UK AIRPROX BOARD

ISSN 1479-2729

Analysis of Airprox in UK Airspace

Report Number 26
January 2011 – June 2011

Twenty-Sixth Report by the UK Airprox Board:

‘Analysis of Airprox in UK Airspace’

(January 2011 to June 2011)

produced jointly for

The Chairman
Civil Aviation Authority

and

The Director General
Military Aviation Authority

FOREWORD

This report contains details of the 63 Airprox that were reported as occurring in UK airspace between 1 Jan and 30 Jun 2011 inclusive. The low total is possibly a result of the harsh winter conditions during the first part of the period and possibly reflects reduced activity levels due to the recession. Anecdotal evidence suggests GA traffic levels have reduced in addition to the documented reduction in Commercial Air Transport hours and movements.

Table 1 shows that the percentage of risk-bearing occurrences (risk categories A & B) remains consistent with previous years at around 30%. Starting in January 2011, the new Risk Category "E" has been introduced. Risk Category E is assigned when the analysis of the incident reveals that, contrary to the perception of the reporting pilot or controller at the time, the incident was entirely benign. The aim is to distinguish between genuine Airprox in which there was no risk of collision (Risk Category C) and non-events that meet the criteria for reporting but are sufficiently benign that it would be misleading to consider them Airprox events; ie normal procedures, safety standards and parameters pertained (Risk category E). Examples of the latter could include Sighting Reports and Controller-perceived Conflicts. For coherence and comparison with previous UKAB reports, the figures for Risk Categories C and E should simply be added together.

Risk Category	2006	2007	2008	2009	2010	2011	2006-2010 Average
A	4	3	5	2	5	10	4
B	20	21	21	23	17	10	20
C	54	51	57	33	53	34	50
D	0	0	4	2	4	2	2
E	N/A	N/A	N/A	N/A	N/A	7	N/A
Totals:	78	75	87	60	79	63	76
Risk Bearing %	31%	32%	30%	42%	28%	32%	33%

Table 1.

The UKAB's purpose is to improve Flight Safety by analysing Airprox occurrences. We work in support of all sections of the aviation industry and welcome suggestions for improving our process and outputs. We also have a database that we can trawl in support of requests for information. Please contact us at info@airproxboard.org.uk Similarly, this report is available in hard copy, CD and our website at www.airproxboard.org.uk anyone may use or reproduce our reports or extracts from them provided their purpose is to promote safety.

Ian Dugmore
Director, UKAB

CONTENTS

AIRPROX DEFINITION

An Airprox is a situation in which, in the opinion of a pilot or controller, the distance between aircraft as well as their relative positions and speed was such that the safety of the aircraft involved was or may have been compromised.

UK AIRPROX BOARD (UKAB) COMPOSITION

The UKAB is an independent organisation sponsored jointly by the CAA and the MOD to deal with all Airprox reported within UK airspace. There are eight civilian and six military voting Members on the Board, which is supported by specialist Advisers and chaired by the Director UKAB who reports directly to the Chairman CAA and Director General MAA. Board Members together form a team of experienced and hands-on practitioners in:

- Military and civilian Air Traffic Terminal Control, Area Control and Airfield Control.
- Commercial Air Transport (CAT).
- General Aviation (GA), powered and gliding.
- Military fixed wing and helicopter flying by the RN, Army and RAF.

UKAB's ROLE

The UKAB undertakes the following tasks in promoting improved safety standards in the air:

- Act as the start point for an investigation process into each incident, generally carried out by the Safety Regulation Group (SRG) of the CAA and/or Military HQs.
- Determine what happened plus analyses of the main causal factors.
- Assess the risk levels involved.
- Make Safety Recommendations where appropriate to reduce the risk of incident recurrence.
- Publish and distribute full reports so that lessons identified can be shared.

STATUS OF UKAB REPORTS

The sole objective of the UK Airprox Board is to assess reported Airprox in the interests of enhancing flight safety. It is not the purpose of the Board to apportion blame or liability. To encourage an open and honest reporting environment, names of companies and individuals are not published in UKAB reports.

RISK CATEGORIES

Risk level assessments are made on the basis of what actually took place and not on what might have occurred.

A	**Risk of collision**	An actual risk of collision existed
B	**Safety not assured**	The safety of the aircraft was compromised
C	**No risk of collision**	No risk of collision existed
D	**Risk not determined**	Insufficient information was available to determine

		the risk involved, or inconclusive or conflicting evidence precluded such determination
E	**Non Event**	Met the criteria for reporting but, by analysis, it was determined that the occurrence was so benign that it would be misleading to consider it an Airprox event. Normal procedures, safety standards and parameters pertained.

THE UKAB DATA SET

The UKAB Airprox database comprises a set of records, each of which related to a specific Airprox. As an investigation proceeds, from first report until the conclusion of the Board's deliberations, the UKAB Secretariat completes fields within the appropriate record. Analysis of the set of records is then possible to produce information such as is published in this Report.

THIS REPORT

The Report follows established practice by giving a broad overview on general trends and then examines in more detail some specific results for each of the three principal airspace user groups, Commercial Air Transport (CAT); General Aviation (GA) and Military.

Some events, reported as Airprox and therefore assigned a reference number by the Secretariat, are subsequently withdrawn and are thus not subject to full investigation and assessment by the Board. Only the reporter can withdraw an Airprox.

In this Report, numbers of 'Unknown/unidentified' aircraft are added to 'Untraced' aircraft and weather balloons to produce the category, 'Other'.

Each Airprox can be assigned more than one Cause. Therefore the total number of Causes usually exceeds the number of Airprox occurrences.

PUBLICATION OF REPORTS

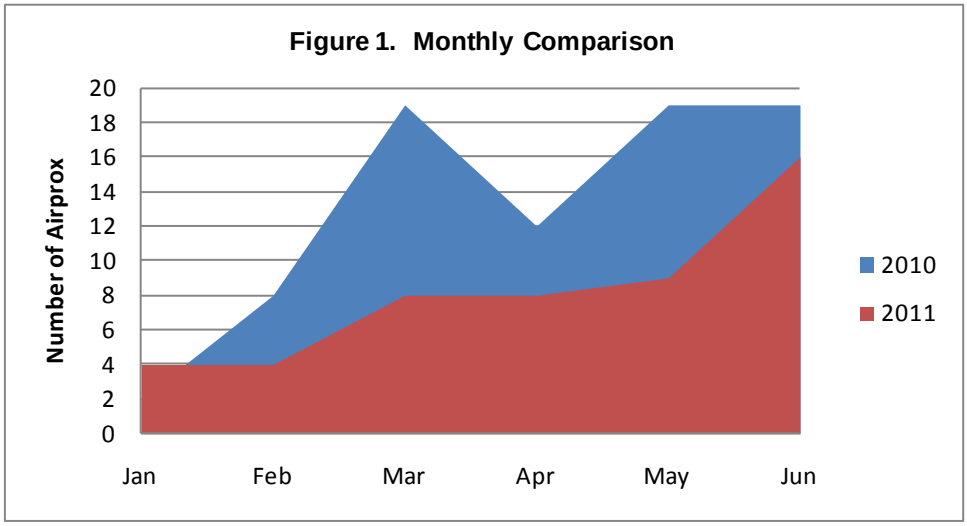
A key UKAB objective is to communicate effectively the lessons identified from Airprox events. Bi-annual 'hardcopy' Reports continue to be the primary means of communication, supported by presentations at flight safety meetings, cd-roms and the Internet. The UKAB Internet website is updated at least every month: for example, details of the most recent set of Reports assessed by the Board are 'uploaded' when finalised.

The UKAB website address is www.airproxboard.org.uk

HALF YEAR COMPARISON 2010 AND 2011

The profile of Airprox occurrences month by month is shown in Figure 1. Both 2010 and 2011 started slowly due to bad winter weather and the sharp decline in Apr 2010 reflects the reduced flying due to volcanic ash.

Figure 1. Monthly Comparison



Tables 2 and 3 allow comparison of Airprox numbers across the first 6 months of 2010 and 2011 differentiated by Civil/Military operators. The major difference is the fall in Civ-Mil Airprox in the Jan-Jun 2011 period, which almost exactly reverses the increase that occurred in this category from 2009 to 2010.

2010	Jan	Feb	Mar	Apr	May	Jun	Totals
Mil~Mil	0	2	5	4	5	2	18
Civ~Mil	0	2	7	6	6	12	33
Civ~Civ	2	3	7	1	8	5	26
Other	0	1	0	1	0	0	2
Totals	2	8	19	12	19	19	79

Table 2.

2011	Jan	Feb	Mar	Apr	May	Jun	Totals
Mil~Mil	1	3	3	3	3	1	14
Civ~Mil	2	1	3	3	4	4	17
Civ~Civ	2	2	3	4	4	11	26
Other	0	1	2	1	1	1	6
Totals	5	7	11	11	12	17	63

Table 3.

The breakdown is shown graphically in Figures 2 and 3 below. The category 'Other' is used when one of the aircraft is untraced and it cannot be determined whether it was civil or military. For obvious reasons, this is most common with gliders and light aircraft.

Figure 2.
User Group Mix Jan - Jun 2010

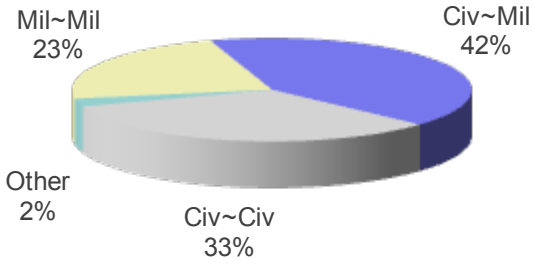
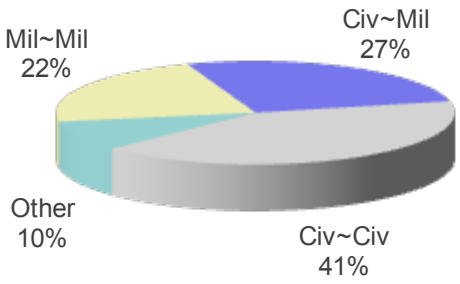


Figure 3.
User Group Mix Jan - Jun 2011



Mix details for Jan-Jun	2010	2011
CAT~CAT	2	2
CAT~GA	4	5
GA~GA	20	19
CAT~Mil	9	1
GA~Mil	24	16
Mil~Mil	18	14
CAT~Unknown	2	0
GA~Unknown	0	2
Mil~Unknown	0	4
Total	79	63

Table 4.

Further examination of the figures in Table 4 shows the reduction in Civil- Military Airprox occurred in both CAT v Mil and GA v Mil events. In percentage terms the reduction in CAT v Mil Airprox was particularly significant.

AIRSPACE

Figure 4 shows the breakdown of Airprox by airspace. The distribution profile is almost identical to that of the previous year.

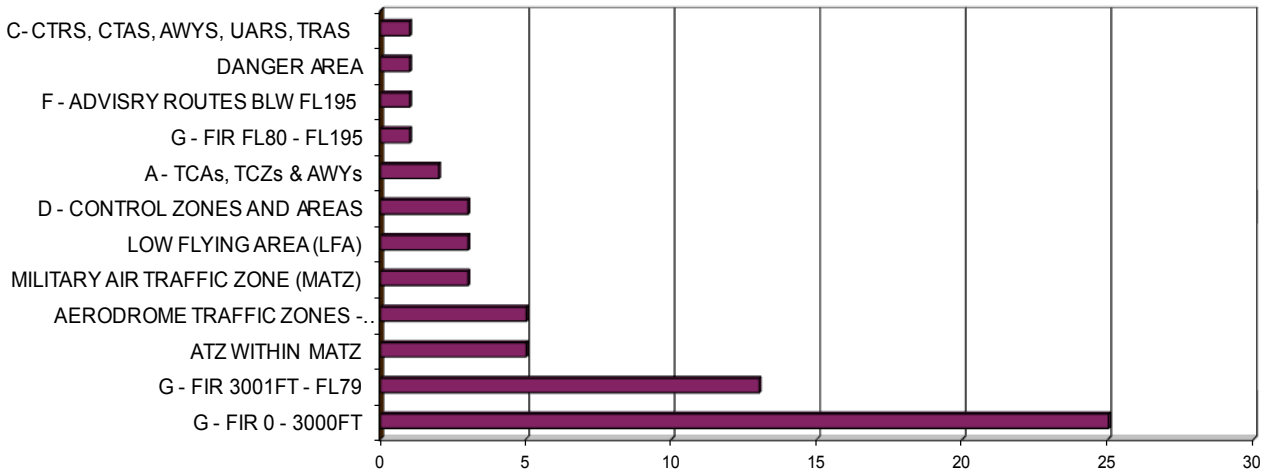


Figure 4. Airprox by Airspace Jan - Jun 2011

COMMERCIAL AIR TRANSPORT

There was a reduction in the number of Airprox involving CAT between 2010 and 2011 and none of them in either year was assessed to be risk-bearing. Tables 5 and 6 and Figures 5 and 6 show the distribution was even throughout the period. For coherence between the years, Risk Categories C and E in 2011 should be added together and compared with Risk Category C in 2010.

2010	Jan	Feb	Mar	Apr	May	Jun	Totals
Risk A	0	0	0	0	0	0	0
Risk B	0	0	0	0	0	0	0
Risk C	1	1	5	2	3	3	15
Risk D	0	1	0	1	0	0	2
Risk E	n/a	n/a	n/a	n/a	n/a	n/a	
Totals	1	2	5	3	3	3	17

Table 5.

2011	Jan	Feb	Mar	Apr	May	Jun	Totals
Risk A	0	0	0	0	0	0	0
Risk B	0	0	0	0	0	0	0
Risk C	1	1	1	1	1	2	7
Risk D	0	0	0	0	0	0	0
Risk E	0	0	1	0	0	0	1
Totals	1	1	2	1	1	2	8

Table 6.

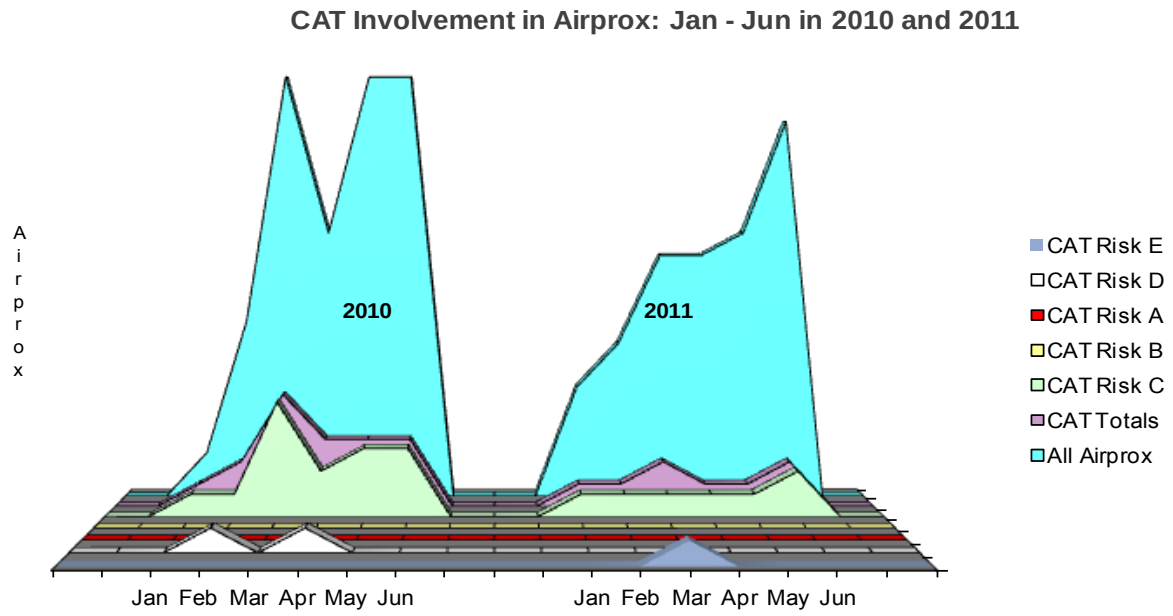


Figure 5.

Figure 6.

Three of the incidents in 2011 occurred in Class D airspace and 2 in Class A CAS. The others were one each in an ATZ, Class G and Class F. The causes were similar to those in previous years with 2 Airprox resulting from airspace infringements. The detail is in Table 7 below.

Ser.	Cause	Totals	Attributed to.
1	PENETRATION OF CAS/ATZ WITHOUT CLEARANCE	2	PILOT
2	DID NOT SEPARATE/POOR JUDGEMENT	2	CONTROLLER
3	CONFLICT BETWEEN FIR AND ADR TRAFFIC	1	OTHER
4	FALSE/MISTAKEN IMPRESSION OF LOSS OF SEPARATION	1	PILOT
5	FIR CONFLICT	1	OTHER
6	FLIGHT CAUSING ATC CONCERN FOR TRAFFIC UNDER SERVICE	1	PILOT
7	INADEQUATE AVOIDING ACTION/LACK OF POSITIVE CONTROL	1	CONTROLLER
8	MISLEADING/AMBIGUOUS TRAFFIC INFORMATION	1	CONTROLLER
9	NOT OBEYING ORDERS/ FOLLOWING ADVICE/ FROM ATC	1	PILOT

Table 7.

GENERAL AVIATION

The number and distribution of GA Airprox during Jan-Jun 2011 was very similar to 2010. Furthermore the number of risk-bearing events was exactly the same in both years, albeit that there was a greater number of Risk Category A events in 2011. The details are in Tables 8 and 9 and Figures 7 and 8.

2010	Jan	Feb	Mar	Apr	May	Jun	Totals
Risk A	0	0	0	0	1	1	2
Risk B	1	2	3	0	3	3	12
Risk C	1	3	7	4	3	11	29
Risk D	0	0	0	0	1	0	1
Risk E	n/a	n/a	n/a	n/a	n/a	n/a	0
Totals	2	5	10	4	8	15	44

Table 8.

2011	Jan	Feb	Mar	Apr	May	Jun	Totals
Risk A	0	0	1	3	0	4	8
Risk B	0	0	1	1	3	1	6
Risk C	3	2	4	0	4	9	22
Risk D	0	0	0	0	0	2	2
Risk E	1	0	0	2	1	0	4
Totals	4	2	6	6	8	16	42

Table 9.

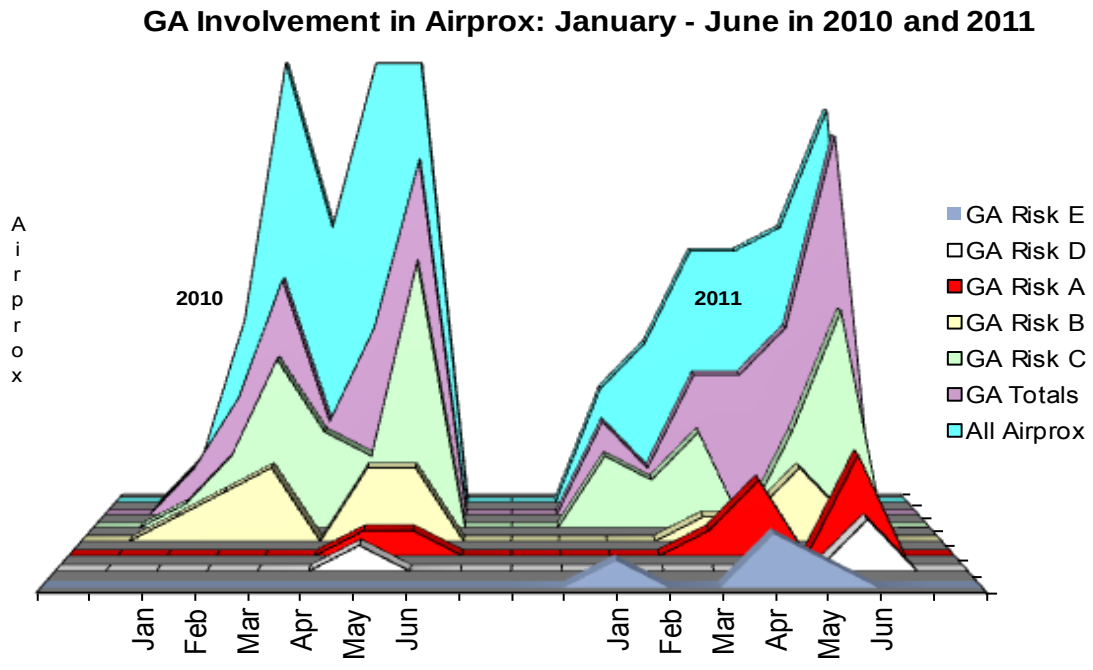


Figure 7.

Figure 8.

The causes of the GA Airprox in 2011 also closely resemble those in 2010. As shown in Table 10, sighting issues predominate and only 'Controller Perceived Conflict' was absent from the equivalent list in 2010.

Ser.	Cause	Totals
1	DID NOT SEE CONFLICTING TRAFFIC	18
2	INADEQUATE AVOIDING ACTION / FLEW TOO CLOSE	8
3	FIR CONFLICT	8
4	LATE SIGHTING OF CONFLICTING TRAFFIC	5
5	FAILURE TO PASS OR LATE PASSING OF TRAFFIC INFO	4
6	PENETRATION OF CAS/ATZ WITHOUT CLEARANCE	3
7	NOT OBEYING ORDERS/ FOLLOWING ADVICE/ FROM ATC	3
8	CONTROLLER PERCEIVED CONFLICTION	2
9	FLYING CLOSE TO/OVER GLIDER, MICROLIGHT OR PARADROP SITE	2

Table 10.

MILITARY AVIATION

Tables 11 and 12 and Figures 9 and 10 show there was a welcome reduction in the number of Airprox involving military aircraft from 51 to 35 comparing periods Jan-Jun 2010 with Jan-Jun 2011. Most of this reduction was in Risk Category C events with the number of Risk category A events remaining constant (3) and the number of Risk Category B events falling slightly from 10 to 8. The introduction of Risk Category E enables us to separate genuine Airprox from those which that are determined to be entirely benign or which it would be misleading to consider as Airprox events. The comparatively high number of Risk Category E events involving military aircraft is partially explained by the routine reporting of TCAS RA events in Class G airspace as Airprox.

2010	Jan	Feb	Mar	Apr	May	Jun	Totals
Risk A	0	0	1	0	1	1	3
Risk B	0	0	2	1	3	4	10
Risk C	0	4	10	8	7	8	37
Risk D	0	0	0	1	0	0	1
Risk E	n/a	n/a	n/a	n/a	n/a	n/a	
Totals	0	4	13	10	11	13	51

Table 11.

2011	Jan	Feb	Mar	Apr	May	Jun	Totals
Risk A	0	1	0	1	1	0	3
Risk B	1	0	1	1	4	1	8
Risk C	1	3	5	3	2	3	17
Risk D	0	0	0	0	0	1	1
Risk E	1	1	1	2	1	0	6
Totals	3	5	7	7	8	5	35

Table 12.

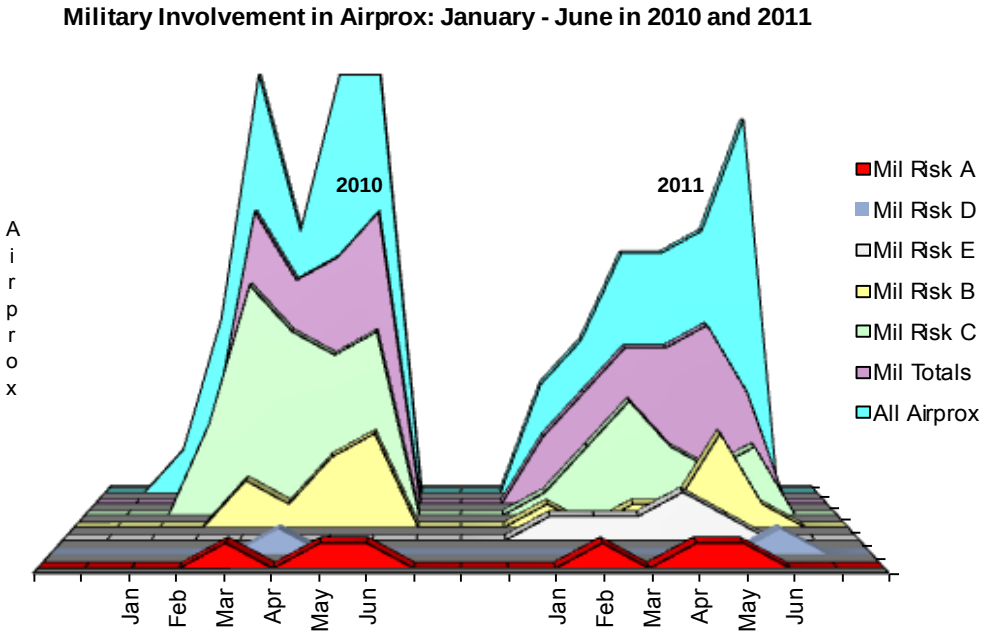


Figure 9. Figure 10.

In examining the causes of Military Airprox, Table 13, the same 2 sighting issues were at the top of the list in 2010. Underlying a significant proportion of these causes are 2 underlying themes in common with GA. The first is the use of a quiet frequency or the selection of a Basic Service (BS) from ATC when a Traffic Service (TS) would be more appropriate to the flight profile. Frequently this is to minimise the interruption to instructional sorties. In GA we see this pattern widely repeated, including by pilots focused on ground or in-cockpit tasks such as survey flights and instrument training. The second theme is the reluctance of pilots in receipt of a TS to change course in response to specific Traffic Information. Rather, pilots tend to stand–on their course in anticipation of seeing the traffic they have been advised about, thereby allowing easily-resolvable encounters to develop into more serious conflicts.

Ser.	Cause	Totals
1	FAILURE TO SEE CONFLICTING TRAFFIC	11
2	LATE SIGHTING OF CONFLICTING TRAFFIC	9
3	INADEQUATE AVOIDING ACTION / FLEW TOO CLOSE	7
4	FIR CONFLICT	7
5	SIGHTING REPORT	3
6	POOR AIRMANSHIP	3
7	FAILURE TO PASS OR LATE PASSING OF TRAFFIC INFO	2
8	CONTROLLER PERCEIVED CONFLICTION	2
9	CONFLICT IN OTHER TYPE OF AIRSPACE	2

Table 13.

UKAB SAFETY RECOMMENDATIONS

UKAB Safety Recommendations are made when, following its consideration of any given Airprox, the Board believes that action needs to be taken to address a particular safety matter. It is for the organisation(s) concerned to decide how to respond to a UKAB Safety Recommendation. The information that follows provides updates on actions being taken in response to those Safety Recommendations published in the last UKAB Report. Also listed are Safety Recommendations made more recently together with responses where available. Updates will continue to be published until action is complete, indicated by 'CLOSED' in the 'STATUS' sections below.

044/08 16 Apr 08 involving an ATR72 and an EMB195 Risk C

RECOMMENDATION: In the light of this Airprox, the CAA should initiate a review of the currently promulgated London Gatwick SIDs in relation to NPRs to ensure clarity.

ACTION**:** The CAA accepts this Safety Recommendation. A number of textual refinements were agreed with the air traffic service provider and incorporated into the procedure chart. These feature in the current iteration (AD2-EGKK-6-6 dated 17 Nov 11).

STATUS – CLOSED

2009-76 PA28 v ASK21 GLIDER – 5 JUL 2009 – RISK: B

RECOMMENDATIONS

(i) Dunkeswell Aerodrome and the Operator of North Hill Gliding Site should jointly develop a LoA and promulgate agreed procedures that will ensure the safe integration of air traffic at these closely located airfields.

(ii) The CAA should review the disparate operations within the ATZ at Dunkeswell aerodrome and at North Hill Glider Site, to ensure their continued operation is in accord with the requirements of Rule 45 of the Rules of the Air Regulations.

UPDATE : The CAA agreed with recommendation (i) and has provided advice on the content of the Letter of Agreement.

The CAA accepted recommendation (ii), and has reviewed operations within the ATZ at Dunkeswell to ensure compliance with Rule 45.

STATUS – CLOSED

2010145 HAWK T MK1 v LYNX – 16 SEP 2010 – RISK: C

RECOMMENDATION

It is recommended that RAF Valley reviews its procedures for co-ordinating helicopter movements underneath fixed-wing circuit traffic.

ACTION: HQ Air Cmd

STATUS - OPEN

2011006 CHINOOK v APACHE - 24 JAN 2011 – RISK: B

RECOMMENDATION

The MoD is recommended to consider fitting Collision Warning Systems to its helicopters.

ACTION: HQ JHC

UPDATE: Cdr JHC has requested MoD to raise an enhancement option to acquire TCAS for JHC ac.

STATUS - ACCEPTED CLOSED

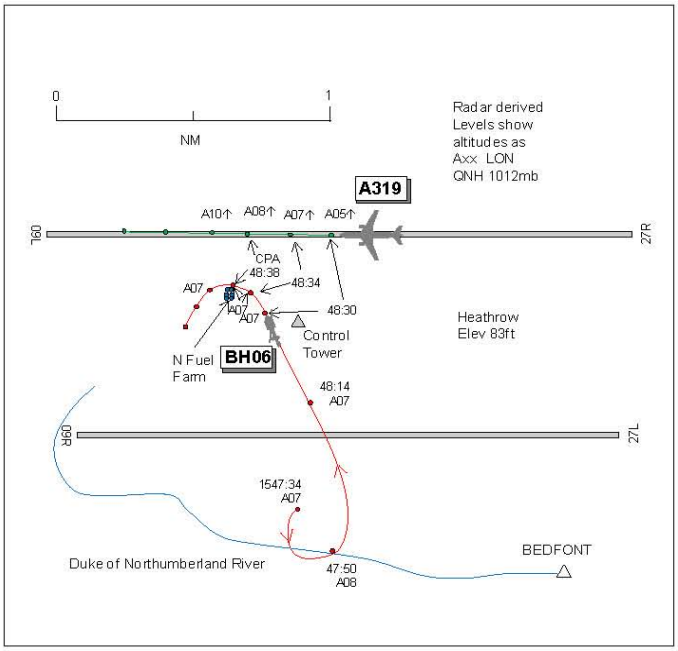
aal	above aerodrome level
ac	aircraft
ACAS	Airborne Collision Avoidance System
ACC	Area Control Centre
ACN	Airspace Co-ordination Notice
A/D	aerodrome
ADC	Aerodrome Control(ler)
ADR	Advisory Route
AEF	Air Experience Flight
AEW	Airborne Early Warning
AFIS(O)	Aerodrome Flight Information Service (Officer)
agl	above ground level
AIAA	Area of Intense Aerial Activity
AIC	Aeronautical Information Circular
AIP	Aeronautical Information Publication
AIS	Aeronautical Information Services
alt	altitude
amsl	above mean sea level
ANSP	Air Navigation Service Provider
AOB	Angle of Bank
A/P	Autopilot
APP	Approach Control(ler)
ACR	Approach Control Room
APR	Approach Radar Control(ler)
ARP	Aerodrome Reference Point
ASR	Airfield Surveillance Radar
ATC	Air Traffic Control
ATCC	Air Traffic Control Centre
ATCO	Air Traffic Control Officer
ATCRU	Air Traffic Control Radar Unit
ATIS	Automatic Terminal Information Service
ATM	Aerodrome Traffic Monitor
ATS	Air Traffic Service
ATSA	Air Traffic Service Assistant
ATSOCAS	ATSs Outside Controlled Airspace
ATSI	Air Traffic Services Investigations
ATSU	Air Traffic Service Unit
ATZ	Aerodrome Traffic Zone
AWACS	Airborne Warning and Control System
AWR	Air Weapons Range
BGA	British Gliding Association
BHPA	British Hang Gliding and Paragliding Association
BMAA	British Microlight Aircraft Association
BMFA	British Model Flying Association
BS	Basic Service
CC	Colour Code - Aerodrome Weather State
CANP	Civil Air Notification Procedure
CAS	Controlled Airspace
CAT	Commercial Air Transport
CAVOK	Visibility, cloud and present weather better than prescribed values or conditions
cct	Circuit
CFI	Chief Flying Instructor
CLAC	Clear Above Cloud
CLAH	Clear Above Haze
CLBC	Clear Below Cloud
CLBL	Clear Between Layers
CLNC	Clear No Cloud
CLOC	Clear of Cloud
CMATZ	Combined MATZ
CPA	Closest Point of Approach
C/S	Callsign
CTA	Control Area
CTR/CTZ	Control Zone
CWS	Collision Warning System
DA	Decision Altitude
DAP	Directorate of Airspace Policy CAA
DF	Direction Finding (Finder)
DH	Decision Height
DME	Distance Measuring Equipment
DS	Deconfliction Service
E	East
EAT	Expected Approach Time
elev	elevation
ERS	En Route Supplement
est	estimated
FAT	Final Approach Track
FIR	Flight Information Region
FISO	Flight Information Service Officer
FMS	Flight Management System
FO	First Officer
FPL	Filed Flight Plan
fpm	Feet per Minute
FPS	Flight Progress Strip
GAT	General Air Traffic
GCA	Ground Controlled Approach
GH	General Handling
GMC	Ground Movement Controller
GP	Glide Path
GS	Groundspeed
H	horizontal
HISL	High Intensity Strobe Light
HLS	Helicopter Landing Site
HMR	Helicopter Main Route
HPa	Hecto Pascals
HPZ	Helicopter Protected Zone
HQ Air	HQ Air Command
HUD	Head Up Display
IAS	Indicated Air Speed
iaw	In accordance with
ICF	Initial Contact Frequency
IFR	Instrument Flight Rules
ILS	Instrument Landing System
IMC	Instrument Meteorological Conditions
JSP	Joint Services Publication
KHz	Kilohertz
kt	Knots
km	Kilometres
L	Left
LACC	London Area Control Centre (Swanwick)
LARS	Lower Airspace Radar Service
LATCC(Mil)	London Air Traffic Control Centre (Military)
LFA	Low Flying Area
LFC	Low Flying Chart
LH	Left Hand
LJAO	London Joint Area Organisation
LoA	Letter of Agreement
LOC	Localizer
LTMA	London TMA
MATS	Manual of Air Traffic Services
MATZ	Military Aerodrome Traffic Zone
METAR	Aviation routine weather report
MHz	Megahertz
MOD	Ministry of Defence
MRP	Military Regulatory Publication
MSD	Minimum Separation Distance
N	North
NATS	National Air Traffic Services
NDB	Non-Directional Beacon
nm	Nautical Miles
NMC	No Mode C
NK	Not Known
NR	Not Recorded
NVD	Night Vision Devices
NVG	Night Vision Goggles
OACC	Oceanic Area Control Centre
OAT	Operational Air Traffic
O/H	Overhead
OJTI	On-the-Job Training Instructor
OOS	Out of Service
PAR	Precision Approach Radar
PCAS	Portable Collision Avoidance System
PFL	Practice Forced Landing
PF	Pilot Flying
PI	Practice Interception
PIC	Pilot-in-Command
PINS	Pipeline Inspection Notification System
PNF	Pilot Non-flying

PS	Procedural Service
QFE	Atmospheric pressure at aerodrome elevation
QFI	Qualified Flying Instructor
QHI	Qualified Helicopter Instructor
QNH	Altimeter sub-scale setting to obtain elevation when on the ground
R	Right
RA	Resolution Advisory (TCAS)
RAT	Restricted Area (Temporary)
RCO	Range Control Officer
RH	Right Hand
ROC	Rate of Climb
ROD	Rate of Descent
RPAR	Replacement PAR
RPS	Regional Pressure Setting
RT	Radio Telephony
RTB	Return to base
RVSM	Reduced Vertical Separation Minimum
RW	Runway
RVR	Runway Visual Range
S	South
SA	Situational Awareness
SAP	Simulated Attack Profile
SAS	Standard Altimeter Setting
ScATCC(Mil)	Scottish Air Traffic Control Centre (Military)
ScACC	Scottish Area Control Centre (Prestwick)
SFL	Selected Flight Level [Mode S]
SID	Standard Instrument Departure
SMF	Separation Monitoring Function
SOPs	Standard Operating Procedures
SRA	Surveillance Radar Approach
SSR	Secondary Surveillance Radar
STAR	Standard Instrument Arrival Route
STCA	Short Term Conflict Alert
Sup	Supervisor
SVFR	Special VFR
TA	Traffic Advisory (TCAS)
TAS	True Air Speed
TC	Terminal Control
TCAS	Traffic Alert & Collision Avoidance System
TRA	Temporary Restricted Area
TFR	Terrain Following Radar
TI	Traffic Information
TMA	Terminal Control Area
TRUCE	Training in Unusual Circumstances and Emergencies
TS	Traffic Service
TWR	ATC Tower
UAR	Upper Air Route
UHF	Ultra High Frequency
UIR	Upper Flight Information Region
UKDLFS	United Kingdom Day Low Flying System
UKNLFS	United Kingdom Night Low Flying System
unltd	unlimited
USAF(E)	United States Air Force (Europe)
U/S	Unserviceable
UT	Under Training
UTC	Co-ordinated Universal Time
V	Vertical
VCR	Visual Control Room
VDF	Very High Frequency Direction Finder
VFR	Visual Flight Rules
VHF	Very High Frequency
VMC	Visual Meteorological Conditions
VOR	Very High Frequency Omni Range
VRP	Visual Reporting Point
W	West
Wx	Weather

AIRPROX REPORT No 2011001

AIRPROX REPORT NO 2011001

Date/Time:	4 Jan 2011 1549Z	
Position:	5128N 00028W (O/H Heathrow - elev 83ft)	
Airspace:	ATZ	(Class: A)
	Reporting Ac	*Reported Ac*
Type:	A319	BH06 JetRanger
Operator:	CAT	Civ Comm
Alt/FL:	300ft ↑ (QNH 1012mb)	800ft (QNH)
Weather:	VMC NR	VMC CLOC
Visibility:	NR	>10km
Reported Separation:	300ft V/<300m H	NR
Recorded Separation:	100ft V/0·2nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE A319 PILOT reports outbound from Heathrow RW27R, IFR and in communication with Heathrow Tower, squawking with Modes S and C. Just after rotation, heading 271° at 140kt, Tower advised of a helicopter operating to the S of the aerodrome. As they climbed through 300ft the Capt visually acquired a black helicopter approx 300m to the forward/L of their ac at about 600ft moving towards the extended C/L of RW27R. Both pilots were ready to take avoiding action if required. The helicopter made a very sharp L turn by which time they were approximately 300ft higher than it. Neither a TCAS TA nor RA warning was received at any time and he assessed the risk as medium.

THE BH06 JETRANGER PILOT reports flying a pipeline survey with an observer and in communication with Heathrow Tower, squawking an assigned code with Mode C. The ac was coloured black with nav, tip strobes, pulsing landing lights and HISLs all switched on. He entered the CTR at Oxshott E having requested a H9 routeing to Heathrow with standard operating altitudes. On entering he was asked to report Heathrow in sight, which he did over the QE2 reservoir and he was then told to change to Heathrow Tower. On contact with Tower he was told to proceed and hold at Bedfont. On reaching Bedfont he took up the hold for a few minutes, RW27L was in use for inbound traffic and RW27R for outbound traffic. The controller then asked if he was familiar with the BA cargo hangar and he responded affirmative. ATC instructed him to proceed to the cargo hangar and hold, which he did and after 1 orbit he was told to cross RW27L immediately and proceed to the Fuel Store and hold S of RW27R. On approaching the Fuel Store from the S at 800ft and 80kt he informed ATC that, when convenient, he was ready to re-cross RW27L to follow the pipeline SW from the aerodrome. ATC told him to continue and re-cross RW27L without having to hold. The manoeuvre was flown in one single arc from the cargo hangar to the fuel store and re-crossing RW27L E of the 09 numbers. Whilst approaching the Fuel Store he was visual with a departing ac, the A319, in his 2-3 o'clock on RW27R, which was already well on the climb-out and which he had seen before he crossed RW27L. ATC informed inbound flights that he was crossing RW27L and would be remaining S of RW27R and he was instructed to contact Heathrow Radar whilst continuing on the pipeline inspection. He assessed the risk as none.

THE HEATHROW AIR (N) DEPARTURES CONTROLLER reports the pipeline inspection BH06 was warned in by the Tower Supervisor. He tracked the BH06 on the ATM and then subsequently visually as it operated S of RW27L. The BH06 was operating on the Arrivals frequency 118·5MHz throughout and coordination took place with the Arrivals controller that the helicopter would cross RW27L and remain S of RW27R. The BH06 crossed RW27L at speed around the midpoint so with the A319 flight already cleared for take-off he gave the crew TI, informing them that the BH06 would be remaining S of RW27R. The BH06 was obscured from view above the

VCR roof for a brief moment and when visual once again its position appeared to be very adjacent to RW27R and the departing A319 as it performed a high energy turn to the S. Its relative position to the A319 appeared very close and he asked the A319 crew if they were happy with the position of the helicopter. The A319 crew replied "it was a bit too close for comfort" and that they would be filing a report.

THE HEATHROW AIR (S) ARRIVALS CONTROLLER reports mentoring a trainee when the incident occurred. On handover they had been advised by the off-going controller that a 6nm gap had been arranged in order for a pipeline helicopter to proceed from Bedfont routeing W of the Tower as far as the Fuel Farm then to retrace its route back to Bedfont. They crossed the helicopter as soon as the inbound ac landed and it proceeded N towards the Fuel Farm before they instructed the pilot to remain S of RW27R, which was read back correctly. The trainee had coordinated with the Departures controller who was aware of the helicopter and was passing TI, so departures from RW27R continued. As the helicopter approached the Fuel Farm an A319 rotated off RW27R. As seen from the VCR the helicopter routed N of the Fuel Farm and then did a sharp R turn, she thought, over the taxiways at which point it looked very adjacent to the A319 next to it in the air. The Departures controller was unhappy with the proximity of the helicopter and questioned the A319 crew as to their opinion. The A319 crew replied that "it was a bit close for comfort". The pipeline helicopter retraced its steps and crossed RW27L and was transferred to SVFR.

ATSI reports that the Airprox occurred at 1548:38 within the Heathrow Airport ATZ, Class A airspace, between an Airbus A319 and a Bell 206 JetRanger, BH06, pipeline survey helicopter.

The A319 was departing from Runway 27R, on a flight from London Heathrow to Paris Charles de Gaulle.

The BH06 helicopter was operating a CAT Z, Non Standard Flight (NSF), pipeline survey. A NSF in CAS is considered to be an aerial task that does not follow published routes or notified procedures. The BH06 route required an approach and entry into the Heathrow ATZ from the S in order to overfly the Northern Fuel Farm, situated between Heathrow's RWs 27L and 27R. The route to be flown by the BH06 was shown on a coloured diagram provided by the Helicopter Operator.

The application procedure for a NSF is contained in the UK AIP and the responsibility for the issue of a NSF approval, within the London Control Zone, lies with London Control (LTC) Swanwick Operations. The Heathrow Manual of Air Traffic Services (MATS), Part 2, Section 1-103, Paragraph 17.13, Non Standard Flights, states:

'The procedure to be followed by operators who wish to carry out Non Standard Flights (NSFs) is contained in the UK AIP Page ENR 1-1-4-1.

The responsibility for the issue of Non Standard Flight Approval for flights within the London CTR and London City CTR lies with TC Ops.

The responsibility for the issue of exemptions from the Air Navigation Order 2000 or Rule 5 of the Rules of the Air Regulations lies with Civil Aviation Authority.'

A NSF approval for the pipeline survey was granted, in principle only, on 17 Nov 2010, serial number W008/2011, valid from 01 Jan 11 to 31 Dec 11. Special Instructions associated with the approval required that areas close to Heathrow had to be flown before 0530, or with reduced separation provided by the Air controller (visually) from Heathrow Tower. The helicopter operator was required to obtain tactical approval at least 30min prior to take-off from the TC Senior Watch Assistant (SWA) and the SWA was to contact Heathrow Tower when the NSF was activated. The LTC, MATS, Part 2, Section GEN-124, Paragraph 17.11.1.1, Handling NSF Flights, states:

'A Non-Standard Flight Operator will telephone the SWA [Senior Watch Assistant] to activate a Non-Standard Flight. The SWA is to locate the relevant NSF documentation from the NSF folders or drawers as necessary. The SWA shall confirm all pertinent information with the operator, such as time, callsign, area of operation and requested level.

The SWA shall take the NSF documentation together with the confirmed details to the relevant GS (Group Supervisor) who shall be apprised of the request. The GS should not approve the request without taking into account the likely impact of the flight on Swanwick operations, sector workload and only following consultation with other units as appropriate. Restrictions should be applied as required.

The SWA shall inform the operator of the status of the approval and inform them of any restrictions that may have been applied by the GS.

If the flight intends to operate within 4NM of Heathrow, Gatwick, Stansted, Luton or London City (excluding helicopter pleasure flights using the H4) the SWA shall inform the relevant Tower SUP of the NSF number. If the Tower SUP is unable to locate the NSF documentation, the SWA shall fax the NSF when requested.

Once this process has been completed, flight progress strips are to be prepared by the SWA and passed to the relevant sectors. If applicable, the SWA shall enter a code-callsign conversion into the CDDS. [Code Callsign Distribution System].

On completion of the NSF task, the NSF documentation shall be returned to the SWA who will re-file it.'

The Heathrow Manual of Air Traffic Services (MATS), Part 2, Section 1-105, Paragraph 17.13.1, Non Standard Flight Notification Forms, States:

'A non Standard Flight Notification proforma is used to give basic information on Aerial work, Parachute Displays, Calibration, etc and will normally have attached to it a sketch diagram and, if received by TC Operations from the operator, copies of appropriate CAA Exemptions/Permissions. Electronic copies of NSFs that affect Heathrow ADC will be held in a folder on the VCR Supervisor's PC.

Non Standard Notification forms include a Serial Number for ease of reference.

The proforma includes dates, times, altitudes and aircraft details.

The NSF proforma is typed and will not be hand amended. A NSF is not to be approved by the operational watch without the proforma produced by TC operations.'

The BH06 Helicopter Operator complied with the notification procedures and obtained tactical approval for the flight. The helicopter entered CAS at Oxshott East and was routed via Helicopter route H9 to hold to the S of Bedfont, which is designated as a helicopter reporting and holding point to the S of Heathrow Airport.

Heathrow were operating on RW27L for arrivals (AIR S arrivals) and RW27R for departures (AIR N departures). Just prior to the reported Airprox there was a handover of the AIR S controller and the VCR Supervisor positions. The AIR N controller remained in position.

CAA ATSI had access to RT and Radar recordings together with pilot and controller and unit written reports. The VCR Controllers were operating in adjacent positions and therefore coordination was not recorded.

METAR EGLL 041520Z 22007KT 9999 FEW017 BKN033 04/01 Q1012 NOSIG=

At 1524:03, the VCR Supervisor received a telephone call from London TC (SVFR) who advised, *"….I've got a pipeline coming your way."* The VCR Supervisor was not aware of the exact requirements and requested the serial number of the flight. At 1527:15, SVFR called the Supervisor with the serial number W008/2011. SVFR agreed to fax the Supervisor a copy of the NSF notification. This comprised two pages, the approval notification and attached map. The Supervisor received a faxed copy of the NSF map, but this was not regarded as a very good copy. The ATSU written report indicated that the Supervisor was familiar with the pipeline to be inspected and judged visibility was good. The Supervisor indicated to TC SVFR that he was happy for the NSF flight to go ahead.

The ATSU report indicated that the Supervisor notified the AIR S controller about the NSF helicopter. An appropriate gap in the arrival traffic was agreed and it was understood that the BH06 helicopter would route to the upwind end of RW27L then over the fuel farm.

At 1534:29, the VCR Supervisor called the Group Supervisor (GS) Airports and agreed a 6nm gap in the arrival sequence to accommodate the crossing of the BH06 across the upwind end of RW27L. The Supervisor was unable to find the electronic copy of the NSF notification file and again requested confirmation of the NSF serial number. The GS Airports confirmed the number as W008/2011 and the Supervisor then confirmed receipt of the second faxed sheet of the NSF notification.

At 1538:59, SVFR contacted AIR S to pass the inbound details on the BH06, which was S of Heathrow, squawking 7031 and routeing to hold S of Bedfont. AIR S confirmed the requirement for a 6nm gap in the arrival sequence.

At 1540:03 the BH06 pilot called Heathrow Tower (AIR S) and reported passing the Queen Elizabeth Reservoir following helicopter route H9. AIR S instructed the BH06 flight to hold S of Bedfont.

At 1542:24 the BH06 pilot reported approaching Bedfont with landing traffic in sight. AIR S advised the BH06 flight to hold S of Bedfont until there was a reasonable gap and then asked the BH06 pilot to confirm that when completing the intended loop to the fuel farm, it would be a quick there and back. The pilot confirmed this was the case, *"affirm all we need to do is we're literally we would come in and immediately turn south and come straight back across the er two seven left."* Air S replied, *"….If you hold south of Bedfont, I'll give you a call back very shortly."*

The ATSU unit report indicated that:

'a) the off-going AIR S controller could not remember discussing the plan with the AIR N controller.

b) the AIR N controller recalls the off-going Supervisor informing AIR S Arrivals of the impending pipeline flight and that a Black and White copy of the Map was briefly shown to AIR N. The AIR N controller stated that he was informed that the helicopter would be remaining S of RW27R but wasn't told where it would be going. The Air N controller considered that there was no need to suspend departures and considered that any other relevant information that would potentially make this unsafe would have been passed to him.'

As the BH06 approached Bedfont a hand over of the Supervisor position took place. The ATSU written report indicated that the oncoming Supervisor considered that there was no requirement to talk to the AIR controllers as the arrivals gap had, 'already been sorted out.'

At 1545, whilst the BH06 was holding at Bedfont, AIR S handed over to the oncoming controller and trainee. The unit report indicated that as part of the handover brief the oncoming controller was shown the map, which detailed the route and advised that the helicopter would follow the Duke of Northumberland River just like an E'ly crossing. However the oncoming controller understood the intention was to allow the BH06 to "route from Bedfont straight up to the fuel farm and straight back again". The oncoming controller also commented that the black and white copy of the map was poor.

The oncoming AIR S controller planned to cross the BH06 across the mid-point of RW27L and in preparation decided to move the helicopter W of Bedfont ready for the crossing. At 1546:36, AIR S instructed the BH06 flight, *"…remain south of two seven left and hold over the cargo hangar."* This was acknowledged, *"Will hold over the cargo hangar (BH06)c/s".*

At 1545:39, AIR N gave the A319 flight a clearance to line up RW27R.

At 1547:31 the A319 flight was given take off clearance, *"(A319)c/s two seven right clear for take off wind two two zero degrees seven knots."* The A319 pilot replied, *"Clear take off (A319)c/s."*

At 1547:34 the BH06 flight was instructed, *"and (BH06)c/s you can cross two seven left now and hold at the fuel farm remain south of two seven right."* The BH06 pilot replied: "*crossing now and will remain south of two seven right (BH06)c/s thank you."* The ATSU written report indicated that the AIR S controller called to the AIR N controller "heli's crossing now" and AIR N responded with a thumbs up. At this point a new QNH 1011 was broadcast.

The ATSU written report indicated that AIR N observed the helicopter leaving the BA Cargo shed and was surprised at the speed the helicopter carried out the crossing. At 1548:03, because the A319 had already commenced the take off roll, AIR N elected to make a general broadcast, *"all stations helicopter approaching er f-from the south will remain south of two seven left."* (This was a slip and should have been transmitted as 27R.)

The ATSU written report indicated that both AIR S and N considered that the helicopter appeared to be fast as it disappeared O/H the Tower. There was no prior coordination between AIR S and AIR N regarding the

management of departures, the passing of TI, the responsibility for applying visual separation or the wake turbulence requirements. The BH06 was next observed in a sharp L turn adjacent to the departing A319.

At 1548:22 the BH06 pilot reported, *"and (BH06)c/s when you're ready we er we're ready to cross back two seven left."* The Tower controller replied: *"and (BH06)c/s that's approved cross two seven left now.*"

At 1548:38 radar recording showed the BH06 at the most N'ly point of the loop in a L turn passing through a W'ly heading, indicating altitude 700ft. The A319 was indicating altitude 800ft and was positioned 0·2nm (370m) N of the helicopter.

At 1549 the BH06 pilot reported clear of the landing RW (27L) and at the same time the Departure controller asked the A319 pilot, *"er did you think that er helicopter was a bit adjacent there,"* and the A319 pilot responded, *"He was a bit close for comfort yeah."* Both the Departures controller and the A319 pilot considered that they might both file a report.

The ATSU written report indicated that after the incident, when asked what could have been done differently, the Supervisor, AIR S and N controllers made the following comments:

Supervisor

Suggested that in future, pipeline or other similar details should call the VCR Supervisor before departing in order for the Supervisor to fully understand what they want to do, so the Supervisor can brief the helicopter pilot on current operations/conditions and subsequently there would be ample time then for the Supervisor to appropriately brief all controllers who would be involved. He stated that this would also allow them to plan their flight better instead of being turned away due to the met conditions not being appropriate.

AIR S

In hindsight departures should have been stopped. The location of fuel farm was now very close to 27R. The controller had seen many pipeline surveys around the airfield but none that came between the runways.

AIR N

Next time departures would be stopped. Had an adequate briefing been given this would have been the obvious course of action but the controller was not aware of all the facts. The controller hadn't seen that particular non-standard pipeline helicopter detail before in which it operated between the runways. The controller also stated that he felt a more in-depth briefing should be required before allowing the activity to take place, as it isn't a routine occurrence.

As a result of the unit incident investigation, Heathrow ATSU made the following recommendations, which have been accepted for implementation by the end of June 2011.

It is recommended that NATS procedures are amended to ensure that the Heathrow Tower Supervisor is involved in the approval process for the flight before the flight gets airborne when the detail involves activity within 4nm of Heathrow.

Benefit: This will ensure that the Supervisor has an opportunity to discuss the impact on the operation before the flight is approved.

Closure Criteria: Terminal Control Operations are made aware of the request to amend procedures to require that the Heathrow Tower Supervisor is to be involved in the approval process for the flight before the flight gets airborne when the detail involves activity within 4nm of Heathrow.

It is recommended that Heathrow Operations work with Terminal Control Operations to revise the assessment process for NSF approvals, including the assessment of the impact on the Heathrow Tower operation.

Benefit: To ensure that a proper assessment of the likely impact on the Heathrow Operation of a Non-Standard Flight is conducted.

Closure Criteria: A robust process for assessing the impact on Heathrow Operations is put in place.

It is recommended that the Heathrow Safety Department raise awareness on the unit of incidents that have occurred at, or close to, the time of handing over of positions.

Benefit: To highlight to controllers that if they are dealing with a complex situation that they should consider whether it is an appropriate time to handover or whether to delay the process.

Closure Criteria: Safety Department will raise awareness on the unit via suitable means.

The Helicopter Operator has, since the incident, advised that there is no longer a future requirement to conduct pipeline survey between the dual runways at Heathrow Airport.

The BH06 pilot complied with the ATC clearances and followed the looped route correctly crossing RW27L and then turning L at the Northern fuel farm situated 370m S of RW27R. Had the A319 departure been delayed or the crew been made more situationally aware of the helicopter operation, with appropriate and timely TI, it is likely that the Airprox would not have occurred.

CAA ATSI considered that the primary causal factor was a breakdown in the NSF approvals process, which did not allow sufficient tactical consultation or planning for the unusual nature of the helicopter survey route and the significant impact this would have on Heathrow operations. It may have been more appropriate for the pilot to have received a personal brief from the Heathrow VCR Supervisor. The NSF application requires 21 days notice. However, prior clearance on the day to activate the NSF is normally requested 1hr before departure. The NSF notification notice did not include any description about the specific requirements or impact that the flight would have on Heathrow operations. The notification provided by SVFR to the Heathrow VCR supervisor, 24min before the Airprox occurred was not considered sufficient to allow the Supervisor to properly assimilate the requirements, formulate an appropriate plan and then brief operational controllers.

The following errors and misunderstanding were considered to be contributory factors:

The missing electronic copy of the Tower NSF notice caused a delay in the operational assessment and appropriate plan and briefing. The faxed black and white copy was considered to be poor.

The handover of the Supervisor and AIR S positions just prior to the incident was unfortunate. With more timely notice and awareness the handover should have been delayed.

There was a lack of awareness amongst the VCR controllers regarding the precise requirement of the BH06 and the impact on Heathrow operations. Neither of the AIR controllers on duty at the time of the Airprox had previously seen a pipeline helicopter operating between the dual RWs at Heathrow; and therefore a lack of familiarisation and awareness of the operation caused a misunderstanding.

There was a lack of awareness regarding the distance of the Northern Fuel Farm from RW27R. There was no discussion about stopping departures from RW27R, the visual separation and wake turbulence requirements, or the passing of TI to departures.

There was some confusion regarding the helicopters routeing. The offgoing AIR S controller considered that the helicopter would route to the upwind end of the RW following the E'ly helicopter route. The oncoming AIR S controller considered that the BH06 would route direct from Bedfont across the RW.

AIR N had not been properly briefed and believed that the BH06 was to remain S of Runway 27R and further considered that there was no requirement to stop departures.

Because the A319 flight had commenced take-off, AIR N considered that the passing of TI would be distracting and therefore elected to pass a general broadcast. However the controller made a slip and stated the helicopter would remain S of RW27L instead of 27R. This may have resulted in the crew of the A319 being unaware of the helicopters intentions and being suprised when the helicopter was observed just S of RW27R.

The routeing and height of the BH06 resulted in the helicopter dissappearing from the view of both controllers for a short period. This together with the speed of the helicopter and sharp L turn over the Northern fuel farm gave the controllers an impression that the helicopter was adjacent to the A319. Radar recording showed that at the closest point, the helicopter was 370m S of the A319.

CAA ATSI are content with the recommendations made by the Heathrow ATSU.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

Irrespective of the supervisory issues leading up to this incident, it was clear both Air S and Air N had been unsure as to the specific task to hand. Air N had decided, from the information available, that departures from RW27R need not be suspended during the BH06's operation in the Heathrow central area. Air S had cleared the BH06 to cross RW27L and told its pilot to remain S of RW27R, which was acknowledged. At the same time Air N cleared the A319 for take-off. Air S then told Air N of the BH06's crossing which Air N acknowledged but as the A319 had already commenced its take-off roll, Air N elected to make a broadcast instead of specific TI to the A319 flight. However, it was unfortunate that Air N inaccurately stated that the helicopter would be remaining S of RW27L, not RW27R as intended. This had undoubtedly led to the A319 crew's surprise when, shortly after their take off, the BH06 appeared in their forward LH quarter with its intentions unknown. Members agreed that had the A319 crew been made aware of the BH06's intentions, it would have allayed their concerns during a critical phase of their flight. The BH06 pilot had complied fully with the clearances issued and had sighted the A319 both prior to, and during, its departure. Although the BH06 was perceived by the A319 crew to be in confliction, the helicopter was always going to remain S of RW27R during its Fuel Farm inspection. Ironically it was the expeditious clearance issued by Air S that allowed the BH06 pilot to perform this manoeuvre in one continuous L turn and contributed much to the concern of the Air N and S controllers. The Board concluded that following the inaccurate broadcast by Air N, the A319 crew was concerned by the BH06's proximity but that the sightings by both crews and action taken by the BH06 pilot ensured that any risk of collision had been removed.

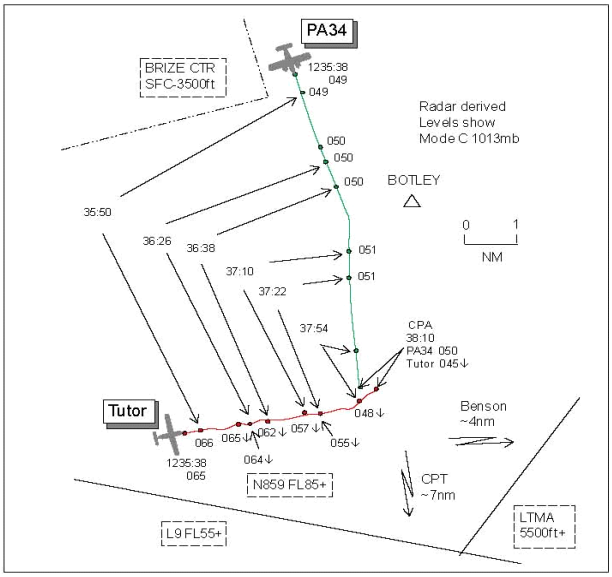
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Following an inaccurate broadcast from Air N, the A319 crew was concerned by the proximity of the BH06.

Degree of Risk: C.

AIRPROX REPORT NO 2011004

Date/Time:	20 Jan 2011 1238Z	
Position:	5138N 00115W (8·5nm N CPT)	
Airspace:	Oxford AIAA	(Class: G)
Reporter:	LTC SW	
	1st Ac	*2nd Ac*
Type:	PA34	Grob TutorTMk1
Operator:	Civ Trg	HQ AIR (TRG)
Alt/FL:	FL50	4500ft↓ (NR)
Weather:	IMC IICL	VMC CLAC
Visibility:	10km	>10km
Reported Separation:		
	Not seen	NR
Recorded Separation:		
	500ft V/0·3nm H	



CONTROLLER REPORTED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE LTC SW CONTROLLER reports that a "remain clear of controlled airspace" instruction had been given to Oxford ATC by the Coordinator for the PA34 requesting to join CAS at CPT and for the flight to call for join on his frequency 134·125MHz. The PA34 was observed on radar by him and the S Coordinator outside CAS approaching CPT before it called on frequency. Other traffic was also seen on a Benson squawk, 3611, outside CAS above FL50 and likely to conflict with the PA34. STCA low-severity (white) activated between the 2 ac and then the PA34 flight called reporting climbing to FL50 and requesting a TS. Identification and verification werecarried out and a BS was provided; STCA high-severity (red) then activated. Following a read back of the service he gave TI to the PA34 flight on the other ac. Once passed, an airways joining clearance was issued. The frequency was fairly busy with other traffic and the PA34 was outside CAS below FL70 (unit terrain clearance level) on a BS. The controller was aware of the perils associated with flying outside CAS but in this situation he believed the safety of both ac had been compromised. He opined that a better and safer service could be provided in the area in conjunction with Brize and Benson. It was noteworthy that in the LTC SI 30/10 'Oxford Arrivals and Departures via Airways' there is no mention of how Brize and Benson coordinate with each other regarding Oxford departures joining at CPT.

THE PA34 PILOT reports flying dual on a local sortie from Oxford, IFR and in receipt of a TS from Brize LARS on 124·275MHz and then a BS from London on 134·125MHz, squawking 6016 with Modes S and C. On a standard CPT departure Brize gave TI twice, he thought, about another ac which at first was below and climbing and then when closer was called at the same level. The visibility was 10km but the cloud was scattered to broken and at FL50 they were between layers in intermittent IMC. Heading 175° at 150kt, despite looking for the other ac, it was not visible and they waited to get a further update from Brize but were then handed over to London. It seemed Brize no longer considered the other ac's proximity to be a factor and they continued en-route. No avoiding action was taken and they had not changed level but turned at Botly towards CPT.

THE TUTOR PILOT reports flying a dual training sortie from Benson and in receipt of a TS from Benson. He was on recovery for a radar to visual approach to Benson in VMC above broken cloud about 7nm NW of Benson when Approach alerted him to traffic on its way to CPT. He first saw the light twin-engine ac below in his 10 o'clock as he continued to descend, tracking perpendicular to it on a heading of 060° at 120kt. He passed through its 12 o'clock at about the same level at what he deemed to be a safe distance. Descending through 4500ft the other ac passed behind and above, well before he entered IMC, and it continued to diverge as he completed his recovery. At no point was there any perceived risk and the other ac never deviated from its track.

AIRPROX REPORT No 2011004

ATSI reports that the Airprox occurred between a PA34 and a Tutor in Class G uncontrolled airspace N of CPT at FL50. The PA34 had departed Oxford on a training flight to Bournemouth and was in contact with LTC SW on 134·125MHz under a BS. LTC SW (OCK, WILLO and SW Deps sectors combined) was being operated by a tactical controller. There were no reported unserviceabilities and the controller was using Pease Pottage radar data on the situation display. ATSI assessed the RT loading on the LTC SW sector as high.

The PA34 departed Oxford having been instructed to remain clear of CAS and call for airways joining clearance on 134·125MHz. A UK Domestic Mode A code of 6016 was issued to the PA34 and displayed throughout its flight.

The LTC Manual of Air Traffic Services (MATS) Part 2 states:

'All departures from Oxford requesting an airways join at CPT are pre-noted to Brize Radar. On occasions, Brize Radar may provide a service to such departures subject to workload.'

Further provision is also made for Oxford ATC to pass details of departures towards CPT to Benson, when such departures will not be worked by Brize Radar.

At 1232:50 the PA34 appeared on the LTC SW controller's situation display 1nm SW of Oxford at FL021. The Tutor was operating at FL064, 6·9nm W of Benson, on Mode A code 3611. The PA34 continued on a S track and climbed to FL050.

At 1236:39 a low-level STCA activated on the LTC SW controller's situation display. The 2 ac were 5·3nm apart on converging tracks, the PA34 maintaining FL50 and the Tutor at FL63. At 1237:08 the PA34 called LTC SW requesting a TS. The SW controller identified the PA34 and a BS was agreed at 1237:18.

Pilots are notified in UK AIP ENR 1-6-1-1 (12 Mar 09) that no DS or TS will be available on any London Control frequency below FL070.

LTC SW issued TI to the PA34 flight at 1237:21, "*…traffic in your twelve o'clock three miles crossing right to left indicating flight level five five unverified*". The PA34 pilot replied, "*Roger*".

Within Class G airspace, regardless of the service being provided, pilots are ultimately responsible for collision avoidance.

CAP493 MATS Part 1, Section 1 Chapter 11 paragraph 3.5.1 states, with respect to traffic information under a BS:

'A controller with access to surveillance derived information shall avoid the routine provision of traffic information … However, if a controller considers that a definite risk of collision exists, a warning may be issued.'

At their operational positions, LTC SW controllers are provided with details of Benson Mode A code allocations and a quick access telephone button to Benson ATC.

High-level STCA activated at 1237:38 and at 1237:54 the Tutor is seen now tracking 060°, having turned L by about 15°, and passing through the 12 o'clock position of the PA34 range 1nm at FL048 descending.

[UKAB Note (1): The Tutor continues on a track of 060° and the CPA occurs at 1238:10, the PA34 maintaining FL50 on a S'ly track with the Tutor now in its 9 o'clock range 0·3nm and diverging indicating FL045, 500ft below. The ac were 8·4nm N of CPT.]

STCA deactivated at 1238:25 as lateral and vertical distance between the 2 ac increased. LTC SW cleared the PA34 flight to enter CAS on track CPT at 1238:41.

The PA34 departed Oxford in accordance with ATS procedures and displayed its UK Domestic Mode A throughout. Therefore, the agency providing a service to the PA34 was unknown to LTC SW. Further, when TI was passed by the LTC SW controller the PA34 pilot gave no indication of whether or not the traffic had been visually acquired. The Brize Radar controller appears to have transferred the PA34 to LTC SW whilst the ac was still in conflict with the Tutor. There was no available evidence to suggest that the Brize Radar controller attempted any co-ordination with LTC SW prior to transfer of the PA34 to LTC SW.

There is no explicit direction to controllers in CAP774 UK Flight Information Services to ensure that an ac outside of CAS in receipt of a service and remaining in confliction with other traffic should not be transferred to the next agency unless, the pilot has reported visual with the traffic and/or coordination has been attempted with the next agency.

The pilot of the PA34 requested a service notified as not available from London Control, i.e. a TS below FL70. The request for a TS may have been made in the knowledge that there was conflicting traffic not acquired by the PA34 pilot.

The SW controller gave a traffic warning on the Tutor, therefore it is highly likely that the SW controller considered that a definite risk of collision existed. This would be reinforced by activation of a high-level STCA alert. The visual manoeuvring of the Tutor relative to the PA34 would also compound the appearance of a collision risk.

The SW controller was unaware of the intentions of the Tutor. Means were available for the SW controller to contact Benson; however, there was only 1min between the initial call of the PA34 flight on the SW frequency and the recorded minimum distance between the ac. The SW controller's ability to coordinate with Benson may have been further limited by the high workload.

ATS procedures and agreements exist for the provision of service to aircraft departing Oxford to join airways, whereby Brize Radar may elect to provide a service to Oxford departures prior to transfer to LTC SW. However, there was no indication to the LTC SW controller that the PA34 was about to call having been in receipt of a service from Brize Radar: i.e. change from a Mode A code allocated to aircraft in receipt of a service from Brize to the UK Domestic Mode A code.

THE BENSON APPROACH CONTROLLER reports having been on the console for 2min when he saw the Tutor 3nm W of Didcot turn onto an E'ly heading. The flight was under a TS in the Vale operating between 4000ft and 7000ft on the Cotswold RPS of 1034mb. At this point he saw what he believed to be a CPT 'joiner' from Oxford to the SE of Abingdon heading S indicating FL50. He called this traffic to the Tutor pilot "(Tutor c/s) traffic North 3 miles heading S 1500ft below believed to be joining airways at CPT", which the pilot acknowledged. The Tutor continued E and he again called the traffic, "(Tutor c/s) previously called traffic North 3 miles tracking S 700ft below" which the pilot again acknowledged. He then answered a call from the ground controller and took a pre-note on a VFR departure. He then called the traffic again, "(Tutor c/s) previously called traffic N 1 mile tracking S same altitude" and the pilot called "visual". The Tutor was seen to descend below the other ac and turn NE for a short while before turning back to the SE. The Tutor pilot then called for an IFR recovery to initials so he was asked to set the Benson QFE 1029 and descend to height 2000ft, at which point the ac was heading SE. When the Tutor was 3nm SW of Benson the pilot reported visual with the airfield and he transferred to Tower on 127·15MHz.

THE BRIZE LARS CONTROLLER reports receiving a call from the relevant civil sector asking whether he had passed TI to an Oxford ac [the PA34], which had recently called on the London frequency, on a Benson SSR code. He had released the PA34 to London about 10nm of CPT and, at the time, he had not seen any ac wearing a Benson code that he believed necessary to call. He was unaware of the time lapse between the PA34 flight leaving his frequency and calling London. He informed the Supervisor about the landline call. The London controller did not inform him of any Airprox.

HQ 1GP BM SM reports that the Airprox occurred between the PA34 working LTC SW in receipt of a BS outside CAS (that had up until 101sec before the incident been in receipt of a TS from Brize LARS) and a Tutor in receipt of a TS from Benson APP.

At 1234:43, the PA34 outbound from Oxford called requesting a TS, was identified and placed under a TS by Brize LARS.

At 1235:39, Benson APP passed TI to the Tutor flight on the PA34 stating, *"(Tutor c/s) traffic north, eight miles, tracking south, one thousand five hundred feet below, believed to be joining airways at Compton*", which was acknowledged by the pilot.

At 1235:48, Brize LARS passed accurate TI to the PA34 on the Tutor stating, *"(PA34 c/s) traffic right one o clock, six miles, crossing right left at one thousand five hundred feet above and I have your airways instruction when you're ready to copy.*" The PA34 pilot replied, *"Roger and er standby (PA34 c/s)"*. Almost immediately afterwards

the PA34 pilot transmits, *"Pass your message (PA34 c/s)"* and Brize replies, *"(PA34 c/s) London Control instructs PA34 c/s to remain outside controlled airspace squawk six zero one six and onwards frequency one three four decimal one two five"*. Brize LARS then, at 1236:25, told the PA34 pilot that his read back was correct and then instructed the PA34 flight to continue with London Control in accordance with their clearance, which is acknowledged immediately. At this point, the Tutor is approximately 5·3nm SW of the PA34, the Tutor indicating FL064 tracking E, having just commenced a descent at 1236:27. LARS stated in their report that at the point when they transferred the PA34 to TC SW, they, "*did not see any aircraft wearing a Benson SSR code that I believed necessary to call*." This point is underlined by LARS' conversation with TC SW immediately after the incident when they stated that they "*didn't see anything relevant to call to him*."

At 1236:39, STCA activated white between the 2 ac followed by activation of STCA red at 1237:38. At this latter point, 2nm lateral separation exists, with the Tutor indicating FL051.

At 1237:11, Benson APP accurately updated the TI to the Tutor, which is descending through FL056, stating, *"(Tutor c/s) previously called traffic north, three miles, tracking south seven hundred feet below.*" A further accurate update was provided at 1237:46 with the Tutor approximately 1·5nm S of the PA34 indicating FL050. The Tutor pilot responded that they were visual with the PA34.

The CPA occurs at 1238:10 as the PA34 passes behind and above the Tutor, with 0·3nm lateral and 500ft vertical separation witnessed on the radar replay.

Benson APP provided a good level of service to the Tutor, enabling the pilot to become visual with the PA34 in time for the pilot to assimilate the situation and take action if necessary.

Given that Brize LARS provided TI to the PA34 on the Tutor at 1235:48, their later statement that they did not see anything at the point of transfer of control appears unusual. Unfortunately, given the passage of time since the occurrence it has proved impossible to explain this definitively; however, 2 possibilities exist. The first is that having passed TI to the PA34 flight on the Tutor, LARS considered that they had fulfilled their obligations within the terms of a TS and that they could therefore release the PA34 to TC SW. The second possibility is closely linked to the first, in that once LARS had provided TI to the PA34 on the Tutor their cognitive process may have discounted the Tutor such that they no longer perceived its presence when scanning the PA34's path to CPT. Given LARS' statement, this lends support to the latter hypothesis; however, there is no additional supporting HF evidence or assessment of taskload and/or workload provided by LARS that would lend weight such a hypothesis. What is clear is that LARS did not perceive there to be a confliction for the PA34 before CPT, despite the Tutor's presence only 5·3nm SW.

Notwithstanding the above, Brize LARS provided TI to the PA34 flight on the Tutor, which was updated by TC SW when approximately 2nms lateral separation existed, approximately 33sec before the CPA. Given that the PA34 pilot reported flying in intermittent IMC and was unable to visually acquire the Tutor, this again raises the question of the appropriateness of the type of service selected by the aircrew appropriate to the met conditions.

The Airprox was resolved by the Tutor pilot, aided by accurate and timely TI from Benson APP. It is reasonable to argue that the PA34 had sufficient timely information to take some form of action to avoid the situation but continued to fly their flight planned route, arguably taking confidence from the lack of updated TI from Brize LARS. It is possible to hypothesise as to why Brize LARS felt there to be no confliction for the PA34 and hence transferred control to TC SW; however, there is insufficient evidence to determine this conclusively.

HQ AIR (TRG) comments that the Tutor pilot had right of way and received a good level of service in order to get visual. The apparent small turn towards the PA34 occurred after becoming visual, was probably a result of manoeuvring to descend and remain visual, and did not significantly reduce the CPA. Agreeing with Air BM, both pilots possibly had the opportunity to manoeuvre earlier to avoid a confliction, one by expediting a descent, the other by turning briefly to avoid laterally. Whilst the rules of the air may indicate who is responsible for avoiding who, they always assume both parties are visual. Ultimately, even with right of way crews should always be prepared to act if it becomes apparent that the other ac is not taking sufficient effective action. The comment about level of service selected is also appropriate; crews should be prepared to request a DS if conditions are not sufficient to enable traffic to be detected and avoided visually.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC authorities.

As 3 ATSUs were involved, there were 3 controllers with different viewpoints on the incident. Brize LARS had provided the IFR PA34 flight with a TS, as requested by its pilot, and passed TI on the Tutor when it was just over 5nm away. The airways clearance to remain outside CAS was then passed and the flight was transferred to London. At this time, the Tutor was 1500ft above the PA31 and just about to commence a descent. Members agreed that LARS had acted appropriately and had released the PA34 to London in good time for its pilot to obtain his joining clearance. Benson APP had passed timely and accurate TI on the PA34 3 times, the Tutor pilot reporting visual after the third call. For his part, LTC SW was understandably concerned as he was awaiting the PA34 flight to call on frequency when the STCA activated a low-severity alert. The PA34 pilot called requesting a TS and was provided with a BS, owing to the restriction imposed that LTC will not provide a TS nor DS below FL70. Controller Members sympathised with the LTC SW, faced with an unknown ac on a 90° closure angle which was apparently descending into confliction and without knowing its intentions. He elected to give a traffic warning to the PA34 flight. His 'mindset' was then further reinforced when STCA high-severity activated. However he was unaware that the VFR Tutor pilot had seen the PA34 and had elected to cross ahead, descending through its level, whilst maintaining visual separation against it; the PA34 pilot did not see the Tutor. Members agreed with the HQ Air Trg comments with respect to the suitability of the PA34 pilot accepting a TS from Brize whilst flying intermittently IMC and wondered whether a DS would have been a better service to be under until he had entered CAS. This was always subject to the ATSU being able to agree to the service provision and Members were acutely aware of the difficulties faced by controllers when endeavouring to provide a DS to an ac routeing to join CAS at a specific point with manoeuvring traffic ahead. A controller Member familiar with LTC operations informed the Board that an initial joining clearance would not be given until the flight called on frequency owing to the uncertainty of the departure time from Oxford and its time en-route. The airspace at CPT is complicated by Luton outbound flights climbing to FL70, the lowest available level, so invariably flights seeking to join are told to remain outside CAS until the controller is sure of traffic situation. With all parties discharging their responsibilities correctly, albeit in an isolated and uncoordinated manner, the Board believed that LTC SW had, from the information presented, perceived a conflict between the IFR PA34 and VFR Tutor but there had been no erosion of normal safety standards or parameters.

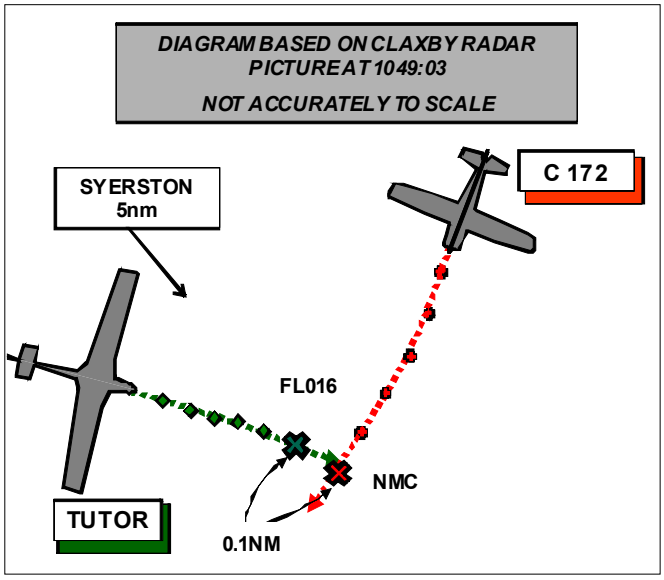
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A controller perceived conflict.

Degree of Risk: E.

AIRPROX REPORT NO 2011005

Date/Time:	28 Jan 2011 1049Z	
Position:	5310N 00100W (5nm NW Syerston)	
Airspace:	Lon FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Grob Tutor T Mk1	C172
Operator:	HQ AIR (Trg)	Civ Pte
Alt/FL:	1500ft (RPS 1022mb)	2000ft (QNH)
Weather:	VMC CLBC	VMC CAVOK
Visibility:	10km	>10km
Reported Separation:	150ft V/250ft H	200ft V/20m H
Recorded Separation:	NR V (est 350ft) /0.1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE TUTOR PILOT reports flying an instructional sortie in a white ac with all lights switched on, initially in receipt of a BS from Waddington ZONE, with the student as handling pilot. They were 5nm NW of Syerston, heading 100° in the climb out from a PFL and passing 1300ft when he (the instructor) cancelled the BS and changed freq to Cranwell APP. Passing 1700ft and before gaining contact with Cranwell, the student pilot pushed forward abruptly and reported an ac above, he gained visual contact with the ac, 400ft away, by moving his head forward and right to clear the area obscured by the canopy arch then took control, noting the height as being 1650ft. The conflicting ac was a white high-wing Cessna with a blue registration mark and was in straight and level flight heading about 195° and he assessed the vertical separation to be 150ft.

He reported the Airprox to Cranwell APP and confirmed with them by telephone after landing, assessing the risk to be high.

THE CESSNA 172 PILOT reports flying blue and white ac on a private, VFR cross country flight, at the time in receipt of a BS from Waddington [ZONE on VHF] while heading of 210° at 105kt. On their return to Nottingham from a turn point near Gainsborough, in a level cruise at 2000ft (QNH), they were informed by Waddington of traffic in their 2 o'clock at a 1000ft and he quickly made visual contact with the ac. He identified the ac as a Grob Tutor which he knew would not be on a VHF frequency and so they would not be able to hear transmissions to or from him, but he noted that the Tutor was much higher than Waddington stated at around 1800ft. Being fully visual and aware of the ac's flight path he didn't feel that there was any need to change his heading or height and considered that there was no collision risk at any time; he assessed the risk as being low.

HQ 1GP BM SM commented that both ac were initially working Waddington ZONE; however the Tutor reports switching freq to Cranwell APP shortly before the incident.

The tape transcript from Waddington ZONE indicates that the controller had a steady flow of traffic with 4/5 speaking units and in the absence of a report to the contrary, it is assumed that he was comfortable with the level of traffic.

The Cessna pilot called ZONE at 1016:24 and requested a BS; the controller assigned a squawk and applied BS. At 1018:01 the Tutor pilot also called ZONE requesting a BS; again a squawk was issued and a BS applied. ZONE passed unrelated TI to both ac well before the incident indicating that when workload permitted, regardless of the service being provided, he was passing TI to BS ac in a busy portion of airspace. The controller continued to pass information to other ac, including TI and airfield information, until at 1048:05, when the Tutor reported complete and was instructed to squawk 7000. At 1048:28 the tape transcript shows that TI was passed to the C172 pilot on

an ac at 12 o'clock half a mile crossing right to left indicating 1600ft. At that point on the radar recording shows the Tutor in the C172's 2 o'clock, indicating 1300 ft climbing; when the Tutor was passing 1600ft it was still in the C172's 2 o'clock. When the Tutor was about half a mile from the C172 in its 12-1 o'clock the C172 turns right towards it.

It is thought that there is a small discrepancy between the radar recording timings and the tape transcript clock. Taking this into account, although is not required under the provision of a BS, the TI was accurate enough to achieve the controllers intent, which was to warn the pilot and provide sufficient information to enable him to resolve the confliction; in the event it enabled the C172 pilot to gain visual contact with the Tutor.

It is clear from the controller's action prior to and during the incident that he was discharging his duties as mandated in busy of airspace and was routinely passing TI to ac operating under a BS, under the duty of care principle. The turn by the C172, which was not prompted by the controller, reduced the horizontal distance between the ac. At that point the Tutor had changed squawk to 7000 and in the process of changing frequency to Cranwell APP.

Although the constant calling of TI to BS ac can cause confusion, there remains a duty of care to which controller must apply their judgement (the regulation is far from clear in this respect).

UKAB Note (1): The recording of the Claxby radar shows the incident. In the lead up to the CPA the Tutor changes squawk to 7000 at 1048:32 in the climb through FL014 to level briefly at FL016 at 1048:54 while tracking 100° towards the C172. The C172 is squawking 3603 but does not display any Mode C data as it tracks initially 195° before turning right onto 210°. It passes from left to right, on a line of constant bearing, 0.2nm (185m) ahead of and above, the Tutor which is still at FL016. Assuming that the C172 was at 2000ft amsl, as the pilot reported, the vertical separation would have been 350ft.

HQ AIR (TRG) comments that the student saw the Cessna later than ideal but took positive action to avoid it in height. The limitations of fixed cockpit structures on the lookout scan are well understood and require positive head movements to clear the whole horizon; however, this is known about and taught. This incident serves as a timely reminder of the problem. It is disappointing that the Cessna, visual from such a long distance, did not take any action to alter course other than to turn further into confliction. Had the Tutor not manoeuvred at a late stage, the vertical separation would have been considerably less. In effect, the Tutor, with the right of way, was forced to take avoiding action as the Cessna, despite being content that there was no collision risk, crossed sufficiently close in front of the Tutor to cause concern. The resultant CPA was around 500ft.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar recordings, reports from the air traffic controller involved and reports from the appropriate ATC and operating authorities.

The Board noted that both ac were operating legitimately under VFR in Class G airspace under the 'see and avoid' principle and both were in receipt of BS where ATC is not obligated to provide TI. In the event however, Waddington Zone, having the capacity to do so, did provide TI to the C172 and this drew the pilot's attention to the Tutor as it climbed up from its PFL. Members observed that, although under no obligation to do so, it would have assisted the C172 pilot's visual acquisition of the Tutor if the controller had added that it was climbing. It was not clear to Members whether the C172 pilot had, as implied in his report, seen the Tutor before the TI was passed or whether his acquisition was a result of the TI; in any case the pilot considered there to be no risk of collision. The Tutor student and subsequently the instructor were, on the other hand, concerned by the proximity of the C172 as it flew almost directly above them. Members also noted that under the Rules of the Air the Tutor had right of way and, although adequate vertical separation may have existed, a turn by the C172 pilot would have indicated to the Tutor pilots that the former had seen them and was relatively unconcerned.

PART C: ASSESSMENT OF CAUSE AND RISK

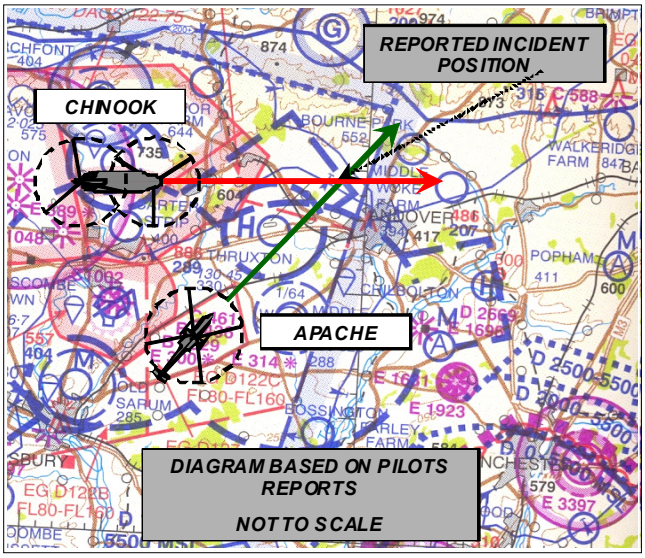
Cause: The C172 flew close enough to cause the Tutor pilots concern.

Risk: C.

AIRPROX REPORT No 2011006

AIRPROX REPORT NO 2011006

Date/Time:	24 Jan 2011 2047Z	
Position:	5115N 00132W	(2nm NW Andover)
Airspace:	UKNLFS	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Chinook	Apache
Operator:	HQ JHC	HQ JHC
Alt/FL:	800ft	NR
	(RPS 1024mb)	(NK)
Weather:	VMC NR	NK NR
Visibility:	10km	NR
Reported Separation:		
	100ft V/0ft H	NR
Recorded Separation:		
	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE CHINOOK PILOT reports that they were Reversionary Night Flying (RNF) [not on NVGs], transiting in the Night Rotary Region 1 from Lugershall to Odiham at 800ft on the Cotswold RPS [1024mb], routeing to the A34 before climbing for a radar pickup for an approach at Odiham. They had all lights switched on and were heading 090° at 130kt approaching Andover and had reselected the radios and IFF [squawking 3646] from SPTA in preparation for the climb and approach to Odiham. The NHP called *"break"* and at the same time he saw an Apache helicopter crossing from right to left in level flight about 50ft below and 100ft in front of them. He cyclically climbed the ac to avoid the Apache which disappeared under their nose. The No1 crewman picked up the Apache as it cleared to their 9 o'clock and saw it continue away without manoeuvring. RT calls were made to try and establish comms with the Apache on Middle Wallop Approach, low level common and Guard UHF but there was no response.

Comms were then established with Odiham, a radar service was requested and a recovery to Odiham was flown without further incident.

Immediately prior to the incident the HP was RNF with the No2 crewman in the front right hand door, the NHP in the left hand seat, and the No1 crewman all on NVG. None of these crew-members saw the Apache until the NHP called *"break"* and the HP manoeuvred. Both ac involved had full visible lighting switched on and it was the red nav light that he first saw before seeing the full silhouette of the Apache.

He thought that the Apache had been obscured by the cockpit window strut and the ac lights had merged with the background lighting from Andover.

He reported the incident to Odiham on first RT contact and assessed the risk as being very high.

THE CHINOOK SQN CDR commented that this incident was a very high risk Airprox. The Apache lights were not discernable against the urban lights of Andover, they had no relative motion because of the potential risk of collision, and they were obscured by the cockpit window strut. All of these frictions, which make picking up a potential mid-air risk difficult, have been highlighted in many previous Airprox incidents and will continue to do so in the future. Understanding of these factors and the importance of head movement to achieve effective lookout are key facts to continue to educate our aircrew about; this ASIMS should be used as an illustration of the risk.

Separately, in light of this Airprox, the existing radio procedures and deconfliction measures for this busy piece of low level airspace should be carefully reviewed by the key regional stakeholders, RAF Benson, RAF Odiham and AAC Middle Wallop.

Finally, technology enhancements to help avoid mid-air collisions, such as ACAS, should be considered for fitment to military helicopters.

THE APACHE PILOT reports that he was Captain/Instructor of an Apache NVS training sortie from Middle Wallop routeing clockwise around Andover at 700ft on the 1028mb Portland RPS into an operational training phase near Barton Stacey Trg Area and recovering to Middle Wallop after 2hrs. The sortie was uneventful and flown as briefed. On return the pilot was informed that he had been involved in an Airprox with a Chinook to the NW of Andover at 2047hrs. At the time he was heading 042° at 100kt.

On reviewing the cockpit FLIR tape on a large screen, a heat source could be seen to the SE of their position at a similar height and at the time and location of the reported occurrence confirming that they were the ac involved in the Airprox reported by the Chinook pilot.

UKAB Note (1): The Chinook first appears on the recording of the Clee Hill Radar at 2048 (after the incident), squawking 3646 at FL006, and tracking about 100° towards Odiham. The Apache does not show at any time.

HQ JHC comments that that this is a known choke point where ac departing or arriving at SPTA will transit Easterly or Westerly at 90^{o} to Middle Wallop traffic departing to the North, so both pilots should have been conducting a particularly meticulous lookout. Further information would have been available to the Chinook crew from Middle Wallop APR about potential conflicting traffic had they called. While all lighting SOPs were being followed, and it is assumed that both ac had planned to deconflict using the CADS system, the use of a common frequency at the time of the incident may have added another layer to the mitigation measures in place to reduce the risk of a collision in Night Rotary Region 1 (NRR1).

The NHP saw the conflicting ac across the cockpit on NVG which, as the Chinook Sqn Cdr highlighted demonstrated the importance of head movement to achieve effective lookout.

As a consequence of this and 2 other recent Airprox near Middle Wallop at night, all JHC stakeholders in NRR1 were brought together to establish a way forward and better risk mitigation processes. The CADS trial period came to an end at the beginning of Apr and increased the need for more procedural deconfliction. As a result, soft boundaries have been established between the 3 JHC main operating bases (using the A34 and M4) with the SW area being used primarily for 7 Regt AAC (training) affording students a better degree of protection. All users of the SW area now monitor MW App and use an ATS from the appropriate ATC on request when in the other areas (noting the effect of terrain at low level). Each user unit exchanges night flying routes and sortie data 3 hours prior to entry, including C130s using Keevil/SPTA. These measures have already been seen to improve the situational awareness of users.

It is anticipated that CADS will be available again within 3 months, which will once again enhance the ability of all users to plan to deconflict. In addition, JHC is pursuing actively the expansion of the RW LFAs areas, perhaps to join LFA 9, subdividing LFA1 and actively pursuing the fitment of a CWS in all JHC RW ac.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, radar recordings and reports from the helicopter operating authority.

The Board was reminded that this is the 3rd recent Airprox to have taken place at night in the Andover area involving military helicopters [201096 and 2010097 last July].

This was a serious incident that again highlighted the difficulty of operating under ‘see and avoid’ at night in a busy area with significant cultural lighting on the ground. The Board understood the operational imperatives for military aircrew to train effectively both with and without NVS and welcomed the HQ JHC initiatives to mitigate the risk. The Board was informed by the HQ JHC Member that this is a very busy choke point with SPTA, Boscombe Down and occasionally Thruxton traffic, both by day and by night, and crews should be very vigilant, particularly at night. She was surprised that the Chinook pilot did not request TI from Middle Wallop APP who would have been aware of the departing Apache (even if it had left their frequency). Radar coverage in the Andover area from Middle Wallop is good and ac returning to from the SPTA to Odiham regularly call them.

Nevertheless, the two ac involved in this incident were, in however difficult circumstances, operating under the 'see and avoid' principle; in this case, unlike the two previous incidents, the Apache crew did not see the opposing ac, but the Chinook crew (acting together) saw the Apache just early enough to initiate effective (in the Board's view) avoidance thus increasing the small vertical separation extant. This action, Members agreed, just removed any actual collision risk although safety had clearly been eroded below normally accepted levels.

There is little scope for significant expansion of the LFS and therefore measures to use the existing airspace more effectively and safely would be of great benefit. Having identified that CWS in many circumstances can assist crews significantly in identifying potential collisions, the Board agreed unanimously to recommend that the MoD should investigate with some haste the fitment of such equipment. In the mean time, Members agreed with HQ JHC that some limited physical deconfliction is needed. While crews can be busy operating their ac, RT air-air and ground-air information exchange can increase their SA significantly and this initiative was welcomed by Members.

PART C: ASSESSMENT OF CAUSE AND RISK

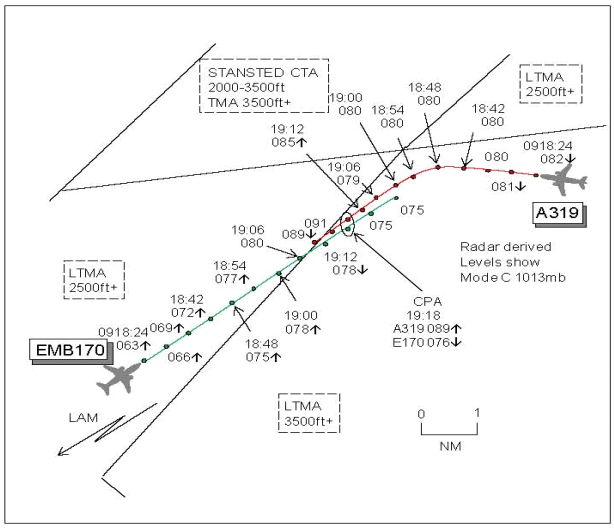
Cause: A non-sighting by the Apache crew and a late sighting by the Chinook crew.

Degree of Risk: B.

Recommendation: The MoD is recommended to consider fitting CWS to its helicopters.

AIRPROX REPORT NO 2011007

Date/Time:	1 Feb 2011 0919Z	
Position:	5144N 00021E (9·5nm NE LAM)	
Airspace:	LTMA	(Class: A)
	Reporting Ac	*Reporting Ac*
Type:	EMB170	A319
Operator:	CAT	CAT
Alt/FL:	FL70↑	FL80
Weather:	VMC CLAC	IMC CLBL
Visibility:	NR	NR
Reported Separation:		
	100ft V/1nm H	150ft V/2nm H
Recorded Separation:		
	100ft V/1·9nm H or 1300ft V/0·2nm H	



BOTH PILOTS FILED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE EMB170 PILOT reports outbound from London/City, IFR and in communication with London on 118·825MHz, squawking with Modes S and C. About 10nm NE of LAM, heading 050° at 250kt climbing through FL70 for FL90, both crew noticed a descending ac on TCAS range 10nm on a reciprocal heading. The traffic quickly became 'proximate' and was visually acquired as they were 2000ft above cloud in VMC. They then received instructions from ATC with avoiding action to 'level-off' and within a few seconds received a TCAS RA to climb. The PF actioned the RA and the PNF informed ATC "EMB170 c/s TCAS RA". PNF had the ac visual at 12 o'clock same level and watched it pitch up rapidly and climb. The PNF commanded PF to descend and within a second TCAS commanded a reversal rapid RA descent. The other ac passed 100ft higher and slightly to their L, about 1nm away. He assessed the risk as high. TCAS was very useful in that they acquired the traffic visually before an RA was issued. ATC issued avoiding action at the same time as the TCAS RA so TCAS was followed. The crew was surprised by the reversal command from the TCAS.

THE A319 PILOT reports inbound to Heathrow IFR and in communication with London, squawking with Modes S and C. About 10nm NE of LAM while turning L from heading 300° towards LAM at 220kt and level at FL80, a TCAS TA was received owing to climbing traffic. The frequency was very busy so they were unable to notify ATC. Initially TCAS commanded a 'descent' RA so AP and PD were disengaged and the ac was started in a descent. ATC told the climbing flight to stop climb and, as a result, TCAS then changed to a 'climb' RA, demanding +5500fpm. At the time they were 1000ft above cloud between layers in IMC. The RA procedures were followed until they levelled at FL90 clear of the traffic, the other ac passing 150ft lower and 2nm laterally. ATC were informed and they descended back to their original level. He assessed the risk as high.

THE LTC NE RADAR CONTROLLER reports working as the NE/LAM controller in a relatively light but complex traffic situation with a Coordinator in position. The A319 was on a heading to pass N of LAM in order to provide lateral separation from a CAT B flight operating to the E of LAM at FL100. Thames Radar transferred the EMB170 flight to him on a heading against an inbound flight to them through LAM. He climbed the EMB170 to FL90 underneath the CAT B ac without reference to the A319 and routed the A319 direct to LAM when it was clear of the CAT B. At the same time he had a Northolt to London/City positioning flight which was cruising at altitude 4000ft whilst Luton Tower telephoned the Coordinator requesting a release on a CLN departure. In order to facilitate this release he discussed with the Coordinator a plan involving the Coordinator calling Heathrow INT N to shortcut the flight to LAM through the Heathrow RMA. Concurrently an Elstree outbound flight called on frequency outside CAS and he issued a squawk and identified the ac as per SOPs. He spotted his mistake when the EMB170 was passing FL72 and when he attempted to pass avoiding action no reply was received. He again

attempted to pass avoiding action and was met with a garbled response, possibly from both subject flights, indicating a TCAS RA. The flights quickly passed and reported back under his control.

ATSI reports that the Airprox in Class A CAS between an A319 and an Embraer E170 (EMB170) was reported by both pilots, NE of LAM at FL080.

The A319 was inbound London Heathrow from Prague and was in contact with LTC NE under a RCS. The EMB170 had departed London City Airport on a flight to Stockholm Arlanda and was in contact with LTC NE under a RCS.

LTC NE (LAM, LOREL and NE Deps sectors combined) was being operated by a single tactical controller supported by the LTC N Coordinator. There were no reported unserviceabilities and the controller was using Debden surveillance data on the situation display. The NE controller was on the first morning duty of a six day cycle. The controller had been detached from watch for the previous 2 cycles on operationally related projects so his last operational duty had been 2 weeks previous. The NE controller described the traffic levels as light with a high level of complexity.

ATSI had access to the following in the course of its investigation: LTC NE controller's report, A319 and EMB170 pilot reports, transcription of the LTC NE frequency (118·825MHz), recording of LTC Group Supervisor N's deskside, recorded area surveillance, ANSP unit report, TCAS Performance Assessment (NATS), Aircraft Operator's timeline of events [QAR download] and interview with the LTC NE controller.

The NE controller reported briefing as normal at the start of duty (0700 UTC). The controller's first session of the day was a busy 30min session commencing at 0730 on LTC NW, which the controller and his colleagues felt had gone well. The Controller reported that it was not unusual for the NE sectors to be band-boxed after the 'first-wave' of morning traffic. The controller took over from a trainee at 0900 and recalled being informed that a Category B flight was coming in to the sector to be worked at FL100. The controller was using the NE Deps situation display with the adjacent (LOREL) screen filtered to show LAM inbounds and the smaller Essex planning screen above. On taking over, the controller described the traffic situation as 'normal' and 'quiet'.

At 0910:57 the A319 flight called LTC NE passing FL217 in the descent to FL150, having been transferred from LTC E 50nm E of LAM. The ac was following the LAM3A arrival for Heathrow. The LTC NE controller acknowledged the call. The previous ac into the LAM hold was in the process of being vectored off the stack by Heathrow INT N and there were no other ac inbound to LAM.

The controller described the A319 flight's first call as 'a bit early' but 'nothing unusual'. At the time, the controller was climbing a Luton DVR departure above its Standing Agreement level, which would have been MSL to LTC S, to LAC S15 levels. He did not remember whether he or the Coordinator initiated the coordination sequence for this ac. Other traffic at this time were 2 Heathrow BPK departures, 2 London City N'bound departures and a London City inbound via LAM. Due to the prevailing traffic the controller's focus of attention was in and around BPK. A non-standard positioning flight to London City (via BPK) had also just become airborne from Northolt.

At 0911 Elstree aerodrome called the LTC Group Supervisor N, requesting a clearance for a BE36 departure. The Elstree representative informed the GS that the flight would be '*ready in a few minutes*'. The GS issued squawk 3411 with instructions to remain outside CAS, on track BPK and contact 118·825MHz.

LTC MATS Part 2 (GEN-144) states that Elstree will contact FDS NE to confirm that an appropriate flight plan is held. The allocated SSR code will be passed and the flight activated using the ETD provided. The MATS Part 2 also states (NTH-34) that for Elstree departures requesting clearance to enter CAS, Elstree will contact LTC Luton Approach who will coordinate an airways joining clearance with TMA N (the traffic having free-called Luton Approach and been placed under an appropriate service, NTH-29).

At 0912:32 the NE controller instructed the A319 flight to descend FL80 to be level 5nm before LAM. This was read-back correctly. The controller noted that the decision to give a level restriction to the A319 was predicated on the expectation that the Cat B flight would remain W of LAM at FL100. The controller reported previous dialogue with LTC Heathrow INT regarding ensuring adequate separation was assured by TMA for LAM inbounds against Cat B traffic. The controller recalled looking at the strips to descend the A319 and did not recall

assimilating the actual position of the Cat B flight. The controller reported that Cat B flights operating in the vicinity of, but mainly W of LAM, were not an uncommon daily experience (described as 75% of the time).

The A319 fps was moved underneath the Cat B fps in the fps bay (see table below). The high-level Luton DVR departure was to be turned and transferred, a Stansted DVR departure had become airborne and he had resolved a confliction between a London City departure and London City arrival.

LTC Heathrow INT called NE to say that the Cat B flight was 'on-task': its location now being SE of LAM. Upon assimilating this, at 0913:59, the controller instructed the A319 flight to turn R 15°. The A319 was 33nm E of LAM and the pilot read-back the instruction stating that the new heading would be 280°. The controller stated that the heading would take it N of the standard inbound route and enable the A319's descent through the level of the Cat B flight. The controller noted that if the LAM sector had been operated independently then coordination would have been required with LTC NE Deps. In the present configuration this was not necessary. (Throughout the period of events the A319 was the only ac associated with the LAM sector; all other traffic was associated with NE Deps or LOREL). Heathrow INT N was controlling the Cat B flight. The NE controller stated that this was not unusual for these flights, particularly as they generally stayed W of LAM. The controller recalled that the Cat B fps stated '10 SE LAM' as the tasking area. For Cat B flights E of LAM, NE may elect to work the flight. The controller recalled there being only one Cat B fps, which was in the LAM fps bay. He could not recall there being, and was fairly certain there was not, a strip in the BPK bay.

Thames Radar requested approval to place a London City CLN departure (the EMB170) on a heading to vector against an inbound to London City via LAM; this was approved. The NE controller stated that the normal SID track of these departures would take the ac S of LAM before turning NE'ly. The SID climbs to altitude 4000ft. The controller stated that his default way of working London City CLN departures was to 'look at LAM, climb to MSL' and stated that it was a technique he taught his trainees. The EMB170 strip was located under the BPK designator.

The controller reported nothing untoward about the strip display*:

LOREL	BPK	LAM	
	EGGW DVR dep ↑170		
	EGLC outbound	A319 ↓80	SND
	EGLC inbound	Cat B 100	
	EMB170 4A (EGLC-ESSA) 050°		

* diagram for illustrative purposes and not wholly representative of all fpss.

At 0917:05 the EMB170 flight called LTC NE passing altitude 3300ft climbing to 4000ft on a heading of 050°. The EMB170 was tracking towards LAM, approximately 1nm SW of the VOR. At this time the NE controller was dealing with Luton ATC's second attempt to request release for a CLN departure and in discussion with the N Coordinator regarding accommodation of Luton's request. The NE controller instructed the EMB170 flight to continue on its present heading and climb FL90 (which the controller stated was against the Cat B flight at FL100). The controller reported a 'fastest finger first' situation for Northolt and Luton departures via BPK, given the route convergence and altitude constraints in the area. The controller reported that the Northolt departure to London City had been released and then Luton subsequently called for a release but were instructed, "Negative, will call you back". Once the Northolt departure was airborne the controller reported that it was not unusual to receive a follow-up call from Luton Tower, as they could see the departure from Northolt airborne on their ATM. After the second call from Luton the controller recalled entering into a discussion with the N Coordinator about how to accommodate the Luton departure 'for expediency of the traffic'.

At 0917:40 the BE36 flight departure from Elstree called LTC NE, c/s only. The BE36 was squawking 7000, rather than the pre-assigned code '3411'. 7000 codes were filtered out from the NE controller's display. The NE controller asked the BE36 flight to confirm its altitude believing that the ac may be beneath the surveillance coverage on the sector. The BE36 pilot replied, "…*just climbing up to two thousand three hundred two thousand four hundred er towards BPK*…" The NE controller instructed the BE36 flight to select Mode A 3411 with ident.

This instruction was read-back initially by the Northolt-London City positioning flight, closely followed by the BE36 pilot's reply.

The controller believed the MATS Part 2 procedures for Elstree departures were for the aerodrome to call FPS S and, via the Coordinator, be passed a release time, squawk and any other information (such as remain clear). A tick would be placed against the squawk by the ATSA. There was no such tick on the NE controller's fps. The controller recalled that usually Elstree departures would be seen as code-c/s converted data blocks before the flight called on frequency. When the BE36 pilot called, the controller's initial thoughts were 'who?' and he started to look for a strip. The Coordinator was also looking on the situation display and pointed out a filtered-out position display symbol in the vicinity of Elstree. When the controller issued the 3411 squawk to the BE36 flight he recalled momentarily being confused as he believed he heard a foreign accent take the call (which was the Northolt – London City flight).

Immediately after hearing the BE36 pilot's reply the controller, at 0918:22, stated, "*Thank you. Break. [A319 c/s] resume own navigation direct to LAM*". The controller recalled that saying 'thank you' was an indication to himself that his doubt about the errant read back had been cleared. At this time the A319 and EMB170 were 8nm apart: the A319 on heading 280° passing FL082 for FL080 with the EMB170 8nm SW of the A319 climbing through FL063 for FL090. The EMB170 was between the A319's present position and LAM. When questioned about this point in the sequence of events the controller believed a certain amount of tunnelling had taken place i.e. only the Cat B flight and A319 figured in his visual scan – not the EMB170. The EMB170 was not in a 'normal position'.

After instructing the A319 flight to resume own navigation to LAM the controller's attention then turned back to the BE36 stating, *"(BE36 c/s) you're identified two miles er southwest of Brookmans Park it's a Basic Service only outside controlled airspace*". The BE36 pilot responded at 0918:37 by asking if the controller wished the ac to route towards LAM before CLN.

STCA between the EMB170 and A319 activated at 0918:42 as the NE controller responded to the BE36 pilot's question.

Immediately prior to recognising the conflict the controller's intention was to issue a joining clearance to the BE36 flight. The controller could only recall seeing 'the situation' e.g. the confliction, he could not recall if STCA had alerted him to the fact or not. He immediately realised his error and instructed the EMB170 flight, *"(EMB170 c/s) avoiding action stop climb immediately*" (0918:49). The controller recalled his immediate thought was to stop the EMB170. He believed he said 'stop climb' because the ac was still climbing. His next immediate thought was 'that's vertical avoidance – do something laterally'.

The NE controller then gave lateral avoiding action to the EMB170 flight at 0918:52, *"(EMB170 c/s) avoiding action turn right heading one eight zero degrees"*. The EMB170 pilot responded, *"TCAS R A"*.

The NE controller was aware of the MATS Part 1 requirements for non-intervention in TCAS encounters. He knew not to give avoiding action to the A319 and recalled accepting that the situation was now 'hands-off'. There then followed an unidentified transmitter switch non-modulation as the STCA changed to a high-level alert.

The EMB170 received a Traffic Alert (TA) at 0918:39 and, gaining a visual sighting of the A319, slowed its ROC. The crew reported that the NE controller's instruction to 'stop climb' (0918:49) had no bearing on the crew's actions as at 0918:51 the EMB170 received an RA 'Climb' ['Maintain v/s – crossing']. Additionally, the NE controller's lateral avoiding action at 0918:52 was not heard in the cockpit due to cockpit noise. Post incident the crew of the EMB170 described how they had initially observed their closure with the A319 and took the precaution to reduce their ac's ROC. They recalled that the controller's "stop climb" instruction came as the first TCAS RA was received – the latter being followed as per company SOP. The crew also clarified that the EMB170 TCAS generated 'RA reversal' came <u>after</u> the Pilot-Non-Flying had observed the A319's change in pitch attitude.

The A319 crew recalled that, prior to the encounter, they had been aware of the EMB170's clearance to FL90 and therefore remained vigilant. The A319 received a TA at 0918:39 as the ac commenced its L turn and this was upgraded to a RA 'Monitor v/s' at 0918:52 before 1sec later at 0918:53 it changed to an RA 'Descend' ['Descend, crossing descend']. The A319 crew reported that all RA commands were followed as per company SOP.

The TCAS software used on both ac, when calculating the geometry required to avoid confliction, factors in a 5sec delay in pilot response to a commanded RA and reduces the anticipated response time in an RA-reversal to 2·5sec.

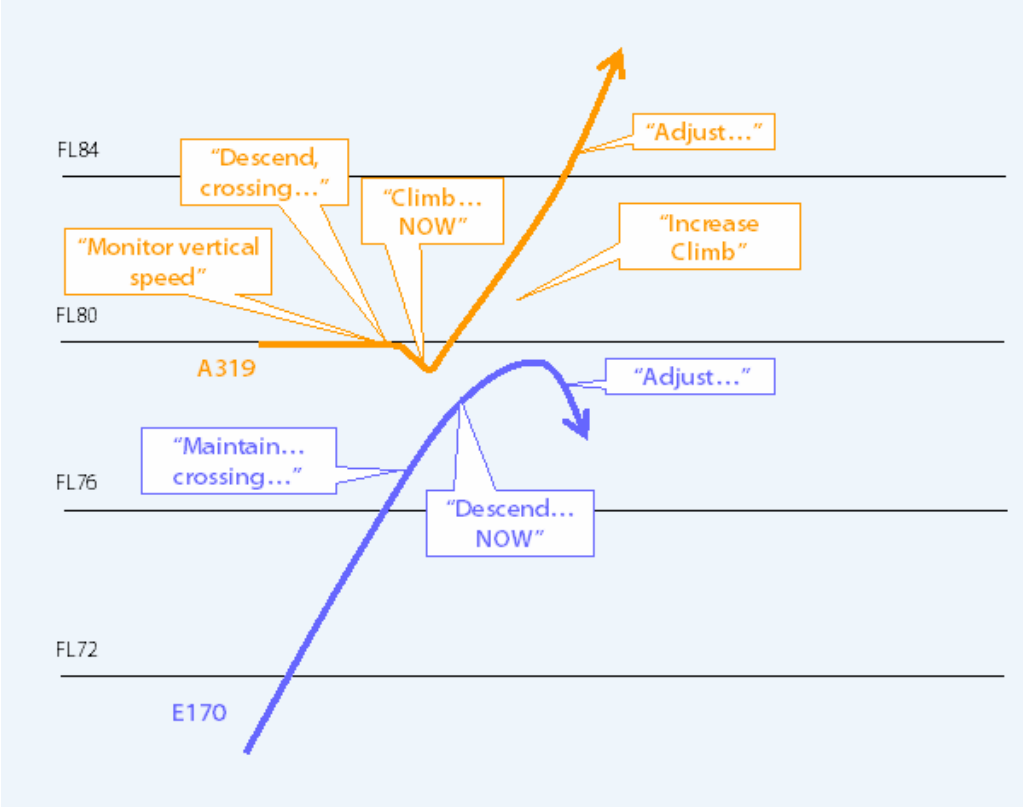
At 0918:57, the EMB170 received an RA reversal, being instructed to descend ['Descend now'] and 1sec later at 0918:58 the A319 also received an RA reversal to climb ['Climb, climb now']. The A319's TCAS also then instructed an 'Increase climb, increase climb' at 0919:02.

At 0918:59 the Northeast controller asked the A319 flight, *"(A319 c/s) have you got TCAS?*" There was another unidentified transmitter switch non-modulation, and 6sec later the NE controller transmitted, *"(A319 c/s) London*", which was answered by the A319 crew, *"…TCAS RA"*. The NE controller requested that the A319 crew report when clear of conflict.

Surveillance analysis at 0918:39 shows the EMB170 climbing through FL069 when it received a Traffic Alert; the A319, level at FL080, receives its TA at the same time. The EMB170 continued its climb to FL075, at which point at 0918:51 the first RA ("Climb") was received. The ac were laterally separated by 4·7nm and the A319's L turn was not observed to be taking effect yet. Seven seconds later as the EMB170 reached FL077 [0918:58] the RAs were reversed: the distance between the ac now being 3·7nm. Separation was lost at 0919:00 with only 2·8nm and 200ft between the ac. The A319 was then recorded as descending for a short period [between 0919:00 and 0919:06 from FL080 to FL079: separation 100ft/1·9nm] before climbing 600ft in 6sec [0919:12 separation 700ft/ 1nm] and eventually passing FL089, when vertical separation was restored at 0919:18. At this time, the CPA, the ac passed abeam each other by 0·2nm, 1300ft apart.

At 0919:26 the EMB170 flight reported clear of conflict and at 0919:30 the A319 flight reported, *"clear of conflict returning to Flight Level 80*".

At 0919:38 the EMB170 flight was instructed to resume its own navigation to CLN and at 0920:01 the A319 flight was transferred to Heathrow Director.



Graphic above courtesy of Eurocontrol from an ACAS II Bulletin.

The NE controller was relieved at 0920:31.

There were no external factors affecting the controller's performance prior to the incident.

Operationally, the controller's traffic mix was complex including:

Non-standard Northolt to London City positioning flight

Request from Luton for a departure release

Category B flight operating in an area not usual for the task

Facilitation of climb for traffic exiting to LAC S15

EMB170, London City CLN departure, off-SID route to facilitate a London City inbound

Elstree departure: airborne without the allocated Mode A code and calling LTC Northeast direct

All other standard TMA traffic.

The A319 was the only ac into the LAM hold and was transferred to the NE sector 50nm prior to the hold. The controller's interaction with the aircraft on its route to LAM was minimal: one descent instruction and one heading instruction.

The EMB170 was off-route and not where the controller would normally expect it to be. The controller, usually having a habit of climbing these departures to MSL only, chose to climb the EMB170 to FL090, underneath the Cat B flight at FL100.

All displays were functioning correctly and the fps outfall was normal for the sector.

The BE36 was an unpre-empted addition to the controller's traffic. As the ac was not displaying the allocated Mode A code it was not immediately apparent to the controller. ATSI were unable to determine why the BE36 was not displaying the 3411 squawk passed to the Elstree representative. ATSI could not determine if there was evidence of the BE36 flight having called LTC Luton Approach prior to its call to NE.

As the controller finished dealing with the BE36 he chose to instruct the A319 flight to resume its own navigation to LAM as it was now beneath the Cat B flight. The controller's next intended action was to join the BE36 into CAS.

In instructing the A319 flight to resume its own navigation the controller did not to ensure separation with the EMB170. The controller did not detect, from the situation display, the presence of the EMB170 between the A319 and LAM. Hence the controller's description of 'tunnelling' of information, resulting in him not integrating all the information available to him i.e. the presence of the EMB170 display symbol.

The controller had forgotten the presence of the EMB170, having previously climbed it underneath the Cat B flight and through the level of the A319. This omission was likely caused by an overload in working memory at the time – his capacity and plans having been changed whilst dealing with the BE36.

As the event occurred, the controller attempted to issue avoiding action; however once the EMB170 stated that it was acting in accordance with a TCAS RA, the controller allowed the ac to act upon their TCAS instructions without further interruption.

The rapid evolution of the encounter prompted several TCAS resolution commands in each ac. All of which were followed in accordance with procedure by both crews.

The Airprox occurred on the LTC NE sector, 10nm NE of LAM at FL080 when the NE controller turned an A319 into confliction with an EMB170. The A319 flight was at FL080 and had been instructed to resume its own navigation to LAM. The EMB170 was climbing to FL090 on a heading of 050°. The minimum distance between the ac at 0919:12 was 1·0nm/700ft (approximately 6116ft ac-to-ac distance). The event was recovered by TCAS.

Analysis of the incident determined that the controller, having experienced a tunnelling of the information displayed to him, did not integrate the position of the EMB170 into his decision to turn the A319 towards LAM.

The controller, being competent in accordance with unit procedures, experienced a complex workload comprising of non-standard flights, non-standard ac routings, a request to join CAS from an unanticipated Elstree departure and operational pressures to release ac from Luton.

The issues concerning the Elstree departure have been addressed by LTC and Elstree: namely, unit personnel have been reminded of the correct procedures for departures and the AIP has been updated to advise pilots that they are to call LTC Luton Approach on departure.

Recommendations:

There are no CAA ATSI recommendations as a result of this incident.

ATSI note that a comprehensive investigation by the ANSP, in conjunction with the Aircraft Operator, has produced a set of actions and recommendations including:

Alignment of procedures for Elstree, TC North, Luton Approach and the General Aviation community.

Lesson learning and training scenario activities; including unit safety day events and dissemination throughout the unit in accordance with their Safety Management System.

Incorporation of aspects of this event into pilot/controller interface meetings.

Presentation of this event, the subsequent findings and outcomes to the EUROCAE Working Group responsible for TCAS.

The incident has also been recommended for the purposes of lesson learning and TCAS training by the ac operator.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

Members commended the comprehensive ATSI report which had covered all aspects of the Airprox thoroughly. The controller had acknowledged not taking the A319 into account when he cleared the EMB170 flight to climb to FL90, beneath the Cat B flight at FL100, and this placed the 2 subject flights into conflict and had caused the Airprox. He had not detected the potential for confliction from the fpss or radar display and the situation was compounded when he released the A319 flight to resume its own navigation towards LAM. Pilot Members agreed that both crews had shown excellent SA and airmanship during the encounter, particularly when faced with a TCAS reversal. The CAT Members and the FOI Advisor agreed that it is known to be difficult to create realistic simulator training for RA reversals occurring against a single ac; the usual scenario used involved 2 separate ac. The EMB170 crew had noticed the A319 on TCAS and realised that their flightpaths were in confliction. They had received a TA, visually acquired the A319 early and reduced their ROC. A pilot Member informed the Board that the crew's actions were the natural reaction when faced with traffic converging from above but that the TCAS TA was only the first part of the ACAS algorithm, effectively a 'heads up' to get ready to react if an RA follows. In this case the ACAS system calculated that a 'crossing climb', through the A319's level was the best resolution for the EMB170 and generated an RA to that effect; the EMB170 crew had only just started to reduce their ROC at the time. The crew followed the TCAS guidance, cognisant of the controllers 'stop climb' instruction, and informed him of the RA after an avoiding action turn had been issued. The A319 had received coordinated TCAS guidance, a momentary 'monitor v/s' before a 'descend' RA was generated. However these RAs were reversed 6sec later, the EMB170 crew seeing the A319 'pitch-up' just before receipt of their 'descend' RA. The Board considered whether it had been the EMB170's reduced ROC immediately prior to the first climb RA that resulted in the subsequent reversal. While it was possible that the reduced ROC may have had an effect, the Board noted that the ROC did not reduce below 500ft/min and the A319's left turn towards LAM also contributed to the changing geometry. As

it was, both crews reacted promptly to the new RAs, the A319 crew achieving a 600ft increase in level in 6sec whilst the EMB170 crew stopped their climb and achieved a 200ft descent. Shortly thereafter, the ac passed with 1300ft of vertical separation, displaced by 0·2nm. These prompt and robust actions taken by the crews were enough to allow the Board to conclude that any risk of collision had been quickly and effectively removed.

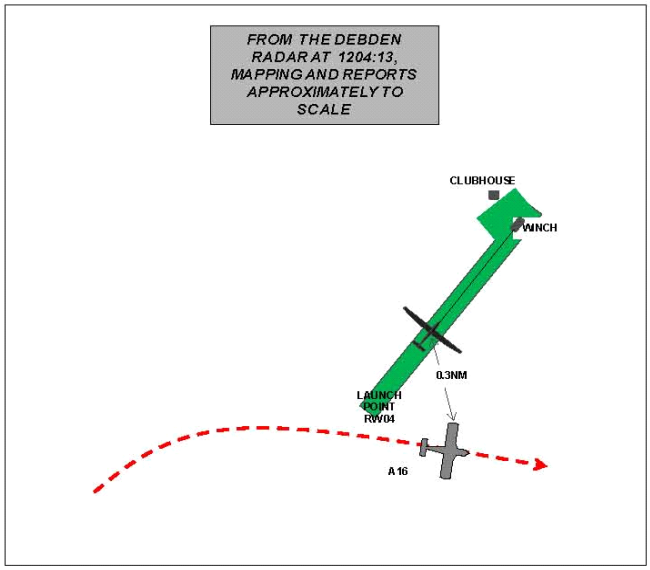
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The LTC NE controller did not take the A319 into account when he climbed the EMB170 into conflict with it.

Degree of Risk: C.

AIRPROX REPORT NO 2011008

Date/Time:	29 Jan 2011 1204Z (Saturday)	
Position:	5211N 00007W (Gransden Lodge - elev 254ft)	
Airspace:	Lon FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	ASK21 Glider	PA28RT
Operator:	Civ Trg	Civ Pte
Alt/FL:	800ft (QFE)	1600ft (QNH)
Weather:	VMC CLBC	VMC CLBC
Visibility:	>15km	>7km
Reported Separation:	0ft V/250m H	500ft V/500m H
Recorded Separation:	Est 550ft V/0.3nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE SCHLEICHER ASK21 PILOT (K21) (the Deputy CFI) reports flying as HP on a training flight heading 040° at 70kt on a winch launch and in communication with Gransden Lodge Radio; FLARM was fitted and serviceable. He was informed after the flight by the Duty Instructor that he had been involved in Airprox but he did not see the other ac as it passed behind his glider; the other ac's engine was not heard due to increased noise during the winch launch. Although he did not see the ac, from other information he assessed the risk as being Medium.

THE WINCH DRIVER reported that he was conducting a winch-launch of a K21 glider on RW04 at Gransden Lodge. While the glider was in the main part of the climb passing about 800ft, he caught sight of a single-engine 'T' tail light ac crossing the RW in a SE'ly direction. From his line of view the ac appeared to be relatively close to the height of the glider, but it had passed over the glider before he had an opportunity to discontinue the launch. He continued with the launch but was sufficiently concerned to raise the issue with the launch marshal and discuss the incident; the launch marshal confirmed that he had also seen the light ac but thought that that its flightpath was taking it behind the launching glider.

THE ONCOMING DUTY INSTRUCTOR reported that he was about to start duty and at 1204 was watching a winch launch in progress on RW04, when a light single-engined ac overflew the RW, passing behind the launching glider from his point of view. It was below cloudbase, which he estimated to be about 1500ft, and was on SE'ly track. He called the winch driver and launch marshal on the ground radio and all agreed that the separation had been uncomfortably close. He guessed that the ac might have been talking to Cambridge TWR so he telephoned them within 15min, but they could not help identify it.

THE PA28T PILOT reports flying a white ac with a multi-coloured stripe on a VFR private flight, with a passenger, inbound to Cambridge. He was heading 095° at 130kt and 1600ft (QNH) in receipt of a BS from Cambridge APP, squawking with Modes C and S (elementary) but TCAS was not fitted.

The incident occurred on a cruise leg from DTY to a point SW of Cambridge where he had planned to pass to the S of Gransden. The conditions were generally overcast at about 1800ft with the reported visibility being 7000m and sub-zero temperatures and they were flying below the cloudbase. In a few local areas along that leg, the lower cloudbase forced them to descend briefly to about 1400ft in places; although he had an IMC rating he did not climb through the cloud due to the risk of icing.

He was aware of the gliding sites in the vicinity and was concentrating on lookout but in spite of this, the first sighting of the reporting (low-wing) white glider was in 10 o'clock position at about 500m range but below their

level. The glider was in sight for about 5sec before passing out of sight below their port wing and it appeared to be flying straight and level after it was sighted.

He assessed that the glider would pass below and behind them and, since there was no further or developing risk, he assessed the risk of collision as being low.

ATSI reports that the Airprox occurred at 1204:06, in Class G airspace in the close vicinity of Gransden Lodge Gliding Site, situated 10nm SW of Cambridge Airport.

The PA28, was operating on a VFR flight from Bristol to Cambridge Airport and was in receipt of a BS from Cambridge APR. The glider was being winch launched from RW04 at Gransden Lodge Gliding site.

Cambridge APP was providing an Approach Procedural Control Service, without the aid of surveillance radar.

Gransden Lodge is shown on the Aeronautical Information Charts and is notified in the UK AIP as a Glider Launching Site, active from sunrise to sunset, with a vertical limit of 3000ft agl (altitude 3250ft). Cambridge MATS Part 2, Section 1, Page 29, paragraph 10.4 Gliding sites, states:

'Gliding takes place at Gransden Lodge 10nm SW of Cambridge. Gransden shall be considered always active although details are usually faxed to ATC when gliding events are scheduled.'

The ATSU indicated that Gransden Lodge normally notify Cambridge regarding any unusual activity or event. No additional gliding activity information was promulgated by AIS NOTAM.

The Cambridge METAR was:

EGSC 291150Z 02007KT 7000 OVC016 01/M03 Q1023=

At 1201:00, the PA28 called Cambridge APP reporting inbound from Bristol VFR, estimating at 1209, requesting joining instructions and information about parachuting in the area. APP advised the PA28, that the only known parachuting was at Chatteris, N of Cambridge, asked the pilot to report at a range of 5nm from Cambridge, and passed the QNH of 1023 and the RW as 05; this was acknowledged correctly. No information was passed regarding possible gliding activity at Gransden Lodge.

At 1201:00, the radar recording showed the PA28, 6.2nm to the SW of Gransden Lodge, squawking 7000, with Mode C showing an alt of 1700ft. Also shown was a possible glider contact, manoeuvring in the PA28's half past ten position at a range of 1.7nm.

At 1202:05, APP asked the PA28 pilot to confirm that a BS was required, together with a request for the aircraft alt; the pilot requested a TS and reported at an alt of 1600ft. APP agreed to provide either a BS or PS because the radar was not available so a BS was agreed at 1202:20. (It was noted that the UK AIP page AD-2EGSC-1-5 (16 Dec 10) promulgates the Radar hours of operation as (winter) 0900 – 1800 and then by arrangement). The ATSU has indicated that radar services are provided to planned traffic on a tactical basis within the promulgated hours.

At 1204:02, the radar recording showed the PA28 tracking E, close to the S boundary of Gransden Lodge airfield. At 1204:13, the recording showed a primary contact appear 0.1nm NE of Gransden Lodge, consistent with a departure from RW04; at that point the PA28 was 0.4nm to the SE of Gransden Lodge with the 2 ac 0.3nm apart and diverging.

At 1207:00, the PA28 pilot reported 5nm from Cambridge airport and requested a straight in approach for RW05, which was approved and the ac was transferred to TWR.

The PA28 was in receipt of a BS from Cambridge APP; the Manual of Air Traffic Services, Part 1, Section 1, Chapter 11, Page 4, paragraph 3.1.1, states:

'A Basic Service is an ATS provided for the purpose of giving advice and information useful for the safe and efficient conduct of flights. This may include weather information, changes of serviceability of facilities, conditions

at aerodromes, general airspace activity information, and any other information likely to affect safety. The avoidance of other traffic is solely the pilot's responsibility.'

CAA ATSI recommends that Cambridge ATSU review the Cambridge UK AIP entry, regarding the promulgated arrangements for the provision of radar services.

UKAB Note (1): The London QNH (and Cambridge) was 1023mb and the PA28 was indicating level at A016 at the CPA; that being the case it was at about 1350ft agl. If the glider was at 800ft, as reported, the vertical separation would have been 550ft. From the viewpoints of both the winch driver and the Duty Instructor (both about 1nm to the N of the PA28) this would have appeared substantially less.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, radar recordings, reports from the winch driver and the Duty Instructor.

It was explained that, although this incident was not strictly in accordance with normal reporting procedures in that the glider pilot did not witness it, since there was sufficient other reliable information, somewhat unusually including a good radar recording, and apparently lessons to be identified, it was decided to allow the incident to be investigated as an Airprox. In these circumstances it was reiterated that the key is 'sufficient reliable information' and gliding clubs should submit as much as possible allowing the UKAB Secretariat to view it and select the most relevant for consideration by the Board.

The Board was informed that Gransden Lodge is a busy glider site in a congested area and, being predominantly grass, is difficult to acquire visually; further it is very close to Little Gransden, Bourne and numerous other light ac strips, further restricting routeing options.

It was also pointed out that gliding supervisory staff have restricted options and little time to react when spotting an unknown ac approaching their site at a relatively low height and while in the initial stages of a winch launch sequence; further, just after getting airborne gliders climb very quickly and, as evident in this incident, their pilots have a restricted field of view allowing them to react only to ac ahead of them and above the nose. Winch drivers too have a restricted field of view (albeit in the opposite direction) but have to concentrate largely on the launching glider to achieve a safe launch and maintain speed control.

Based mainly on the radar recording, it seemed to Members that the PA28 pilot, although reportedly aware of local airfields, attempted unwisely to 'thread the needle' between Little Gransden and Gransden Lodge, bringing him into close proximity to both. In this case, the lowered cloudbase had restricted both the maximum glider launch height and, due to potential icing, the height that the PA28 could fly, resulting in the latter being at about the maximum winch launch height as he passed very close to the Southern boundary of the airfield; that, Members agreed unanimously, was too close for comfort. Although the precise geometry of the incident differed when viewed from different points and regrettably there was no report from the Launch Marshal who was by a significant margin closest to the PA28's track, it was accepted by Members that the PA28 had tracked along, or just outside, the airfield boundary at about 1600ft amsl as the glider was at about 800ft agl (1050ft amsl) resulting in about 550ft vertical and 0.3nm (500m) horizontal separation (as reported by the PA28 pilot and confirmed by the radar recording). Although Members agreed that the track selected by the PA28 pilot had been unwise, it was unanimously accepted that there had been no risk of collision as the PA28 pilot had seen the glider throughout.

The Board noted the ATSI comment regarding the provision of radar services by Cambridge, but did not consider it to have played a significant part in the incident.

PART C: ASSESSMENT OF CAUSE AND RISK

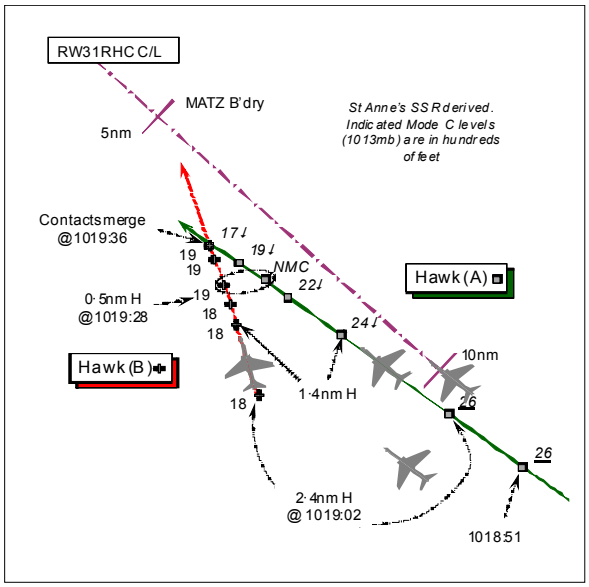
Cause: The PA28 flew close enough to a notified and active Glider Launch Site to cause concern.

Degree of Risk: C.

AIRPROX REPORT No 2011009

AIRPROX REPORT NO 2011009

Date/Time:	1 Feb 2011 1019Z	
Position:	5310N 00424W (6½nm SE of Valley - elev 36ft)	
Airspace:	London FIR	(Class: G)
	Reporting Ac	*Reporting Ac*
Type:	Hawk T Mk1 x3	Hawk T Mk1
Operator:	HQ Air (Trg)	HQ Air (Trg)
Alt/FL:	2000ft ↓	2000ft
	QFE (1021mb)	QFE (1020mb)
Weather:	VMC CLBC	VMC CLBC
Visibility:	20km	>10km
Reported Separation:		
	Nil V/<100ftH	200ft V/nil H
Recorded Separation:		
	200ft V/SSR contacts merged	



BOTH PILOTS FILED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE HAWK T MK1 FORMATION LEAD PILOT [HAWK (A)], a qualified QFI but here a student on the TAC Weapons course, reports that he was leading a formation of 3 Hawk ac in 'arrow' formation, inbound from the Valley Aerial Tactics Area (VATA) E, VFR, for a visual recovery to RW31RHC at Valley. APP was providing a TS on Stud 5 as they descended to 3500ft QFE (1020mb) and a squawk of A3730 was selected with Mode C; neither Mode S nor TCAS are fitted.

APP informed them of traffic Downwind for a short pattern PAR – the subject singleton Hawk (B) - which he acquired visually while he was more than 10nm from the airfield positioning for Initials. The formation was descended to 2000ft QFE reducing vertical separation to 500ft, but because of a thin layer of Stratus at 1700ft [see UKAB Note 1: later reported to be at 2500ft], he lost visual contact with this ac. APP continued to pass TI on the singleton Hawk (B): traffic at 11 o'clock - 5nm 2000ft below, followed by traffic at 11 o'clock – 3nm 500ft below. On discovering a 'VMC gap', he descended the formation through it and switched to TOWER on Stud 2. About 6nm SE of Valley heading 320° at 350kt, passing, he thought, 1500ft in the descent, he saw the singleton Hawk (B) [that was flying level at 2000ft QFE (1020mb) – broadly 1800ft (1013mb)] pass to port of his ac through the LH side of the formation at a range of less than 100ft between the No 2 and No 3 with a 'high' Risk of collision. No avoiding action was taken as by the time he, as the formation leader, was 'tally' with Hawk (B) it had passed up and through the formation and was no longer a factor. The formation continued through Initials [at 3nm] for an uneventful Break to land.

The ac are coloured Black and the upper and lower red strobes and nav lights were on.

[UKAB Note (1): During the investigation it became apparent that there were 2 versions of the report from the lead pilot of Hawk (A), which differed in two areas of detail. The second report specified, correctly, that the Airprox occurred as the formation descended through 2000ft QFE, not the 1500ft QFE reported originally. Moreover the phrase the formation was 'descended to 2000ft QFE reducing vertical separation to 500ft' was excised from the report. A subsequent conversation with the pilot of Hawk (B) has confirmed that his original report was amended by the SFSO to account for Hawk (A) pilot's factual error of the height at which the Airprox occurred. However, this amended report did not accurately reflect the lead pilot's SA, as he believed at the time that Hawk (B) was still level at 1500ft QFE for a short pattern PAR cct as he had been told in the first transmission of TI from APP. This was the basis of the lead pilot of Hawk (A)'s perception of the other ac's height throughout the encounter as being 1500ft QFE, despite the three further transmissions of TI which referred to the vertical separation of Hawk (B) beneath Hawk (A). Furthermore, he had levelled his formation with the intention of affording some vertical

separation above Hawk (B). The pilot also added that none of the other formation pilots were visual with Hawk (B) before the Airprox occurred.]

THE HAWK T MK1 PILOT [HAWK (B)], a QFI, reports that he was conducting an instructional sortie whilst in receipt of a TS from Valley DIR and then TALKDOWN on Stud 7. The assigned squawk of A3740 was selected with Mode C.

Whilst flying level at 2000ft QFE (1020mb) at 200kt on feed-in to RW31 for a PAR, a traffic call was given by TALKDOWN alerting him to joining traffic in his 4 o'clock crossing from his R to L. He informed his student that he would conduct the lookout and briefly scanned the area for the traffic. No traffic was seen and he then prioritised the capture of the glideslope, which was imminent. A few moments later, before the glideslope was reached, he spotted 2 Hawks in arrow formation in his 4 o'clock – 400ft away just before they passed 200ft directly underneath his ac from his 4 o'clock to 10 o'clock position, at relatively high-speed. As the ac extended into the 10 o'clock he saw a 3rd Hawk swept L on the arrow pair, which had probably passed behind his ac. No avoiding action was taken as the other ac were seen too late.

He added frankly that he had assumed a degree of safety by virtue of being on an instrument approach, hence only a cursory lookout scan was made when the traffic was called. Workload was also a factor as his student was flying with a simulated emergency which gave rise to an increased workload as they approached the glideslope.

The ac is coloured Black and the white strobes were on.

THE VALLEY APPROACH (APP) CONTROLLER reports that the formation leader of Hawk (A) called for a visual recovery, was identified, passed the aerodrome details and given own navigation to the aerodrome. Upon identification of Hawk (A) an ac in the Valley radar training cct – Hawk (B) - was called to the lead pilot of Hawk (A) as it was deemed to be relevant traffic for his recovery. TI was passed on Hawk (B) again and updated for a third time as it was deemed relevant. The formation leader of Hawk (A) called visual at a range of 3nm and 500ft above Hawk (B) and changed to the TOWER frequency. Information was passed to TALKDOWN that Hawk (A) was visual with Hawk (B).

This type of recovery is a very common occurrence at Valley and it was performed in a standard manner. He did not see anything untoward at the time, but it later transpired that Hawk (A) had lost contact with Hawk (B) and flown exceptionally close to it.

THE VALLEY TALKDOWN CONTROLLER reports that he received control of Hawk (B) approaching 7nm from touchdown, well L of centreline correcting nicely on a heading of 340° at 2000ft QFE, the pilot having elected to delay checks. The ac was originally vectored by DIRECTOR for a short pattern cct but had been climbed to 2000ft due to a wide feed for RW31RHC. Hawk (B) was identified and the QFE read-back checked, he then called traffic as 'right 4 o'clock 2 miles crossing R to L'. This traffic had been indicated to him by the APP controller as Hawk (A), a formation joining the visual cct that was visual with his Hawk (B). He continued with a normal PAR until approx 4nm when he questioned whether the crew had completed their checks, but no reply was received. At 3½nm he carried out a gear check, but again received no reply so he elected to break off the approach for safety reasons as no gear indication had been given. He asked the pilot of Hawk (B) if he was visual with the aerodrome, to which he indicated he was, so he then instructed the pilot to join the visual cct Deadside and to continue with TOWER.

HQ 1GP BM SM reports that this Airprox occurred between a 3-ship formation of Hawks – Hawk (A) - conducting a visual recovery at Valley in receipt of a TS from Valley APP, and a singleton Hawk – Hawk (B) - on a PAR also in receipt of a TS from Valley TALKDOWN.

Given the range of the Hawks from the St Anne's Radar used for the LATCC (Mil) radar recording, Hawk (B) does not appear on the recording until 1019:02, which has complicated the task of correlating the radar replay and tape transcript. Moreover, comparison of the radar recording and RT tape transcript has identified a difference of 25sec between them. An initial engineering analysis at Valley could find no fault in their system, yet the events portrayed within the evidence available could only be explained through the presence of a 25-sec time-lag. The investigation was therefore pursued on the basis of the presence of a 25-sec time difference and all times were amended by adding 25sec to the original transcript timing.

[UKAB Note (2): Both ac are displayed during the encounter as SSR contacts with no supporting primary.]

At 1015:48 Hawk (A) flight free-called APP for a visual recovery. The formation leader was issued a squawk of A3730 at 1015:54; the formation was identified, placed under a TS that was reduced as Valley ATC was operating SSR-only and instructed to continue, "…*own navigation taking your own terrain clearance descent approved*."

Following a previous Airprox some years ago between IFR traffic and an ac on a visual recovery in receipt of a FIS, the Unit mandated that visual recoveries receive a RIS and with the introduction of CAP774 – UK FISs - a TS. The procedure outlined in the Flying Order Book is that aircrew will be given TI to assist them in becoming visual with all relevant IFR traffic and differs from a radar to visual approach.

[UKAB Note (3): Sequencing is not affected by ATC between instrument and visual recoveries.]

At 1017:15, over 2min before the CPA, APP passed TI to the lead pilot of Hawk (A) about Hawk (B) downwind stating, "…*traffic left 11 o'clock 8 miles correction 13 miles, opposite direction, indicating 1500 feet, Hawk in short pattern circuit*."

In his original report, the lead pilot of Hawk (A) states that following receipt of the initial TI and having lost sight of Hawk (B) due to a thin stratus layer, they "*descended to 2000ft reducing separation to 500ft*." This sentence does not feature in the second version of the report but provides evidence for the pilot's perceived mental 'air picture' at the time of the Airprox.

TI was given on 3 further occasions; first at 1018:14, *".. previously called traffic left 11 o'clock 5 miles opposite direction 3 tho-correction 4 thousand feet below*", just as DIR instructed Hawk (B) at 1018:15 to, *"…climb to height 2 thousand feet"* from 1500ft to avoid Caernarfon ATZ [elev-14ft]. Second, in response to a query of *"request range"* from Hawk (A), at 1018:22 APP advised, *"left 11 o'clock 5 miles crossing left to right 2 thousand feet below".* The third and final update was given at 1018:47, *"..previously called traffic left 10 o'cl. correction 11 o'clock 3 miles crossing right-left* [sic] *500 feet below*." Hawk (A) was not told specifically that Hawk (B) has been climbed to 2000ft QFE by DIR.

At the time the final update was given, Hawk (B) is not visible on the LATCC (Mil) radar recording, but at 1018:51 Hawk (A) is about 11·5nm SE of Valley indicating level at 2600ft Mode C [about 2810ft QFE (1020mb) just L of the centre-line to RW31]. The lead pilot of Hawk (A) replied at 1018:54, *"visual"* – the response perceived to be that he was visual with Hawk (B). Some 22sec later at 1019:16, Hawk (A) declared, "[C/S] *visual to TOWER"* and switched to TOWER. However, the lead Hawk pilot also states in his written report that at some point in the incident sequence he lost sight of Hawk (B) due to a 'thin stratus layer at 1700ft, subsequently amended to 2500ft.'

TALKDOWN passed TI to Hawk (B) about the 3-ship formation at 1019:19 as, "..*traffic right 4 o'clock 2 miles crossing right left instrument traffic visual with the visual joiners above*", which was acknowledged with Hawk (B)'s C/S. Although the latter part of the TI is not clear, it has been confirmed that TALKDOWN was passing TI on Hawk (A). At 1019:02, when Hawk (B) first appears on the radar replay, 2·4nm horizontal separation exists.

[UKAB Note (4): Following the read-back check of the QFE by TALKDOWN, the new QFE value of 1021mb (issued to Hawk (A) by APP at 1016:16) was not issued to the crew of Hawk (B).]

The lead pilot of Hawk (A) called TOWER to join and was instructed at 1019:28, "*Valley TOWER,* [Hawk (A) C/S] *join runway 3-1 right hand QFE 1-0-2-1 circuit clear instrument traffic 6 miles*." At 1019:33, Hawk (A) reported that they were *"visual",* which is believed to refer to the instrument traffic. After this point, all RT calls between TOWER and Hawk (A) are completely normal for a visual recovery and there is no indication that an AIRPROX has occurred.

At 1019:09, Hawk (A) commenced a further slow descent, with Hawk (B) about 1.8nm W, on a converging heading, indicating 700ft below. Up until 1019:28, the ROD of Hawk (A) appears steady, losing 100ft per sweep of the radar (15RPM); however, at this point the Mode C of Hawk (A) 'drops out' for one sweep and then re-appears at 1019:32, indicating the same level as Hawk (B) with 0·4nm horizontal separation. The CPA occurs on the radar replay at 1019:36 with no discernible horizontal separation and 200ft of vertical separation as Hawk (A) descends through 1700ft Mode C and below Hawk (B), indicating 1900ft Mode. The pilot of Hawk (B) had the best sight of the Airprox

and reports acquiring Hawk (A) visually with 200ft separation as the formation passed directly underneath his ac from 'the 4 o'clock to the 10 o'clock position at relatively high speed.'

The basis of the Valley visual approach procedure is that it is incumbent upon the traffic joining visually to 'see and avoid' IFR traffic, facilitated by the provision of TI from ATC. Once the visual joining traffic has declared that they are visual with the IFR traffic, there is no further ATC involvement until the integration of visual cct traffic with the IFR traffic. TALKDOWN was informed that the visual joining traffic was visual with their IFR Hawk (B) and provided TI accordingly. Moreover, given the relative positions of the ac and the assumption inherent in the 'see and avoid' principle of the visual recovery, earlier provision of TI to Hawk (B) would have been nugatory.

From an ATM perspective, although the TI passed by APP to Hawk (A) at 1018:47 incorrectly described the direction of Hawk (B) as crossing *"..right to left..",* it seems that Hawk (A) pilot stated that he was visual with Hawk (B). In HQ 1Gp BM SM's view this error in the TI was neither a causal nor contributory factor. All of the controllers involved reasonably expected Hawk (A) flight to 'see and avoid' Hawk (B). However, it also appears reasonable that, based upon Hawk (A) pilot's original report and his stated intent to descend to 2000ft QFE, thereby reducing separation against Hawk (B) to 500ft, that Hawk (A) pilot's mental air picture was still based on Hawk (B)'s height of 1500ft and that he had been unable to assimilate the later TI from APP. Therefore, the lack of an explicit statement from APP to the lead pilot of Hawk (A) that Hawk (B) had been climbed to 2000ft, could be considered contributory. However, there is an element of 'hindsight bias' in this view and it would also have been reasonable for APP to expect that the lead pilot of Hawk (A) would assimilate the height separation information passed about Hawk (B).

Following discussion with SATCO Valley and examination of the evidence, it appears that Hawk (A) leader lost sight of Hawk (B) at some point between 1018:54 and 1019:36, due to a thin stratus layer in the area. In this instance, the lead pilot of Hawk (A) was cognisant of the presence of Hawk (B), yet had been unable to use the TI passed by APP to update his mental 'air picture' and, having lost sight of Hawk (B), descended through that ac's height into confliction.

HQ AIR (TRG) was unable to provide Command comment on this Airprox before Service staffing action had been completed.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

Members agreed that the pilot of Hawk (B) had little influence on the outcome of this Airprox, which had already occurred when he sighted elements of the formation passing 200ft beneath his ac. Pilot Members understood Hawk (B) QFI's view that he 'had assumed a degree of safety by virtue of being on an instrument approach', which was not unreasonable when the other ac were overtaking from astern. However, this relies on pilots executing a visual approach acquiring instrument traffic in good time and affording appropriate separation. Whilst the pilot of Hawk (B) reported that he briefly scanned in the direction of the reported traffic, pilot Members stressed the importance of maintaining a good lookout in Class G airspace and particularly in an instructional environment where pilots should always be prepared to react to the unexpected.

During the formation's visual recovery, APP initially provided TI at a range of 13nm advising the pilot of Hawk (A) that Hawk (B) was executing a Short Pattern Circuit at 1500ft QFE, the regular height for the procedure. This enabled the formation leader to sight Hawk (B) some distance away, but it was clear to the Board that he had subsequently lost sight of it and not assimilated the good flow of TI provided by APP. The way that the three subsequent transmissions of TI had been given had evidently not registered with the pilot of Hawk (A), who descended his formation through a small gap in the thin stratus layer and through Hawk (B)'s height not recognising that it was no longer level at 1500ft QFE. Pilot Members agreed that the omission of any specific mention that Hawk (B) had been climbed to 2000ft QFE was critical to the pilot of Hawk (B)'s appreciation of the air situation, albeit that he was aware that it was in the vicinity because he requested its range. The TI given was, however, all passed in a conventional manner by referring to the vertical separation remaining as the formation descended, controller Members pointed out. However, pilot Members were not content that it 'painted the picture' simply enough and perceived that the formation leader was somewhat 'maxed out' because he patently had not

understood what he had been told; although there are good reasons for passing altitudes within TI as the number of feet above or below the TI recipient, there is potential for lag and inaccuracy if either or both of the aircraft have high rates of climb or descent. Moments before the formation leader called visual, the final TI update given, *"..left….11 o'clock 3 miles crossing right-left* [sic] *500 feet below*", should have been called as 'left-right'; a pilot Member suggested this might have misled the formation leader into thinking that Hawk (B) was now displaced L of the formation, moving L and thus no longer a confliction, whereas it was actually still a factor in confliction and still drawing R. This was an error, but the TI still told the formation leader that Hawk (B) was close below in the vertical plane, but it was unfortunate that it had not been made plain that Hawk (B) had been climbed up to 2000ft QFE from the outset. The Board did not suggest that APP was in any way culpable; the controller provided a good flow of TI until the pilot of Hawk (A) called *"visual",* when the controller quite reasonably expected the pilot of Hawk (A) to lead his formation clear of Hawk (B). An experienced controller Member thought it was unclear whether the pilot was actually visual with Hawk (B) or the A/D when he called, *"visual"*. It was plain that the lead pilot of Hawk (A) was visual with the A/D later when he switched to TOWER; however, a fast-jet pilot Member perceived that the formation leader's priorities were on descending his formation down towards 'Initials' at that point rather than remaining clear of Hawk (B). The subsequent call in reply to TOWER's joining clearance transmitted at 1019:28, reflected that he had reacquired Hawk (B) by 1019:33, just as the contacts are merging on the radar recording.

The formation leader has subsequently advised that none of the other pilots in the formation were visual with Hawk (B) when the Airprox occurred, which calls into question the lookout regime within the formation. Fast-jet pilot Members perceived a lookout responsibility on the part of the other formation pilots when flying in 'arrow'. Furthermore, since the formation leader was a student, albeit that he had served one tour as a fast-jet instructor, there are supervisory aspects to this Airprox. The Board agreed that the other two crews should have heard APP's TI and might have had the SA to question why the lead pilot was descending the formation through a gap in the cloud toward an ac they had been told about below them. If this was the case then there was an opportunity for the instructors in the formation to step-in and avert this Airprox. As it was, despite seeing Hawk (B) at range, the pilot of Hawk (A) lost sight of it before he descended his three-ac formation through the level of the singleton, bracketing the other ac as they flew past at higher speed, the leader not actually reacquiring Hawk (B) until he saw it passing to port less than 100ft away between his number 2 and 3, he reports. Weighing all these various factors for relevance, the Members agreed that the Cause of this Airprox was that the pilot of Hawk (A) lost visual contact with Hawk (B) and descended his formation into conflict with it.

ATC were under no obligation to provide separation between this visual recovery and the PAR traffic. Having called visual with Hawk (B), the formation leader was entirely responsible for avoiding it with his formation. However, in the Board's view what separation that did exist was minimal and was purely fortuitous. The separation reported by both flights was closely aligned to that reflected by the radar recording which illustrates that the contacts merge with 200ft separation indicated on Mode C, after Hawk (A) had descended below Hawk (B). Given also that Hawk (B) had merged within the bounds of the formation, the Board could only conclude that an actual Risk of collision had existed in the circumstances conscientiously reported here.

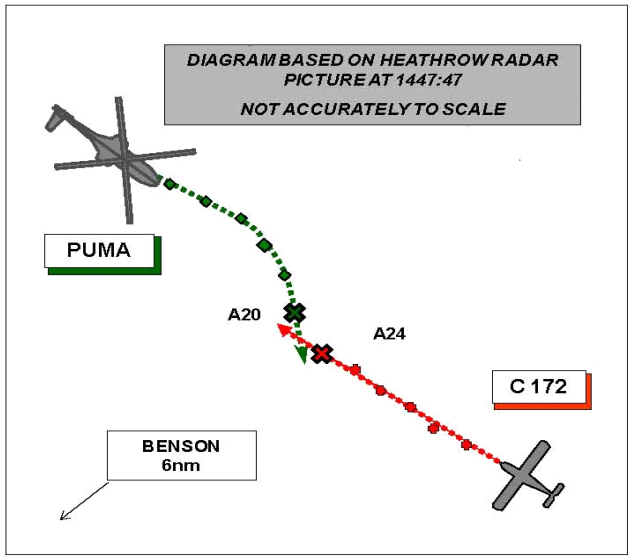
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The pilot of Hawk (A) lost visual contact with Hawk (B) and descended his formation into conflict with it.

Degree of Risk: A.

AIRPROX REPORT NO 2011010

Date/Time:	8 Feb 2011 1048Z	
Position:	5140N 00056W (6nm NE RAF Benson)	
Airspace:	Lon FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Puma	C172
Operator:	HQ JHC	Civ Trg
Alt/FL:	2000ft (RPS 1013mb)	2400ft (1023mb)
Weather:	VMC CAVOK	VMC CAVOK
Visibility:	10km	40km
Reported Separation:	100-200ft V/NR H	400ft V/0.5nm H
Recorded Separation:	400ft V/0 H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PUMA PILOT reports flying a camouflage green helicopter with no TCAS fitted but with strobes and nav lights switched on, on a GH sortie, in receipt of a BS from Benson APP, squawking as directed with Modes C and S. While he (the LHS QHI) was positioning the ac for a PFL near Stokenchurch, in straight and level flight at 2000ft on the RPS, heading 170° (he reported out of sun) at 120kt, the RHS pilot called 'break left' for a light ac that was a possible confliction. The ac was a white, high-wing, single-engine Cessna type, 100-200ft above them, also in a straight and level flight and was crossing them from the 11 o'clock to the 4 o'clock position. He started the break but quickly acquired the light ac visually and determined that there was no direct confliction and so he remained straight and level and allowed the light ac to pass overhead.

He saw no evasive action by the other ac which continued its track away from them. An airborne Airprox report was not filed, but RAF Benson ATC was informed immediately on landing, assessing the risk as being medium.

THE C172 PILOT reports flying a white ac with all lights switched on, on a local training flight from Wycombe Air Park. They were in receipt of a BS from Benson ZONE for a MATZ crossing and squawking as directed with Mode C. While in a level cruise near Stokenchurch, heading 305° at 110kt he first saw a Puma helicopter 5nm away which closed and passed below them. They were also advised of the traffic by Benson ZONE and no potential for collision existed at any time. Both fixed wing pilots had the helicopter in sight at all times until it passed underneath them, maintaining its track. No concern was raised at any time by either of them and he assessed the risk as none.

THE BENSON APP CONTROLLER reported that the Puma crew called ATC via landline to report an Airprox which happened whilst they were on the APP frequency under a BS. They were operating about 2nm W of Stokenchurch mast and the ac faded in and out of radar cover due to it carrying out PFLs.

At the time of the incident she was initiating the handover of an ac 15nm S of Benson to Odiham. When the handover was complete she noticed that the Puma was back on radar and that there was an ac in its vicinity. The unknown contact had already passed the Puma and was tracking away from it; therefore she decided it was not significant so she did not pass TI.

HQ 1GP BM SM reports that the Airprox occurred between a Puma in receipt of a BS from Benson APP, flying a training sortie in the vicinity of Chalgrove and a C172 in receipt of a BS from Benson ZONE.

At the time, APP was working mixed BS/TS traffic and although work load was not mentioned in the Controller's report, examination of the RT transcript suggests that it was low.

Both ac were operating under a BS in Class G airspace and although the controller reports that she was conducting a handover at the time of the incident, the radar replay shows that this was later. The RT transcript shows that APP last spoke to the Puma at 1037:37 when the pilot reported that he had completed his GH and was climbing to 1000ft. APP was called by a Merlin at 1047:11 on climb-out for a radar service and APP's focus would have been on that ac. At that point the ac involved in the Airprox were about 3nm apart. It is difficult to ascertain the last time that APP would have focused her attention on the Puma; however, there were no landline or transmissions recorded between 1042:50 and 1047:11.

At 1047:35 the Puma commenced a right turn putting it on a conflicting flightpath with the C172. At that point, the C172 was 0.7nm SE of the Puma and was indicating 300ft below it.

Given that APP was expecting the climb-out ac as a pre-noted departure, it is reasonable to assume that she would have been scanning the climb-out lane for a period of about 30sec before the ac came on frequency; at the time the C172 would have been over 4nm from the Puma. Moreover, it would be unlikely that the controller consciously watched the Puma and C172 converge without passing TI; therefore, it is assessed that the controller was not scanning in the area of the conflict due to perceived higher priority activity and was therefore unable to assess the possible confliction. Furthermore, comparison of the RT transcript with the radar recording showed that at the point where the confliction becomes apparent, APP was engaged in the identification of and passing of TI to the Merlin.

The C172 pilot was visual with the Puma in reasonable time and considered no avoidance was required.

When operating under a BS, the controller is a last safety net and not the primary means by which safe separation is assured. Regardless of experience and work load, controllers should always seek to provide TI that enables pilots to carry out conflict resolution; however, if the controller is busy or scanning away from the point of confliction they cannot be responsible for any lack of TI.

UKAB Note (1): The recording of the Heathrow radar shows the incident. The Puma squawking 3620 with Mode C approaches the CPA tracking about 170° at an alt of 2000ft as the C172 tracks about 330° towards it from its 1 o'clock at an alt of 2400ft. The C172 passes 400ft above the Puma at 1047:47.

HQ JHC comments that the high workload in the Puma cockpit resulted in the late sighting of possible conflicting traffic. Whilst a timely call from Benson APP would have altered the Puma crew to the conflicting traffic and thus avoided this incident, it is recognised that a BS will only provide TI when the controller is able, therefore crews must always remain vigilant. HQ JHC is also actively pursuing a CAS system, which would have given the Puma crew vital SA. This Airprox will be used to remind Puma crews of the necessity to maintain a good lookout in high workload environments and of the importance of reporting their intention to file an Airprox whilst airborne.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar photographs/video recordings, reports from the air traffic controller involved and reports from the appropriate ATC and operating authorities.

The Board noted that both ac were operating legitimately in Class G airspace and in receipt of an ATS appropriate to the type of flight. The Puma crew were engaged in high workload GH activity and they did not see the C172 approach from their 12 o'clock high as they turned right to position the ac for a PFL. However, the C172 pilot saw the Puma throughout, was warned of its presence by Benson ZONE and considered there to be no collision risk. A GA Member observed that notwithstanding any vertical separation it is generally good practice to turn to avoid overflying a conflicting ac; this allows better visibility and indicates to the other ac that it has been seen (and avoided).

The Board agreed that although the Puma crew saw the C172 late, they reacted appropriately; the C172 pilot saw the Puma throughout, ensuring that there was no risk of a collision.

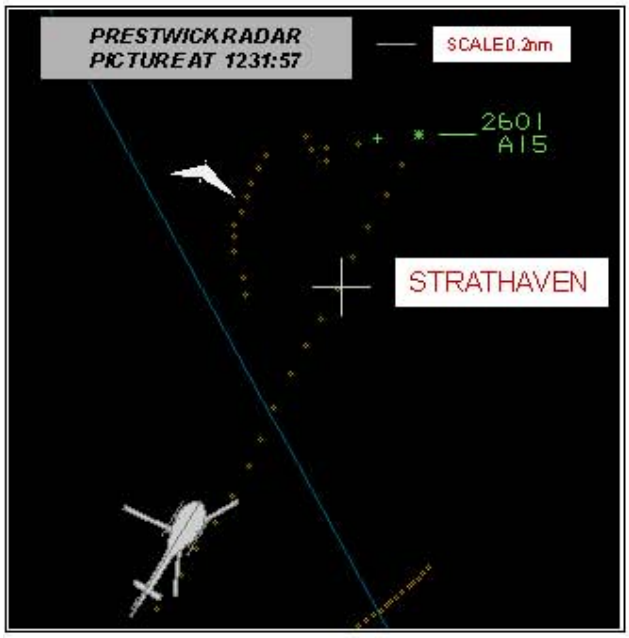
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A late sighting by the Puma crew.

Degree of Risk: C.

AIRPROX REPORT NO 2011011

Date/Time:	12 Feb 2011 1232Z (Saturday)	
Position:	5541N 00406W (Strathaven - elev 847ft)	
Airspace:	Scot FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Pegasus Quantum Microlight	AS355
Operator:	Civ Trg	Civ Comm
Alt/FL:	1000ft (QFE)	1800ft (QNH NR)
Weather:	VMC CLBC	VMC
Visibility:	30nm	10km
Reported Separation:	200ft V/150m H	NR
Recorded Separation:	Est 200ft (See ATSI report) V /0.2nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PEGASUS QUANTUM MICROLIGHT PILOT reports flying an instructional flight from Strathaven unlicensed airfield in a flexwing microlight, listening out on Safety Common. They were heading 090° at 50kt and 1000ft agl in the mid downwind position for RW27 (RH cct) and carrying out downwind checks, when a maroon helicopter appeared in his 3 o'clock about 200ft lower so he kept helicopter visual and continued to extend the downwind leg. The helicopter passed ahead through his 12 o'clock from R to L, about 200ft below. He assessed the risk as being medium and reported the incident to Glasgow ATC after landing and also to the helicopter airfield.

THE OPERATOR commented that ac, particularly helicopters, fly through the cct at least once a month. The airfield is 847ft amsl, just outside the Glasgow CTR, and they feel they are vulnerable to ac following Glasgow's standard instruction to remain clear of CAS not above 2000ft on the Glasgow QNH. Their circuit is at 1000ft agl which equates to 1847ft on the Glasgow QNH.

They are a busy microlight school with 3 instructors training on two three-axis and two weight-shift microlights. Not being licensed, they have no ATZ and so their chart symbol is just a small circle. This may become a problem at other airfields since light ac training is now permitted from unlicensed strips.

He spoke to the helicopter pilot who told him he that he would notify all company pilots of the location through his chief pilot.

THE AS355 TWIN SQUIRREL PILOT reports flying a burgundy coloured helicopter with all lights on, squawking as directed with Mode C in receipt of a BS from Glasgow APR while inbound to Cumbernauld under VFR. He was informed by TWR on landing that he had been involved in an Airprox but did not see any other ac in the position notified. At the time he had been heading 020° at 100kt and flying at an alt of about 1800ft.

THE Glasgow APR Controller provided a report but all aspects are covered in the ATSI report below.

ATSI reports that an Airprox in Class G airspace between a Pegasus Quantum Microlight (M'light) and an AS355 was reported by the M'light pilot in the vicinity of Strathaven at a height of 1000ft agl.

The M'light was operating in the vicinity of the grass strips at Strathaven from where it had departed, was maintaining a listening watch on 'Safetycom', but was not in receipt of an ATS. The AS355 had departed from a private site near Penrith and was in receipt of a BS from Glasgow APR while operating under VFR inbound to

Cumbernauld 16nm ENE of Glasgow Airport. Glasgow ATC was unaware of the Airprox at the time and filed a unit report with ATSI in retrospect, when they were notified of the incident. ATSI had access to the pilots' reports, the RT and radar recordings.

The Glasgow METAR was:

EGPF 121220Z 08004KT 9000 FEW007 BKN014 OVC019 06/05 Q1007=

The UK AIP ENR 1-1-5-9 states:

'Those Microlight Flying Sites where flying is known to take place are listed at ENR 5.5 and are regarded as aerodromes. Sites are listed primarily as hazards to other airspace users…'; Strathaven is notified as a Microlight site (ENR 5.5) and is annotated on CAA VFR Charts both 1:500,000 and 1:250,000. The circuit height is not promulgated in the AIP or on the VFR charts.

The AIS VFR Route Brief from Carlisle to Cumbernauld, (12 Feb 11 1030-1430Z, VFR FL000 to FL050) did not notify Strathaven activity. NOTAMs are published in accordance with ICAO standards, are intended to cover information of a temporary nature/short term duration and can include information concerning the presence of hazards to air navigation.

At 1228:50 Glasgow APP established contact with the AS355 and instructed it to squawk 2601. At 1229:30 the ac was identified and a BS was agreed, "*c/s you are identified about one seven miles south south east of Glasgow it's a Basic Service report if you wish to climb above altitude two thousand feet V F R the Q N H one zero zero seven*"; the pilot read this back correctly. At the time the ac was tracking in a NE'ly direction, at an alt of 1600ft VFR, about 5nm SW of Strathaven.

Under a BS controllers will provide information useful for the safe and efficient conduct of flight. This may include general airspace activity information but the avoidance of traffic is solely the responsibility of pilots. Glasgow ATC reported that the unit's radar does not always show activity at Strathaven, which is 16.4nm to their SE and has an elevation of 847ft. Strathaven is 2.3nm outside the SE corner of the Glasgow CTR (Class D airspace, surface to altitude 6000ft). The preferred radar source for Glasgow APR is their Watchman primary and Glasgow SSR but Kincardine and Lowther Hill are also available when required; it is not known which source the controller was using at the time of the incident.

There is no requirement for Strathaven to inform Glasgow ATC when they are active and it is standard practice that Glasgow does not provide information on Strathaven activity.

The base of CAS above Strathaven is 4500ft amsl (Scottish TMA Class D), while just N, and for the remainder of the route to Cumbernauld, the base is 2500ft (Glasgow CTA Class E).

The M'light reported operating in the cct at Strathaven which has two unlicensed grass strips: 05/23 and 09/27; the direction of cct is to the north. The M'light pilot reported being mid-downwind RW27 at the time of the incident and that the circuit height at Strathaven is 1000ft agl.

At 1230:16 the radar recording (Prestwick Multi Radar Tracking) shows a primary only contact appear 0.9nm SW of Strathaven and the AS355 2.1nm SW of it. By 1231:16 the primary contact had passed W abeam Strathaven by about 0.4nm and the AS355 was 1nm S of it at 1300ft alt. The AS355 passed overhead Strathaven at an alt of 1500ft at 1231:37 and the primary contact had turned onto an E'ly track approximately 0.7nm N of Strathaven. At 1231:57, the AS355, on a NE'ly track, passed through the primary contact's 12 o'clock at a range of 0.2nm, from right to left, at an alt of 1500ft. The M'light pilot reported that the AS355 passed 200ft below him but the AS355 pilot was unaware of the presence of the M'Light. The primary contact observed on the Prestwick MRT was such that its characteristics indicated it to be the reporting M'light i.e. the track flown and the position of the AS355 relative to the primary contact. Since the cct alt at Strathaven is 1847ft alt and the AS355 flew overhead at an alt of 1500ft (recorded) this substantiates the M'Light pilot's report that the AS355 flew about 200ft below.

Both ac were flying in uncontrolled airspace where responsibility for collision avoidance lies with the pilots. Glasgow APR had no information to suggest there was any activity at Strathaven, was not required to provide such information and the radar equipment at Glasgow is not reliable in detecting activity in that area.

The Glasgow weather was reported as overcast at 1900ft, which might have prevented the AS355 from climbing to a higher alt; in addition it was about to route underneath the Glasgow CTA, just N of Strathaven. Further, Glasgow APR had also requested that the AS355 report an alt of above 2000ft was required.

The location of Strathaven is such that any VFR traffic routeing to Cumbernauld, outside CAS from S of the Glasgow CTR, will pass close to the site. The AS355 flew over the Microlight site, which is notified in the UK AIP and annotated on CAA VFR charts; however, it is not known by what means the AS355 pilot was navigating. Pre-flight briefing information would not have notified the pilot of any activity at Strathaven.

The AIRPROX occurred when the AS355 flew overhead Strathaven, below the cct height.

The encounter happened due to several factors:

The Cloud-base precluded the AS355 (VFR) from climbing higher.

The location of Strathaven in relation to the Glasgow CTR and Glasgow CTA means that traffic routeing around and beneath controlled airspace respectively will likely pass close to Strathaven.

Whilst Strathaven is notified in the UK AIP as a microlight site (and depicted on standard navigational maps), there is no notification of the circuit height used at the aerodrome.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequency, radar recordings, reports from the air traffic controllers involved and reports from the appropriate ATC authorities.

Members were briefed in detail on the location of Strathaven and the specifics of the site and surrounding controlled airspace; it was also noted that it is a grass airfield that is difficult to acquire visually. A controller Member familiar with the area also informed Members that despite the new Kincardine radar and the excellent coverage on the Prestwick composite recording shown above, due to the terrain and an extensive local windfarm, radar coverage at Glasgow can be poor in the locality. He also informed the Board that although there is a LoA between Strathaven and Glasgow ATC regarding gliding activity, as far as he is aware no such equivalent is in place regarding microlight operations; in any case since Strathaven is published in the AIP he thought that an ATC warning to VFR traffic that the airfield is active was probably not warranted.

The Board agreed that the helicopter pilot had probably not been aware of the existence of Strathaven, as it was most unlikely that a professional pilot would have overflown it deliberately. Members observed that there are differing standards of commercially available paper and electronic VFR charts; it is not known whether Strathaven is marked on any charts other than those produced by the NATS on behalf of the CAA on which it is clearly marked. The DAP Advisor informed the Board that they are soon transferring to an electronic AIP which should ensure commonality among chart producers.

Notwithstanding the aspects above, it was clear that the AS355 pilot had overflown Strathaven and flown through the downwind leg of the cct at cct height, albeit both unbeknown to him. The Board noted that the pilot had undertaken to disseminate information regarding Strathaven activity to his company thus reducing the likelihood of a recurrence.

Although the helicopter pilot did not see the microlight, its pilot saw the former throughout and this Members agreed had prevented any risk of a collision.

PART C: ASSESSMENT OF CAUSE AND RISK

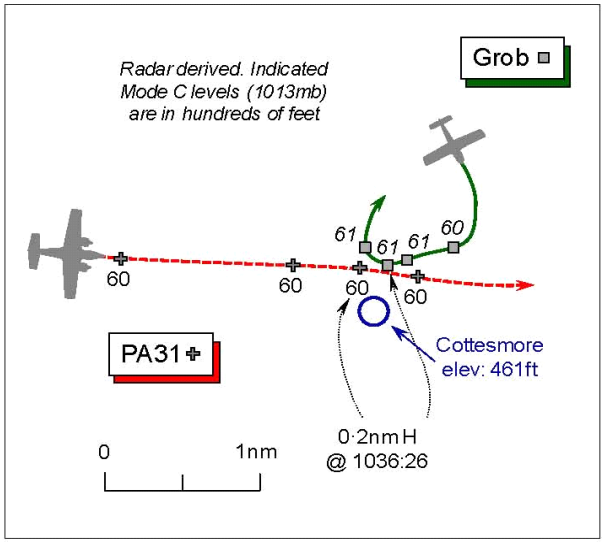
Cause: The AS355 pilot flew through a notified and active Microlight Site and into conflict with the Pegasus Quantum, which he did not see.

Degree of Risk: C.

AIRPROX REPORT NO 2011012

Date/Time: 14 Feb 2011 1035Z
Position: 5244N 00039W (Overhead Cottesmore A/D - elev 461ft)
Airspace: London FIR (Class: G)

	Reporting Ac	*Reported Ac*
Type:	Grob TutorTMk1	PA31
Operator:	HQ Air (Trg)	Civ Comm
Alt/FL:	5500ft	5500ft
	RPS (991mb)	(NK)
Weather:	VMC CLOC	VMC CLOC
Visibility:	30km	>10km
Reported Separation:		
	300ft V/100m H	800-1000ftV/¼-½nm H
Recorded Separation:		
	100ft V	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE GROB TUTOR T Mk1 PILOT, a QFI, reports he was conducting a QFI Training sortie from Cranwell with the trainee QFI as the PF. Operating VFR, they were not under an ATS but listening out on the quiet frequency - #19 – squawking the Cranwell conspicuity code of A2641 with Mode C; elementary Mode S is fitted but TCAS is not.

Directly above Cottesmore, just to the SW of the main runway, during a climb to 6000ft RPS (991mb) at 80kt for a spinning exercise, a R turn from 240° was initiated. After about 30-40° of the R turn, passing 270°, exceeding 5500ft [the recorded radar data suggests the Grob was at 6000ft (1013mb) – about 5340-5440ft RPS (991mb)] the QFI saw a low-wing twin engine ac low in their 12:30 position, head-on, at an estimated range of ½nm about 300ft below initiating a R turn. He immediately took control from the trainee and broke R to avoid a collision as the other ac also broke to the R in avoidance. The twin passed about 100m to port and 300ft below his Tutor with a 'medium' Risk of collision. Following a recovery to straight and level flight and after confirming the other ac posed no further threat, he reported an Airprox to Wittering APPROACH on the RT.

THE PA31 PILOT reports he was in receipt of a TS from Cottesmore LARS (ZONE) whilst flying a dual transit to Norwich under VFR some 2000ft+ clear below cloud at 166kt. The assigned squawk was selected with Modes C and S on; TCAS is not fitted.

Heading 120° approaching Cottesmore, they had been advised of a Grob Tutor on their L, more than 5nm away and below them but climbing. Whilst looking for the traffic they maintained their course and their altitude of 5500ft RPS; TI was updated by the controller about the ac on their L, still at a similar altitude and so they continued looking. They first saw the other ac – a white low-wing Grob Tutor - about 1-2nm away in their 10-11 o'clock slightly above them to their L and it appeared to be flying straight and level. Maintaining their course, as they had 'right of way' being on the R of the Grob, they watched it and deemed its crew was not taking action to route behind their ac or climbing to maintain a greater margin of safety. As the ac commander, he elected to take avoiding action by descending and turning R. The Grob passed more than 800ft above and slightly behind them by about ¼-½nm. He assessed the Risk of collision to be 'very low', but was very surprised to learn it was a military ac over the old Cottesmore MATZ, not talking to Cottesmore LARS nor receiving a radar service of any kind. Moreover, he was concerned that in accordance with the Rules of the Air, having maintained his course and altitude to allow the Grob pilot to manoeuvre around his PA31, the Grob pilot then took no avoidance to remain clear.

His ac is coloured white and grey and the HISLs were on.

He would recommend all ac operating within range of a LARS unit to operate at least one radio on that frequency. Also, even in VFR conditions, it would be preferable to have a radar service to provide a higher degree of safety and give pilots and controllers better information.

THE COTTESMORE LARS CONTROLLER (ZONE) reports that the weather was good - CAVOK - and traffic had been light, mainly Tutors from Wyton and several transits under a BS. The PA31 pilot free-called after he had departed East Midlands for a transit to Norwich. The pilot called ZONE about 12nm W of Cottesmore, heading E at 5000ft (999mb). After identification, the flight was placed under a TS, with a reduced service due to poor radar performance. The pilot then asked to climb to an altitude of 5500ft BARNSLEY RPS (991mb) routeing direct to Norwich. Whilst outside the old MATZ boundaries, TI was called to the PA31 pilot about a Tutor ac displaying an 'agreed airspace' squawk, that was in the radar overhead and which appeared to be carrying out GH at a similar level. As the PA31 approached the radar overhead a further reduction to the service was issued in accordance with SOPs. The controller gave the PA31 pilot an update as the ac closed to a range of about 3nm and he monitored their profile. Additionally, he briefed the PA31 pilot that the Tutor might possibly be performing aerobatics in this area, which he knew from his own local knowledge is often the case. Both ac were now close in the radar overhead and he was unable to give further updates. However, at this stage the PA31 pilot requested an update which he was unable to provide as the Tutor was now displayed only as an SSR contact and the position would have been inaccurate. The PA31 pilot acknowledged that transmission and may have taken avoiding action on the Tutor. Later, the Tutor pilot called the unit on another frequency and declared the Airprox; the PA31 pilot was informed about the Airprox report on RT when he was about 12nm E of Cottesmore, before the ac was handed over to Marham LARS.

UKAB Note (1): Cottesmore aerodrome is open, and hence the MATZ instituted, on very limited occasions when advised by NOTAM or Supplement.

HQ 1GP BM SM reports that this Airprox occurred in the Cottesmore overhead, between a Tutor operating VFR and the PA31 routeing to Norwich, in receipt of a TS from Cottesmore ZONE.

At 1034:30 the PA31 was identified at 5000ft and placed under a TS that was reduced due to poor radar performance. This was immediately followed by ZONE providing accurate TI to the PA31 about the Tutor, which was acknowledged and a climb to 5500ft requested. At 1035:06, ZONE updated the TI on the Tutor to the PA31 pilot stating, "*traffic 12 o'clock, 3 miles* (radar replay shows 4.5nm lateral separation)*, crossing left to right, southbound, indicating 4 hundred feet below*" adding, "*that traffic Tutor possible aerobatics*." Neither of these transmissions were acknowledged by the PA31; however, the pilot states in his report that they were updated about the ac on their left. At 1035:23, ZONE updated the TI on the Tutor again to the PA31 crew stating that the Tutor was displayed *"…secondary only now 12 o'clock 3 miles manoeuvring."* This was followed shortly after by ZONE stating a further reduction in the TS from, "*ahead as you approach* (the) *radar overhead*."

The PA31 pilot's written report states that they 'saw the (Tutor) at approx 1-2nm…we maintained course and heading as we had right of way being on the right of them, watching the other aircraft I deemed it not to be taking avoiding action…so took avoiding action to descend and turn right.' At 1036:20, the PA31 pilot began to request a further update to the TI, but then reported visual with the Tutor. At this point the Tutor was E of the PA31, with both ac indicating 6000ft Mode C and 0.7nm lateral separation evident. The CPA occurred shortly after 1036:26, as the Tutor QFI executed a R turn to pass to port of the PA31, the Tutor indicating 6100ft and the PA31 6000ft.

[UKAB Note (2): The ac passed port-to-port, in between sweeps, with vertical separation of 100ft Mode C evident before and after the 'merge', the Grob Tutor passing above the PA31.]

The ZONE controller mentioned in his report the lack of primary surveillance radar (PSR) data due to the location of the ac in the Cottesmore overhead and the possibility that the position report derived from SSR would have been inaccurate. Although the update rate of the SSR is lower than that of the PSR, it is unlikely to have been an issue in this occurrence, especially given the relatively low altitude.

ZONE provided accurate and timely TI that enabled the PA31 pilot to visually acquire the Tutor in what the PA31 pilot considered enough time to monitor and assess the situation prior to taking avoiding action.

HQ AIR (TRG) comments that the Tutor pilot was operating in Class G airspace without an ATS. The sortie being flown involved intensive in-cockpit communication, in which case orders permit operation on a common quiet

frequency. The crews of both ac were able to detect and avoid each other but estimates of the margin by which this was achieved vary. The Tutor pilot's assessment of height difference accords closely with the Mode C readouts, allowing for some inherent errors. The PA31 pilot's height assessment, coupled with his report that the Tutor passed behind him, suggests that he may have lost sight of the Tutor in the latter stages and may not have seen his avoiding action.

The Rules of the Air in such a scenario, where one pilot may not be visual with the other, are of limited use. Indeed, if the pilot with right of way does not see any avoidance action being taken by the other ac, or at least a wing waggle to acknowledge their presence, it would still be prudent to take action, as the PA31 pilot did in this case. Furthermore, the situation was close to being a 'head-on' in which case both pilots are obliged to avoid, to the right if possible, as both did in this case. Pilots operating under a TS should also be prepared to take pre-emptive avoiding action on identified conflicting traffic before an Airprox situation develops.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, a transcript of the relevant RT frequency, radar video recordings, a report from the air traffic controller involved and reports from the appropriate ATC and operating authorities.

It was apparent that the PA31 crew had wisely obtained a TS from ZONE to supplement their lookout, but it was not apparent why they were flying at an altitude of 5500ft RPS when it might have been preferable to transit, VFR, at the recommended quadrantal flight level. The Board recognised that the Controller had provided the PA31 crew with accurate TI, which was updated to reflect that the Grob was drawing R into their 12 o'clock. The controller also used his experience to advise that the Tutor could be manoeuvring hard and without warning – *"…possible aerobatics"*. This flow of information ensured that the PA31 crew obtained visual contact on the Grob Tutor about 1-2nm away in their 10-11 o'clock and slightly above them the PA31 pilot reports. The Board commended the controller for his good service and sound judgement that had contributed significantly to the PA31 crew's SA. A controller Member familiar with Cottesmore advised that their SSR is sourced from Cranwell and whilst the Airprox did occur close to the Cottesmore ASR 'overhead', at these altitudes the SSR should have been displayed fully to the controller, whereas primary data from their ASR would be more limited at the centre of his display and a good reason for not operating in their overhead.

When the PA31 crew first saw the Grob, the PA31 pilot had stressed that it seemed to him that the relative geometry required the pilot of the other ac to give way in accordance with the Rules of the Air. Subsequently, however, it was apparent from the radar recording that the Grob Tutor had turned onto a more nearly head-on aspect as the two ac closed on one another. Members noted the PA31 crew 'stood-on' in anticipation of the Grob crew turning away or climbing to remain clear of his ac, but when it became apparent that they were not doing so, the PA31 pilot elected to turn R and descend away from the Grob. Plainly 'the Rules' can only work if pilots have spotted the other ac in good time to react appropriately and at that stage the PA31 was unseen by the Grob crew. The radar recording reflected a slight turn away to starboard by the PA31, but the ac's Mode C did not indicate the reported descent. Pilot Members opined that, while it is a matter of judgement at the time, it would have been better if the PA31 crew had made a more positive alteration at an earlier stage, thereby allowing a greater margin and preventing the two ac from flying into close quarters. The Board was briefed that a supplementary telephone discussion between the PA31 P-I-C and UKAB Staff had elicited that it was the co-pilot that was watching the Grob. However, this might have been difficult 'cross-cockpit' from the RH seat and he might have lost sight of the Grob at a critical moment as the recorded radar data shows it was certainly not 800ft above them when they passed port-to-port and just 100ft above.

Without the benefit of any ATS to assist their lookout, the Grob crew was not aware of the PA31 until it was spotted by the QFI during their R turn through W, prior to spinning. Some Members perceived that this was a late sighting by the Grob crew as the PA31 should have been visible to them beforehand, inside the turn, when they turned R WSW'ly. However, in a further discussion between the Grob Tutor pilot and UKAB Staff it was revealed that the PA31, which is coloured white and grey but had the strobes 'on', had been very difficult to spot against the cloudscape. As it was the Grob QFI took control and broke R at the same time as he saw the PA31 also turning to the R. Both pilots followed 'the Rules' in this respect, and the Board concluded that the Grob crew might have seen the PA31 as early as they could in the conditions that pertained, leading the Members to agree unanimously that this Airprox had been the result of a conflict in Class G airspace resolved by the pilots of both ac.

Controller Members suggested that if it did not inhibit the execution of the instructional sortie, it would have been beneficial if the Tutor crew had called Cottesmore ZONE whilst operating in their aerodrome overhead. Furthermore, in advance of the forthcoming TAS embodiment to the Grob Tutor fleet, a TS could have given them early warning of the approach the PA31. Nevertheless, both pilots saw each other's ac in time and the action taken was effective. Whilst the subsequent separation was certainly less than ideal, the crew of the faster twin had sighted the Tutor and could have taken more robust action in the vertical plane if need be to manoeuvre further away from the slower Tutor. Therefore, in the Board's view, both pilots' actions had averted any Risk of a collision.

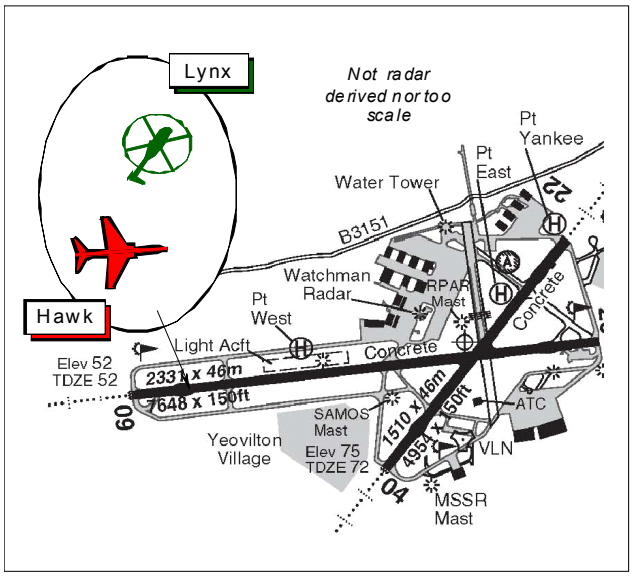
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict in Class G airspace resolved by the pilots of both aircraft.

Degree of Risk: C.

AIRPROX REPORT NO 2011013

Date/Time:	9 Feb 2011 1113Z	
Position:	5101N 00238W (Yeovilton RW09 - elev 75ft)	
Airspace:	MATZ/ATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Lynx Mk8	Hawk T Mk1
Operator:	HQ Navy	HQ Navy
Alt/FL:	10ft	100ft↓
	QFE (1003mb)	QFE (1003mb)
Weather:	VMC NR	VMC CLOC
Visibility:	10km	15km
Reported Separation:		
	>50m	Nil V/30m H
Recorded Separation:		
	Not recorded	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE AGUSTA WESTLAND LYNX Mk8 HELICOPTER PILOT reports he was returning to Yeovilton from Culdrose and had completed a PAR to RW09 at Yeovilton in VMC. At DH he was transferred from TALKDOWN to the TOWER frequency, the clearance to land was reiterated with the instruction to continue along RW09 to exit at RW04 for Yankee dispersal. After reading back these instructions, TOWER then requested him to vacate RW09, to the L across the grass, because of a Hawk turning Final to Land. He repeated back TOWER's instructions and turned L at 15kt hovertaxying towards the northern parallel taxiway at a height of 10ft QFE (1003mb), about 200m beyond the threshold of RW09. During the L turn his observer, occupying the LH Seat, informed him the Hawk was directly over the RW09 threshold. He expeditiously vacated the runway as the Hawk landed and passed >50m astern from L – R with a 'medium' Risk of a collision. He reported the Airprox to the Duty Air Traffic Control Officer (DATCO) by telephone after landing.

His helicopter has a grey colour-scheme; the landing lamp (directed forward) and the red anti-collision light situated on the tail were switched on.

THE BAe HAWK T Mk1 PILOT reports he was the Captain and PF at the completion of a local training sortie from Yeovilton.

Whilst flying in the visual cct to RW09 he became aware of a Lynx helicopter flying a PAR to the runway in use. As he flew downwind he saw the Lynx from a range of 3nm approaching the runway threshold. His 'Final gear down' call resulted in a 'continue' from TOWER. Whilst descending wings level at about 150ft QFE, the Lynx crew called 'vacated' on the RT and he was given clearance to land by TOWER whilst he was still above 100ft QFE. The Lynx helicopter was well clear of the runway to the Northside 'on the deck' and he landed normally heading 090° at 120kt. At no point was there a Risk of collision. He estimated the minimum horizontal separation as 30m as he passed astern of the helicopter.

His ac has a black colour-scheme; the 2 HISLs and the nose light were on. The assigned squawk was selected with Mode C; neither TCAS nor Mode S are fitted.

THE REAR SEAT HAWK PASSENGER (a Harrier QWI) reports he saw the Lynx on short finals to RW09 as the Hawk Captain flew downwind. The Hawk Captain configured the ac for landing and commenced the finals turn for RW09. As the Hawk Captain rolled out on the RW heading, the Lynx was vacating the runway. With a height of 100ft indicated on the Hawk's altimeter the Lynx had vacated the runway and Yeovil ATC issued the Hawk Captain clearance to Land. Their Hawk touched down and decelerated as the Lynx remained hovering clear of RW09,

over the grass to the N of the RW. The Lynx was clearly visible throughout their final approach and landing; at no time was there a Risk of collision.

THE HAWK PILOT'S UNIT commented that having debriefed the Hawk Captain at length they were content that no risk of collision existed & there was no breach of local orders. However there was a perception from the Lynx crew that this could have been the case and they were, therefore, right to highlight their concerns.

THE YEOVILTON ATC LOCAL EXAMINING OFFICER (LEO) reports that the Weather State Colour Code (CC) was WHITE and the Forecast CC WHITE [Vis >5km; Cloud SCT > 1500ft QFE].

On this occasion there was a trainee in the ADC position (TOWER) and also a trainee on DIRECTOR, so 2 controllers were afforded higher levels of traffic and more challenging controlling. There were 2 Hawk ac in the visual cct to RW09 and the Lynx was conducting a PAR to the duty runway – RW09. The subject Hawk pilot called Downwind and was advised using standard ATC liaison and RT phraseology that the Lynx on PAR was ahead for the runway. At 1111:49, the Lynx crew called TOWER from TALKDOWN and were told to vacate L along RW04/22 for Y dispersal, which by 1112:04 had been read-back. At 1112:07 the Hawk pilot called Final, whereupon the Lynx crew was asked at 1112:09 by TOWER if they could vacate the runway onto the grass for the Hawk behind. The Lynx crew agreed, read-back the instruction by 1112:16; the Hawk pilot was told to Continue. At 1112:36, Hawk pilot was given a clearance for the runway and immediately after the read-back by the Hawk pilot, the Lynx crew was instructed to continue with GROUND.

The trainee TOWER controller and his instructor report that they both visually confirmed that the Lynx was clear of the landing area, prior to issuing the clearance to the Hawk pilot. The Lynx crew did not report runway vacated on the RT; however, immediately after the Hawk pilot was given his clearance to land, the Lynx was transferred to GROUND for his air taxy to dispersal.

Clearances to use landing areas are not given by controllers until after a visual check of the landing area has been conducted, regardless of whether an ac has called runway vacated or not, as this call is only ever used as a back up to a visual observation by the controller from the VCR. The DATCO also had full SA and was also content that the Lynx had vacated the landing area.

JSP550 at R307.125.6 states that:

'..aircraft shall move clear of the landing area as soon as it is safe to do so.'

Yeovilton Aviation Orders (YAvOs) at 0213.6 states that a FW pilot will initiate his own 'go around' by 100ft if he is not in receipt of a clearance from ATC. Thus we can deduce that when the clearance was issued by TOWER at 1103:53, the Hawk should have been higher than 100ft. Additionally, JSP 552 at 310.160 requires that the Runway Caravan Controller fire a red verey cartridge (refusing an ac permission to land) if he believes that there is a definite risk of collision or if the path of the oncoming ac is obstructed. No red verey cartridge was fired, therefore the caravan controller also deemed there to be no risk of collision or obstruction on the runway.

Although given a positive clearance by ATC, one must assume that the Hawk pilot would not have chosen to continue his approach if the Lynx was still on the runway and a Risk of collision existed.

The Lynx pilot's ASIMS report states that his helicopter was taxying. An aircraft taxying from the runway is defined by ICAO as:

'upon exiting the landing runway and terminates upon arrival at the gate, ramp, apron, or parking area, when the aircraft ceases to move under its own power.'

By this definition, if the Lynx was indeed taxying as stated, then he had exited the landing runway and consequently the landing area was fit for use by the Hawk.

There was no breech of YAvOs and no breech of ATC procedures. The Hawk had been given a positive clearance to use the landing RW surface, which it seems the Lynx captain had not heard. The Hawk pilot was visual with the Lynx at all times, as he was No2 to the Lynx landing ahead. Additionally the Lynx crew was told on their landing

clearance that there were 2 Hawks in the cct, so would have been aware that they were entering a busy traffic environment.

THE DEPUTY SENIOR AIR TRAFFIC CONTROL OFFICER YEOVILTON comments that he was a witness to the event in the VCR and therefore tasked another Local Examining Officer to investigate the Airprox. He fully supported the actions of the ATC personnel on watch at the time, who acted in accordance with YAvOs and the relevant regulations.

HQ NAVY COMMAND comments that the thorough investigation indicates that in this instance there was no Risk of collision and that no breach of regulations occurred. The Lynx captain reported that the Hawk was directly over the threshold whilst the Lynx was still occupying the runway; however, it would appear that the Hawk was in line with the runway, on a 'continue' from ATC and still above 100ft awaiting the runway to be vacated by the Lynx. ATC issued the Hawk with a clearance to land after they had visually assessed the runway to be clear. All parties were fully aware of the other aircraft's position and intentions in the minutes preceding the reported incident, with the Hawk pilot positioning his ac to take account of the Lynx ahead. The perception of the Lynx Captain was that they had been the subject of a Flight Safety occurrence, and are therefore fully supported in their decision to submit a report.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, a recording of the relevant RT frequency and reports from the appropriate ATC Unit and operating authority.

The Board agreed that if the Lynx Captain was at all concerned at the proximity of another ac in flight then he was not only duty bound to initiate an Airprox report, but was wise to do so. From the Lynx crew's perspective, they had complied promptly with TOWER's request to vacate RW09RHC onto the grass in order to expedite matters, but were concerned that they were still in close proximity to the runway when the Hawk, which they thought too close, was given a clearance to land. The Board noted that the estimate of the minimum horizontal separation given by the Lynx crew at 50m was more than the Hawk pilot's reported 30m. However, the Lynx crew would have lost sight of the Hawk as it passed from the observer's field of view to port, behind the tail and into the pilot's view to starboard as it landed. Conversely, the Hawk pilot had the helicopter in full view throughout. Moreover, the ATC Unit report from the LEO assured the Board that TOWER, who had full view of the runway surface, had checked that the Lynx was clear of RW09RHC before the Hawk pilot was given his clearance to Land. It was evident that the Hawk pilot was also content that the Lynx was clear of the runway when he received this landing clearance for the HQ Air pilot Member was in no doubt that the Hawk pilot would have executed a 'go-around' and not attempted to land if the helicopter had not been a safe distance from the runway surface he was about to land on. The Board also noted that the runway caravan controller appeared to have been content that the runway was clear because he did not intervene to send the Hawk around. However, the Board's discussion then centred on the parameters for a helicopter to be sufficiently clear of the runway to allow the jet to land with complete safety. The Board was briefed that civilian practice requires that an ac must have passed the holding/marshalling point for the RW in use for an ac to be considered to have vacated the RW. However, a helicopter's ability to hovertaxi across an aerodrome unconstrained by fixed taxiways made this point somewhat open to interpretation. There was no equivalent military regulation that applied in this instance, a point noted by the MAA Advisor, which required aerodrome controllers to use their judgement to exercise safe control over traffic within the manoeuvring area. This aerodrome is a well established mixed traffic environment with ATC well versed in accommodating fixed and rotary wing traffic. It was plain to the Members that both the Lynx crew and the Hawk pilot were complying with the instructions issued by TOWER, who were endeavouring to exercise expeditious but safe and orderly control over aerodrome traffic. Whilst it was not feasible to determine independently the geometry or the minimum separation that applied here, it seemed that the Lynx crew's report was based on their reasonably held belief that the Hawk was closer on final than it might have actually been. But it seemed to the Members that the Lynx crew's perspective, looking virtually straight-up the approach, had probably given a misleading perception of the Hawk's distance from touchdown when the clearance was issued. The Board was content that ATC had established that the Lynx was clear of RW09RHC when the Hawk pilot's landing clearance was issued. Therefore, the Members were unanimous in their agreement that this Airprox had resulted because of a perceived conflict by the Lynx crew. Moreover, the Board also concluded that established procedures had been followed, normal safety standards had been applied and had not been compromised in any way.

AIRPROX REPORT No 2011013

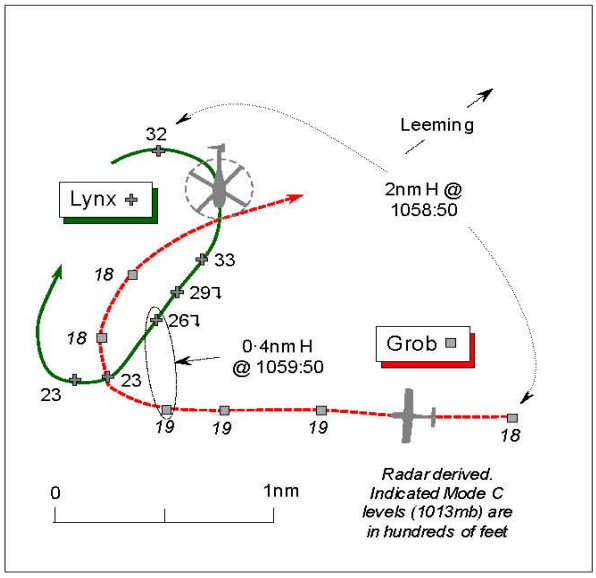
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A perceived conflict by the Lynx crew.

Degree of Risk: E.

AIRPROX REPORT NO 2011014

Date/Time:	24 Feb 2011 1100Z	
Position:	5413N 00143W (8nm SW by W of Leeming - elev 132ft)	
Airspace:	Vale of York AIAA	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Lynx AH Mk7	Grob Tutor TMk1
Operator:	HQ JHC	HQ Air (Trg)
Alt/FL:	2200ft	2000ft
	RPS (1014mb)	RPS (1013mb)
Weather:	VMC Sleet	VMC CLBL
Visibility:	20km	10km
Reported Separation:		
	500ft V/Nil H	400-500ft V/100m
Recorded Separation:		
	~500ft V	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE WESTLAND LYNX AH Mk 7 PILOT, a maintenance test pilot, reports he was the ac commander and PNF occupying the LH seat whilst conducting a dual airtest; the ac's crew consisted of just the 2 pilots. The workload in the cockpit was fairly high during the airtest as the PNF monitors instruments/limitations, whilst the PF concentrates on accurate speeds, NR control and rates of application of power. The airtest, involving a series of autorotations, was carried out in VMC whilst in receipt of a BS from Leeming ZONE on 127·750MHz about 2nm SW of Masham, which is situated 1nm SW of the Leeming MATZ boundary. A squawk of A0401 was selected with Mode C; enhanced Mode S is fitted but TCAS is not.

The same area had been used for the preceding 10min of the air test and, after carrying out the HASEL checks, the Lynx crew entered autorotation from 3000ft RPS (1014mb), heading SW at 80kt, intending to commence recovery from the autorotation at an altitude of 2000ft. Whilst looking out passing about 2200ft, he spotted a small white fixed-wing ac on the port side about 200m and 500ft below their helicopter that flew directly beneath them with less than 500ft clearance. Upon sighting the other ac – the Grob Tutor flying straight and level - the PF was instructed to overshoot from the autorotation and a climb was initiated to avoid the Tutor, which passed directly beneath his Lynx and then appeared on the starboard side, maintaining its heading he thought. Minimum vertical separation was less than 500ft and the Risk assessed as 'high'; an Airprox was reported to Leeming ZONE on the RT.

His helicopter has a grey and green camouflage scheme but the HISLs were on and the navlights on 'bright'.

THE GROB TUTOR T Mk1 PILOT reports that he was flying an Air Experience Flight (AEF) sortie, VFR, under a TS from Leeming APPROACH (APP) when traffic was reported to him whilst performing aerobatics. About 2min later, after completing the aerobatic manoeuvres, a visual recovery to Leeming was initiated with a gentle descent at 130kt, turning R onto a NE'ly heading in VMC, some 2000ft above cloud in between layers. About 1nm S of Masham, passing 030° in the R turn, descending through 4000ft RPS (1013mb) he thought, a camouflaged Lynx helicopter was seen heading W about 200m ahead and above his aeroplane crossing from R – L in level flight. He passed about 400-500ft under the Lynx and about 100m slightly in front of it. No avoiding action was considered necessary and he assessed the Risk as 'low'.

A squawk of A4322 was selected with Modes C and S on. His aeroplane has a white colour-scheme and the HISL was on.

AIRPROX REPORT No 2011014

THE LEEMING ZONE CONTROLLER (ZONE) reports he was mentor to a trainee controller and they 'plugged-in' at about 1030 for a very quiet session, operating SSR only, because the Watchman ASR was unserviceable. The Aerodrome Availability/Weather State Colour Code was BLU.

Shortly after commencing the session, they received 2 pre-notes from Dishforth; one relating to a VFR transit to Carlisle and the subject Lynx departing for an airtest; both flights were issued the standard squawk of A0401 for a BS. The subject Lynx climbed out for the airtest, was placed under a BS and issued the BARNSLEY RPS (1014mb), whereupon the crew informed them they would operating up to 3000ft. The next call was when the Lynx pilot reported an Airprox, stating that a white ac had passed underneath them, possibly a Tutor. At the time no relevant contacts were showing on radar, although subsequently a squawk assigned to Leeming APP was observed about 2nm E and 2000ft below the Lynx tracking towards the aerodrome. The Lynx crew was informed about this ac, now well to the E and 2000ft below the helicopter, and advised that ATC was operating SSR only. The Lynx crew estimated that the reported ac had passed well within 500ft whilst they were at 3000ft RPS (1014 mb).

The Lynx crew then broadcast they were carrying out a series of autorotations and asked to be advised of any ac which came within 2-3nm of them. ZONE asked the Lynx crew if they wished to upgrade their ATS from the extant BS, but they declined, "as it would get a bit cluttered up on that". The Lynx crew retained their BS on 127·750MHz before initiating a VFR recovery back to Dishforth.

The Supervisor was advised of the Airprox and they were relieved from the ZONE position shortly afterwards. A phone call to the Lynx pilot at Dishforth ascertained he was happy with the ATS provided, was not apportioning blame, but would refer to his QHTI with a view to submitting an Airprox report. He estimated the minimum vertical separation was 500ft.

THE LEEMING APPROACH CONTROLLER (APP) reports that the Grob Tutor departed VFR to the SW, was identified and placed under a reduced TS as Leeming was operating with SSR only. Shortly afterwards TI was provided on traffic 5nm S tracking NW 1000ft below believed to be the Lynx. This TI was updated as the Tutor flew closer to the helicopter - at 3nm SW tracking SW manoeuvring 2000ft below and climbing - with another update on the Lynx when it was NW 2nm indicating 3300ft (1013mb).

THE LEEMING ATC SUPERVISOR (SUP) reports the unit was operating under a light workload with 2 flights on frequency. The only controllers providing an ATS were operating in the APP and ZONE positions, which were both manned by controllers under training screened by members of the Unit Standards Team. Although the Lynx pilot stated over the RT that he wished to file an Airprox, after landing he spoke with the pilot on the telephone who admitted that he did not inform ZONE that he would be conducting autorotation manoeuvres. It was explained that this information would have been of value to the ZONE controller when he was placed under a BS. Moreover, although operating SSR only, if the Lynx pilot had requested a TS, ZONE may have been able to pass TI on the Tutor before it became a potential hazard. He advised the Lynx pilot that he had also spoken to the Tutor pilot who admitted that he had been passed TI about the Lynx, with which he was visual and took his own separation by flying underneath. The Lynx pilot then advised that he would speak to his Duty Instructor. It was late afternoon when the Lynx pilot rang to inform him that he would be filing an Airprox.

HQ 1GP BM SM reports that this Airprox occurred 8nm SW of Leeming between a Tutor on an AEF sortie conducting aerobatics in receipt of a TS from Leeming APP, and a Lynx on an air-test from Dishforth operating VFR in receipt of a BS from Leeming ZONE.

Leeming were operating SSR only at the time of the occurrence, with both APP and ZONE manned by trainees and under a light workload.

The Lynx pilot reports that as part of the airtest there was a high cockpit workload with the PNF 'heads-in' monitoring instruments and limitations, while the PF was concentrating on maintaining accurate speeds, NR control and rates of power application. Moreover, the Lynx unit RQHI reports that these factors in addition to the restricted view from the Lynx cockpit, contributed to the Lynx crew's difficulty in visually acquiring the Tutor.

At 1048:01, the Lynx was identified by ZONE and placed under a BS, which was acknowledged *"…Basic Service 1-0-1-4 and we'll be operating up to 3 thousand feet on that"*. The Tutor was identified by APP shortly afterward and placed under a TS, reduced as Leeming were operating SSR only.

At 1048:48, [10min before the Airprox occurred] APP passed TI on the Lynx to the Tutor pilot stating, "*traffic south, 5 miles, tracking north-west, 1000ft below, believed to be a Lynx*." This was updated at 1051:36 as, "*traffic south-west, 3 miles, tracking south-west, 2000ft below climbing*." This was updated again at 1058:57 stating, "*traffic north-west, 2 miles, indicating 3300ft one-zero-one-three*." The radar replay indicates 1.6nm lateral separation, with the Lynx in a R turn indicating 3300ft Mode C (1013mb) and the Tutor tracking W'ly indicating 1800ft Mode C (1013mb).

At 1059:18 the Lynx rolled out of the right-turn to track south-west, at which point 0.9nm lateral separation exists. At 1059:33 the Lynx has commenced a 2000ft/min descent, with 0.6nm lateral separation extant. At 1059:48 the Tutor appears to have made a relatively rapid manoeuvre to the NW, reducing the lateral separation between it and the Lynx to 0.2nm, with the Lynx now descending through 2400ft.

The ZONE controller states in their report that "at the time (of the Airprox) no relevant contacts were showing on radar, although subsequently a Leeming APP squawk was seen approximately 2 miles east of the Lynx", which was after the CPA. This is substantiated by ZONE's comments at 1100:08 in reply to the Lynx's Airprox report stating, "*we did lose SSR on that aircraft, it's just popped up now* (on the radar replay the Tutor is 0.6nm NE of the Lynx)." However, given that APP was able to update TI to the Tutor at 1058:57, when 1.6nm separation existed, it is clear that the SSR label was visible at this point.

The Tutor pilot reports that their first sighting of the Lynx occurs at the point where around 200m lateral separation existed with the helicopter above, with the Lynx pilot reporting the same first sighting distance. Given that the Tutor pilot assessed minimum separation as 100m and 4-500ft, it is likely that the pilots became visual with each other immediately prior to the CPA.

[UKAB Note (2): The Grob Tutor passed beneath the Lynx, in between sweeps, moments after 1059:50, with 700ft separation evident on Mode C before the 'merge' and 500ft afterwards as the Grob turns away to the NE.]

In terms of ATSOCAS provision to the Tutor, APP provided timely and accurate TI to the Tutor that should have enabled the pilot to visually acquire the Lynx and to take appropriate action. In this case, the Tutor pilot seems to have spotted the Lynx relatively late, at approximately the same point as the Lynx PNF spotted the Tutor and commanded the overshoot.

At the last confirmed point that the Tutor's SSR label was visible to ZONE and APP, given the relative altitudes of the aircraft, there was nothing to suggest to ZONE that a definite risk of collision existed between the Lynx and Tutor. Therefore, in keeping with the terms of a BS there was no requirement for them to pass a warning to the Lynx pilot on the Tutor.

Throughout the incident sequence the Tutor appears to have maintained its altitude, albeit that for a short period it indicates 1900ft. However, the Lynx began a descent which brought it into confliction with the Tutor at the point when only 0.6nm lateral separation existed. It is likely, given the Lynx pilot's statement over cockpit workload and the RQHI's report on reduced visibility from the cockpit, that these factors precluded the Lynx crew from visually acquiring the Tutor prior to commencing their descent.

In this instance, the ATM related safety barriers worked appropriately in that the pilot in receipt of the TS received timely and accurate TI to allow them to visually acquire the conflicting ac. However, the Tutor pilot was unable to sight the Lynx until relatively late. That said, the Tutor pilot felt that no avoiding action was required having spotted the Lynx, which was at or about the point when the Lynx PNF sighted the Tutor.

THE WESTLAND LYNX Mk 7 PILOT'S UNIT comments that the restricted view from the Lynx cockpit coupled with the requirement for the LHS ac commander to have his 'eyes-in' in order to record the details of the airtest, coupled with the difficulty in visually identifying another aircraft when looking down from above resulted in this Airprox. Action has been taken at local level requiring a rear-seat crew to be carried on all airtests in order to assist with lookout.

HQ JHC comments that the avoiding action taken by the Lynx crew was effective but it is clear that this potential conflict could have been prevented if each pilot had spotted the other ac earlier. It would appear that the Tutor pilot would have been forced to take action if the Lynx crew had not spotted him first, however the Tutor had in fact seen the Lynx and decided that there was no conflict. In hindsight, the most sensible course of action would have

been for the Lynx pilot to upgrade the air traffic service, knowing that he was particularly busy in the cockpit, despite the potential for a more cluttered frequency – he could subsequently decide to downgrade the service if necessary. The action of the Lynx pilot's unit requiring an extra rear-crewmember to be carried on all airtests to assist with lookout is commended. It is also recommended that the unit pilots are reminded that requesting an upgrade in traffic service is usually a sensible precaution during periods of high cockpit workload.

HQ AIR (TRG) comments that the Tutor was operating under a TS in compliance with 22 (Trg) Gp Orders. It is unfortunate that the pilot chose to operate quite so close to the Lynx's reported position but it is not known what his airspace or weather considerations were. In mitigation, the TI received would have indicated that the Lynx was tracking N or NE and he may have reasonably assumed that his WSW track would keep him clear. As it was, in the minute preceding the CPA, there was no TI as the Lynx turned into confliction. HQ Air agrees that the sighting probably occurred just before CPA, probably as the Tutor pilot commenced a turn to the right, with the Lynx approaching from above just forward of the wing. The ongoing fleet embodiment of a Traffic Alerting System to the Tutor should reduce the likelihood of a recurrence.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

The HQ AAC pilot Member briefed the Board that a Lynx airtest is a very intensive sortie, especially during autorotation manoeuvres, demanding the fullest concentration of the pilots who must be very careful indeed not to overspeed the rotor. Consequently, the Lynx pilots' attention here would have been closely focussed within the cockpit during the 'auto', in line with the reporting pilot's account, with a potentially adverse impact on lookout. It was plain that the Lynx pilots had not spotted the Grob Tutor as they turned about at the northern extremity of their racetrack, and were unaware of its presence below them, just over 0·6nm away when they initiated the descent the radar recording revealed. Furthermore, the Lynx crew had not mentioned to the controller that they would be conducting autorotation manoeuvres on the RT, merely *"..operating up to 3000 feet…".* The AAC pilot Member suggested that a call to ATC on the landline beforehand to brief the Supervisor and explain in more detail the sortie content might have been advantageous. Moreover, he concurred with the Command's view that a TS would have been beneficial to supplement the Lynx crew's lookout and assist them with their responsibilities to 'see and avoid' other traffic. Under the BS they had requested there was no compunction on ZONE to track the helicopter or provide any form of TI unless they had asked for an upgrade to their ATS. Controller members agreed that a TS would have given the Lynx crew much better SA; if the additional RT transmissions associated with a TS were a distraction, the Lynx crew could have opted for this service for the limited duration of their auto rotation manoeuvres. It was disappointing that the crew had not given ZONE more insight into what they were doing. As it was, the Lynx P-I-C eventually spotted the Grob below him during the 'auto', in time to ensure that robust avoiding action could be initiated by the PF and vertical separation maintained as their tracks crossed.

Conversely, the Grob pilot had obtained a TS from APP and had been given TI three times about the Lynx, the last transmission advising that was it 2nm away to the NW and over 1000ft above him. Whilst APP would not have known the Lynx was about to descend, this TI was ultimately misleading. It lacked the important detail of the helicopter's course; moreover, the Lynx subsequently turned R about into confliction. Understandably, the Grob pilot might not have been at all concerned by another ac flying 1000ft clear above, but the TI gave no indication whatsoever of the helicopter's projected flightpath and did not 'paint the whole picture'. Members were adamant that updated TI was warranted when the Lynx headed toward the Tutor and the geometry of the situation changed so significantly. Whilst the radar recording did not replicate exactly what was displayed to the Leeming controllers at the time, it seemed that both ac were in solid radar coverage and had both been displayed to APP only 1min before the CPA when the last transmission of TI was given. Indeed, if either ac had faded from coverage that should have been of concern to APP and might have presaged a warning. A civilian controller Member was also concerned that the two controllers, operating in close proximity from the same ACR and both with trainees, were not liaising more closely about their traffic. The two positions were working only one flight each when the Airprox occurred and the Member perceived that a more proactive stance by the controllers involved might have averted this Airprox.

The Grob Tutor pilot was evidently not concerned when he saw the Lynx crossing ahead, as by that time the Lynx crew had already levelled off clear above him. No avoiding action was therefore warranted on his part. The Board

concluded, therefore, that this Airprox had resulted from a conflict in the Vale of York AIAA, resolved by the Lynx crew. While debating the inherent Risk one Member opined that the dynamic nature of the encounter, coupled with the late sighting, followed by the robust avoiding action taken by the Lynx crew as they overshot from the autorotation had compromised the safety of these two ac. However, the overwhelming view of the Members was that the Lynx crew's prompt action on sighting the Tutor had ensured that over 500ft of vertical separation was preserved after they had established level flight, which the Board concluded had effectively removed the Risk of a collision.

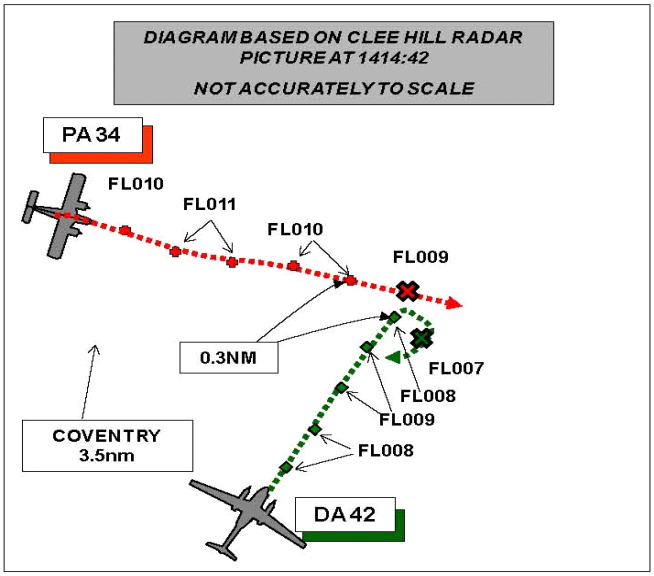
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Conflict in the Vale of York AIAA resolved by the Lynx crew.

Degree of Risk: C

AIRPROX REPORT NO 2011016

Date/Time:	7 Mar 2011 1415Z	
Position:	5219N 00128W (3·5nm S Coventry - elev 267ft)	
Airspace:	LFIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	DA42	PA34
Operator:	Civ Trg	Civ Trg
Alt/FL:	1320ft (QNH 1028mb)	NR
Weather:	VMC CLOC	NR
Visibility:	>10km	NR
Reported Separation:	NR	NR
Recorded Separation:	200ft V/0·3nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE DA42 PILOT reports conducting a CPL skills test from Coventry and in communication with Coventry APP using an 'Exam' callsign, squawking with Modes S and C. The visibility was good and the ac was coloured white with nav, landing, taxi and strobe lights all switched on. The candidate was the handling pilot and they were joining the cct from the Wellesbourne direction having been given a downwind join for RW23. Other traffic [the subject PA34] on frequency was conducting a standard missed approach and was informed of their position and reported that they had his ac in sight.

About 10 sec later when they were 2.5nm S of the airfield, heading 050° at 130kt and 1320ft QNH, he visually acquired the PA34 1nm away and it initially appeared that it would pass clear of them and slightly above. However, it then started to descend slightly and it appeared to be either on a collision course or about to pass very close. As the candidate [HP] was not taking any avoiding action he took control and executed a steep RH turn and they passed behind the PA34 after a 360° turn. He could not judge how close they passed as their wing and engine completely obscured the PA34. Due to his avoidance, he assessed the risk as low to medium. He noted that on initial sighting of the PA34 he anticipated the commander would comply with Rule 9(3) [the ac which has the other on the right shall give way] which he estimated required a 10° R turn by the PA34 to avoid a conflict.

THE PA34 PILOT declined to submit a report.

UKAB Note (1): The circuit direction for RW23 at Coventry is left.

ATSI reports that this Airprox occurred at 1414:32, in Class G airspace, 3.6nm to the S of Coventry Airport, just outside the Coventry ATZ which comprises a circle of radius 2.5nm, centred on RW 05/23 and extending to a level of 2000ft aal (Aerodrome elevation 267ft). Coventry is situated below the Birmingham CTA, Class D airspace, base altitude 1500ft.

The PA34 was an IFR training flight inbound to Coventry from Oxford and was in receipt of a TS from Coventry Radar. After the completion of a radar vectored ILS approach to RW23, the PA34 pilot conducted a standard MAP published as:

'Climb to 1500. Straight ahead to 765 or I-CT DME 1 outbound whichever is later, NO DME; straight ahead to 1265, then turn left to track 179o to intercept VOR DTY R304 towards DTY VOR. When within DTY DME 14 (HON DME9 or more) turn left to NDB(L) CT and continue climb to 2000 or as directed.'

The DA42 was returning to Coventry Airport from the SSW after a local VFR (CPL skills test) exam flight in the vicinity of Wellesbourne Mountford, situated 12nm SSW of Coventry.

The Coventry primary radar data source is the local S511, with an SSR feed from NATS, Clee Hill radar. The Radar controller was providing an Approach Radar Control service with a 30nm range displayed on the radar.

CAA ATSI had access to RTF and radar recordings, together with reports from the controller and DA42 pilot; no report was available from the PA34 pilot.

The METAR was:

EGBE 071350Z 09004KT 050V140 CAVOK 09/M00 Q1029=

At 1218 the DA42 departed VFR from Coventry towards Wellesbourne, in receipt of a BS, in order to complete a CPL skills test. The ac flight progress strip indicated that the ac transferred to Wellesbourne Info at 1220

At 1400:46, the PA34, called Coventry Radar, squawking 4376, in receipt of information 'Uniform' and heading 350°; at the request of the pilot, a TS was agreed, with vectors for the ILS RW23 and QNH 1029. Following an ILS the PA34 pilot requested a standard MAP towards DTY and then a return to Oxford.

The PA34 was given descent to an alt of 2000ft and, at 1406:02, the Coventry Radar controller passed the missed approach instructions, "(PA34)c/s on the go around it'll be a standard missed approach procedure until one four D M E from Daventry initially not above altitude one thousand five hundred feet". The PA34 pilot's initial readback needed to be clarified by the controller and a correct readback was obtained. The PA34 was vectored onto the ILS and at 1407:38, the pilot reported localiser established. The PA34 pilot was given further descent on the glide path and asked to report at 4nm DME. At 1409:53, as the PA34 reached 3.9nm from touchdown, the controller instructed the PA34 to continue the approach and, at 1410:22 he passed go around instructions, "(PA34)c/s cleared for a low approach report going around off runway two three one three zero at three knots".

At 1410:48, the DA42 estabished contact with Coventry and requested rejoin, "(DA42)c/s just ???? from Wellesbourne er to er Coventry for rejoining"; the radar recording showed the DA42, 10nm SSW of Coventry squawking 7000. Radar responded, "Roger (DA42)c/s route to the field VFR QNH one zero two nine"; this was correctly acknowledged and the controller allocated a squawk of 0260 which was correctly acknowledged. At 1411:38, the DA42 transponder code changed to 0260 while the ac was 9nm SSW of the airfield.

Although not considered to be a factor in the Airprox, it is noted that the DA42 pilot did not request, nor did the controller specify, a level of service. On being informed of this the controller was suprised, as he always attempts to specify a level of service. The ac's flight progress strip indicated that a BS was being provided and the controller considered that the outbound agreement 2hr previously might have been a factor.

At 1412:08, the PA34 reported going around.

At 1412:22 Radar passed joining instructions to the DA42, "(DA42)c/s position downwind lefthand runway two three the Q N H one zero two nine" , this was acknowledged correctly and at 1412:42 Radar passed TI, "Roger information for you a P A thirty four just going around off Runway two three standard missed approach"; the DA42 pilot responded, "Roger looking".

The controller was asked whether he considered that the VFR pilot would have been familiar with the standard MAP and, although he acknowleged that better information could have been passed, he considered that the exam instructor would have been familiar with the standard missed approach.

At 1412:55, Radar passed TI to the PA34, "(PA34)c/s traffic er just called me inbound to the field from the southwest it's a D A forty two VFR er level unknown" and this was acknowledged by the pilot; the radar recording indicated that the DA42 was at FL009 with the PA34 was passing FL008 on the climb out.

At 1413:07, Radar advised the PA34, "...that contact is believed to be in your left eleven o'clock at a range of three miles" and this was acknowledged by the pilot. At 1413:12, the radar recording showed the PA34 commencing a left turn off the RW centreline; the distance between the ac was 4.6nm.

At 1413:32, Radar updated the PA34 on the position of the DA42, "(PA34)c/s that traffic converging from your er righthand side now right one o'clock a mile and a half about to join downwind indicating one thousand three hundred feet unverified". The PA34 pilot responded, "Roger we're visual (PA34)c/s". The radar recording showed the range between the ac was 3.7nm.

At 1413:45, the DA42 was advised, "(DA42)c/s the PA thirty four just gone around on your lefthand side is visual with you". The DA42 pilot replied, "Roger that er (DA42)c/s". The radar recording showed the distance between the ac was 2.7nm, with the PA34 in a left turn indicating FL011 (converts to altitude 1500ft on QNH 1029, with 1mb equal to 27ft) and the DA42 indicating FL009 (1300ft). The DA42 pilot's report indicated that the PA34 was sighted at about this time, (i.e. 10sec after the PA34 pilot's sighting report); the report gives the first sighting distance as 1nm. At 1414:03, the DA42 was transferred to the TWR frequency and the radar recording showed the ac converging at a distance of 1.7nm with a vertical separation of 200ft.

The DA42 pilot's report indicated that the pilot initially considered that the PA34 would pass clear, but stated that it started to descend. At 1414:24, Mode C showed the minimum vertical separation between the two ac decrease to 100ft as the PA34 Mode C changed from FL011 to FL010, with the DA42 indicating FL009. The next radar return showed the vertical separation as 200ft.

At 1414:32, the radar recording showed the two ac in close proximity, with the PA34 crossing the DA42 from left to right and 200ft above. At 1414:41 the radar recording shows the DA42, 0.3nm S of the PA34, commencing a right hand orbit, with the respective ac Mode C readouts indicating a vertical distance between the ac of 200ft. The DA42 completed the orbit and then set course at 1415:05 and the first call to the TWR was made at 1415:12.

The controller was asked if he considered giving the PA34 a heading, as a method of traffic management under a TS; he indicated that had the pilot requested a DS, he would have applied a more positive method of control; however, in formulating a plan in CAVOK weather and the (training) PA34's request for missed approach, he was content that he passed appropriate TI and this TI resulted in the PA34 pilot aquiring visual contact with the DA42.

The controller was also asked whether he thought that it might have been appropriate to retain control of the DA42 until after the two ac had passed, he indicated however, that the DA42 was under a BS, appropriate TI had been passed and there was a need to transfer it to TWR for integration into the circuit.

In good weather conditions, the PA34 had requested a missed approach procedure as part of a training exercise; it was in receipt of a TS and the controller passed TI regarding the DA42, which resulted in the PA34 pilot aquiring the DA42 visually.

MATS, Part 1, Section 1, Chapter 11, states:

'A Traffic Service is a surveillance based ATS, where in addition to the provisions of a Basic Service, the controller provides specific surveillance derived traffic information to assist the pilot in avoiding other traffic. Controllers may provide headings and/or levels for the purposes of positioning and/or sequencing; however, the controller is not required to achieve deconfliction minima, and the avoidance of other traffic is ultimately the pilot's responsibility.

The controller shall pass traffic information on relevant traffic, and shall update the traffic information if it continues to constitute a definite hazard, or if requested by the pilot. However, high controller workload and RTF loading may reduce the ability of the controller to pass traffic information, and the timeliness of such information.'

The DA42, in receipt of a BS, was passed TI regarding the PA34 prior to its transfer to the TWR frequency. MATS Part 1, Section 1, Chapter 11, Page 4, Paragraph 3.1.1, states:

'A Basic Service is an ATS provided for the purpose of giving advice and information useful for the safe and efficient conduct of flights. This may include weather information, changes of serviceability of facilities, conditions at aerodromes, general airspace activity information, and any other information likely to affect safety. The avoidance of other traffic is solely the pilot's responsibility.'

and Part 1, Section 3, Chapter 1, Page 5, states:

'8.1 Approach Control shall retain all arriving VFR flights under its jurisdiction until appropriate traffic information on IFR flights and other VFR flights has been issued and co-ordination effected with Aerodrome Control.

8.3 Approach Control must ensure that VFR flights are transferred in sufficient time for Aerodrome Control to pass additional information in respect of local traffic.'

The Coventry Radar controller passed TI to both ac and the PA34 reported seeing the DA42.

The written report from the DA42 pilot, indicated that after seeing the PA34, the pilot initially considered the PA34 would pass clear, but became concerned when the PA34 started to descend slightly. From the radar recording and the PA34 pilot's report, the data available would indicate that the PA34 appeared to descend momentarily, just prior to the Airprox occurrence.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the DA42 pilot, transcripts of the relevant RT frequencies, radar recordings, reports from the air traffic controller involved and reports from the appropriate ATC authorities.

The Board considered the PA34 pilot unprofessional in declining to submit a report, thereby limiting the investigation.

The Board was briefed on the complexities of the airspace and MAP for RW23 at Coventry. Members were also briefed by the CAA Flight Ops Advisor that, although an Examiner is Captain of the ac and ultimately responsible for its safety, he has very little other operating responsibility and it is assumed the candidate is fully responsible for all tasks concerning the operation of the ac.

Although engaged on differing activities, with both pilots in receipt of an ATS while in the vicinity of Coventry, this was essentially an encounter in Class G airspace where the ROA and the 'see and avoid' principle applied. Further, since the PA34 had the DA42 on its right throughout, notwithstanding that it was under IFR and the DA42 was VFR, the former should have given way. Consideration of why the PA34 crew elected to 'stand on' having seen the DA42 was limited to conjecture due to the absence of a report from the pilot. A Member suggested that since the PA34 was an IFR training flight, the HP (student) had probably been flying under an IF hood. The transcript however, confirmed that the crew called visual with the DA42 suggesting that it must have been the instructor/safety pilot who was visual with it and it was his responsibility to initiate visual avoidance, despite that they were flying an IFR MAP. Bearing in mind airspace constraints such avoidance would have had to be lateral and behind the DA42. He went on to say (considering the DA42) it is always a fine line deciding whether or not your ac has been seen when exercising one's right/obligation to 'stand on'; in his view it is better to give way earlier rather than later.

Controller Members agreed that the APR Controller had more than fulfilled his obligations to both ac under an Approach service. In any case, probably as a result of the information he passed, both pilots had called visual with each other's ac. Without any knowledge of the other ac in the cct/pattern Members could not agree whether the DA42 could have been held by APR until after the two ac had crossed, thereby allowing the controller to separate them.

Members observed that this incident could easily have been avoided had the PA34 pilot made a small track alteration soon after he first reported that he was visual with the DA42.

Notwithstanding the factors above, when the DA42 Examiner considered that a collision risk was imminent, he took effective action by orbiting the ac to negate that risk without compromise to the safety of either ac.

PART C: ASSESSMENT OF CAUSE AND RISK

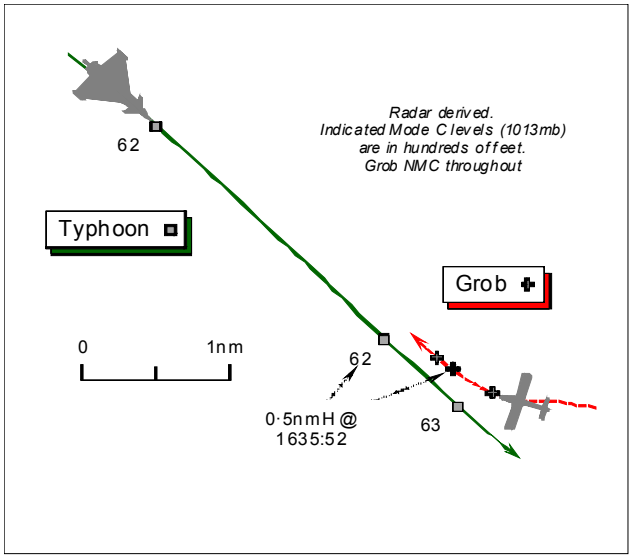
Cause: The PA34 flew close enough to cause the DA42 crew concern.

Degree of Risk: C.

AIRPROX REPORT No 2011017

AIRPROX REPORT NO 2011017

Date/Time:	8 Mar 2011 1636Z	
Position:	5246N 00013E (15nm NW of Marham)	
Airspace:	London FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Typhoon	Grob Tutor TMk1
Operator:	HQ Air (Ops)	HQ Air (Trg)
Alt/FL:	6000ft	5000ft
	RPS (1007mb)	RPS (1007mb)
Weather:	VMC CLAH	VMC CLAH
Visibility:	5km	20km
Reported Separation:		
	500-1000ftV/200m	500ft V/1000yd H
Recorded Separation:		
	0·2nm H [~370m]	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE EUROFIGHTER TYPHOON PILOT reports that he had departed on a VFR training flight from Coningsby to Marham for a Practice Diversion (PD) and was receiving a TS from Coningsby APP. The assigned squawk of A1771 was selected with Mode C; neither TCAS nor Mode S is fitted.

After levelling at 6000ft BARNSLEY RPS (1007mb) some 500ft above haze in VMC, steady heading 140° at 400kt, a contact was called at 12 o'clock - 10nm. Unable to gain radar contact on the reported traffic he requested an update from ATC who responded the other ac was '12 o'clock - 3nm, no height information'. Believing it would be safer to check his sensor and look out rather than turning belly-up to an ac closing at high speed from ahead, he split his scan initially from the radar display to outside the cockpit, then focused just outside in an attempt to gain 'tally' and avoid a possible collision. He was unable to detect the reported traffic until out of his peripheral vision he saw a white flash passing his ac to port. He estimated that the other ac – a low-wing single piston-engine propeller-driven light ac coloured white with a blue stripe down the fuselage - passed about 200m away down his port side and some 500-1000ft below him with a 'medium' Risk of collision.

The Sun was low but 30-40° W of the reported ac's 'angle of arrival'. More significant was that he was flying just above the haze layer and he believes the light aircraft was in it. On seeing the other ac – the Grob Tutor - he waggled his wings although the Grob had now passed abeam but received no response. Advising APP that he might wish to report an Airprox, he asked for his position to be noted - 5247N 00012E - and continued with his sortie without further incident.

THE GROB TUTOR TMK1 PILOT reports that he was flying a dual training sortie in VMC and listening out on the Sector E frequency of 279·725MHz; he was not in receipt of an ATS. A squawk of A2641 was selected with Mode C; elementary Mode S is fitted, TCAS is not.

While in transit in a NW'ly direction between 5000 and 5500ft BARNSLEY RPS, heading 300° in the vicinity of Holbeach, he saw a Typhoon ac in his 1 – 1:30 position at a range of about 2nm, some 500ft above his transit altitude. He had time to make a conscious decision that no avoiding action was necessary. The Typhoon was crossing from R – L flying straight and level and passed through his 12 o'clock at range of about 1000yd and 500 feet above his aeroplane, the pilot rocking its wings to show that he had seen him. He assessed the Risk as 'low'.

Weather conditions were such that visibility was excellent above a haze layer which extended from the surface to 3500ft. His aeroplane as a white/blue colour-scheme and the HISLs and landing lamp were on.

THE CONINGSBY APPROACH CONTROLLER (APP) reports that with no inbound traffic and one transit on VHF, APP was band-boxed with DEPs and LARS. He received a prenote from GND for a Typhoon flying from Coningsby to Marham for a PD at 6000ft; the Typhoon was released and the VHF traffic handed over. Following the Typhoon pilot's initial call the ac was identified and the flight placed under a TS, 'reduced' due to radar clutter and the pilot requested to report level at 6000ft BARNSLEY RPS (1007mb). As the Typhoon closed to within 30nm of Marham he commenced the handover, observing an A2641 squawk in the Typhoon's 12 o'clock at 10nm, opposite direction, indicating 1000ft below so he called the traffic. The Marham controller confirmed he heard the TI and they completed the handover. The other traffic was then only 4nm away from the Typhoon and he informed the SUP that he would keep the Typhoon on his frequency until it was clear of the other ac. The Typhoon pilot then called for an update of the traffic and so he reported it at 12 o'clock - 3nm - opposite direction - no height information, as the other ac's squawk was no longer displayed on either the Scampton or Cranwell SSR feeds. As the Typhoon passed the other ac he was asked by the Typhoon pilot to update the position again; he informed him that he was now clear of the traffic and the pilot requested him to note the position and time as he may be filing an Airprox.

THE CONINGSBY ATC SUPERVISOR (SUP) witnessed the event and provided a report which corroborated that of APP, confirming that the traffic intensity was low and that the Unit was fully serviceable. As the Typhoon pilot was not visual with the conflictor, APP elected to keep the Typhoon on frequency until it was clear of the confliction. The Typhoon pilot called the possible Airprox as he overflew the contact.

He added that the A2641 squawk is the ATC Cranwell conspicuity code for Cranwell and Barkston Heath traffic entering, exiting or operating below the Cranwell Agreed Airspace. This in conjunction with the pilot's description of the aircraft led him to believe the reported ac was a Grob Tutor operating out of either Cranwell or Barkston Heath.

HQ 1GP BM SM reports that this Airprox occurred between a Tutor operating VFR transiting NW'ly between 5-5500ft in the vicinity of Holbeach and a Typhoon transiting to Marham for a PD in receipt of a TS from Coningsby APP.

The Typhoon pilot reports 5000m visibility flying 500ft above a layer of haze, whilst the Tutor pilot reports excellent visibility above a layer of haze which extended from the surface to 3500ft. Moreover, the Typhoon pilot reports that 'the sun was low and at an angle of 30-40 degrees right of the contact aircraft's angle of arrival. This reduced visibility.'

As APP handed the Typhoon over to Marham they noticed the Tutor and at 1634:32 passed accurate TI stating, "*Traffic 12 o'clock, 10 miles manoeuvring, indicating 2 thousand f…err correction 1 thousand feet below.*" At this point the Tutor was approximately 12.1nm SE of the Typhoon indicating 4800ft, with the Typhoon indicating 6300ft Mode C. The Typhoon pilot stated that he attempted to acquire the Tutor visually and by using radar to no avail, prompting him to request an update of TI.

At 1634:51, the SSR return for the Tutor disappears from the radar replay, which accords with the statement made by APP that the SSR label 'was no longer displaying on either the Scampton or Cranwell SSR feeds.' Coningsby ATC has access to both these SSR sources and sets up alternate consoles within the ACR to display each SSR feed.

At 1635:07 the handover between Coningsby was complete and at 1635:29, the Typhoon requested an update of the TI which APP passed as, "*traffic is now at 12 o'clock, 3 miles, opposite direction, no height information* [the radar replay shows 4.1nm separation]." The Typhoon pilot states in his report that after this update he 'believed it would be safer to check my sensor and look out rather than turning belly-up to an aircraft closing at high speed in a zone broadly considered to be 12 o'clock.'

The Tutor pilot reports seeing the Typhoon 'in approximately the 1 to 1.30 position at a range of approximately 2 miles, some 500ft above'. He had time to make a conscious decision that no avoiding action was necessary.' The Typhoon pilot reports that his first sighting of the Tutor was in his peripheral vision as the ac passed 200m laterally down the port side, between 500-1000 feet below his ac.

[UKAB Note (1): The CPA occurs as the two ac pass port to port, on broadly reciprocal tracks, with a track displacement in between sweeps of about 0·2nm just after 1635:52.]

In this instance, the ATM related safety barriers worked appropriately in that the pilot in receipt of the TS received timely and accurate TI to allow him to visually acquire the conflicting ac or to take appropriate action if he was unable to do so. In this case, having received TI the Typhoon pilot decided to maintain his track in order to try to visually acquire the Tutor; however, his scan was affected by the weather conditions, the relative position of the Tutor and, arguably, the size and colour scheme of the Tutor. The Tutor pilot with the haze below them had the 'easier' scanning task which enabled the crew to visually acquire the Typhoon and to decide that no avoiding action was required.

HQ AIR (OPS) comments that aircraft operating VFR in Class G will occasionally become proximate. The Typhoon pilot could have adjusted his heading early to maximise separation rather than relying on the expectation that he would definitely get visual.

HQ AIR (TRG) comments that the Tutor pilot reports sighting the Typhoon is good time and being content that he had been sighted and avoided by the Typhoon pilot. However, it appears that the sighting was too late to have effected avoiding action had it been necessary. By contrast, the Tutor would have retained some ability to carry out any such avoiding action. Whilst reporting that no avoiding action was necessary, it appears from the radar trace that from the reported sighting at 2nm, a turn to the right was initiated that prevented a direct overflight by the Typhoon, reducing the risk further.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controller involved and reports from the appropriate ATC and operating authorities.

The Typhoon pilot had received prompt and accurate TI from Coningsby APP under the TS, which had ultimately enabled him to sight the Grob Tutor, albeit a fleeting glimpse as it passed 200m away some 500-1000ft below his ac he reported. The Board agreed that the controller had provided a good level of TI here and had conscientiously elected to retain the flight on his frequency during the period that these two ac were at close quarters, which was wise. As it was, the Typhoon pilot was unable to detect the Tutor on radar and was thus entirely reliant on TI from APP and visual sighting to avoid the other ac. Given the difficulties inherent in visually acquiring small light ac, Members agreed that positive action at an earlier stage would have been preferable. The HQ Air fast jet pilot Member reiterated the Command's view that it might have been wiser if the Typhoon pilot had just jinked 10-15° to the R to ensure that he passed clear rather than relying on visual sighting alone and other pilot Members concurred.

Although the Typhoon pilot reports that at 6000ft RPS he was flying just above a layer of haze, it is often difficult to determine the limits of a haze layer and it would seem he was further above it than he might have thought. The Grob pilot, flying at a maximum of 5500ft RPS, reported he was flying in VMC with 20km visibility; he had sighted the larger Typhoon from a range of 2nm and was not concerned as he was 500ft below it and did not consider that any avoiding action was warranted whilst he watched it cross about 1000yd (0·5nm) ahead. This was supported by the radar recording, although it seemed that the Grob had indeed turned to the R as the ac closed, which did affect the overall geometry of the encounter. It was unfortunate that the Grob's SSR was lost just before the encounter and it was not clear why this was so because it had been clearly displayed just moments beforehand when the TI was issued at 10nm. In the absence of the Grob's Mode C data it was not possible to verify the vertical separation independently. Nevertheless, both pilots reported it to be not less than 500ft, which was considered to be a safe margin. The Board concluded, therefore, that this Airprox had been the result of a sighting of the Grob Tutor by the Typhoon pilot, but with 500ft vertical separation clear below there was no Risk of a collision.

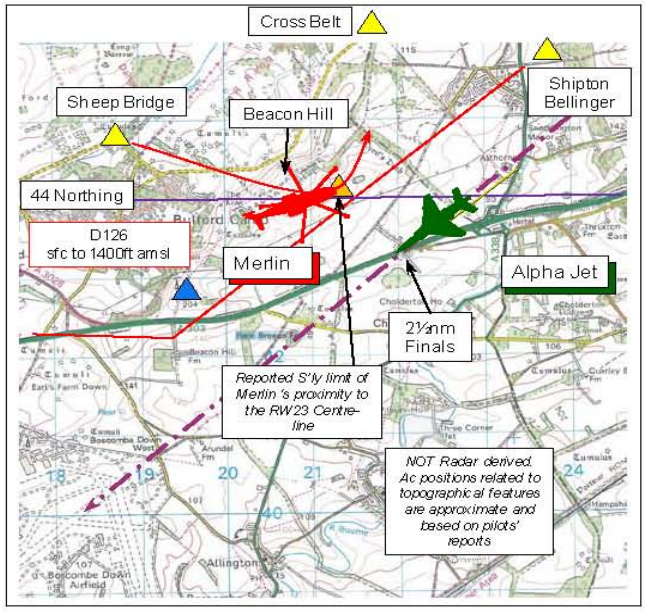
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Sighting Report.

Degree of Risk: C.

AIRPROX REPORT NO 2011018

Date/Time:	9 Mar 2011 1256Z	
Position:	5111N 00141W (2½nm NE of Boscombe Down A/D- elev 407ft)	
Airspace:	Boscombe MATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Alpha Jet	Merlin
Operator:	MoD FTR	HQ JHC
Alt/FL:	800ft	300ft
	QFE (1002mb)	agl
Weather:	VMC NR	VMC CLBC
Visibility:	10km	8km
Reported Separation:		
	200ft V/800ft H	400ft V/700m H
Recorded Separation:		
	Not recorded	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE DASSAULT-DORNIER ALPHA JET PILOT reports he was the ac commander occupying the rear seat of the ac whilst conducting an instrument flying training sortie with a student test pilot in the front seat. During the period of the Airprox, the student was the PF on a simulated single-engine SRA to RW23 at Boscombe Down using standby instruments and he was monitoring his student's instrument flying during the approach with occasional visual lookout searches.

From about 3nm from touchdown his student levelled the ac at 800ft QFE (1002mb) just above the MDH [770ft], whilst continuing in level flight towards the missed approach point [MAPt at 2nm from touchdown]. TALKDOWN was providing a TS during the approach and at about 2½nm from touchdown, whilst heading 238° at 140kt, they received an alert from the TALKDOWN controller of Salisbury Plain Range traffic in the Range [D126] to their R. He searched in that direction but saw nothing; about 5sec later he searched again and then saw a Merlin helicopter at a range of about 800ft in what appeared to be a hard L turn, climbing slightly, just aft of their right wing. Simultaneously there was a call from TALKDOWN that there was range traffic that had passed Beacon Hill and was closing towards them; Beacon Hill is a significant feature 1nm N of the centreline and just inside the range area. By the time he saw the Merlin the actual risk of collision had passed as the helicopter was aft of their 3-9 o'clock line and its pilot appeared to be taking evasive action. He estimated that the Merlin passed 800ft horizontally down their starboard side and 200ft vertically below them. Because of their poor manoeuvrability in the approach configuration, the late alert, the late visual sighting and the proximity of the other ac, he assessed the Risk of collision as 'high'.

THE AGUSTA WESTLAND MERLIN HC3 PILOT reports that he was flying a VFR training sortie returning to Benson and in RT contact with Salisbury OPS [an A/G Stn] on 122·75MHz. The white upper and lower strobes, together with the two landing lights were all on. A squawk of A7002 [Danger Areas General] was selected with Mode C. TCAS is not fitted.

His routeing from D123 to Andover was via Sheep Bridge, Cross Belt and Shipton Bellinger at 300ft agl flying at 90kt and after passing Sheep Bridge he routed though D126 around the edge of Bulford Range (BDA), which was active. While in a port turn for Cross Belt [NW of Shipton Bellinger] the crew saw an Alpha Jet, on approach to Boscombe Down, 400ft vertically above his ac and assessed by the crew to be 'offset' 700m laterally. The most S'ly position of his turn was at OS Grid SU 2130 4400, his flight path remaining to the N of the electricity transmission line running ENE-WSW. At Cross Belt they called Boscombe ZONE for further clearance, when the crew was informed that they had exited previously D126, which was noted, however, it was not believed to be correct.

AIRPROX REPORT No 2011018

THE BOSCOMBE DOWN TALKDOWN CONTROLLER (TALKDOWN) reports that whilst controlling an Alpha Jet on an SRA to RW23 at Boscombe Down an ac contact – the Merlin – appeared, initially within the confines of D126. This was as the Alpha Jet was approaching, he thought, the 3½nm point on the SRA with more than 1.5nm lateral separation. The Merlin within D126 was called to the Alpha Jet, and as SSR Mode C information was available the indicated level was also passed; at that point the helicopter was indicating between 200-300ft below the Alpha Jet. As the SRA continued the Merlin flew closer to the southern edge of D126 and briefly indicated outside the range. As the Alpha Jet approached Beacon Hill 1-1.5 miles from the runway [centre-line] the Merlin helicopter was shown on the radar display within 0.5nm laterally and 200ft vertically. At that point the TOWER controller came through on the radar clearance line with an additional warning about the Merlin infringing the approach path, which was immediately passed to the Alpha Jet.

HQ 1GP BM SM reports that this Airprox occurred between an Alpha-Jet on a simulated single-engine SRA, in receipt of a TS from Boscombe Down TALKDOWN, and the Merlin HC3 routeing VFR through EGD126. The Airprox is not shown on recorded radar, consequently, the investigation has relied upon the reports raised by the aircrew, TALKDOWN and the RT tape transcript.

The point stated by the Merlin crew as their most southerly position during the turn at SU 2130 4400, lies about 0·6nm NW of the centre-line for Boscombe's RW23 [at 2½nm Finals]. The south-eastern edge of EGD126 parallels the RW23 centre-line within 5nm of Boscombe aerodrome and lies approximately ½nm N of the RW23 centre-line.

Analysis of the TALKDOWN RT transcript shows that the Alpha Jet remained L of the RW23 centre-line until approximately the 3½nm point and thereafter remained on the centre-line. However, an SRA is a non-precision approach and the ac could have been displaced from the exact RW centre-line, potentially placing it closer to [or further away from] the Merlin.

The TALKDOWN controller states that the Merlin appeared within the confines of D126 as the Alpha Jet was approaching the 3½nm point on the SRA with more than 1.5nm lateral separation. It is more likely the Merlin was around 2nm NE of RW23 threshold. TALKDOWN states that they provided TI to the Alpha Jet approaching the 3½nm point; however, this is not the case and TALKDOWN is referring to the TI that they provided later at 1256:22, "*Traffic right 1 o'clock half mile crossing right left indicating below on the range".* It is reasonable to suggest, given the timing of the 3nm range check given by TALKDOWN [at 1256:06, *"3 miles 9 hundred feet approaching minimum descent height"*, followed by the *"at minimum descent height"* call at 1256:18 and the 2nm call at 1256:36] that the passing this TI occurred at about the 2½nm point, which accords with the Alpha Jet pilot's report.

This inability to accurately recall timelines whilst accurately recalling events is a typical HF issue and is not a concern. However, TALKDOWN goes on to state that 'as the SRA continued the ac within D126 moved closer to the southern edge and indicated briefly outside.'

The DE SPTA Standing Orders for Training Part 4 Management of Salisbury Plain Airspace state that the low level routes within EGD126 pass well to the N of Bulford Camp and are to be followed.

The Alpha Jet pilot states that having received the TI he initially saw nothing but 5 seconds later he 'searched again and saw a Merlin ac in what appeared to be a climbing hard left turn just behind the right wing'. This would have been co-incident with the warning from TWR, re-broadcast by TALKDOWN at 1256:32, '*caution rotary in the undershoot short final, just short of Beacon Hill'*. Whilst it is impossible to determine the exact location of the CPA, given that the position accords with the TI passed by TALKDOWN and the report of the Alpha Jet on the timing of the TI, it is reasonable to suggest that the CPA was at about 2½nm Final to RW23.

Notwithstanding that the Merlin appears to have been off the low-flying route and that the Alpha Jet crew sighted the Merlin late, the timeliness of the TI passed to the Alpha Jet by TALKDOWN requires examination. Given the terrain in that location and the low altitude of the Merlin, there will be a degree of clutter on the SRA display and the Merlin will not have painted until relatively late. Yet it is clear from the detail in TALKDOWN's narrative that they spotted the confliction in a timely manner with around 1.5nm lateral separation. The fact that the provision of TI did not occur until around 29sec later at 1256:22, suggests that TALKDOWN deliberately delayed passing TI until the Merlin posed a definite threat as it approached the boundary of EGD126 and appeared likely to exit the range. Further investigation with Boscombe Down has shown that when utilising the PAR, TI will always be passed in accordance with JSP552; however, the coverage of the PAR within 5nm is restricted and traffic operating in the

southern segment of EGD126 rarely paints on the PAR display. The wider field of view afforded by the SRA display will have enabled TALKDOWN to observe the Merlin earlier. Furthermore, rotary ac are routinely seen operating within the southern section of D126 and it is arguably this knowledge that caused the delay between TALKDOWN identifying the Merlin and passing TI to the Alpha Jet crew, in an attempt to avoid passing nugatory TI.

SATCO Boscombe Down is reviewing local procedures pertaining to the provision of TI to ac executing instrument approaches.

UKAB Note (1): The Mil AIP at AD 2 - EGDM - 1 - 18 – Radar Procedures – includes a note for RW23 that:

'Due to underlying low-level hel routes and obstacle clearance, immediate descent from FAF to MDA [MDH] prohibited. Notional 3° GS mandatory.'

HQ JHC comments that if the Merlin's most southerly position was the stated Grid, and his flight path remained to the north of the electricity transmission line running ENE-WSW, this would not have brought it into conflict with the RW23 extended centreline until reaching a point to the E of Shipton Bellinger (where the electricity lines crosses the extended centreline). It may be the case that as a 'large' helicopter (in comparison to perhaps a Lynx), the Merlin appeared to be closer to the Alpha Jet than it actually was (800ft assessed by the Alpha Jet pilot vs 700m by the Merlin crew). The Grid position given has been assessed by HQ 1 GP BM SM as 0.6nm from the extended centreline at $2^1/_2$nm, which is slightly less than the 'offset' 700m reported by the Merlin pilot. The Alpha Jet pilot did not see the Merlin until it was aft of their 3-9 o'clock line, therefore it is puzzling that the assessed risk of collision was 'high'. However, the late visual sighting caused the Alpha Jet pilot to be concerned about the proximity of the other ac. Having spoken to the reporting Merlin pilot, he is clear that he was on an approved route which did take him close to the extended RW23 centreline, but at no time did he get closer than the Grid as stated on the report. The route from Sheep Bridge to Cross Belt skirts around the impact area for the Bulford Range (BDA) and routes aircraft close to the electricity transmission wires running ENE-WSW. If it is assessed that the Merlin was too close to the extended centreline of RW23, the route (around the Bulford impact area between Sheep Bridge and Cross Belt) should be changed and/or the aircraft should be required to be on a Boscombe Down frequency for coordination purposes. This Airprox may have been prevented by the earlier passing of TI to the Alpha Jet, despite the expectation that the Merlin would not encroach the extended RW23 centreline.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, a transcript of the relevant TALKDOWN RT frequency, a report from the air traffic controller involved and reports from the appropriate ATC and operating authorities.

It was evident from the Merlin pilot's account that he had strayed S of the established SPTA Low Level Route, whilst skirting BDA between Sheep Bridge and Cross Belt and had been in the turn to regain the route just inside the range boundary at Grid SU 2130 4400 when the Airprox occurred. The Board was briefed that the co-ordinates for the Low Level Route turning points are specified in SPTA Orders. Aircraft are required to follow, and remain within 300m of, the road around BDA joining the co-ordinates. These routes had been agreed between SPTA and Boscombe Down and were designed to allow VFR rotary-wing transits in/out of SPTA, whilst causing least disruption to aerodrome traffic and keeping helicopters away from the FAT to RW23. The HQ AAC Member, who was well-versed in air operations on SPTA, opined that the Merlin crew seem to have overshot the route somewhat, but added that it is not easy to distinguish on SPTA maps the exact track to be followed. The HQ 1Gp Advisor was of the view that the helicopter might have been further S than the Merlin pilot had reported, given the location specified in the TI passed to the Alpha Jet crew by TALKDOWN. TOWER was also clearly concerned at the appearance of the Merlin above the ridge line of Beacon Hill, hence the warning to TALKDOWN, who controller Members perceived would have issued a warning as soon as the Merlin was at the limits of D126 marked on the radar video map. The Merlin pilot reports remaining N of the electricity transmission line and that he was flying at the correct transit height of 300ft agl, some 400ft below the Alpha Jet when it was spotted on Final, which was in general accord with the Alpha Jet pilot's reported height just above the MDH. Without recorded radar data illustrating the encounter it was not feasible to be definitive about the actual geometry that obtained here and it was possible to fly outside the Danger Area boundary and still remain N of the power lines further toward Shipton Bellinger. However, the Merlin pilot's given position was consistent with the Alpha Jet pilot's account when he spotted the helicopter in the turn, just drawing aft of the starboard wing as they passed through 2½nm from touchdown 'on centre-line'. Members concurred that the Merlin as a large helicopter might have appeared closer

than it was, but the significant difference between the Alpha Jet pilot's estimate of separation at 800ft/243m and that of the Merlin pilot at 700m could not be resolved independently without radar data. However, the helicopter pilot's manoeuvre was to regain the route towards Cross Belt and not the evasive action that the Alpha Jet pilot perceived at the time. It seemed that this was an unintentional excursion from the route by the Merlin crew that had been spotted by ATC at the critical moment and the overall procedure seemed to be generally sound. Following an extensive debate the Board agreed unanimously that this Airprox had resulted because the Merlin crew flew close enough to cause the Alpha Jet crew concern.

Turning to the inherent Risk, the Alpha Jet crew had received a warning of the presence of the Merlin and had spotted it as it was turning away to the L, behind the starboard wing, away from their ac and probably at about the closest point. It was evident that the Merlin pilot intended to remain N of the electricity transmission line, at low-level, until he crossed beneath the FAT/notional 3°glidepath in the vicinity of Shipton Bellinger. This, coupled with the sighting of the Alpha Jet by the Merlin crew convinced the Board that no Risk of a collision had existed in the circumstances reported here.

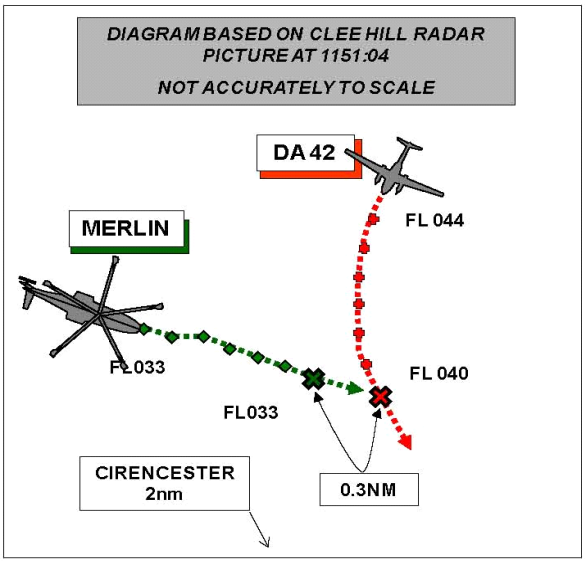
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Merlin crew flew close enough to cause the Alpha Jet crew concern.

Degree of Risk: C.

AIRPROX REPORT NO 2011019

Date/Time:	15 Mar 2011 1151Z	
Position:	5146N 00156W (2nm N Cirencester)	
Airspace:	Lon FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Merlin	DA42
Operator:	HQ JHC	Civ Comm
Alt/FL:	3000ft (QFE 1003mb)	4000ft (1013mb)
Weather:	VMC CLAC	VMC
Visibility:	10km	NR
Reported Separation:	300ft V/500m H	NR
Recorded Separation:	700ft V/0.3nm (540m) H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE MERLIN PILOT reports flying a green helicopter with all lights switched on, squawking with Mode C, but TCAS was not fitted. They were heading 110° at 120kt above cloud, in receipt of a TS from Brize Norton APP and were being given radar vectors for an ILS approach, when an ac was seen manoeuvring to the S in the vicinity of Kemble aerodrome. Shortly after, while in a high workload situation preparing for the approach, a white twin-engine, high-tail ac, believed to be a DA42, was then seen high in their 11 o'clock passing from left to right in front of them; the DA42 was assessed to be about 300ft above and separated 500m laterally and they considered it to be a late spot by the LHS pilot. They received no information from Brize APP about the ac until they pointed it out to the controller.

He assessed the risk to be high and reported the incident to Brize APP on the frequency in use.

THE DA42 PILOT reports that he was made aware of the Airprox by Brize Radar after he had returned to Lyneham. He was told that a Merlin at 3000ft reported having an Airprox with him but he informed Brize that in that area he was never lower than 4000ft [FL40] so it must have been another ac.

At the time he was cruising at 120kt in good weather, heading 145° squawking with Modes C & S, changing between ATC units. At no point did he receive a traffic warning from the ac Traffic Warning System [TCAS 1] nor did see any traffic. He was asked to call NATS, which he did and he was told that the highest the Merlin reached was 3300ft and the lowest he went was 3900ft.

HQ 1GP SM BM reports that this Airprox occurred between a Merlin HC3 inbound to Brize Norton for an ILS and in receipt of a TS from Brize APP and a DA42 operating VFR to the W of the Brize CTR.

The Merlin was identified and placed under a TS, reduced as Brize were operating SSR only. The Brize Norton SSR update rate is 8RPM, which equates to one sweep every 7.5sec.

At 1149:23, the DA42 was approximately 5.6nm E of the Merlin, descending through 6000ft in a LH turn, with the Merlin maintaining 3300ft (SSR Mode C), which it does throughout the period. At some point after 1149:26, APP commenced a handover of the control position to another controller. The handover was not recorded on the deskside recording, nor has it been possible to determine what information the incoming controller received. The first APP controller was a trainee being screened by an experienced controller, whilst the second controller was fully validated in the position.

JSP 552 110.115.1 states, '*when handing-over a control position to another controller the off-going controller is to brief his relief on the state of all surveillance and instrument aids; serviceability state of communication equipment; the traffic situation and any other relevant information'*.

At 1149:55 the DA42 rolled out of the left turn tracking W and then re-commenced the left turn at 1150:04, bringing it into confliction with the Merlin.

At 1150:55 it is clear that the handover of control position was complete since the voice recording showed a different voice as APP was liaising with TWR. It has not been possible to determine for how long this controller had assumed responsibility for the control position. At that point, the DA42 was 0.5nm E of the Merlin [at 3300ft] indicating 4100ft. The CPA occurred 1151:04 as the DA42 passed through the Merlin's 12 o'clock at 0.3nm and indicating 700ft above.

At no stage did APP pass TI to the Merlin on the DA42. The Supervisor stated that APP's workload was Med to Low and the Unit's workload High to Med; that said, in the lead-up to the incident, the trainee APP controller was involved in liaison with several agencies and would have been monitoring DIR's busy radar training cct in order to sequence their own traffic.

Notwithstanding the 'see and avoid' responsibilities of both pilots when operating in Class G airspace, while in receipt of a TS the Merlin should have been passed TI on the DA42. Even with the slower update rate of the SSR compared with the primary radar, the DA42 was in confliction for 51sec prior to the CPA descending to 4000ft and was 'there to be seen' by APP. From the subsequent actions of the second APP controller it is clear that he accepted the control position with the Merlin in confliction and the lack of action by both APP controllers suggests that the situation was not questioned.

Although this was primarily a sighting issue, the lack of TI from APP to the Merlin crew, caused by poor handover procedures between the APP controllers, was probably a contributory factor.

SATCO Brize Norton has reviewed the console position handover procedures at the Unit; he is content that this was an isolated incident and that controllers routinely operate in accordance with JSP 552 110.115.1.

HQ JHC comments that it is recognised that TI should have been passed to the Merlin pilot, but it remains the pilot's responsibility to 'see and avoid' whilst in receipt of a TS. In this case, the pilot considered it a 'late spot' and did not take avoiding action but assessed the risk of collision to be high.

While probably not a contributory factor in this case, it is noted that the reporting pilot stated that he was receiving a TS, whilst HQ 1GP BM SM stated that he was being provided a reduced TS due to Brize operating SSR only. It is assumed that both parties understood what service was being provided. However, when a pilot accepts a 'reduced TS, SSR only', it is assumed that he understands the implication that he will only receive TI on aircraft fitted with a serviceable transponder that is switched on. To reiterate this important difference, JHC HQ will publish a reminder to aircrew, highlighting what the term 'SSR only' actually means.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

As noted above, the HQ JHC Member informed the Board that there was a perception in the HQ that some pilots do not fully understand the significance of 'SSR Only' when applied to a TS and accordingly they had commenced an education programme; she suggested that this lack of understanding might not be confined to helicopter pilots.

Members noted that the Merlin had right of way, but it was suggested that since it was well below the DA42, its pilot (as inferred in his report) may not have considered there to be any conflict; in any case he was not aware of the incident and received no TCAS warnings. This incident was another case where the 'see and avoid' principle had not worked as the pilot with the onus to avoid did not see the opposing ac.

Members were unanimous in their opinion that, had TI been passed to the Merlin crew about the DA42, the crew would not have considered the incident to be an Airprox, even allowing for the DA42 being between frequencies and not receiving any warning about the former. That being the case, due to the significant separation extant, Members agreed that there had been no risk of collision. Members also agreed that, since the Merlin crew were operating under a TS, they should have been warned about the DA42.

The Board noted the HQ 1 GP BM SM report and the explanation for the TI not being passed by Brize ATC during the handover of the APP position and accepted that this had been a 'one off' occurrence caused by a misunderstanding, albeit one that should have been evident had the handover procedures stipulated in JSP552 been fully complied with.

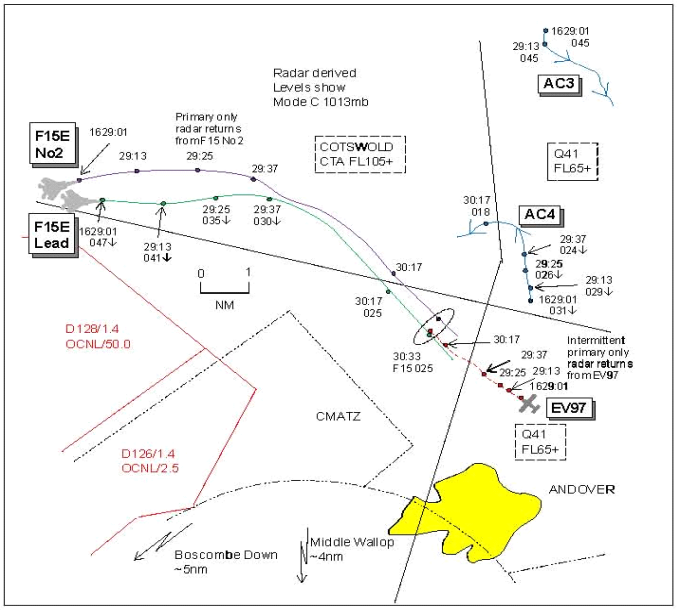
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: In the absence of TI, the Merlin crew was concerned by the proximity of the DA42.

Degree of Risk: C.

AIRPROX REPORT NO 2011020

Date/Time:	14 Mar 2011 1630Z	
Position:	5117N 00130W (4nm N Andover)	
Airspace:	London FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Evektor EV97 Eurostar	F15Ex2
Operator:	Civ Pte	Foreign Mil
Alt/FL:	2000ft (QNH 1016mb)	NR (QNH)
Weather:	VMC HZBC	VMC HAZE
Visibility:	10km	8km
Reported Separation:	50ft V/25m H	50-100ft V /300m H
Recorded Separation:	0·1nm/0·3nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE EVEKTOR EV97 EUROSTAR PILOT reports enroute from Goodwood to Clench Common VFR and listening out on Safety Common frequency 135·475MHz; no transponder was fitted. The visibility was 10km flying 1000ft below cloud in VMC and the ac was coloured silver/blue; no lighting was fitted. Heading 310° at 85kt and 2000ft QNH 1016mb he was surprised to see 2 small jet fighters 1nm ahead on a reciprocal course heading towards him before they passed either side of and above his ac, estimating 50ft vertical separation and 25m horizontal. At the time he felt that maintaining his heading was the best course of action. He did not feel he was in danger at the time but once the ac had passed he felt very shocked indeed. He assessed the risk as medium.

THE F15E LEAD PILOT reports, 5 weeks post incident, enroute to Boscombe Down for a Practice Diversion and under a TS from Boscombe LARS on 256·5MHz, squawking an assigned code with Mode C. The visibility was 8km in haze in VMC and the ac were coloured dark grey with anti-collision, nav and strobe lights switched on. They were flying clockwise around the SPTA in level flight when ATC gave them a traffic call on a light ac flying in the opposite direction closing within 5nm. Heading 170° at 300kt he initiated full radar track (~6nm) and IR pod track (~4nm) on the traffic and gained visual contact no later than 2nm away. His wingman, previously on the E flank manoeuvred W on to his opposite side so as to avoid the traffic, a low wing single engine ac coloured white, which passed 300m down their LHS about 50-100ft above. He did not perceive a conflict at the time, acknowledging the traffic and informing Boscombe that the formation was visual with the traffic. Limited manoeuvring room was available owing to their close proximity of the EGD124/125/126 complex and he had elected to maintain the Boscombe assigned altitude. He did not report any danger and no further comments were made to/from Boscombe ATC regarding the matter and he assessed the risk as medium.

THE BOSCOMBE DOWN LARS CONTROLLER reports he was working a pair of F15s from the Swindon Corridor, N of SPTA and then through the MATZ NE to SW. They descended to overfly Boscombe Down before he handed them over to Yeovilton. No mention of an Airprox was made.

HQ 1GP BM SM reports that the Airprox occurred between an EV97 Eurostar operating VFR and a pair of F15E Strike Eagles on a NAVEX towards Boscombe Down and Yeovilton, in receipt of an ATS from Boscombe Zone. Whilst the F15 pilot stated in Part 1 of his Airprox report that he was in receipt of a DS, in the narrative he stated that he was in receipt of a TS which is borne out by the tape transcript.

[UKAB Note (1): The F15 flight contacted Boscombe ZONE at 1625:29 approximately 7nm SSW of Lyneham tracking 220°, squawking Boscombe code 2651 and levelling at FL100. ZONE confirmed the flight was identified

under a TS and then requested their intentions. It was established that the flight wanted to turn onto 090° to remain N of SPTA and then route clockwise around SPTA to pass O/H Boscombe Down towards Yeovilton. One minute later the F15 flight requested descent to the lowest level available and was cleared to FL50 initially before, at 1627:59, being cleared 2000ft QFE 999mb.]

At 1629:11 ZONE passed TI to the F15 flight on un-related traffic, AC3, to the ENE, *"(F15 c/s) traffic left eleven o'clock, six miles, crossing left right, indicating FL45"* (radar replay shows approximately 9nm lateral separation). ZONE then issued the F15 flight with a R turn onto 110° before at 1629:26, ZONE passed further TI on other un-related traffic, AC4, *"(F15 c/s) traffic east 3 miles, tracking north, indicating 2500ft"* (radar replay shows approximately 5nm lateral separation). Both of these pieces of TI are acknowledged by the F15s and at 1629:38 they declare, *"(F15 c/s) we got radar traffic.*" However, at this point what is believed to be the EV97 is approximately 6nm SE of the F15s manoeuvring. No SSR return is observed throughout the radar replay from the EV97. Moreover, ZONE does not provide TI that can be correlated to the position of the EV97 relative to the F15 flight.

Boscombe reported that the PSR and SSR were fully serviceable at the time of the occurrence.

ZONE then instructs the F15 flight to turn R onto heading 140°, which was not acknowledged. Over 30sec later at 1630:19 the F15s reported, *"140 (F15 c/s) is visual with radar traffic confirm you want us at 140*" which ZONE acknowledges. The F15 pilot's written report stated that they had radar lock at around 6nm, targeting pod acquisition at around 4nm and visual at around 2nm. Given the content of the F15 crew's report, that the radar contact relating to the second piece of TI was approximately 2nm NE of the F15s and that the EV97 is approximately 1·7nm in their 12 o'clock, it is clear that the F15s had locked onto and then sighted the EV97.

Although ZONE did not provide TI to the F15s on the EV97, the F15 crew's interpretation of TI on AC4 allowed them to obtain sensor and then visual acquisition of the EV97 and to avoid it by a margin that they deemed appropriate.

From an ATM perspective, the issue to be addressed is the lack of TI on the EV97 to the F15s. Given that ZONE passed TI on the other traffic that was relevant to the F15s an HF related cognitive failure or a deliberate decision not to pass TI can be discounted; therefore, it appears reasonable to argue that the EV97 either did not paint on the surveillance display due to the ac's size, construction or presenting aspect to the radar aerial, or was obscured by radar clutter. However, it has been impossible to determine exactly what occurred.

UKAB Note (2): The diagram was created using a combination of the Clee Hill, Heathrow 10cm and Pease Pottage radars. The EV97 is seen as an intermittent primary only radar return but exhibiting severe track jitter throughout and F15E No2 is showing as a primary only return displaced echelon port to the Lead ac. The radar recording shows the Airprox occurs at 1630:33, the EV97 appearing to pass between the 2xF15Es, the closest being F15E Lead on its LHS by 0·1nm with F15E No2 0·3nm on its R.

HQ 3AF comments that it appears that in complying with Boscombe ZONE's instructions, particularly the R turn to 140°, the formation was brought into confliction with the EV97 which, it is reasonably suggested above, was probably not painting on ZONE's display. Fortunately, the formation lead obtained radar contact on the EV97 in time to see and avoid.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and from the appropriate ATC and operating authorities.

Members were mindful of the disparate descriptions of the event from the reports submitted by both crews. The EV97 pilot had seen the F15Es pass either side of his ac whilst the lead F15E crew had reported that both of their ac had passed the ac they sighted on their L. The radar recording does not show the F15Es changing formation positions, the No2 always remaining in echelon port with the lead ac, and the EV97 probably passing between the formation. This geometry was thought to be the most likely, even taking into account the severe track jitter exhibited by the primary only return that is believed to be the EV97. The F15E pilot's report was submitted some 5 weeks after the Airprox which could have clouded his recollections of the scenario to some degree. Some

Members questioned whether the ac that the F15E flight had acquired on radar and IR pod and then visually might have been AC4 as it was TI on this ac that preceded the F15E crew's call of 'radar contact'. The Board also noted that the range reported by the F15E crews for commencing radar tracking (6nm) was consistent with both the EV97 and AC4. However, AC4 had passed nearly 2nm away and 800ft below the F15E pair; both the F15E crew and EV97 pilot reported a much closer encounter. Pilot Members wondered whether the F15E's onboard equipment is capable of acquiring a very small ac of the EV97's size flying at 85kt head-on and presenting a very small target aspect. A military pilot Member opined that the F15E ac had a modern on-board radar system capable of detecting and tracking targets over a broad speed range and a large area around the ac; he believed the combination of radar and IR sensors had enabled the F15 crews to detect and then visually acquire the EV97. Members agreed that it would have been prudent for the EV97 pilot to have called Boscombe Down for a service as this would have given ZONE the 'heads-up' of the ac's presence; in the event ZONE did not see the EV97 on radar as he had vectored the F15Es towards the Boscombe O/H but unfortunately had placed the ac in conflict. One Member thought that perhaps the F15E lead pilot queried the heading assigned because he was concerned that he was heading towards the EV97 which he had just seen ahead. In his assessment of the 'miss distance', the EV97 pilot believed that the F15Es were small jet ac, which would create the impression that the ac were a lot closer than they actually were. Notwithstanding his underestimation of the 'miss distance', it was the proximity of the F15Es which caused the EV97 pilot concern and was the cause of the Airprox.

Turning to risk, one pilot Member expressed concern that, from the information available, he was not convinced that the F15E crews had seen the EV97 and that the ac had passed uncomfortably close with no action being taken by either crew such that a definite risk of collision had existed. This view was not shared by the other Members who believed that, on the balance of probability, the F15E crews had seen the EV97 in good time and were content with the separation but may have misjudged it due to the small size of the ac. Although the EV97 pilot had limited options for avoiding the 2 F15Es, he had elected to continue level and on track and watched them pass either side. These sightings by both crews were enough to persuade the Board that any risk of collision had been effectively removed.

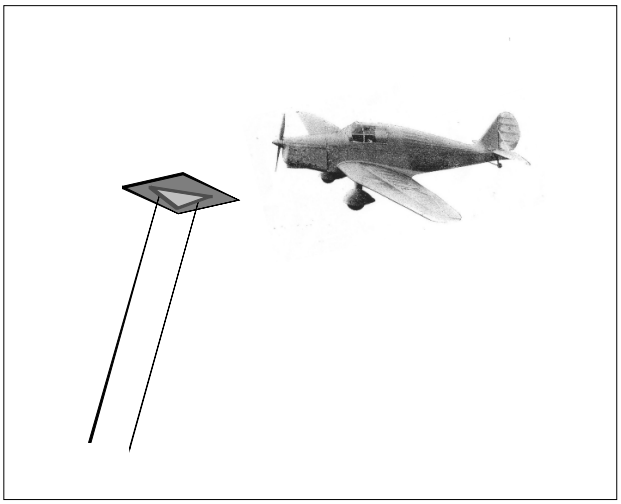
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The F15E crews flew close enough to cause the EV97 pilot concern.

Degree of Risk: C.

AIRPROX REPORT NO 2011021

Date/Time:	27 Mar 2011 1130Z (Sunday)	
Position:	5206N 00050W (3nm N Milton Keynes)	
Airspace:	Lon FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Tipsy Belfair	Kite
Operator:	Civ Pte	NK
Alt/FL:	1450ft (QNH 1014mb)	NK
Weather:	VMC HAZE	NK
Visibility:	6km	NK
Reported Separation:	50ft V/10m H	NK
Recorded Separation:	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE TIPSY BELFAIR PILOT reports that he was en-route to Turweston on a pleasure flight, heading 250° in the cruise at 95kt in hazy weather and he kept his alt low to aid forward visibility. He was navigating by map, stop watch and compass without GPS or other nav aids.

Just after crossing the M1, he saw what he initially thought to be a large hawk slightly above them and to their left. He was surprised to see a bird so high in the reduced visibility especially as the air was quite smooth with only about an 8kt breeze and no significant thermals to carry a bird to that height. Many years ago when he was learning to fly, he was taught that a hawk can out-manoeuvre any aircraft so when encountering one it is unwise to manoeuvre your aircraft as this will confuse the bird and may inadvertently increase the risk of collision. As the 'hawk' passed by about 30ft off his port side and 50ft above, he noticed that it was not a bird, but a kite with strings visible below it; it was much larger than a hawk and delta-shaped (like small flex-wing microlight). It was static and did not change position as he would have expected a bird to do. He was shocked and when clear he turned but could not re-acquire it as he was looking into hazy sun and did not wish to increase the risk of hitting either it or the string by circling.

He could not identify any obvious person or site on the ground, which was open farm land and small villages. He thought that it could have been free flying, blown in wind, and stabilised by strings as he would not expect a tethered kite to fly so high.

Friends in a preceding aircraft flying slightly lower than him, on a similar track about 3min ahead, said they thought they had seen a large hawk flying in the same vicinity and above them and he thought that it might have been the same object.

He observed that here are increasing numbers of NOTAMed kite flying sites but they generally do not state the upper limit of the activity, which he thought might indicate that they are operating above 60m (~200ft) iaw the Rules of the Air; if that is the case he thought that the max height should be included in NOTAMs.

UKAB Note (1): The closest NOTAMed kite flying was 25nm to the W and the subject kite flyer could not be traced.

UKAB Note (2): Neither the Tipsy nor the kite showed on recorded radar.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted solely of a report from the Tipsy pilot.

Despite extensive procedural searching it was not possible to trace the kite flyer; further, it was established that the activity was not NOTAMed [although there was a NOTAM for kite activity 25nm further W].

Members agreed that the Tipsy pilot had seen the kite as early as feasible and, since he opted not to take any avoidance, they agreed that there had been no risk that the ac would have collided with the kite.

The Board was informed that the ANO restricts the height of kite flying in open FIR to 60m without CAA permission [no record of such permission being granted for a kite in this location and time]. Without doubting the pilot's report, Members expressed surprise that it was feasible to fly a kite at such a high alt.

While noting the Tipsy pilot's remarks about maintaining course when confronted by a bird of prey, the GA Member drew attention to the CAA Safety Sense Leaflet 10 which advises pilots to 'attempt to fly above birds in their flightpath' as birds normally descend away from approaching ac. Further, the DAP Advisor pointed out that, where possible, AUS will always include a top height in kite flying NOTAMs; he also advised that kites are often used to train captive birds of prey.

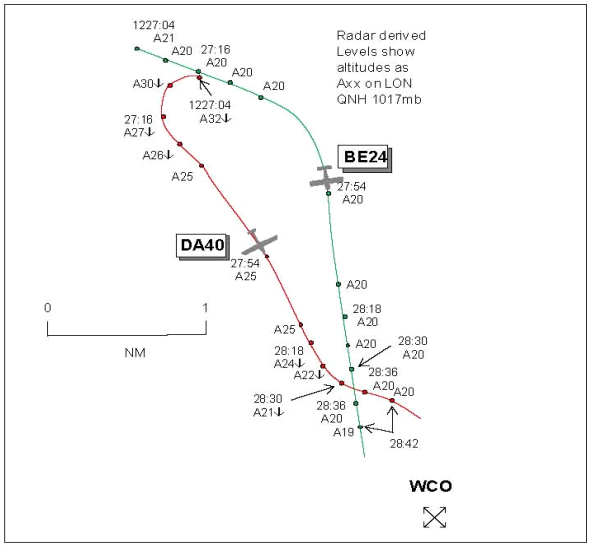
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict in Class G airspace with an untraced kite.

Degree of Risk: C.

AIRPROX REPORT NO 2011022

Date/Time:	28 Mar 2011 1229Z	
Position:	5152N 00058W (1nm NW WCO)	
Airspace:	LFIR	(Class: G)
	Reporting Ac	*Reporting Ac*
Type:	BE24	DA40
Operator:	Civ Trg	Civ Trg
Alt/FL:	2000ft (QNH 1017mb)	3000ft (QNH 1017mb)
Weather:	VMC HAZE	VMC CLBC
Visibility:	4000m	7km
Reported Separation:	30ft V/0m H	0ft V/5m H
Recorded Separation:	<100ft V/Nil H	



BOTH PILOTS FILED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE BE24 PILOT reports flying a dual CPL Training Exercise from Wycombe, VFR and in receipt of a BS from Farnborough N on 132·8MHz, squawking 5034 with Mode C. The visibility was 4000m in haze and the ac was coloured white/red with anti-collision, nav and landing lights all switched on. They had been tracking inbound to WCO when 15D from CPT. When inbound on 350° QDR heading 170° at 120kt and level at 2000ft QNH 1017mb nothing was seen approaching the beacon and as they passed over it, he thought, he showed the student how they know they had station passage. They both became aware of a loud noise and saw a blue/white DA40 about 10m away before it passed above and slightly behind them, estimating vertical separation at 30ft. He pushed the elevator control fully down for avoiding action, his student stated seeing the other ac's tyre creep marks. He made an Airprox call to Farnborough N and soon after they heard the DA40 flight also report an Airprox. He assessed the risk as high, believing that both ac had been in the other's blind spot.

THE DA40 PILOT reports carrying out a dual training GH sortie from Elstree, VFR and in receipt of a BS from Farnborough N on 132·8MHz, squawking 5034, he thought [actually 5036], with Modes S and C. The visibility was 7km flying 1000ft below cloud in VMC and the ac was coloured white with nav and strobe lights switched on. At the time of the Airprox they were about 5nm N of WCO NDB, heading W to E at 115kt and level at 3000ft, he thought, QNH 1017mb. The other ac, a BE24, was first seen in their 7 o'clock as it passed 5m behind them on a S'ly heading at the same level and they maintained their heading and kept visual with it until no further risk was posed. The BE24 pilot first reported the Airprox whilst airborne followed by themselves. He assessed the risk of collision as high.

THE FARNBOROUGH LARS CONTROLLER reports working as the LARS N and E controller bandboxed under moderate traffic conditions that did not require the frequencies to be split. At approx 1229Z the BE24 pilot reported on frequency that he wished to report an Airprox on a DA40 ac in his close vicinity. The controller acknowledged the request, noted that the flight was receiving a BS and asked the pilot to make the report on landing. The BE24 then returned to Wycombe Air Park. Shortly after the DA40 pilot, under a BS, informed him that he would also be filing an Airprox which the controller acknowledged. At all times both flights were under a BS with the relevant QNH.

ATSI reports that the Airprox occurred at 1228:36 (UTC), in Class G airspace in the vicinity of the WCO NDB.

The Diamond Star DA40 was operating on a local VFR flight from Elstree, conducting a GH exercise and was in receipt of a BS from Farnborough LARS.

AIRPROX REPORT No 2011022

The Beech Musketeer (BE24) was operating on a local VFR flight from Wycombe Air Park, conducting a CPL training exercise and in receipt of a BS from Farnborough LARS.

The Farnborough Radar controller was operating LARS N and E in a combined (bandboxed) mode. Traffic levels were reported as moderate with a number of other flights on frequency.

The weather at Farnborough and Luton were provided:

METAR EGLF 281220Z VRB04KT 7000 BKN043 14/05 Q1017=

METAR EGGW 281220Z VRB03KT 8000 BKN032 12/04 Q1016=

The BE24 flight was already on frequency and in receipt of a BS from Farnborough, with an allocated squawk 5034 when, at 1207:32, the DA40 flight made an initial call to Farnborough, but satisfactory 2-way communication was not established until 1208:48. The DA40 pilot reported, *"(DA40 c/s) we are a D A forty just out of Elstree er just passing overhead Bovingdon now two thousand three hundred feet on a Q N H one zero one five two P O B intentions er just gonna do some er general handling in the Westcott region between er er three thousand feet er to er one thousand feet request a Basic Service."* The Farnborough controller agreed a BS, allocated a squawk of 5036 and passed the London QNH 1017mb. This was acknowledged correctly by the DA40 pilot. (It was noted that the DA40 pilot's written report erroneously indicated the squawk as 5034.) At 1214:10 the DA40 pilot reported climbing to 3000ft.

At 1227:04 the radar recording shows 3 ac operating in close proximity in the vicinity of Westcott, with the SSR labels overlapping and garbling. An expanded radar picture showed the BE24 indicating altitude 2100ft on a SE'ly track. The DA40 was indicating altitude 3200ft in a L turn, passing through a W'ly track. The third ac was tracking N indicating altitude 3000ft.

At 1227:16 the radar recording shows both ac established on a SE'ly track with the DA40 positioned 0·4nm to the SW of the BE24. The BE24 was indicating altitude 2000ft and the DA40 was indicating altitude 2700ft in a descent.

About 1min later at 1228:18 the radar recording shows the BE24 had turned R onto a S'ly track, indicating altitude 2000ft and converging with the DA40, which was tracking SE and indicating altitude 2400ft in the descent. The DA40 was ahead and in the BE24's 2 o'clock position at a range of 0·3nm.

By 1228:30 the radar recording shows the 2 ac converging on steady tracks with the BE24 indicating altitude 2000ft and the DA40 indicating altitude 2100ft. The DA40 was slightly ahead and in the BE24 aircraft's 2 o'clock position at a range of 0·1nm.

[UKAB Note (1): The CPA occurs before the next sweep which at 1228:36 shows the ac having crossed, the BE24 at 2000ft 0·1nm SW of the DA40 which is indicating 2000ft. It is estimated that the ac crossed with no horizontal separation and <100ft vertical separation.]

At 1228:42, the radar recording shows that the 2 ac tracks diverging, with the DA40 indicating altitude 1900ft and the BE24 indicating altitude 2000ft.

At 1229:02, the BE24 pilot called Farnborough and reported the Airprox*, "Farnborough Radar er erm just in the Westcott area this time just er like to file an Airprox against er er D A Forty.....over flew us by about thirty feet erm from the west to the east we're flying erm north to south.*" The controller acknowledged the call and requested the pilot file the report on the ground at his destination. The pilot agreed and then reported leaving the frequency and squawking 7000.

Following these RT exchanges at 1229:52, the DA40 pilot also reported the Airprox, *"..listened to the last transmission yeah like to also er file an Airprox er just er passed us from behind by about thirty feet we're now heading er northbound and er two thousand feet Q N H one zero one seven.*"

The DA40 and BE24 flights were both in receipt of a BS from Farnborough LARS. The Farnborough radar controller's workload was considered to be moderate. The radar labels of the 3 ac manoeuvring in the WCO area

were shown to be overlapping and garbling. CAP 774, UK Flight Information Services, Chapter 2, Paragraph 1, states:

'A Basic Service is an ATS provided for the purpose of giving advice and information useful for the safe and efficient conduct of flights. This may include weather information, changes of serviceability of facilities, conditions at aerodromes, general airspace activity information, and any other information likely to affect safety. The avoidance of other traffic is solely the pilot's responsibility.'

Paragraph 5, states:

'Pilots should not expect any form of traffic information from a controller/FISO, as there is no such obligation placed on the controller/FISO under a Basic Service outside an Aerodrome Traffic Zone (ATZ), and the pilot remains responsible for collision avoidance at all times. However, on initial contact the controller/FISO may provide traffic information in general terms to assist with the pilot's situational awareness. This will not normally be updated by the controller/FISO unless the situation has changed markedly, or the pilot requests an update. A controller with access to surveillance-derived information shall avoid the routine provision of traffic information on specific aircraft, and a pilot who considers that he requires such a regular flow of specific traffic information shall request a Traffic Service. However, if a controller/ FISO considers that a definite risk of collision exists, a warning may be issued to the pilot.'

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC authorities.

It was clear to Members that this had been a very serious Airprox. Undoubtedly the visibility had played a part in the proceedings; however, within this Class G airspace, the pilots were responsible for maintaining their own separation from each other through see and avoid. It was not clear whether the BE24 student was under an IF Hood with the instructor responsible for the lookout as well as monitoring the student's actions whilst tracking towards the WCO NDB on instruments, or whether the crew were sharing the lookout responsibility. However, they were alerted to the DA40's presence only when it was heard before seeing it as it passed 30ft above and then behind, effectively a non-sighting and a part cause of the Airprox. The DA40 instructor also only saw the BE24 as it passed 5m behind in his 7 o'clock at the same level, another effective non-sighting and other part cause. The radar recording showed that there had been ample opportunity for both pilots to see each other's ac prior to the CPA but this had not occurred. Initially both ac were head-on about 1.5min before CPA with the DA40 1200ft above and turning L to the SE. The DA40 was always ahead of, and displaced to the SW of, the BE24 as it converged from its R descending. Although this geometry made it more difficult for the DA40 pilot, the BE24 was there to be seen even before he turned L just before the Airprox. Members considered that, if it was available, a TS would have been a more appropriate level of service, to assist the pilots in building better SA of the surrounding traffic. Members noted that Farnborough controller did not issue a traffic warning. The controller was working 2 sectors bandboxed with moderate traffic levels so it may have been that the controller did not see the impending confliction while scanning a large area of responsibility or because of the overlapping labels in the busy WCO area.

Turning to the risk, with effectively non-sightings by both pilots and the ac passing by luck - the avoiding action taken by the BE24 pilot was considered to have been too late to affect the outcome - the Board were left in no doubt that there had been an actual risk of collision during this Airprox.

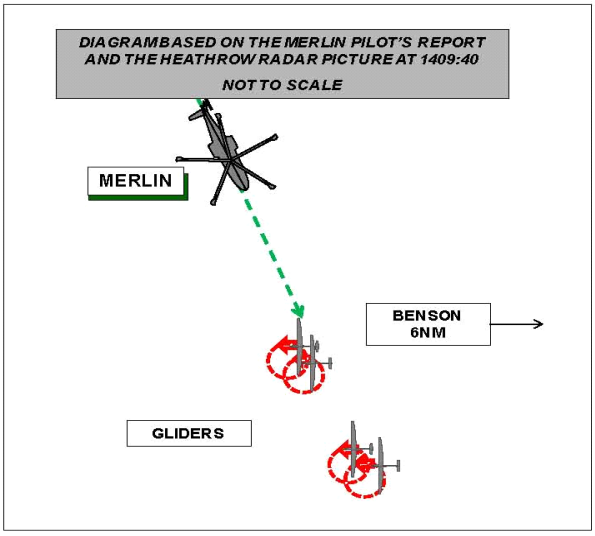
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Effectively, non-sightings by the pilots of both ac.

Degree of Risk: A.

AIRPROX REPORT NO 2011023

Date/Time:	28 Mar 2011 1410Z	
Position:	5136N 00114W	(1nm S Didcot)
Airspace:	Oxford AIAA	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Merlin	Untraced Glider
Operator:	HQ JHC	NK
Alt/FL:	1900ft (QFE 1009mb)	NK
Weather:	VMC CLBC	NK
Visibility:	8km	NK
Reported Separation:	0ft V/50m H	NK
Recorded Separation:	NK	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE MERLIN PILOT reports flying a green ac with all lights switched on, recovering to Benson in slightly hazy conditions, but flying out of sun, in receipt of a TS from Benson APP. While under radar vectors, heading 170° at 120kt, about 1nm S of Didcot the crew identified a glider due W, slightly above them about 400m away; they immediately informed Benson APP which was operating with SSR only. Thirty sec after first identifying this glider another was seen passing down the LH side, descending through their height (1900ft) in a LH turn to the N, within about 50m of their ac; the glider was seen to depart to the N. They did not take any avoiding action as the glider had descended through their height and was turning away from them.

The HP reported an Airprox to Benson on the frequency in use at approx 1410Z and the sortie continued with the ac recovering to Benson without further incident. He assessed the risk as being high.

Despite extensive procedural tracing, the glider pilot could not be located.

UKAB Note (1): The Benson APP controller provided a report but, for brevity, it has not been included as it is essentially the same as the HQ 1GP BM SM report below.

HQ 1GP BM SM reports that this Airprox occurred between a Merlin HC3 in receipt of a TS from Benson APP, reduced due to operating SSR only and an untraced glider.

Since Benson was operating SSR-only due to planned maintenance on the Watchman radar, it was not possible for ATC to have acted as a safety barrier to this occurrence, given that the glider was non-transponding. That said, the reduction of service to SSR-only was not passed until after the Merlin pilot had informed APP of his sighting the first glider mentioned in his report; 21sec after this that the pilot declares the Airprox with the second glider.

The operation of non-transponding ac combined with operating SSR-only leaves one final safety barrier; namely 'see and avoid'. However, this final barrier is prejudiced when the visual acquisition task is made more difficult by reduced visibility and the small size and white colour scheme of the target ac.

UKAB Note (2): The recording of the Heathrow 10cm radar shows the Merlin throughout tracking 170°, squawking with Modes C and elementary Mode S, initially at an alt of 3000ft. The ac is tracking towards two intermittent primary only contacts manoeuvring in its 12-1230 position. At 1409:40 the helicopter commences a slow descent just as both the primary contact disappear from radar in its 1230 position at about 1.5 and 2nm respectively (there are another 2 gliders at a distance of 4nm in the 12 o'clock). The Merlin passed through the approximate position that the closest glider last painted at 1409:59 at an alt of 2600ft. The primary only contact reappears at 1nm W of the Merlin's track at 1410:37. There are other gliders in the area.

HQ JHC comments that It is not possible to ascertain when, and indeed if, the conflicting glider saw the Merlin, but in either case, a reported separation of 50m is clearly very concerning, whether verified by radar recording or not.

From the HQ 1GP BM SM comment, it appears that the Merlin was unaware that the TS being provided was reduced until after he had reported the sighting of a gilder in reasonably close proximity. The absence of primary radar was probably a factor in this incident. It is also clear that the final safety barrier - as identified by HQ1GP BM SM – was see and avoid but in the event, the Merlin saw the glider too late to take any avoiding action.

HQ JHC considers that a mid-air collision with a glider or light coloured small ac is a very significant risk- this was the second Airprox in that area in the space of a month. This is a particularly problematic area in terms of gliding activity and Benson instrument traffic - which is subject to both geographical and airspace constraints and the necessity to maintain aircrew currency and competency in instrument flying and approaches. These issues were brought sharply into focus last year, during NOTAMed gliding competitions and/or when the radar service being provided by Benson was derived from SSR-only information since the Watchman radar had a long-term unserviceability.

This Airprox indicates that the local gliding community may not be fully cognisant of the flying operations at RAF Benson – it could be considered unwise for a glider pilot to choose to operate in that particular piece of airspace if the pilot understood that a Puma or Merlin ac was very likely to be operating there, whilst knowing that the glider itself is difficult to see. It appears that the risk acceptance differs between the gliding community and other aviators.

It is widely recognised that the small size and white colour scheme of gliders (and other small light ac) makes visual acquisition extremely difficult, whilst glider construction also means that they are difficult to see on radar. In the short term, JHC ac operating in the RAF Benson area are encouraged to try to obtain a primary radar-derived TS when this is practical. In the medium term, JHC HQ supports the initiative by RAF Benson that this specific problematic airspace be mandated as 'transponder-equipped ac only' which would enable all ac to be seen on both primary and secondary radar whether they are radar-reflective or not.

In addition to efforts to improve the airspace issue, JHC HQ requests that the UK Airprox Board recommends the fitting of transponders to all gliders and similarly small, light coloured general aviation ac, in order to reduce both the frequency of Airproxes and the likelihood of an actual collision (there have been 9 assessed Airproxes involving gliders and military RW ac in the last 3 years). Further, JHC HQ requests that the UK Airprox Board undertake to educate the glider community on the risk of mid-air collision in the vicinity of military aerodromes.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the Merlin pilot, transcripts of the relevant RT frequencies, radar recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

[Some of the discussion in this incident also applies to 2011028.]

The HQ JHC Member reported that it was concerning that the Merlin pilot was not informed that they were operating under a reduced TS, due to the primary radar being on maintenance, until after he had reported the presence of the first glider to APP; had he known, he would have been aware that information on gliders would not have been forthcoming from ATC.

A military Advisor, familiar with both fast-jet and gliding operations opined that there was a widespread lack of understanding of gliding operations among both military aircrew and ATC staff; he urged closer co-operation to foster mutual understanding. He went on to say that the MoD is trying to provide liaison staff at major gliding competitions so that up-to-the-minute information about movements/routes can be relayed to military airspace users. Noting the HQ JHC comment regarding the high military traffic levels around Didcot, a gliding Member stated that it was *'the busiest area in Britain'* for gliding traffic due to precisely the same airspace constraints that funnel both N/S traffic and E/W traffic through the area; the power station is a particular focus as it often provided good thermals.

There was genuine concern from both military and gliding Members that despite a previous mid-air-collision in the area, little had been done to integrate or separate the traffic (on the day of the mid-air collision there had been in excess of 100 gliders transiting the area). Unlike other areas where there were more obvious solutions: not all traffic in the area is radio equipped, but for ac that are fitted with radios and for those pilots with RT licences, Benson is not necessarily the obvious station to call (Farnborough/Brize Norton being the LARS providers); many gliders from several often distant airfields N, S, E and W of the area transit through the area and, finally but importantly, Benson instrument patterns are also constrained by the airspace and RW direction.

A military controller Member reminded the Board that, notwithstanding that the Watchman primary radar was unavailable on this occasion, gliders are very difficult for controllers to 'see' and react to as they are often 'invisible' on ATC radars; he suggested that more effort be put into inexpensive technological solutions. A gliding Member suggested that such a solution already exists, namely FLARM, which is widely used by gliders. In his opinion FLARM was a more practical solution for gliders' traffic awareness and collision avoidance than Modes C and S transponders. It was agreed, however, that neither the CAA nor the MoD are likely to pursue this course unless it is more widely acceptable and used universally, preferring the (currently) ICAO agreed Mode C/S solution.

Notwithstanding the difficulty of seeing gliders on primary radar, the Board also queried the necessity for conducting maintenance on the primary radar during hours of the day when gliding activity was likely to occur. Members agreed that maintenance should schedule for hours when there were likely to be the fewest number of aircraft without transponders airborne.

The DAP Advisor informed the Meeting that there is an established procedure for proposing and agreeing airspace changes and, as far as he was aware, no application had been made for a TMZ (Transponder Mandatory Zone) in the Benson area; he went on to say that should HQ JHC make such an application it would be handled in the normal manner with all interested parties being consulted. That being the case, the Board noted the HQ JHC recommendation but could neither support nor reject it and advised an application through the correct channels.

Regarding the proposed recommendation regarding the mandatory fitment of transponders to gliders and GA aircraft, the Board noted that in this incident, since Benson were operating 'SSR only', had the glider been squawking, Benson would have been able to pass TI to the Merlin crew allowing them to take avoidance. However, it was pointed out that the Board had made a similar recommendation following an Airprox between a glider and a Tornado (Airprox 2005 186): 'The CAA should continue to promote with renewed urgency the production of a lightweight transponder and, when available, consider mandating its carriage and use in gliders'. This recommendation was agreed but the consultation process did not result in legislation but increased the areas where they are mandatory, albeit with only small changes in Class G airspace. Although some Members were in agreement with the JHC recommendation, others were not and, since this aspect had been recently reviewed by the CAA, the Board could not support the recommendation. [UKAB Note (3): The Board was more or less equally divided regarding mandatory use of transponders].

The JHC Member stated that, in view of their concern over the degree of risk they perceive of a mid-air-collision between one of their ac and a glider or light ac, HQ JHC is looking at all measures to mitigate this risk; they are, however, anxious that the GA/Gliding community should co-operate in ensuring that the airspace is available for safe and flexible use by all operators.

The Board was concerned that a (at least one) glider had flown so close to a large helicopter and apparently chosen not to make a report. Members agreed unanimously that it was inconceivable that the glider pilot neither saw nor heard the Merlin (it was seen to discontinue thermalling and depart to the N). A Member noted the great advances made in the reporting culture among professional aviators and opined that, on the evidence of this incident, the benefits of such a culture do not appear to have been realised by glider pilots. The Gliding Member undertook to discuss the topic with the BGA officers.

Several different causes were considered but, since there was no report from the glider pilot giving his perspective, Members were forced to conclude, somewhat unsatisfactorily, that the incident had been a conflict in Class G airspace. Regarding the degree of risk, since the Merlin pilot did not see the glider until it was too late to initiate any meaningful avoidance, and in the absence of a report from the glider pilot, it was agreed unanimously that there had been an erosion of normal safety margins.

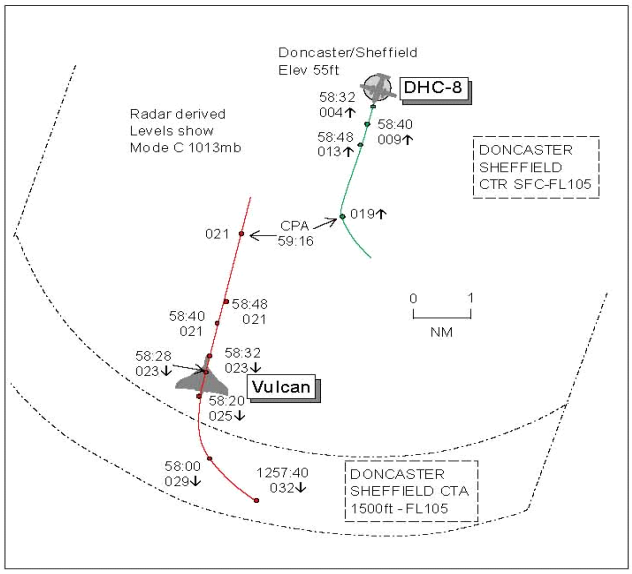
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict in Class G Airspace between the Merlin and an untraced glider.

Degree of Risk: B.

AIRPROX REPORT NO 2011024

Date/Time:	29 Mar 2011 1259Z	
Position:	5326N 00103W (3nm SSW Doncaster/Sheffield - elev 55ft)	
Airspace:	CTR	(Class: D)
	Reporting Ac	*Reported Ac*
Type:	DHC-8	Vulcan
Operator:	CAT	Civ Pte
Alt/FL:	↑2000ft (QNH 1012mb)	2000ft (QNH 1012mb)
Weather:	VMC HAZE	VMC CLBC
Visibility:	5000m	8km
Reported Separation:	NR	Not seen
Recorded Separation:	Nil V/1·9nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE DHC-8 PILOT reports on departure from Doncaster IFR and in communication with Doncaster squawking with Modes S and C. Their departure clearance from RW20 was an UPTON 1A SID squawk 7773 climbing to FL60. The departure involves making a series of R turns shortly after departure based upon ILS/DME distances from Doncaster and using/establishing on radials from GAM VOR, which is 12nm S of Doncaster. Whilst taxying for departure they heard the Vulcan crew call on the Tower frequency stating the flight was at 4000ft 23nm S of the aerodrome requesting a visual recovery. Tower asked if the crew had called Radar, to which the crew replied, "negative" so the crew was instructed to call Radar. At the hold Tower told them to line up and as they entered the RW whilst awaiting take-off clearance they were given an amendment to their UPTON 1A departure clearance to stop climb at 5000ft QNH 1012mb, which was set and read back. After a pause Tower cleared them for take-off, gave surface wind information and then issued TI on the Vulcan S of the aerodrome joining RH downwind, he thought, for the RW20 cct. The FO asked Tower to confirm their take-off clearance which was confirmed. A normal full power, flap 5 take-off was carried out and on passing 600ft the Tower controller, with an urgent tone in his voice, instructed them to stop climb at 2000ft and to call Radar on 126·225MHz. This was read back and actioned by the PNF (Capt) changing the selected altitude to 2000ft and checking ALTSEL was still armed whilst the FO continued to hand fly correctly. On passing 1060ft, "one to go and acceleration altitude" was called followed by the FO calling, "flap zero" which was actioned by the PNF who changed frequency and called Radar as quickly as possible stating that they were climbing to 2000ft on RW heading. Heading 210° at 170kt they had not reached the first significant R turn on the SID at 1·5DME I-FNL but it was approaching very quickly. As there had been an urgent tone in the Tower controller's instruction and they knew the Vulcan was inbound from the S and the in-flight visibility was 4-6km at best, a developing uneasy feeling made him decide it was better to give their actual heading rather than the SID for speed of identification, clarity and accuracy. Radar instructed them to turn L heading 090° and maintain 2000ft without using any terminology such as 'immediately' or 'avoiding action' but there was a distinct urgent tone to his instruction. The PNF altered the heading bug and read back the instruction, the FO commenced the L turn by hand flying before engaging the AP to complete the turn which took them 160° or more away from the first track turn of the UPTON 1A and 110° off their current heading. Selection of AP also reduced the likelihood of an altitude bust during the level-off and the FO adjusted the power appropriately. The FO reported, from a quick glance to his R once he had commenced the turn, that he had seen the Vulcan pass down their RHS at the same height and close but because of the poor visibility flying into sun and the physical side profile of the ac, the actual miss distance was difficult to judge. They were then in a position to continue with their normal take-off SOP actions of setting climb power and bleeds to on/normal. This had all happened very quickly owing to their full power, flap 5, 24-Tonne take-off with a 15° pitch-up climb attitude accelerating through 170kt to 200kt+ and a ROC >2500fpm. Radar then instructed them to climb to FL60 and turn L direct to UPTON and to call Scottish Control on 133·8MHz. After establishing with Scottish they were asked to contact Doncaster Radar on Box 2, which PNF did. They were asked if they had seen the Vulcan, how close it was, had they received a TCAS alert

and would they be reporting the incident. The Capt confirmed that the FO had seen the Vulcan but owing to poor visibility the distance was difficult to judge and that a report would be submitted. No TCAS alerts had been generated and he assessed the risk as medium. He went on to state that the UPTON 1A and all Doncaster SIDs were not present in the FMS database which meant the departure was flown on raw data using the heading bug, initially hand flown until normally above acceleration altitude. With a normal take-off using FMS the PF asks for the FMS NAV mode to be engaged and he monitors the flightpath which would have, on this occasion, turned the ac R in accordance with the SID towards the oncoming Vulcan. However in this case the PF was actually hands-on controls following raw data and did not follow the SID R turn automatically and was able to react instantly to the L heading 090° instruction given by Radar.

THE VULCAN PILOT reports inbound to Doncaster VFR and in receipt of a TS from Doncaster Radar on 126·55MHz, squawking 6163 with Modes S and C. The visibility was 8km flying 2000ft below cloud in VMC. They were handed over to Doncaster Radar from Wyton and were issued a discrete code before they requested a visual join. They positioned to join downwind LH for RW20 at 180kt and were alerted to a DHC-8 getting airborne and they were told to maintain 2000ft but were not on a radar heading. They heard Radar tell the DHC-8 flight to turn onto 090° but they were not aware of its location relative to their ac and did not see it at any time.

THE DONCASTER/SHEFFIELD APR reports screening a U/T controller when the Vulcan flight requested a VFR joining clearance into the CTA for landing at Doncaster. The flight was issued a 6163 squawk and identified 4nm SE of GAM before being given clearance to enter VFR not above 4000ft. The crew requested to join downwind LH for RW20 and was cleared to do so. Meanwhile the DHC-8 flight had been released on an UPTON 1A departure climbing to 5000ft owing to overflying traffic. The Vulcan squawk was garbling with other traffic operating in the GAM area and when it reappeared it was noticed that the ac had tracked W through the RW20 climbout. At this time he had also taken over from the trainee and was attempting to stop the DHC-8 departure and also to ask the Vulcan flight to maintain 3000ft however, both attempts were unsuccessful. The Vulcan then turned R back towards the aerodrome for a LH cct and the DHC-8 flight, which was now on frequency, was given an immediate L turn and its climb stopped at 2000ft. The Vulcan passed behind the DHC-8 by about 2nm and joined downwind LH; the DHC-8 flight was given further climb once clear.

ATSI reports that the Airprox occurred at 1259:16 UTC, at a position 3nm to the SSW of Doncaster Airport, within the Doncaster CTR, Class D CAS. The Manual of Air Traffic Services (MATS), Part 1, Section 3, Chapter 4, Page 1, for the 'Integration of VFR flights with IFR Traffic in Class D CTR', paragraph 3.2 & 3.3 states:

'Instructions issued to VFR flights in Class D airspace are mandatory. These may comprise routeing instructions, visual holding instructions, level restrictions, and information on collision hazards, in order to establish a safe, orderly and expeditious flow of traffic and to provide for the effective management of overall ATC workload.

Routeing instructions may be issued which will reduce or eliminate points of conflict with other flights, such as final approach tracks and circuit areas, with a consequent reduction in the workload associated with passing extensive traffic information. VRPs may be established to assist in the definition of frequently utilised routes and the avoidance of instrument approach and departure tracks. Where controllers require VFR aircraft to hold at a specific point pending further clearance, this is to be explicitly stated to the pilot.'

The Vulcan was inbound to Doncaster VFR from Lyneham in order to be based at the airfield for the summer season. The arrival of the Vulcan was considered to be a high profile event at the airfield. In this regard the Radar controller had been asked to arrange for the ETA to be notified to the airfield in advance of the Vulcan's arrival.

The DHC-8 was departing IFR from Doncaster Airport on a scheduled flight to Jersey and was cleared for the Standard Instrument Departure (SID) 'UPTON 1A' from RW20. This required a R turn after departure to the SW climbing to altitude of 5000ft.

[UKAB Note (1): The UK AIP states UPTON 1A SID as 'Climb straight ahead to 555 QNH (500 QFE) or I-FNL D0.5 whichever is later, then turn right onto track 210°. At I-FNL D1.5 turn right onto track 250°. When passing GAM VOR R331 turn right to intercept GAM VOR R325.Cross GAM D13 at or above 4000. At GAM D14 turn to intercept GAM VOR R328, cross GAM D18 at FL60, to UPTON. (8%).']

RW20 was the notified RW in use. The Radar controller was providing an Approach RCS, together with a trainee under supervision. The Radar controller indicated that traffic levels were moderate with a number of ac on frequency, including traffic crossing the CTR at FL65 and traffic holding overhead Gamston at 3000ft.

METAR EGCN 291220Z 19006KT 150V240 9000 NSC 15/06 Q1013=

At 1252:25 the Vulcan flight initially contacted the Tower for a visual join. The RT was distorted and required 2 calls to establish two-way communication. Tower instructed the Vulcan flight to contact Radar.

At 1253:04, the Vulcan flight called Doncaster Radar, *"...Vulcan is for recovery we're twenty miles to the southeast at four thousand feet on er one zero zero seven for a visual join."* Doncaster Radar instructed the Vulcan crew to squawk 6163 and passed the QNH 1012. The Vulcan crew did not respond to this transmission and the controller called the Vulcan flight again. The Vulcan crew responded *"er Vulcan is squawking six one six three."* There was no readback of the QNH.

At 1253:54, the Vulcan crew requested a Traffic Service and Radar responded, *"Vulcan roger it's a Traffic Service and you're clear to enter controlled airspace er on track the Foxtrot November Yankee er VFR not above altitude four thousand feet and report field in sight."* The Vulcan crew replied requesting the QNH and QFE. Radar passed the QNH 1012, RW20 and QFE 1011. The Vulcan crew acknowledged, *"One zero one one ???not above four thousand on the er QNH one zero one two Vulcan."* The radar recording shows the Vulcan's position, 18·2nm SSE of Doncaster Airport tracking directly towards the airfield.

The Vulcan's clearance to enter CAS on track the FNY NDB, VFR not above altitude 4000ft, had the potential to conflict with IFR departures from RW20. At this point the Radar controller made a phone call to advise the airport authority of the Vulcan's arrival.

At 1255:36, the radar recording shows the Vulcan at an altitude of 4000ft, crossing the boundary of CAS. Later, when discussed, the Radar controller acknowledged that the pilot was not advised of the change in service from 'Traffic Service' to a 'Radar Control Service'. The Manual of Air Traffic Services, (MATS) Part 1, Section 1, Chapter 5, Page 1, paragraph 1.2.2, states:

'Pilots must be advised if a service commences, terminates or changes when:

a) they are operating outside controlled airspace; or

b) they cross the boundary of controlled airspace.'

At 1256:00, Tower coordinated the release of the DHC-8 and Radar issued a clearance to route, "UPTON 1A stop climb at 5000ft on QNH 1022". This required a R turn at an altitude of 555ft.

At 1257:00, the radar recording shows the Vulcan to be 9·8nm S of Doncaster. The Vulcan flight reported, *"Er Vulcan's clear of Gamston and request further descent for a downwind left hand join."* Radar responded, *"Vulcan Roger you can descend at your discretion traffic shortly getting airborne from Doncaster is a Dash Eight er turning er initially southwest bound before turning northeast bound climbing through your level."* The Vulcan crew responded, *"That's copied are we er clear downwind join."* The Radar controller confirmed, *"Vulcan affirm you can expect a downwind lefthand join for Runway two zero."* The Vulcan crew replied, *"Downwind lefthand join approved Vulcan.*"

Meanwhile, at 1256:38, Tower cleared the DHC8 flight for take-off and passed TI to the DHC-8 on the Vulcan, *"(DHC8)c/s traffic is a Vulcan eight miles south of the airfield erm to the east of climb out to position downwind lefthand visual."* At 1257:35, the Tower confirmed that the DHC-8 flight was cleared for take-off.

Later the Radar controller indicated that the intended plan, was for the DHC-8 to depart to SW, with the Vulcan remaining E of the airfield to join downwind LH for RW20.

At 1257:40, the radar recording shows the Vulcan crossing the extended C/L for RW20 at a range of 8·2nm and tracking NW. In order to confirm the joining instructions Radar transmitted, *"Vulcan confirm you're looking for a downwind lefthand join for Doncaster."* The Vulcan crew did not respond to this transmission.

The Radar controller explained that the phone call to the aerodrome authority had proved distracting. This had resulted in the late recognition of the developing situation and potential conflict with the DHC-8 departure. The Radar controller contacted Doncaster Tower and instructed them to hold the departing DHC-8. The Tower controller advised Radar that the DHC-8 was already rolling.

Radar instructed the Tower to stop the DHC-8 climb at 2000ft and indicated the Vulcan would stop descent at 3000ft.

The Radar controller took over from the trainee and at 1258:01, instructed the Vulcan flight to stop descent at 3000ft, *"Er V-Vulcan er stop descent altitude three thousand feet."* There was no response from the Vulcan crew and the radar recording shows the Vulcan passing altitude 2900ft.

At 1258:20, the radar recording shows the Vulcan at a range of 7nm, indicating altitude 2500ft. The Radar controller called the Vulcan flight again, *"Vulcan Doncaster."* The Vulcan crew replied, *"Vulcan six miles field in sight to Tower."* Radar responded to the Vulcan, *"Yeah maintain three thousand feet Sir three thousand feet there's traffic just airborne below you climbing one thousand feet below."* The Vulcan crew did not respond to this transmission. The radar recording shows the Vulcan now passing altitude 2300ft at a range of 6·1nm tracking 005° on the western side of RW20 climbout.

Also at 1258:20, Tower instructed the DHC-8, *"...if you stop your climb now at two thousand feet."* This was acknowledged by the DHC-8 crew and at 1258:37, the DHC-8 flight was transferred to Radar. The DHC-8 crew's written report indicated that the urgent tone in the Tower controller's voice had caused an uneasy feeling and this would result in the pilot reporting to radar, RW heading, rather than the SID designator.

Following the lack of response to his last instruction, at 1258.40, Radar called the Vulcan, *"Vulcan did you copy."* The Vulcan crew replied, *"Vulcan Vulcan's levelling at two thousand feet."* The radar recording shows the Vulcan at range of 5·5nm indicating altitude 2100ft.

At 1258:50, the departing DHC-8 flight called Radar, *"(DHC8)c/s with you climbing two thousand feet runway heading at the moment."* Radar responded, *"(DHC8)c/s turn left immediately left please heading zero nine zero maintain two thousand."* The DHC8 pilot replied, *"Maintain two thousand left zero nine zero (DHC8)c/s."* The radar recording shows the range between the 2 ac is 3·8nm with the Vulcan indicating altitude 2100ft and the DHC-8 indicating altitude 1300ft.

At 1259:16 the radar recording shows the 2 ac, at a position 3nm SSW of Doncaster Airport, passing abeam each other at a distance of 1·9nm, with the Vulcan indicating altitude 2100ft and the DHC-8 indicating altitude 1900ft. Radar told the Vulcan flight, *"Vulcan the traffic just airborne in your right two o'clock at two miles turning east."* The Vulcan crew did not respond to the transmission. When the 2 ac had passed abeam, the DHC-8 was instructed to climb to FL60.

The Vulcan was now SW, tracking towards the W side of the airfield. Radar advised the Tower that the Vulcan would now be joining downwind RH. Radar instructed the Vulcan flight, *"and er Vulcan join downwind right hand for Runway two zero the circuits now clear contact the Tower one two eight seven seven five."* The Vulcan crew responded, *"Vulcan was that for us to Tower."* Radar replied, *"Affirm one two eight seven seven five."* There was no readback of the instruction to join downwind RH and the Radar controller did not challenge the Vulcan crew's incomplete readback. The Vulcan then turned R and crossed to the E side of the airfield and joined downwind LH.

The controller was asked if there was any action that might have prevented this incident or similar future occurrence. The controller indicated that the phone call to the airport authority had been distracting and resulted in a delay to the corrective action which would have resolved the situation earlier. The controller indicated that the Vulcan was a heavy, fast ac and considering the type of approach and high profile nature of the arrival, a restriction on all departures would have been appropriate. In addition, with the pilot's agreement, radar vectors to join a LH cct, would have ensured that safety was not compromised.

The controller indicated that the Vulcan pilot's lack of response to various transmissions was frustrating and not helpful in the circumstances. There was some discussion and speculation about the possible reasons. It later became apparent that the Vulcan crew had reported a control problem (Yaw damper) to the Tower on joining the

cct. However it was not clear if this may have been a factor and there was not sufficient information to establish a cause for the Vulcan crew's non-response to Radar's transmissions. Rule 30 of the RoA states:

'Subject to Rule 31, whilst flying within Class B, Class C or Class D airspace during the notified hours of watch of the appropriate air traffic control unit, the commander of an aircraft shall:

(a) cause a continuous watch to be maintained on the notified radio frequency appropriate to the circumstances; and

(b) comply with any instructions which the appropriate air traffic control unit may give.'

Separation standards are not prescribed for application by ATC between VFR flights or between VFR and IFR flights in Class D airspace. However, ATC has a responsibility to prevent collisions between known flights and to maintain a safe, orderly and expeditious flow of traffic.

The controller had a responsibility to ensure that the Vulcan's routeing to join downwind LH was not in conflict with the departing DHC-8. The Radar controller, acting as the OJTI to the trainee, was distracted by the non-operational telephone call. CAA ATSI considered that this resulted in the situation developing, which the controller was unable to resolve in a satisfactory manner and for which the controller must accept some responsibility.

CAA ATSI considered the lack of response from the Vulcan crew on 6 occasions, was a significant contributory factor that caused a delay in resolving the conflict.

The DHC-8 pilot intuitively recognised that there was a problem and elected to report on RW heading, rather that R onto the SID. This significantly contributed to a resolution of the situation.

Recommendation.

CAA ATSI recommends that the ATSU reminds controllers of the requirement to ensure that non-operational conversations must not be permitted to interfere with a controller's operational duties. MATS Part1, Appendix E, Page 2, paragraph 2, states:

'Non-operational and other conversations have the potential to distract a controller from their primary task of providing a safe air traffic service. Examples include telephone conversations with external agencies, such as airline representatives, and discussions between controllers conducted on the telephone, intercom or, in some cases, face to face, following an unplanned traffic situation.

Non-operational conversations must not be permitted to interfere with a controller's operational duties. Procedures at units should ensure that non-urgent telephone calls from external agencies could be accommodated without prejudicing the controller's primary task.'

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC authorities.

Several elements highlighted in the comprehensive ATSI report were raised by Members in a lively and lengthy debate. From the initial call to Approach by the Vulcan crew, which was distorted and needed 2 calls to establish 2-way communication, there was a train of events which went unbroken leading to the Airprox. The Vulcan crew did not reply to the instruction to squawk, prompting another transmission from the controller to obtain a read-back but this reply did not include the QNH. The next RT exchange included a clearance to enter CAS, VFR on track to the Doncaster OH, which was answered with an incomplete read-back of the routeing that went unchallenged by the controller. At the time this instruction was issued the Radar controller was not aware of the impending DHC-8 IFR departure. The Radar controller expected the Vulcan would track direct to the OH and be in a position from which its crew would then join the visual cct. It was then that Radar telephoned the Airport Authority. When Tower called for a departure release on the DHC-8, the Radar controller was happy to release the flight on its UPTON 1A departure as he had formulated a plan to allow the Vulcan to join LH downwind which he assumed would keep the ac to the E of the RW20 climbout. So when the Vulcan crew called for further descent he cleared

the flight to descend without a level restriction but passed inaccurate TI on the departing DHC-8's routeing once airborne, stating the ac would be turning NE instead of NW after departure before approving the LH downwind join by the Vulcan. Meanwhile the DHC-8 crew had been cleared for take-off by Tower and informed of the Vulcan's expected routeing to the E of the climbout. In passing TI to both flights the controller had discharged his responsibilities with respect to IFR and VFR traffic in Class D airspace; separation standards are not prescribed, and he believed that the ac would not be in confliction if the ac had followed his plan. However, it was apparent to controller Members that even if the Vulcan carried out the Radar controllers plan, flying towards the OH could still conflict with the DHC-8 as the ac could route very close to the extended C/L of the RW before turning R to position downwind LH. Had the controller been more positive with the Vulcan crew by stating that the flight must remain E of the RW20 climbout track and specified a distance, this would have clarified the Vulcan crew's 'air picture' of the traffic situation. When the TI and take-off clearance were issued to the DHC-8 flight, this was the last chance that its crew had to assess the information and elect not to take-off if they were unhappy with the Vulcan's flightpath. The DHC-8 crew was reminded, 1min after the initial take-off clearance and TI were issued, that the flight was cleared for take-off; this delay was thought by Members to have been due to the crew assimilating the traffic situation prior to departing.

From then on the situation deteriorated as the Vulcan did not route direct to the OH but tracked NW, crossing the RW20 climbout at a range of just over 8nm before Radar recognised the situation albeit late. Although the Vulcan's radar return had been garbling with traffic in the GAM area, Members were concerned that Radar allowed himself to be distracted in making the telephone call to the Airport Authority. This led to a late recognition of the Vulcan's flightpath, which was not in accordance with his intended plan, and this had caused the Airprox. He tried to confirm that the Vulcan would be turning R to join downwind LH, however this transmission went unanswered. Radar then tried to stop the DHC-8 departing but the ac was already rolling for take-off so he attempted to apply vertical separation by asking Tower to stop the DHC-8 at 2000ft, advising the ADC that he would stop the Vulcan at 3000ft. However, when Radar instructed the Vulcan flight to stop descent the ac was already passing 2900ft and the crew did not respond. After another call to the Vulcan flight its crew replied that they were at range 6nm with the airfield in sight and transferring to Tower. Members commented that this call would have been normal had the ac been flying into a military aerodrome but flying into Doncaster within Class D airspace the Vulcan crew should not have expected 'military style' procedures to be acceptable. In the event, however the Vulcan remained on the Radar frequency. Given the METAR visibility value, this sighting is consistent with the in-flight visibilities reported by both crews, the Vulcan crew viewing down-sun and the DHC-8 crew flying into sun. Radar asked the Vulcan crew to maintain 3000ft and informed them of the DHC-8 traffic climbing 1000ft below however there had been no response. By now the Vulcan was W of the climb-out tracking 010° and towards the W side of Doncaster aerodrome. Radar again called the Vulcan flight asking if the crew had copied his last transmission but the crew then reported levelling at 2000ft. Immediately thereafter the DHC-8 flight made its initial call to Radar and was given an immediate L turn onto 090° and was told to maintain 2000ft. As the ac were about to pass at the CPA, Radar passed TI on the DHC-8 to the Vulcan crew but again this transmission was not acknowledged. Radar informed Tower that the Vulcan would be joining RH downwind, then instructed the flight to do so and passed the frequency but the crew queried whether that transmission was for their flight. Radar repeated the frequency but did not challenge the lack of read back to the joining instruction. Thereafter the Vulcan turned R and passed over the aerodrome to the E before turning downwind LH.

Pilot Members agreed that the DHC-8 crew had displayed excellent CRM. During a particularly high workload phase of their flight their SA of the situation was first-rate which had enabled them to execute a L turn immediately when instructed by Radar as the subject ac approached the CPA. Members agreed that the Radar controller's efforts were hampered by the communication difficulties with the Vulcan and were disappointed that the Vulcan crew had missed so many RT calls and repeatedly given incomplete read–backs. However, Members agreed that unless ATC challenged any missing or incomplete read-back there was no agreement reached between both parties. Although the DHC-8 passed the Vulcan unsighted by its crew, the flightpaths flown by both ac combined with the actions taken by Radar and the DHC-8 crew were enough to allow the Board to conclude that any risk of collision had been effectively removed.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Late recognition that the Vulcan was not flying in accordance with the controller's expectations.

Degree of Risk: C.

AIRPROX REPORT No 2011025

AIRPROX REPORT NO 2011025

Date/Time:	30 Mar 2011 1238Z	
Position:	5816N 00330W	(17nm SW WIK)
Airspace:	N560D	(Class: F)
	Reporting Ac	*Reported Ac*
Type:	SF 340	Tornado GR4
Operator:	CAT	HQ Air (Ops)
Alt/FL:	FL80	FL075
Weather:	VMC CLBL	VMC CLBL (4000ft above cloud)
Visibility:	NK	10km
Reported Separation:	0ft V/1nm H	500ft V/3nm H
Recorded Separation:	300ft V/2.8nm H	

See Diagrams below

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE SF 340 PILOT reports flying a passenger flight inbound to Kirkwall heading 043° on N560D at 230kt and FL80; they were squawking as directed with Modes C and S, nav lights and HISLS were on, and TCAS was fitted and serviceable. When they had about 30nm to run to WIK he saw a TCAS contact 6nm W of them just as the controller asked for their meteorological conditions; he replied, "VMC between layers". They were given an immediate turn on to 090°, followed by an avoiding action turn further R onto 120°; at that point he became visual with a single Tornado ac. They were then turned onto a heading of 180° as two more contacts appeared and he was given a further turn on to 270° to avoid them. When the ac was on track he became visual with two Tornados manoeuvring below them.

He reported the Airprox to ScACC and his company assessing the risk as being low.

THE TORNADO GR4 PILOT reports flying a singleton OCU low level training sortie in a grey ac with strobes and HISLs switched on; TCAS was not fitted. They were squawking 7001 with Modes C and S, heading 140° at roughly 300kt having broken off an attempt to prosecute a low level SAP on a heading of 065°, about 20nm W of Wick. Low cloud had forced a high workload emergency abort from low level at 1235; following the abort they levelled initially at 8000ft and set a heading of 140° for recovery to Kinloss for a booked practice diversion.

Aware of the proximity of Class F airspace SW of Wick, he contacted Lossie APP in order to obtain a radar service. While establishing radio contact with Lossiemouth at the edge of ADR N560D, they set 1013mb and descended to level at FL75 in order to be at the correct quadrantal FL. Prior to formal radar identification by ATC, Lossie APP informed them of civilian traffic 5nm ahead, crossing R to L, 100ft above. Lossie APP then informed them that the traffic was taking avoiding action, and at 1236:30 updated the position of the civilian traffic as being 2 o'clock at 3nm. At this point they observed the civilian traffic in the position called by ATC (3nm away and 500ft below), but they could not determine the ac type.

They perceived no confliction based on visual separation, but followed a subsequent air traffic recommendation to turn L onto a heading of 090°. The pilot was VMC throughout this incident.

The report was filed in response to an Airprox report believed filed by the civilian ac; he assessed the risk as low/ none.

ScACC MORAY PLANNER/TACTICAL CONTROLLER reports that he was providing a SF 340 with a DS on N560D [Class F] inbound to Kirkwall. The ac had left FL90 and was descending to FL70 when he saw a 7001 squawk in the ac's 10 o'clock at about 5nm with no mode C. It appeared that the mode C was then activated by the military ac and it was showing FL072 climbing but on a roughly parallel track to the SF 340 heading. He asked

the SF 3400 pilot for his flight conditions and he reported they were IFR [sic – see SF 340 pilot's report above] so he gave the ac a precautionary turn onto 090°. Almost immediately the military ac turned towards the SF 340 and commenced a further climb so he gave an avoiding action turn onto 120°. He did not consider a vertical solution as the military ac was climbing towards his traffic which was descending.

The SF 340 pilot then reported that he had the military ac on TCAS so the controller took no further action. By that time, the ac were very close and the STCA was flashing red. He then realised the SF 340 pilot had only stated he had the ac on TCAS but had not stated that he had a RA so he gave a further avoiding action turn onto a heading of 180°. Lossiemouth radar then called him but they were both too busy to co-ordinate with each other.

He then saw second pair of ac squawking 7001 that was also climbing out from the same area. As a precaution he turned the SF 340 away from these ac but he eventually managed to get co-ordination with Lossiemouth radar.

The controller asked the SF 340 pilot if he wished to file an Airprox and he said yes.

THE RAF LOSSIEMOUTH APP CONTROLLER (Lossie APP) reports a Tornado ac free-called on Stud 4 and she observed a fast moving track in the vicinity of its reported position. There was a further return about 5nm ahead of it and slightly above, displaying an ORCAM squawk, following the route of N560D. She called the ac to the Tornado, using the words 'traffic believed to be you has traffic' advising that the ac was indicating slightly above but descending. She gave the Tornado a Lossiemouth squawk and called the Moray Sector Controller (MOR) who answered almost immediately; she could hear the controller giving advice to the SF 340 involved, however, despite her best efforts she was unable to speak to the controller. She then formally identified the Tornado and placed it on a TS. Throughout her attempts to contact the MOR controller she continued to pass information to the Tornado regarding the other ac until the Tornado pilot reported "visual". The (Lossie) controller heard the MOR ask his ac whether or not he was 'still visual' but she could not effect co-ordination with MOR as the Controller was talking to the SF 340 continuously.

She believes that the ac came within approximately 3nm and 100ft – the height being based on the mode C readout. The civil traffic was given a RH turn from a NE'ly heading then through S onto NW so she asked the Tornado to head E, which took it further away from the civil traffic.

She heard the civil controller ask the SF 340 if he wished to file an Airprox, at which time she asked the Lossie Supervisor (Sup) to listen in. The Sup eventually managed to effect co-ordination on her behalf but by that time the ac were diverging; the Tornado to the E of N560D heading E and the SF 340 to the W of the ADR tracking N.

She handed the ac to Director for a radar-to-visual recovery and was relieved by another qualified controller.

UKAB Note (1): Both NATS and RAF Lossiemouth conducted comprehensive internal investigations; for brevity they have not been included as they are summarised in the ATSI and HQ 1Gp BM SM2 reports below.

ATSI reports that an Airprox was reported by the pilot of a SF 340 when it came into confliction with a Tornado, 17nm SW of WIK, as the SF 340 descended through FL080. The Airprox was also reported by the Prestwick Centre MORAY controller (MOR). The SF 340 was on a flight from Glasgow to Kirkwall and in receipt of a DS from the MOR sector on 129.225MHz. The Tornado had been on a low level sortie when cloud forced an emergency low level abort and established contact with Lossiemouth APP in order to receive a radar service.

The MOR sector was being operated as a combined tactical and planner position, his workload was assessed as light to medium and there were no reported unserviceabilities or distracting factors.

ATSI had access to the SF 340 pilot's report, the Tornado pilot's report, the ScACC watch and unit investigations, recorded area surveillance and transcript of frequency 129.255MHz.

The SF 340 established contact with the MOR sector at 1221:40, the ac was maintaining FL170 and a DS was agreed; the SF 340 continued inbound WIK on ADR N560D and at 1230:20 it was descended to FL090 and 3 min later it was given further descent to FL070.

AIRPROX REPORT No 2011025

At 1235:35 a 7001 return (the Tornado) appeared on the display 11nm N of the SF 340 but initially there was no Mode C readout. The return initially tracked parallel to the SF 340 and the Tornado's Mode C initially showed as FL078 with the SF 340 descending through FL093.

At 1236:00 the MOR controller requested the SF 340's flight conditions and the pilot replied, "*between layers, VMC at the moment*". By 1236:04 the Tornado had commenced a right turn and was tracking perpendicular to the ADR at FL080. STCA activated at 1236:23 at which time the MOR provided TI as, "*pop-up traffic in your ten o'clock at a range of 5 miles",* followed by the instruction, "*turn right immediately heading 090 degrees".* The pilot read back the instruction and, at 1236:35, the controller upgraded this to, "*avoiding action turn right immediately onto a heading of 120 degrees"* and updated TI was provided.

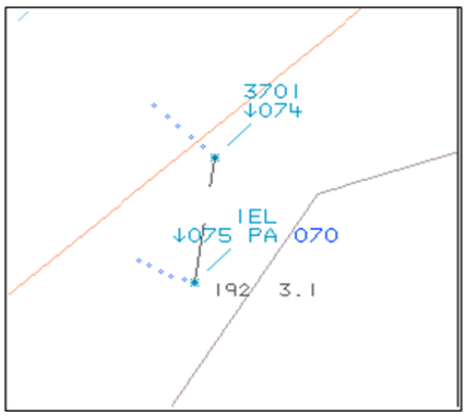
At 1236:49 a high-level STCA activated when the ac were 5nm apart on converging tracks, the SF 340 descending through FL082 and the Tornado maintaining FL082.

The SF 340 pilot then informed the controller, "a*nd have TCAS contact erm visual now"*.

The SF 340's right turn can be seen to take effect at 1236:58, at which time the STCA alert downgraded to low severity.

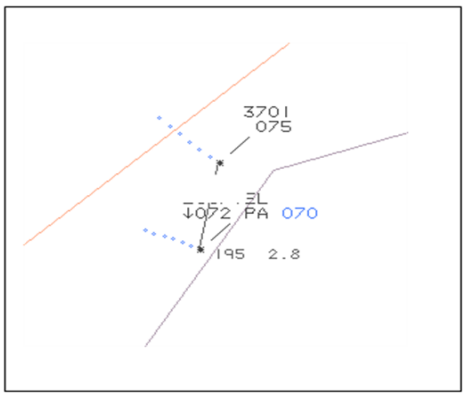
At 1237:00 the MOR controller initiated a call to Lossie APP. The line remained open as the MOR controller listened to the Lossiemouth controller who was then handling the Tornado. [See UKAB Note (2)]

At 1237:10 the Mode A code of the Tornado changed to 3701 (Lossiemouth) and by 1237:30 both ac were on parallel SE'ly tracks, 3.1nm apart, the SF 340 descending through FL075 and the Tornado descending through FL074 (see photo below).



(PC MRT 1237:30)

At 1237:20 the MOR controller asked the SF 340 pilot if they were still visual with the traffic. The pilot replied, "*Negative, we're in cloud now*". The controller then gave a right turn onto a heading of 180°. The minimum distance between the two ac was 2.8nm laterally, 300 feet vertically, at 1237:40.



(PC MRT 1237:40)

By 1238:00 the Tornado had taken up an E'ly track and the SF 340 was instructed to continue its right turn and resume own navigation to Kirkwall. It was only at this time that the workload of the Lossiemouth controller permitted co-ordination with the MOR controller.

The MOR controller correctly noted that although the SF 340 pilot had reported visual and having TCAS contact, an RA had not been reported. These facts had prompted him to ascertain if the SF 340 had remained visual with the Tornado; when the response was negative, he gave further avoiding action as necessary.

The CPA occurred 17nm SW of WIK in Class F advisory airspace between a SF 340 at FL072 and a Tornado at FL075. Minimum lateral distance was 2.8nm.

The Tornado had aborted a low level sortie and sought the assistance of Lossie APP during its recovery. During this time it came into confliction with the SF 340 NE bound on the ADR. The PC MOR controller observed the emergency climb out and instructed the SF 340 accordingly.

Controllers providing a DS will provide specific surveillance derived TI and issue headings and/or levels aimed at achieving planned deconfliction minima. MATS Pt 1 stipulates that against un-co-ordinated traffic the planned deconfliction minima is 5nm or 3000ft. Whilst the deconfliction minima were not achieved in this case the following actions mitigated and minimised the impact of the encounter:

Prompt TI by the MOR controller.

The MOR controller followed the actions of the Lossie APP on an open telephone line, thus providing complementary instructions to the SF 340.

Recognising that an RA had not been reported by the SF 340 the controller updated the avoiding action as necessary.

HQ 1GP BM SM reports (abridged to avoid duplication) that following the Tornado's initial call, Lossie APP was able to correlate their radar return with its reported position and immediately passed TI on the SF 340 stating, "*traffic south, 5 miles right to left, indicating slightly above descending, civil traffic just 100ft above descending*"; at that point the SF 340 was bearing 187°, 6.8nm from it and descending through FL085. Shortly thereafter [1236.58 from Lossie APP transcript] APP rang MOR and although the call was answered immediately, the MOR controller was too busy initially to conduct any liaison.

At 1236:45 it is evident on the radar replay that the SF 340 has turned right, eventually rolling out onto a SE'ly track. Throughout the incident sequence APP continued to pass TI to the Tornado on the SF 340 and then at 1237:23 suggested a left turn onto E to increase the separation between the ac. At that point the SF 340 was

3.5nm SSW of the Tornado and both ac were indicating FL075. Moreover it is around that point that the Tornado crew became visual with the SF 340, reporting as such at 1237:31.

At 1237:44 the Tornado's turn onto E is evident on radar and coincides with the CPA, with 2.8nm lateral and 300ft vertical separation existing.

The Tornado crew correctly prioritised the low-level abort and, once established at a safe level and cognisant of the presence of the ADR, contacted APP for a radar service. APP provided a good level of service to the Tornado passing accurate TI allowing them to visually acquire the SF 340 in good time but, conscious of the MOR controller's responsibilities and the difficulty in establishing liaison with him, also suggested a turn onto E to increase separation between the 2 ac.

This was a confliction in uncontrolled airspace where the safety barriers provided on the one hand by the provision of TI in aiding aircrew to 'see and avoid' and on the other by the provision of deconfliction advice iaw CAP 774, resolved the situation before safety was compromised.

UKAB Note (2): The Tornado first show on the PC MRT at 1235:35 as a 7001 squawk with no Mode C. The Tornado called Lossiemouth at 1236:20 with the call sequence being completed 6sec later and the first TI on the SF 340 was passed a further 8sec later. Analysis of the respective transcripts shows that MOR and Lossie APP initiated calls to one another at precisely the same time (1236:58). The call however, was not answered by the MOR controller until 1238:20 (to the nearest 20 sec). The MOR RT transcript shows that RT frequency was in continuous use from 1237:20 to 1238:20; the Loss APP frequency was busy continuously from 1236:19 to 1238:04. The CPA was at 1237:40.

UKAB Note (3): The analysis of the PC MRT radar recording confirmed the analysis conducted by ATSI above (and NATS). The pair of Tornados mentioned by the SF 340 pilot cross from L to R under the SF 340 well after the Airprox (3½ min) when the SF 340 is re-established inbound WIK, 5nm W of the ADR C/L; they are never above FL040 (3000ft below the SF340).

HQ AIR (OPS) comments that the Tornado crew correctly prioritised the need to conduct a Low Level Abort before the need to avoid the Class F airspace. They then sought to obtain a radar service as soon as was practical; perhaps a call to ScACC Mil on the ICF would have allowed quicker coordination with ScACC MOR given the co-location of those 2 agencies. Nevertheless, the ScACC controller reacted promptly to the pop up traffic and gave avoiding action to prevent a further erosion of separation.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

A majority of Members agreed that this had been a potential conflict on a Class F ADR, recognised as such as soon as it became apparent by both controllers, who acted swiftly and correctly to resolve the situation, preventing any actual conflict or risk of collision.

Pilot Members noted that the Tornado crew had demonstrated good awareness of the ADR, acted appropriately by being predictable (to the controllers) and crossing it at right angles and level at the (lowest) appropriate quadrantal FL. Further, as soon as they had the capacity following the emergency climb out from Low Level, the Tornado crew contacted the appropriate Radar Unit (Lossie App is the local LARS unit) for assistance. Members observed that although ScACC and ScACC (Mil) are co-located at Prestwick Centre, the respective controllers are not adjacent; co-ordination would still have required a telephone call and would not have been any quicker had the Tornado crew called ScACC (Mil) rather than Lossie App.

Controller Members also observed that both controllers had, in their opinion, acted quickly and correctly, not allowing a conflict to develop. Although the Moray Sector controller did not achieve the desired deconfliction parameters, Members agreed that in the circumstances, he could not have done any more. Members also noted that both Controllers had initiated calls to each other at about the same time but at the precise moment of the calls,

both had been too busy to initiate co-ordination; the open line however had been useful in that it allowed them both at least some information on each other's actions.

Members also observed that the ScACC controller had noted quickly that the Saab was not reacting to a TCAS RA, merely that he had a TCAS contact for the Tornado; on realising this he immediately acted by attempting to gain the desired (horizontal) separation from the latter. TCAS terminology for pilots had been the subject of a previous UKAB Recommendation (2010018) resulting in the CAA issuing Safety Notice SN-2011/012 of 8 Sep 2011.

Members discussed at length the risk associated with the incident and whether it should be classified as risk Category C or E. While everyone agreed that the actions taken by the aircrew and controllers had removed the risk of a collision, the controllers were required to work hard and had difficulty in coordinating their actions; furthermore despite being given avoiding action the S340 did not maintain 5nm/3000ft separation from the Tornado and there was confusion over whether the S340 was responding to a TCAS RA. These factors were enough to satisfy some Members that the event had been an Airprox with a Risk Category C. Other Members opined that the event was a routine event for this type of airspace and normal procedures, safety standards and parameters had pertained; therefore it would be misleading to consider it to be an Airprox event. The latter view prevailed by a small majority.

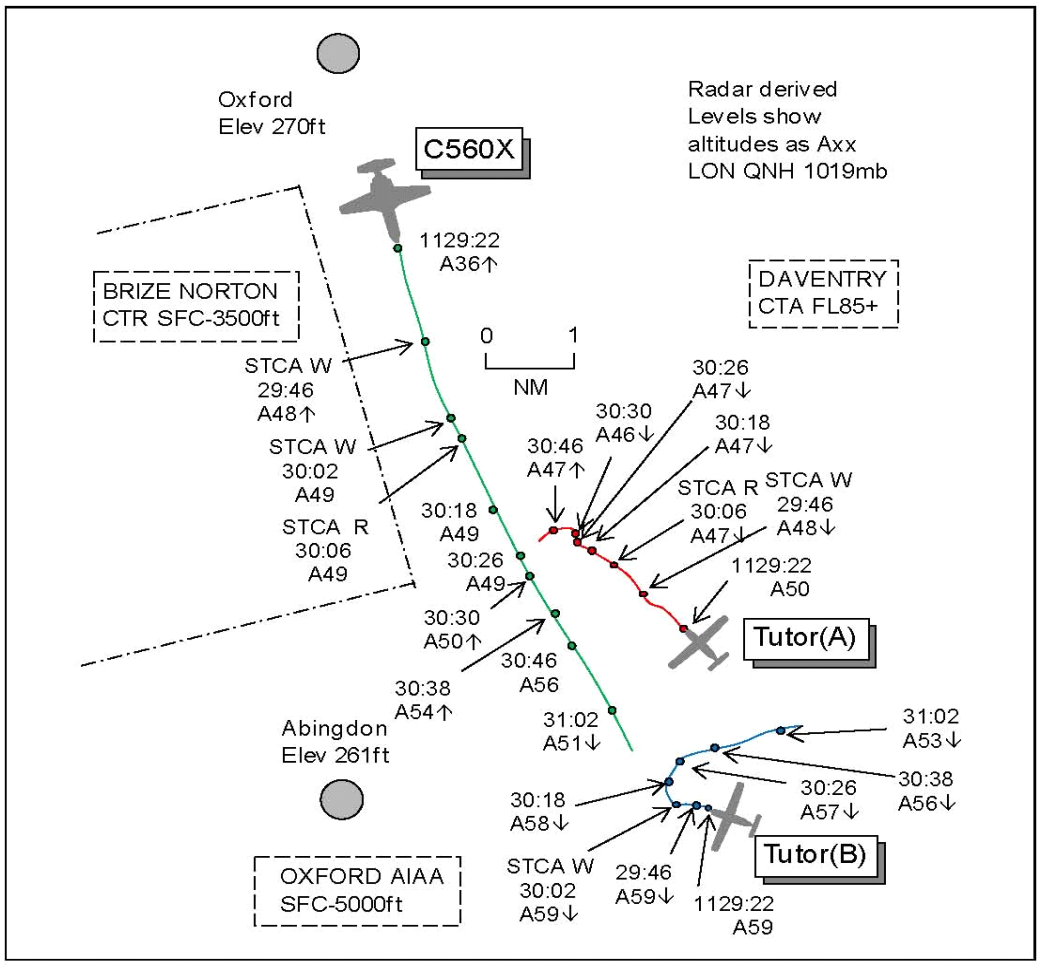
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A potential conflict resolved by both controllers.

Degree of Risk: E.

AIRPROX REPORT NO 2011026

Date/Time:	1 Apr 2011 1130Z		
Position:	5144N 00115W (15nm N CPT)		
Airspace:	Oxford AIAA	(Class: G)	
Reporter:	LTC OCK/SE LOW		
	1st Ac	*2nd Ac*	*3rd Ac*
Type:	C560X	Tutor(A)	Tutor(B)
Operator:	Civ Exec	HQ Air (Trg)	HQ Air (Trg)
Alt/FL:	5000ft (QNH 1017mb)	5000ft (QNH)	FL50
Weather:	VMC CLNC	VMC CLAC	VMC CLAC
Visibility:	>10km	>10km	NR
Reported Separation:	400ft V/NR H	above V/2nm H	Not seen
Recorded Separation:	C560X v Tutor(A) 200ft V/0·7nm H C560X v Tutor(B) 200ft V/1·8nm H		



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE LTC OCK/SE LOW CONTROLLER reports that an Oxford departure, the C560X, had been given a clearance to remain outside CAS and to call for join. He noticed that there were 2 Benson ac operating on the route towards CPT between FL40 and FL60. As the C560X flight called on frequency climbing to FL50, STCA activated against the first Benson ac [Tutor(A)] which was at FL49. He told the C560X crew that they were under a BS only but that there was traffic 11 o'clock 5nm now descending to FL48. He re-called the traffic at 2nm at the same level before the C560X was seen to climb to FL54 and its crew reported that they had climbed owing to traffic. In taking the climb the C560X came into conflict with the second Benson ac [Tutor(B)] so he called this as traffic and gave the C560X flight a joining clearance on track CPT altitude 6000ft to enable further climb. When the C560X flight was inside CAS he asked the crew if they had seen the traffic to which they replied that they had not seen it but had responded to a TCAS RA. While this event occurred outside CAS and under a BS, a flight on frequency activating STCA with 2 other unknown ac and reporting a TCAS RA could be a distraction.

THE C560X PILOT reports outbound from Oxford, IFR and in communication with London on 135·8MHz, squawking 5251 with Modes S and C. They had received a clearance from Oxford to take-off RW19 with a L turn to CPT and to climb to 5000ft with the assigned code and to contact London after take-off. After calling London they were assured again of 5000ft to CPT under a 'Traffic Advisory' service, he thought. Heading 150° at 240kt and maintaining 5000ft they received TI on traffic in their 1230 position, he thought, range 6nm. Neither the PF in the RHS nor he could visually acquire the traffic but it was shown on TCAS to be closing quickly and almost at the same height. He switched the TCAS from 12nm to 6nm range but then received a TCAS RA 'climb, climb'. The co-pilot initiated the manoeuvre without delay and he also increased the ROC. This climb took them to 5800ft; a second ac was no immediate threat owing to their climb. He informed London as soon as the frequency wasn't occupied. Flight conditions were VMC but they never visually acquired any traffic. Shortly thereafter they were cleared to FL60 and were fully IFR controlled.

THE TUTOR(A) PILOT reports teaching an elementary flying exercise to a UAS student at 100kt and in receipt of a TS from Benson. The visibility was excellent above a uniform layer of cloud, tops 3500ft. The controller alerted him to fast moving traffic to his NW with which he was already visual in his 1030-11 o'clock approximately 3nm away and at the same height, 5000ft; he acknowledged this accordingly. The other ac was on an opposite track and it was clear that his continued heading would keep him well clear of it. The other ac appeared to maintain its heading in a gentle climb and passed abeam on his LHS at range 2nm and at high speed, sufficiently far enough away to make it difficult to identify the ac type but he thought it was a Citation. At no point was there any perceived risk and the Citation did not deviate from its track throughout. He maintained visual contact with Citation throughout until it cleared to the S.

THE TUTOR(B) PILOT reports flying a dual training sortie from Benson and in receipt of a TS from Benson squawking with Modes S and C. About 4nm S of Oxford he was flying above 8/8th cloud outside CAS on recovery to Benson in excellent visibility. He was on an E'ly heading at FL50 when he was advised of fast moving traffic 2nm to the NW, behind him, 200ft below and climbing. He did not consider this traffic to be a threat but asked ATC to keep him posted. He was later advised that the other ac was submitting an Airprox.

THE BENSON APPROACH CONTROLLER reports operating bandboxed with Director. At 1115 he received a telephone call from Oxford with TI on an ac departing Oxford squawking 5251 climbing to 5000ft to join CAS at CPT. He was asked if he wanted to work the flight and due to him having no traffic to affect at the time he declined after consultation with Zone. At 1130, 15min after the TI was passed, he witnessed an ac leaving the Oxford ATZ squawking 5251 and, as now he had traffic in the area, he passed TI to Tutor(A) pilot, who called visual, and to another Tutor flight, Tutor(B), whose pilot asked to be kept updated. Both Tutors were under a TS and due to the non-threatening heading of the traffic he did not consider an update to be relevant and therefore none was passed. Shortly after this Tutor(A) flight downgraded to a BS and changed frequency to Stud 7. Shortly after this he was relieved for lunch and on arrival back in the Tower he was informed that LTC S had filed an Airprox on both Tutors.

ATSI reports that an Airprox occurred approximately 10nm N of CPT when the C560X came into confliction with a Tutor at altitude 5000ft.

The C560X departed Oxford for a flight to Bern, Switzerland. The C560X was in contact with the LTC OCK sector on 132·125MHz and in receipt of a BS.

AIRPROX REPORT No 2011026

The Tutor had departed Benson and was on a training flight, in receipt of a TS from Benson Approach.

LTC OCK was manned by one controller and there were no reported unservicabilities or undue distractions. The OCK controller filed an Airprox report. ATSI assessed the controller's workload as 'light'.

ATSI had access to controller and pilots' reports, transcript of frequency 132·125MHz, recorded area surveillance and the ANSP unit report.

The C560X flight departed Oxford's RW19 cleared, *"left turn to Compton, climb altitude 5000 feet, squawk 5251"*. The code 5251 was the airways Mode A code for the flight and was code-c/s converted on the OCK controller's situation display. The C560X was airborne at 1128 (UTC).

The LTC Manual of Air Traffic Services (MATS) Part 2 STH 5.7 Para 5.8.2 states:

'All departures from Oxford requesting an airways join at CPT are pre-noted to Brize Radar. On occasions, Brize Radar may provide a service to such departures subject to workload.'

Further provision is also made for Oxford ATC to pass details of departures towards CPT to Benson, when Brize Radar will not work such departures. ATSI were unable to ascertain if the C560X flight was offered to either Brize Norton or Benson for a service.

The C560X appeared on the OCK controller's situation display at 1129:23 as it passed through altitude 3600ft. Pease Pottage was the radar in use.

At 1129:25 the C560X pilot called the OCK sector and a BS was assigned. The ac was 18·5nm N of CPT, where the base of CAS is FL085.

[UKAB Note (1): Pilots are notified in UK AIP ENR 1-6-1-1 (12 Mar 09) that no DS or TS will be available on any London Control frequency below FL070.]

Under a BS controllers are not obliged to pass TI; however, a controller with access to surveillance derived information may pass a warning to pilots if that controller considers a definite risk of collision exists.

At 1129:40 the OCK controller informed the C560X flight, *"(C560X c/s) although it's a Basic Service outside be advised there is traffic in your 11 o'clock range of approximately 5 miles showing flight level four nine er descending actually four eight now unverified.*" The controller's transmission ended at 1129:52, by which time STCA low-level alert had activated between the C560X and an A3610 return [Tutor(A)]. Both ac were at altitude 4800ft (London QNH was 1019mb), Tutor(A) in the C560X's 11 o'clock range 3·8nm.

The C560X pilot replied, *"Yeah, we have contact er one thousand below."* The controller did not detect this discrepancy.

Another low-level STCA warning activated at 1130:02 on a Benson squawk A3611, Tutor(B), at altitude 5900ft in the C560X's 11 o'clock, range 5·4nm.

At 1130:05 a high-level STCA warning activated between the C560X and Tutor(A).

The controller updated the TI on Tutor(A) at 1130:16, *"and (C560X c/s) previously mentioned traffic at about two miles now er in your 11 o'clock opposite direction showing four seven unverified."* The C560X crew acknowledged with, *"Er".* The C560X was now at altitude 4900ft with Tutor(A) at 4700ft, range 1·8nm closing from the L, 11 o'clock.

[UKAB Note (2): The CPA occurs at 1130:26 when Tutor(A) passed down the LHS of the C560X with lateral separation 0·7nm, the C560X showing altitude 4900ft and Tutor(A) at 4700ft. The next sweep 4sec later shows the lateral separation still at 0·7nm with the C560X climbing through 5000ft and Tutor(A) descending through 4600ft.]

At 1130:49 the C560X flight reported, *"…we had to climb up due to er climb advisory of the TCAS of the mentioned traffic we're descending to five thousand again."* The C560X had climbed to altitude 5600ft. STCA had ceased on Tutor(A) but reactivated on the 3611 return, Tutor(B).

The controller acknowledged the C560X's climb and at 1130:57 gave TI on Tutor(B) return which by now had turned E'bound away from the track of the C560X, *"…there's further traffic now in your nine o'clock showing five four unverified you are clear to enter controlled airspace in the climb to altitude six thousand feet if you want to climb."*

No further TCAS incidents were reported.

Shortly before leaving the OCK frequency the controller asked the C560X pilot if they had seen the Tutor traffic, to which the reply was negative. The flight conditions later reported by the C560X pilot were 'VMC (visibility >10km in haze)'.

The controller later acknowledged that even though outside CAS under a BS, the activation of conflict alert between the C560X and the 2 other ac, plus the reporting of the RA, could have been an undue distraction. There were no other reported incidents on the sector at the time.

The Airprox occurred in Class G uncontrolled airspace 15nm N of CPT at altitude 5000ft when the C560X, inbound CPT, came into confliction with Tutor(A) operating in the vicinity.

Outside CAS the responsibility for collision avoidance rests solely with the pilot of each ac however, subject to the level of service agreed through ATSOCAS, controllers may provide TI (or deconfliction advice) as necessary.

At the time of the incident the C560X flight was in receipt of a BS; however the OCK controller deemed that the relative positions of each ac were such that a warning, in the form of TI, was necessary. Tutor(A) flight, being visual with the C560X, was able to avoid the C560X having been provided TI from Benson Approach.

There is no obligation for a third party agency to provide services to Oxford departures via CPT and similarities between this Airprox and an earlier Airprox (2011004) should be noted. London Oxford Airport has published its intention to procure surveillance equipment for operational readiness in 2012 at which time the procedures relative to all ANSPs in the Oxford-Compton area should be reviewed.

HQ 1GP BM S M reports that this incident was filed as an Airprox by the LTC OCK controller and involved 2 individual Tutors operating VFR in receipt of a TS from Benson APP and a Citation 560X which had departed Oxford in receipt of a PS from them and latterly a BS from TC OCK.

All altitudes quoted within the report, unless stated otherwise, are based on the SSR Mode C information from the RAC supplied radar replay.

At 1115:24, Oxford contact Benson stating, *"five-three-five-four squawk, climbing up towards CPT at 5, do you need to work him?"* The procedure between Oxford and Benson is that as Benson is not a unit with a mandated LARS task; they only accept Oxford traffic if they have IFR traffic that they need to de-conflict with the Oxford traffic. In this case, Benson had no such traffic.

[UKAB Note (3): The C560X assigned code was 5251.]

At 1129:45 the Citation is approximately 3·2nm S of Oxford climbing through 4800ft, with Tutor(A) 4·3nm SE at 4800ft in a slow descent, tracking NW.

Shortly afterwards at 1129:50 Tutor(A) turned L approximately 20° bringing it more directly into confliction with the Citation. At 1129:57 APP passed accurate TI to Tutor(A) flight stating, "*traffic north-west, three miles* [radar replay shows 3·7nm]*, tracking south, fast moving, one hundred feet above climbing*."

By 1130:01 Tutor(B) is 5·7nm SE of the Citation, tracking W, indicating 5900ft, with the Citation now maintaining 4900ft.

At 1130:09 Tutor(A) pilot reported visual with the Citation, with 2·1nm lateral separation existing and Tutor(A) indicating 4700ft in descent. However, the pilot of Tutor(A) stated in his report that they were already visual with the Citation at the point when TI was passed.

At 1130:15, Tutor(B) commences a long R turn onto NE.

The CPA between Tutor(A) and the Citation occurs at 1130:26 with 200ft vertical and 0·7nm lateral separation shown on radar. The pilot of Tutor(A) stated that the Citation could be seen to be "*flying the opposite track to me and it was clear that our continued heading would keep us well clear of each other*."

At 1130:35 APP passed accurate TI to Tutor(B) flight stating, "*traffic north-west, two miles* [radar replay shows 2·6nms]*, tracking south-east, fast moving, two hundred feet below climbing*." At 1130:38 the Citation has climbed to 5400ft which accords with the pilot's report to the TC OCK controller that they had manoeuvred in accordance with a TCAS RA. Although Tutor(B) pilot requested to be kept "*posted*" on the position of the Citation, with the relative courses of the ac no further update was required from APP with the Citation tracking through Tutor(B)'s 6 o'clock range 2·1nm.

The CPA between Tutor(B) and the Citation occurs at 1131:02 with 200ft vertical and 1·8nm lateral separation shown on radar.

Realistically, the Airprox did not involve Tutor(B) and occurred between Tutor(A) and the Citation. However, Tutor(A) pilot was visual with the Citation at an early point in the incident sequence, enabling him to assess the situation and determine that sufficient separation existed.

Focussing specifically on the Mil ATM issues, APP provided accurate TI to the Tutors in accordance with the criteria laid down within CAP774. Moreover, by adapting their phraseology to include the term "fast moving" they provided a better "picture" for the Tutor aircrews involved. Given the number of Tutors operating within the local area and that both Tutors had previously been passed TI on each other, exclusion of the term "fast moving" might have suggested that the TI referred to another Tutor.

In terms of the timeliness of the TI to both Tutors, based upon the information presented to APP in terms of the relative tracks of Tutor(A) and the Citation and the speed of Tutor(A), passing TI earlier than 1129:57 would have been nugatory. Moreover, in terms of the TI to Tutor(B), 1130:35 represented their first opportunity to pass TI given that they had been involved in an RT exchange with a third Tutor, involving the passing of TI to that flight. This exchange lasted from the point where approximately 4·2nm lateral separation had existed between Tutor(B) and the Citation, to the point where TI was passed to Tutor(B) at 2·6nm.

Finally, the Unit raised the issue of the landline liaison between themselves and Oxford at 1115:24 and their status as a non-LARS unit. Whilst a hindsight-bias argument could be created to suggest that APP could have contacted Oxford to pass TI to them on the Tutors, no clear benefit from such an activity could have been gained from Oxford's perspective, given the absence of surveillance equipment at that unit which would result in the passing of very generic TI to the Citation. Moreover, Oxford clearly transferred control of the Citation to LTC OCK relatively early, enabling LTC OCK to give more effective TI, despite only being able to offer a BS outside CAS.

This Airprox occurred in Class G airspace where the Mil aircrews and controllers involved discharged their responsibilities under CAP774 and the Rules of the Air exactly.

HQ AIR (TRG) comments that both Tutors operated under a TS and received timely TI that enabled them to deconflict from traffic, in Class G airspace, that did not see them. The activation of STCA and TCAS provided an additional benefit, firstly to the controller and secondly to the Citation, by highlighting a potential conflict in 'see and avoid' airspace.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of all 3 ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

The LTC OC/SE Low controller was undoubtedly concerned when the C560X flight was transferred to his frequency in potential conflict with 2 ac, Tutors (A) and (B). Although the C560X flight was flying under IFR, in Class G airspace there was equal responsibility on all crews to maintain their own separation from other ac through see and avoid. The controller was limited to providing a BS but issued a traffic warning to the C560X crew as the flightpaths were in apparent conflict, which was reinforced when STCA activated. The controller updated the warning when separation reduced to 2nm, the C560X crew reporting 30sec later that they had manoeuvred in response to a TCAS RA against Tutor(A). Members noted that the radar recording does not reflect the C560X crew's perception of the TCAS evolution as the ac's Mode C only indicates a climb as it passes abeam Tutor(A) with 0·7nm horizontal separation and 200ft vertical. The LTC controller also passed a traffic warning on Tutor(B) but by now that Tutor was tracking E'ly and the C560X had descended back to 5000ft, below it. Meanwhile, unbeknown to the LTC controller, both Tutor(A) and (B) flights were operating under VFR and a TS from Benson. Tutor(A) flight was issued with TI by Benson on the C560X which he had already seen and was taking visual separation against. (B) flight was given TI and was not concerned given the geometry, content the C560X would pass behind.

A controller Member, familiar with LTC operations, stated that an initial joining clearance would not be issued until the flight called on frequency owing to the uncertainty of the departure time from Oxford and its time en-route. The airspace in the CPT area is complicated by Luton outbound flights climbing to FL70, the lowest available level, or above, so invariably flights seeking to join are told to remain outside CAS until the controller is sure of traffic situation. Members noted that in this incident, although it was not relevant to the Airprox, the Oxford clearance to the C560X had not included the instruction to remain clear of CAS; rather it had cleared the ac to CPT at 5000ft. Members sympathised with the controller's predicament, being on the receiving end of a situation where STCA activated and a TCAS RA was reported. However, the Tutor crews had fully discharged their responsibilities whilst the C560X crew, although unable to visually acquire the Tutors, were cognisant of their presence from the LTC controller's warnings and TCAS, and had followed the TCAS guidance. The Board believed that LTC controller, from the information presented, had perceived a conflict between the IFR C560X and VFR Tutors but there had been no erosion of normal safety standards or parameters.

The CAA SRG Advisor informed the Board that a new routeing had been established out of Oxford towards KENET and Brize would endeavour to provide a service for those flights.

PART C: ASSESSMENT OF CAUSE AND RISK

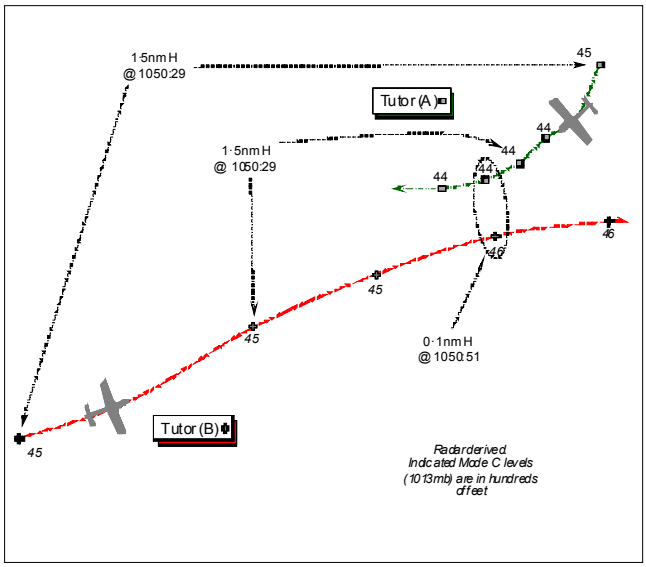
Cause: Controller perceived conflict in Class G airspace.

Degree of Risk: E.

AIRPROX REPORT No 2011027

AIRPROX REPORT NO 2011027

Date/Time:	1 Apr 2011 1050Z	
Position:	5056N 00152W (9½nm N of Bournemouth Airport)	
Airspace:	London FIR	(Class: G)
	Reporting Ac (A)	*Reporting Ac (B)*
Type:	Grob Tutor TMk1	Grob Tutor TMk1
Operator:	HQ Air (Trg)	HQ Air (Trg)
Alt/FL:	4500ft RPS (1014mb)	5000ft RPS (1014mb)
Weather:	VMC	VMC
Visibility:	30km	30km
Reported Separation:	120ft V	200-300ft
Recorded Separation:	200ft V @ 0·1nm H	



BOTH PILOTS FILED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PILOT OF GROB TUTOR T Mk1 (A), a QFI, reports that he was conducting a basic flying grading exercise in VMC above overcast cloud cover with tops to 3000ft amsl. He was in receipt of a 'listening watch' from Boscombe ZONE, on UHF and a squawk of A2677 selected with Mode C; elementary Mode S is fitted, but TCAS is not.

Flying level at 4500ft PORTLAND RPS (1014mb), heading 270° at a position about 270SAM24d [the Airprox occurred at 271SAM20d] with the candidate in control, maintaining straight and level flight, a late spot of conflicting traffic necessitated avoiding action being taken by him as the P-I-C. The conflicting ac – another Grob Tutor – was first sighted 200m ahead and to avoid it he dived to the R as simultaneously, the other ac climbed. Minimum vertical separation was about 120ft and the Risk 'very high'. Subsequently, he set course approximately E to continue the teaching element of the sortie. The conflicting traffic was identified as an ac from his Unit and the decision was made to discuss the Airprox on the ground before reporting action was initiated.

He added that the contrast between the cloud tops and the sky was affected by milky cirrus cloud above the horizon. His ac is coloured white; the HISLs and landing light were on.

THE PILOT OF GROB TUTOR T Mk1 (B), a QFI, reports he was teaching flying grading exercise 2 (effects of controls 2) to a candidate whilst keeping a listening watch with Boscombe ZONE on 256·5MHz; a squawk of A2677 was selected with Mode C; elementary Mode S is fitted, but TCAS is not.

Flying wings level at 5000ft (1014mb) above solid 8/8th cloud, heading 120° at 100kt to the N of Bournemouth, he became aware of another Tutor ac in his 11 o'clock, 100m away, slightly below the horizon and closing on a constant bearing. He broke to the R immediately and estimated that the two ac passed within 200 to 300ft of each other. As the other ac was well camouflaged against the undercast he saw it later than he would have liked. Initially he did not think an Airprox report was necessary, but he decided to discuss the situation with this colleague on the ground after landing; the Airprox was filed subsequently and he assessed the Risk as medium. His ac is coloured white; the HISLs and landing light was on.

THE GROB TUTOR PILOTS' UNIT commented that the Tutor colour-scheme is notoriously difficult to spot under the conditions experienced during this Airprox. Middle Wallop asked if the colour-scheme could be altered but was told this was not possible, although it is interesting to note that the display Tutor has a different colour scheme.

None of the Middle Wallop Tutor fleet currently has a Collision Avoidance System fitted, but the Unit's ac are scheduled to be fitted starting in June 2011.

THE BOSCOMBE DOWN ZONE CONTROLLER (ZONE) reports that he was operating LARS during a quiet period with little traffic when two Grobs called on UHF 256·5MHz. These flights were operating on a 'Listening Watch', where no ATS is provided. However, as they have a duty of care, he requested these two ac to squawk 'ident'. A further Grob Tutor pilot called up whom he also requested to squawk 'ident'. Observing two of these Grob Tutor ac in close proximity to each other, he called the other ac to the two crews; one called visual and the other just acknowledged his transmission. Shortly afterwards he handed over the position. Subsequent to the Airprox being filed, he listened to the RT tape recordings, but no mention of any Airprox was made by the pilots of any Tutor ac whilst on the frequency.

HQ 1GP BM SM reports that this Airprox occurred between a pair of Middle Wallop based Tutors operating VFR in receipt of a "Listening Watch" from Boscombe ZONE.

'Listening Watch' was introduced for Middle Wallop based Tutor ac conducting general handling in the vicinity of Boscombe Down, to facilitate co-ordination with Boscombe Down's IFR traffic when required. There is no form of flight following or undertaking to provide an ATS inherent in this 'listening watch'; the Tutor pilots simply 'check-in' on the ZONE frequency and are acknowledged. However, following the unit's investigation into this occurrence and that of Airprox 2011029, Boscombe Down ATC became concerned that their controller's perception of their 'duty of care' had blurred the line between their responsibilities toward ATSOCAS mandated within CAP774 and that of a 'Listening Watch'. Consequently, this concept has been withdrawn with Boscombe Down ATC applying ATSOCAS iaw CAP 774. A manning study is also being undertaken at Middle Wallop ATC to facilitate greater provision of ATSOCAS by that unit to their own station-based ac.

Both pilots report 30km visibility with nil weather and OVC cloud at 3000ft. The pilot of Tutor (A) reports that their visual acquisition task was hampered with the contrast between the cloud tops and the sky affected due to milky cirrus cloud above the horizon. The pilot of Tutor (B) reports a similar difficulty due to the lack of contrast between the colour scheme of Tutor (A) and the white background, compounded by their constant relative bearing.

Tutor (B) called ZONE initially at 1027:57 and, as ZONE was 'quiet…with little traffic', was instructed to squawk ident. At 1035:33, [over 15min before the Airprox occurred] the crew of Tutor (A) called ZONE and was also asked to squawk ident. Shortly after the pilot of Tutor (A) acknowledged this instruction, ZONE passed TI to Tutor (A) stating, "[callsign (A)] *Tutor 12 o'clock 1 mile manoeuvring indicating 8 hundred feet, correction 5 hundred feet below.*" The pilot of Tutor (A) replied that they were visual. ZONE then immediately passed TI to Tutor (B), stating that the ac that was the subject of that TI was "*visual with you*," making it clear that it was Tutor (A). This TI was acknowledged by Tutor (B) at 1036:24 and there were no further transmissions from ZONE to the subject Tutors until 1054:44.

ZONE states in their report that shortly after passing TI to the Tutors, they handed over the console position to a second controller. Subsequently, ZONE has confirmed that this handover took place between 1036:24 and 1054:44, with the second controller's voice evident on the tape at 1054:44. However, neither controller nor the Supervisor could state exactly when the transfer of control position occurred, nor were any details of the handover evident on the RT tape transcript due to the absence of 'live mic' recording.

The CPA occurred at 1050:51, with 200ft vertical separation and a minimum horizontal separation of 0·1nm.

Notwithstanding the conceptual limitations of the 'Listening Watch', perceiving a duty of care to exist, the first ZONE controller identified the subject Tutors and passed them TI on each other, with Tutor (A) replying that they were visual with Tutor (B). Although it has proved impossible to determine the point at which the handover of control position took place, the limitations of the 'Listening Watch' as briefed to Boscombe Down Controllers meant that they were not required to provide any flight following or TI. Moreover, the Tutor pilots' reports and subsequent conversation with the pilot of Tutor (B) have highlighted that the aircrew were under no illusion that they were in receipt of an ATS. Furthermore, given the time elapsed from the passing of TI to the CPA it is clear that the TI passed between 1036:10 and 1036:23 was irrelevant to the air situation at the time the Airprox occurred.

From a BM perspective, notwithstanding the first ZONE controller's perceived 'Duty of Care', Boscombe Down ATC had no responsibility towards the provision of TI to the Tutor crews.

HQ AIR (TRG) comments that the procedures for avoiding mid-air collisions are currently being reviewed at Middle Wallop. The embodiment of TCAS should help reduce this risk further but only against transponding traffic.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

ZONE had conscientiously passed a warning to the Tutor pilots about each over 15min before the close quarters situation, despite the 'Listening Watch' provided, but this was plainly not relevant to the air situation when the Airprox occurred later. A 'Listening Watch' was not an effective ATS and contributed nothing to the pilot's SA. Members were encouraged that the Unit, in the interests of standardisation, has subsequently reviewed their procedures and applied the extant FIS stipulated for use nationally in conformity with CAP774. The HQ Air Trg Member added that the outcome of the review initiated by No1 EFTS subsequent to Airprox 2011029, whereby the Army Flying Grading organisation was seeking an increase in controller manpower with a view to Middle Wallop ATC providing a TS to such flights, was still awaited. There was, however, a fine balance to be struck between achieving the primary training goals of the sortie and the provision of a compatible ATS to enhance the pilots' SA with the attendant increase in RT and potential interruption to flying instruction. The Traffic Alert System (TAS) embodiment to the Tutor fleet would probably have averted this Airprox and a current Tutor pilot Member, familiar with TAS, extolled its worth. [Post Meeting Note: The UKAB was subsequently advised that two of Middle Wallop's Tutor airframes had already been equipped with TAS, two are currently being fitted out, with the last due for fitment by the end of September 2011.]

The Board was briefed by the HQ Air Training Member that the issue of a more conspicuous colour scheme for service Grob Tutor ac has been considered in great detail. Unfortunately, there was no 'easy fix' as the dark colours that have been applied to other training ac, eg black to Hawk and Tucano ac, can adversely affect the Glass Reinforced Plastic (GRP) structure of the Tutor because of the heat absorption characteristics of dark colours.

Turning to the Airprox itself, it was apparent that both pilots were operating VFR and approaching each other head-on, or nearly so, separated vertically by only 100ft Mode C. Each was therefore responsible for sighting the other ac in sufficient time to afford appropriate visual separation. The pilot of Tutor (A) reports that Tutor (B) was first sighted 200m ahead and to avoid it he dived to the R as, the other ac climbed. The pilot of Tutor (B) notes that he saw the other ac marginally later at a range of 100m and broke to the R immediately, estimating that the two ac passed within 200 to 300ft of each other. This led Members to agree, unanimously, that this Airprox had been the result of a late sighting by both pilots. Whilst not doubting the veracity of the report from the pilot of Tutor (A) in any way, the dive was not readily apparent on the radar recording, whereas the R turn was shown clearly taking effect at the CPA of 0·1nm – 185m. At this point Tutor (B)'s Mode C evinces a climb of 100ft. It was indeed fortunate that each pilot had chosen to take the action that he did, complimentary to that of his colleague and in conformity with the Rules of the Air, thereby averting a more serious situation. Nevertheless, the Board concluded that at these distances the safety of the ac involved had been compromised.

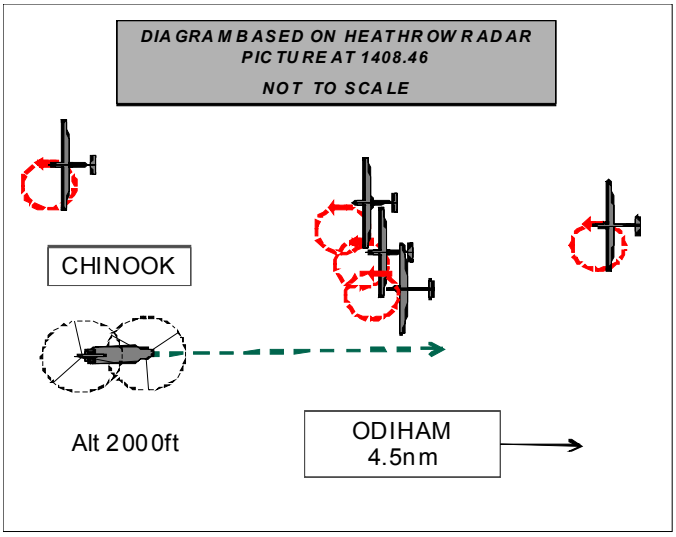
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Late sightings by the pilots of both ac.

Degree of Risk: B.

AIRPROX REPORT NO 2011028

Date/Time:	7 Apr 2011 1409Z	
Position:	5116N 00105W (5nm W Odiham - elev 405ft)	
Airspace:	Odiham MATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Chinook	Untraced Glider
Operator:	HQ JHC	N/K
Alt/FL:	1600ft (QFE 1013mb)	NK
Weather:	VMC CAVOK	NK
Visibility:	20km	NK
Reported Separation:	0ft V/150m H	NK
Recorded Separation:	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE CHINOOK PILOT reports flying a green helicopter on an SRA recovery to Odiham under a TS, in good weather conditions, squawking as directed with Mode C and S with no CWS fitted. While under radar vectoring heading 085°, out of sun, at 120kt, just prior to descent ATC called traffic in their 11 o'clock with no height and then cleared them to descend on the glideslope. On looking in the 11 o'clock the traffic was identified an estimated 300m away, and although it was much closer than acceptable, it was not an actual collision risk. The LH seat pilot then saw another object in their 9 o'clock, slightly higher than them and about 150m away, which transpired to be a white glider banking to the R away from their ac. This was perceived to pose a high collision risk as they had descended through the alt of the glider and he reported the incident to ATC on the frequency in use.

The glider was seen late and only after the call about the other ac from ATC; they were in a period of high workload with the HP 'heads in' on instruments while the NHP had just completed pre-landing checks and set up the approach aid (GPS) requiring further time 'heads in'.

UKAB Note (1): Despite extensive procedural tracing action the glider pilot could not initially be identified. However after a further approach the following e-mail was received:

'On Thursday the 7th of April I took a launch from Lasham airfield in my LS8 glider (reg given) with the intention of flying a task to the North. The weather didn't turn out as predicted and I was finding it difficult to stay airborne locally to Lasham so I abandoned the original task and decided to stay local to the airfield. The visibility on this day varied from 5n to 6km looking into sun and 10km looking down sun. About an hour into the flight when I was just south of Basingstoke and slowly climbing in a thermal I spotted a Chinook helicopter about 2 to 3 miles away approaching my location from the west. After another two turns I became obvious that he had not seen me so I straightened up and headed North. I would estimate the separation between us was 500 to 600ft. If I had carried on circling my estimation was that he would have passed 200ft below me. I was fully aware of his position at all times and I chose to move away because I suspected that he was flying a simulated instrument approach and there would only be one set of eyes looking out'.

The pilot did not say if there were any other gliders in the area as shown on the radar, nor if he was the closest glider to the Chinook. Further 'just S of Basingstoke', his reported position is about 6nm on the C/L for RW09 and about 1½ nm W of the reported incident position; it is therefore thought unlikely that he was the reported glider.

THE TD CONTROLLER reported that he was training a UT controller on SRA when the Chinook was handed over from APP. Communication was established at 7.5nm final, about half a mile south of the CL. Conflicting traffic was seen at a range of 5 and a half miles final and half a mile N of the CL. The Chinook was converging with the

AIRPROX REPORT No 2011028

CL while the glider continued to manoeuvre in the Chinook's 11 o'clock at about 2nm. Following the initial handover of the Chinook he instructed the UT controller to call the glider to the Chinook; the pilot acknowledged the traffic and continued as instructed. A few moments later, the pilot stated his intention to file an Airprox against the glider, later explaining that he thought the glider pilot was operating in an inappropriate area and displaying poor airmanship to the detriment of flight safety.

HQ 1GP BM SM reports that this Airprox occurred 4.5nm W of Odiham between a Chinook conducting an SRA in receipt of a TS from Odiham TD and an untraced glider.

Lasham airfield is a notified glider site approximately 4.5nm SW of Odiham, which has a mandatory military avoidance of 2nm radius up to 3000ft agl. The UK Mil LFHB contains a further warning that "*intensive gliding activity takes place within 5nm of Lasham*." The diagram below shows the local area.

The Chinook free-called Odiham APP at 1402:08 while 8nm WSW of Odiham, was identified and was placed on TS, reduced by APP, stating, "*reduced traffic information, you are entering an area of high traffic density with Lasham gliders*."

Although the Chinook requested a PAR for RW09, this was not available as the PAR was on maintenance; an SRA was offered and accepted.

At 1407:24 APP transferred control of the Chinook to Talkdown (TD), with comms being established at 1407:35 when the Chinook was 7nm out. TD was manned by a trainee and an experienced instructor. From 1407:35 until 1408:08 there was an almost continuous RT exchange between TD and the Chinook.

At 1408:16, TD passed TI to the Chinook stating, "*traffic north-east, 1 mile, manoeuvring, no height information, possibly gliders"* and almost immediately, the pilot responded that they were visual with the traffic. At that point on the radar replay one primary-only contact can be seen 1nm NE of the Chinook, with 2 further intermittent primary contacts 1.5nm to the NE.

The radar replay shows that the CPA probably occurs at about 1408:37. At 1408:39, the next sweep of the radar after the CPA, there are 4 primary-only contacts almost directly N of the Chinook, the closest of which is just to the NW. Although the minimum separation cannot be measured, it is likely to accord with the Chinook pilot's report.

Based upon the Chinook pilot's sighting report and their position on radar, the gliders were on, or just N of, the extended CL at about the same height as the Chinook within the instrument pattern.

The TD instructor reported that he instructed the U/T controller to call the glider to the Chinook; it is assumed that this prompt occurred between 1408:08 and the passing of TI at 1408:16. Given the RT exchange between TD and the Chinook in the 43sec after the initial call, 1408:08 would have been the first opportunity to pass TI. Moreover, the TD instructor correctly assessed that there was sufficient time to prompt TD to pass TI, before the delay became unacceptable. It is considered that that TI was passed by TD in a timely manner and enabled the crew to visually acquire at least one of the gliders operating in that area, 14sec before the CPA.

The operation of the gliders in such a constrained piece of airspace causes both technical and human problems. The lack of SSR in gliders and the ac construction makes them almost invisible to surveillance radars and it is impossible to identify the number of gliders operating in the area, thereby making it impossible for ATC to pass anything more informative than generic TI. Furthermore, there is a risk for the aircrew that, given the difficulty in visually acquiring gliders, once they have sighted one glider, the human eye will focus on that for a short period and exclude other objects, thereby reducing the time available to visually acquire any other targets.

Notwithstanding that the gliders were operating within Class G airspace, their position close to the RW approach path of a busy airfield at about the same alt as the glidepath is not considered good airmanship.

This Airprox involved a late sighting of the gliders by the Chinook crew at a time of high cockpit workload. A contributory factor was that the gliders chose to operate, inside the MATZ, close to the Odiham instrument pattern.

BM SM Spt recommends that Odiham continue to engage with the local flying community to develop awareness of their operations.

UKAB NOTE (2): The recording of the Heathrow radar shows the Chinook throughout as described by in the HQ 1 GP BM SM report. There are multiple primary only intermittent contacts, presumed to be gliders, manoeuvring just to the N of the Odiham RW09 C/L.

HQ JHC comments that the comments by HQ 1 GP BM SM are fully supported. The poor airmanship displayed by the glider pilots who chose to operate on the extended centreline of a busy airfield at around the same altitude as the glide path, undoubtedly made an Airprox much more likely to happen. The lack of SSR in gliders has been highlighted, alongside the glider's construction, as making them difficult to see on surveillance radars and by the human eye (especially when scanning for several ac at once).

HQ JHC considers that a mid-air collision with a glider or light coloured small ac is a very significant risk. This Airprox indicates that the local gliding community is probably not fully cognisant of the flying operations at RAF Odiham and/or that the risk acceptance differs between the gliding community and other aviators.

It further supports the requests in HQ JHC comments on Airprox 2011023 - that the UK Airprox Board recommends the fitting of transponders to all gliders and similarly, light coloured small ac in order to reduce the frequency of Airproxs and the likelihood of an actual collision between a military RW ac and a glider, and that the UK Airprox Board undertakes to educate the gliding community on the risk of mid air collision in the vicinity of military aerodromes.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the Chinook pilot, transcripts of the relevant RT frequencies, radar photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

Members agreed that soaring close to the instrument approach path to the active RW of a busy military airfield is, at best, ill-advised.

The gliding Member was surprised that there was not a closer liaison between Odiham and Lasham and better communication between Odiham ATC and Lasham. There were several plausible suggestions one of which was that Lasham gliders operating inside the MATZ or close to the instrument pattern, should listen out on a nominated

(VHF) frequency on which Odiham ATC could broadcast the presence of instrument traffic as soon as they become aware of an ac inbound; this would allow gliders temporarily to remain clear of the area. The HQ 1 GP BM SM Advisor stated that there was liaison between Odiham and Lasham, but others suggested that this might not be at the level required to agree integration procedures.

Several civilian Members expressed surprise that a military ac on a SRA (or GCA) should operate in receipt of a TS as they considered that pilots on instrument approaches should be in receipt of a higher level of service; they acknowledged, however, that military instrument approaches are usually flown in Class G rather than Class D airspace, which is generally the case at civilian airfields with similar traffic densities. In any case, this incident where there were gliders soaring close to the RW C/L provides a good example of why a DS can be inappropriate as the ac would be vectored round the 'unknowns' and never achieve the aim of conducting a radar approach; that being the case, a TS was the only feasible option.

The HQ JHC recommendation regarding compulsory fitment of transponders was not supported by the Board; the reasoning was discussed previously on Airprox 2011023 and is outlined in that report.

The reluctance of glider pilots to submit reports was again a factor in assessing this Airprox. The Board was grateful for the glider pilot's report at UKAB Note (1), but agreed that, since this pilot was slightly further out from Odiham, it was likely that he was not the one who came closest to the Chinook. Members did not believe that the reported pilot could have come so close to a Chinook without becoming aware of it at some stage. However, in the absence of a report from the glider pilot, it was impossible to determine whether and/or when he saw the Chinook and whether and/or when he took avoiding action. Therefore the Board reluctantly concluded that the incident had been a conflict on the Odiham approach. In assessing the risk, the Board noted that the Chinook crew saw that the glider was 150m distant and turning away from them and therefore agreed that on balance, there had likely been no risk of collision.

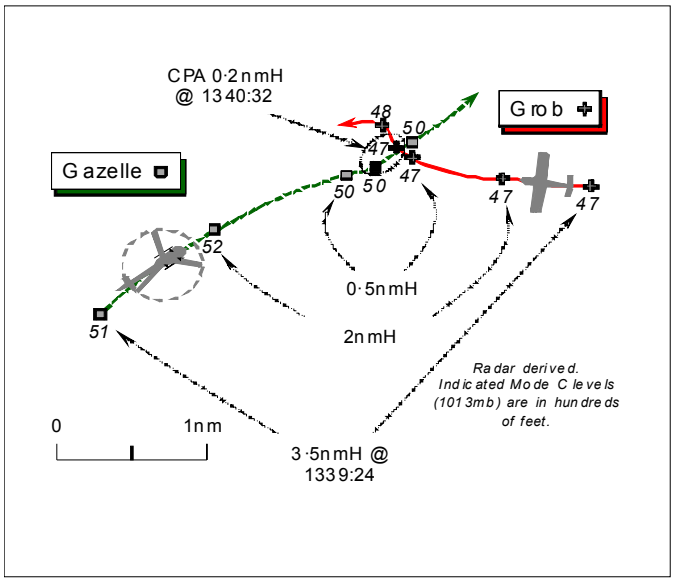
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict on the instrument approach to Odiham.

Degree of Risk: C.

AIRPROX REPORT NO 2011029

Date/Time:	6 Apr 2011 1340Z	
Position:	5102N 00154W (9nm SW of Boscombe Down - elev 407ft)	
Airspace:	London FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Gazelle	Grob Tutor T Mk1
Operator:	MoD FTR	HQ Air (Trg)
Alt/FL:	5000ft	-
	QFE (1011mb)	QNH
Weather:	VMC Sky Clear	VMC CLAH
Visibility:	50km	10km
Reported Separation:		
	Nil V/200m H	NK
Recorded Separation:		
	300ft V/0·2nm H (~370m)	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE WESTLAND GAZELLE HT Mk3 HELICOPTER PILOT reports he was conducting advanced training, VFR to the S and SW of Salisbury under a TS from Boscombe APPROACH (APP), demonstrating a flight test technique. A squawk of A2612 was selected with Modes C and S on; TCAS is not fitted. His helicopter has a white colour-scheme; the white HISLs were on.

Before the Airprox occurred traffic had been previously called by APP out to the E, which had been identified about 5min earlier operating at very low level (about 1000ft) with no confliction. Flying level at 5000ft Boscombe QFE (1011mb) heading 090° at 80kt, APP called two contacts, believed to be to the N of his ac. One was identified going away as no confliction - the other was not identified [seen]. Subsequently, on looking up from the cockpit instruments both pilots saw a white fixed-wing light ac in a banked R turn at 12 o'clock, 300-400m away and slightly below his helicopter. Minimum horizontal separation was 200m as the other ac – the Grob Tutor – resumed its course; he took no avoiding action as the Tutor had already turned away by the time they saw it. He then made a call to APP to state that he was visual with another ac now passing astern, but did not recall having been told about it. The Risk was assessed as 'high' and he added frankly, both student and instructor were looking heads-in at the time of the Airprox.

THE GROB TUTOR T MK1 PILOT reports he had departed from Middle Wallop for a local elementary training sortie, his third of four sorties of the day with a total brakes-off to brakes-on time of 5hr 50min. He does not recall the specific weather conditions although they would have been suitable for the exercise he was teaching, which was Straight and Level 1 & 2 with perhaps 1min of manoeuvring.

During the period that the Airprox occurred he would have been flying between 3000-6000ft amsl whilst operating between the SAM VOR radials of 270° to 300°, from 10nm to 30nm range. Boscombe ZONE was providing a 'listening watch' on 256·500MHz and a squawk of A2612 was selected with Mode C on; Mode S is fitted but TCAS is not.

He does not recall experiencing any event suggesting an Airprox had occurred and his normal practice on seeing another ac is to turn to avoid it or, if appropriate, increase the separation distance. Whilst they occasionally see other non-Middle Wallop ac in the local training area, he did not recall seeing any other ac on this particular day that had caused him any safety concern.

His aeroplane is coloured white with a blue stripe and all the ac's lighting was on.

AIRPROX REPORT No 2011029

THE BOSCOMBE DOWN APPROACH CONTROLLER (APP) reports the Gazelle helicopter was under his control throughout this sortie. The helicopter was operating out to 15nm SW of Boscombe Down at an altitude of 5000ft. At the same time, there were a number of Middle Wallop ac operating in the same area, mostly indicating below FL40 Mode C. There were, however, two ac indicating at about the same level as the Gazelle; one contact manoeuvring 2nm away to the NE and the second, was about 4nm E tracking W. Both of these ac were called to the Gazelle pilot, who reported visual with both ac. As the Gazelle pilot had called visual with the traffic, no further TI was offered. A short time later, the Gazelle pilot reported that an ac had passed close by at the same level. This was identified as the E'ly of the two contacts that had earlier been called to the Gazelle crew.

THE BOSCOMBE DOWN ZONE CONTROLLER did not submit a report.

HQ 1GP BM SM reports that this Airprox occurred between a Gazelle HT Mk3 conducting flight test training in receipt of a TS from Boscombe APP and a Tutor T Mk1 operating under a 'listening watch' from Boscombe ZONE.

'Listening Watch' has been introduced for Middle Wallop based Tutor ac to facilitate coordination when required against Boscombe Down ac operating under IFR. There is no form of flight following or any undertaking to provide an ATS inherent in this 'listening watch', the Tutor crews simply 'check-in' on the ZONE frequency and are acknowledged.

At 1338:47, APP passed TI to the Gazelle crew on other unrelated traffic to the NE of the Gazelle, *"…traffic north east 3 miles manoeuvring believed to be fixed wing flight level 4-5"*, which was acknowledged with *"..looking".* This was updated at 1339:12, *"…unknown contact north north east 2 miles South West"*, with which the Gazelle pilot reported visual 3 sec later.

At 1339:25, APP passed TI to the Gazelle crew on the subject Tutor stating, "*further traffic, east-north-east, 4 miles, west bound, flight level 4-7*." Following this transmission at 1339:29, the Gazelle pilot replied that they were, "*visual with traffic*." When the TI was issued the LATCC (Mil) radar recording shows that the Tutor was 3.5nm ENE of the Gazelle indicating 4700ft Mode C (1013mb), with the Gazelle indicating 5100ft Mode C. [UKAB Note (1): The CPA occurred at 1340:32 with the Tutor turning R through the Gazelle's 12 o'clock at a range of 0·2nm and below it with vertical separation of 300ft Mode C evident.] At 1340:47, the Gazelle pilot stated on the APP frequency, "*gone behind her.*"

From an ATM perspective, although the Gazelle pilot reports that they could not recall being informed of the Tutor, it is clear that APP did pass accurate TI about the Tutor. Moreover, the Gazelle pilot immediately reported visual with, *"visual with traffic"*. However, at that time (1339:29) the ac that had been the subject of the previous TI passed at 1338:47, and updated at 1339:12, was approximately 1.2nm N also indicating 4700ft Mode C. Given the amount of background traffic and the similarity of the positions of the aircraft involved, the Gazelle crew may have missed APP stating "*further traffic*" and thought that the TI related to the ac that he had previously called visual with. This hypothesis is consistent with the Gazelle pilot's belief that he had not been passed TI on the subject Tutor and their late sighting of it. Nevertheless, from APP's perspective, the controller passed timely and accurate TI to the Gazelle crew in accordance with CAP774, to which they replied that they were visual.

UKAB Note (2): This Airprox occurred at the base and just below the Boscombe Advisory Radio Area (ARA) promulgated in the UK AIP at ENR 5-2 which gives the lateral co-ordinates of the Area within Class G airspace and the vertical limits of FL50 – FL195. It is noted in Remarks that:

'Considerable test flight activity. Test flight activity often requires the pilots to fly profiles which limit their ability to manoeuvre their aircraft in compliance with the Rules of the Air. Such flights will receive a radar service from Boscombe Down or the Swanwick Military Special Tasks Cell.'

HQ AIR (TRG) comments that the Tutor complied with extant Group Air Staff Orders (GASOs) regarding the requirement or otherwise to operate under a TS. The Tutor pilot was also operating clear of the ARA on this occasion but is not required to. However, following this incident, a local review of procedures, initiated by No1 EFTS, is under way. Unfortunately, segregation of test flights is not always practical and operating under a TS is the next best option. However, this incident highlights that even with perfect TI the system can break down if crews misinterpret the TI given or choose not to take their own separation based upon it. Collision avoidance in this case relied on the 'see and avoid' principle, the flaws of which were exposed here. The ongoing embodiment of a Traffic

Alerting System on the Tutor will add a further layer of mitigation and should avoid the concentrating effect of any potential alternative geographical airspace limitations.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, a report from the APP controller involved and reports from the appropriate ATC and operating authorities.

The Gazelle crew had wisely sought to supplement their lookout with a TS whilst engaged in their intensive instructional sortie and it was evident that APP was conscientiously providing a good level of TI to assist the crew's SA. The HQ 1Gp report coupled with the RT transcript and radar recording confirm that the Gazelle crew had indeed been passed comprehensive TI by APP about the subject Grob Tutor when it was 3·5nm away, before they subsequently sighted it 300-400m away and slightly below their helicopter, believing they had not been told about it. As the Gazelle pilot had reported just 4 sec after APP's transmission, *"visual with traffic",* it was understandable that such a reply would have assured the controller that the subject Grob had been seen and that the Gazelle crew would maintain their own separation, making any further update superfluous. Controller Members recognised that all the essential elements of TI were included in APP's transmission, and the Board agreed with HQ 1Gp BM SM's contention that the Gazelle pilot had probably missed or not assimilated correctly the *"further traffic..",* perceiving that the TI related to the ac previously seen. This was most unfortunate but such mistakes can happen occasionally in a busy traffic scenario and which are virtually impossible to guard against. Notwithstanding any assistance from ATC, in Class G airspace it is the pilots' responsibility to see and avoid other traffic; the Board agreed that part of the Cause here was a late sighting by the Gazelle crew.

All involved were undoubtedly doing their best to complete their specific instructional/training assignments as efficiently as possible and there was a fine balance to be struck between achieving the primary training goals of the sortie with the provision of a compatible ATS to enhance the pilots' SA. However, the Board was somewhat surprised that the Grob Tutor pilot had not similarly availed himself of a TS. In the Board's view a 'Listening Watch' contributed nothing to the pilot's SA and Members were surprised that a BS was not being requested at a minimum, or preferably a TS. The Board welcomed the review initiated by No1 EFTS; the HQ Air Trg Member briefed the Members that the Army Flying Grading organisation was seeking an increase in controller manpower with a view to Middle Wallop ATC providing a TS to such flights as the norm.

As it was the Grob Tutor pilot reports that he had not seen the Gazelle at all, or if he did, had discounted it as a factor. It was feasible that the R turn evinced by the radar recording might have been an avoiding action turn but this was conjecture. The Board could assess the Airprox only on the basis of the reports provided and Members concluded that this was a non-sighting by the Tutor pilot. The Board determined, therefore, that this Airprox had resulted from a non-sighting by the Tutor pilot and a late sighting by the Gazelle crew. The radar recording shows that 300ft of vertical separation existed at the closest point of 0·2nm as the Tutor crossed ahead and probably when the Gazelle pilot had spotted the Tutor. Furthermore, the Gazelle pilot had realised that the Tutor was turning away from his helicopter at the CPA and his ac was passing clear astern so no avoiding action was necessary. This convinced the Members that in these circumstances there was no Risk of a collision.

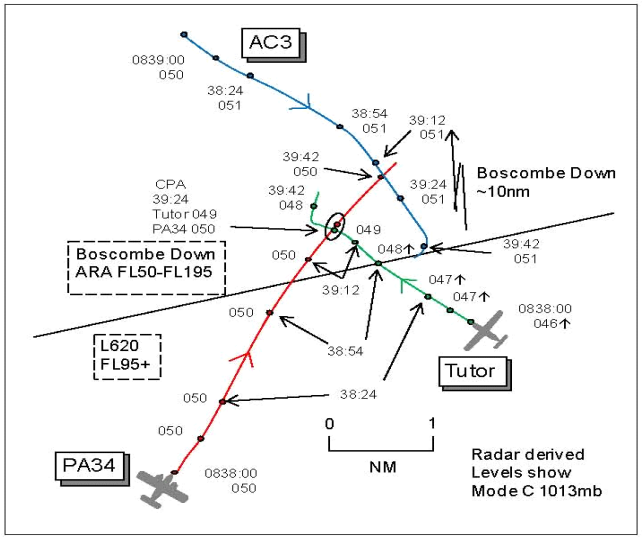
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A non-sighting by the Tutor pilot and a late sighting by the Gazelle crew.

Degree of Risk: C.

AIRPROX REPORT NO 2011030

Date/Time:	12 Apr 2011 0839Z	
Position:	5059N 00145W (6nm SSE Salisbury)	
Airspace:	Boscombe ARA	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Grob Tutor TMk1	PA34
Operator:	HQ Air (Trg)	Civ Trg
Alt/FL:	5000ft ↑ (RPS 1028mb)	FL50
Weather:	VMC CLOC	VMC CLOC
Visibility:	50km	30km
Reported Separation:	100ftV	Not seen
Recorded Separation:	100ft V/<0·1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE TUTOR PILOT reports flying a dual grading sortie from Middle Wallop, VFR and under a 'listening watch' with Boscombe Zone on 233·85MHz, squawking with Modes S and C. The visibility was 50km in VMC and the ac was coloured white. Operating in the SW training area the student was flying the ac straight and level at 5000ft RPS 1028mb and 100kt with a slightly high nose attitude and a small ROC established. Following a lookout scan to the L the required radio frequencies for recovery were selected by the student. A lookout scan was conducted from the ac's nose to the RHS tailplane by the ac Capt and student. During the scan to the L a light twin-piston engine ac was seen passing directly O/H from the 7 o'clock sector passing to the 2 o'clock sector about 100ft above. This sighting was too late to take avoiding action. The Capt took control and levelled the ac; he assessed the risk as medium.

THE PA34 PILOT reports flying a dual training sortie from Oxford, IFR and in receipt of a TS from Boscombe Zone on 126·7MHz, squawking with Modes S and C. The visibility was 30km in VMC and the ac was coloured white/ blue. About 6nm SE of Boscombe heading 050° at FL50 and 160kt a student seated in the rear seat saw a Tutor about 0·5nm away approaching from his 3-4 o'clock and 300-500ft below. The Tutor then executed a manoeuvre to position itself in their 6-7 o'clock at approximately the same level or slightly below. The student did not think there was a risk of collision. Boscombe informed them of traffic and he saw an ac, AC3, which crossed ahead from L to R and slightly above, but the Tutor was probably hidden beneath the starboard wing. This Tutor was not seen by either of the operating crew. The rear-seated student took pictures of the Tutor when it was positioning behind their ac.

UKAB Note (1): The UKAB received the Boscombe RT transcript on the 1st July which revealed that the Airprox had occurred immediately before the PA34 flight made its initial call to Boscombe Zone. ATSI was requested to contact Bournemouth however the ATSU had returned their RT tapes back into service and owing to the delay the controller would not be able to provide a meaningful report.

HQ 1GP BM SM reports that this Airprox occurred between a PA34 operating IFR in VMC that reported being in receipt of a TS from Boscombe Zone and a Tutor operating VFR in VMC under a "listening watch" with Boscombe Zone. All levels are based upon SSR Mode C except where otherwise stated.

The "listening watch" was introduced for Middle Wallop based Tutor ac conducting GH in the vicinity of Boscombe Down, to facilitate coordination for the latter unit's IFR traffic when required. There is no form of flight following or undertaking to provide an ATS inherent in this "listening watch"; the Tutors simply "check-in" on the ZONE frequency and are acknowledged. However, following the unit's investigation into this occurrence and that of Airprox 2011029, they became concerned that their controller's perception of duty of care had blurred the line between their responsibilities toward ATSOCAS mandated within CAP774 and that of a "Listening Watch."

Consequently, this concept has been stopped, with Boscombe applying ATSOCAS iaw CAP774 and a manning study being undertaken at Middle Wallop to facilitate greater provision of ATSOCAS by that unit to their Stn-based ac.

At 0824:40, Bournemouth pre-noted Zone with details of the PA34 routeing toward Oxford. Zone passed Bournemouth a new SSR 3A for the PA34 of 2651 and the conversation ended with Zone instructing Bournemouth to freecall the PA34 to, "*126·7…clean and clear*." This is acknowledged, with Bournemouth stating, "*126·7 once clear, thanks*."

At 0838:24 the PA34's SSR 3A changed from Bournemouth's code to a Boscombe Zone SSR 3A of 2651. At this point the Tutor is 2·4nm NE of the PA34 indicating FL047, with the PA34 indicating FL050.

[UKAB Note (2): The radar recording shows the PA34 tracking 030° and Tutor tracking 310° converging on a line of constant bearing, the Tutor in a slow climb reaching FL049 at 0839:11 with the PA34 0·5nm to its SW at FL050. Simultaneously AC3, which was seen by the PA34 crew, was crossing 1·25nm ahead and 100ft above. The CPA occurs at 0839:24 with the Tutor passing just behind and below the PA34 with <0·1nm lateral and 100ft vertical separation existing.]

At 0839:45 the PA34 flight called Zone, *"PA34 c/s with you flight level 50"*. Zone replied, *"PA34 c/s Boscombe Zone identified flight level 50 traffic service traffic south west 1 mile similar heading 200ft by the way"*. The PA34 pilot responded, *"Traffic service visual with the traffic PA34 c/s"* however, by this stage, the Tutor is 0·8nm SW of the PA34 and no longer a factor.

The PA34 pilot stated that the Tutor was sighted by a student in the rear of the ac, in the 3 to 4 o'clock position, at a range of approximately 0·5nm. Given the relative positions of the ac, this sighting was approximately co-incident with the CPA. The Tutor was not sighted by the handling crew at any point during the incident sequence. Moreover, the PA34 pilot's report makes no mention of having received TI on the Tutor from Bournemouth.

Unfortunately, whilst the unit were informed about the Airprox within 3 days of the occurrence, their incident reports were not completed until just over 2 months after the event. Consequently, the involved Boscombe controllers could not recall any details of the incident and so there is no record, other than the transcript, of Zone's workload.

Although the language used in the prenote between Bournemouth and Boscombe was ambiguous, it is reasonable to argue that the intent behind it was clear; that the PA34 flight could be free-called to Zone once clear of CAS and if clear of confliction. At the point when the Boscombe SSR 3A code was set by the PA34 flight, 2·4nm lateral separation existed between the PA34 and the Tutor, with the confliction evident on the radar replay. While it has not been possible to determine whether Bournemouth provided TI to the PA34 flight on the Tutor prior to releasing them to Boscombe Zone, nor what their taskload or physiological state was, based upon the available evidence it is the contention of BM SM that the PA34 was released by Bournemouth in confliction with the Tutor.

Whilst information to determine the point at which Bournemouth instructed the PA34 to contact Zone was not available to this investigation, the PA34 was squawking the Boscombe assigned SSR3A for 83sec prior to initial contact with Zone. This length of time can be viewed as an aggravating factor to the occurrence, in terms of its effect on delaying the provision of TI to the PA34; however, the source of this delay could not be determined.

These issues notwithstanding, both crews were expected to discharge their responsibilities to "see and avoid" other traffic and, in this instance, neither crews became visual until around the CPA, with providence the only safety barrier.

HQ AIR (TRG) agrees that whilst the Tutor pilot reports the PA34 passing from his 7 o'clock to 2 o'clock, this geometry is not substantiated by the radar data. The radar trace indicates the PA34 passing from the Tutor's 10 to 4 o'clock, almost directly overhead. It is unlikely that he sighted the PA34 before the CPA. The PA34 passenger report is also not consistent with a sighting of the Tutor at 0·5nm assuming that the reported 3-4 o'clock is correct. From the radar trace, the Tutor was only in the 3-4 o'clock at or beyond the CPA, when the range was significantly less. The lookout scans of both crews were therefore ineffective. The hazard posed by recognised weaknesses in the "see and avoid" system are being mitigated by the fitment of Traffic Avoidance System (TAS) to the Tutor fleet, with fleet embodiment expected in Oct 11. Action is also ongoing to provide a more effective ATS either from Boscombe Down or Middle Wallop.

AIRPROX REPORT No 2011030

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the Boscombe Down RT frequencies, radar video recordings and reports from the appropriate ATC authority.

The Board were disappointed that Boscombe Down ATSU had filed their reports late, which had prevented reports being available from Bournemouth. Without any input from Bournemouth, Members could only assess this Airprox on the limited information available. It was clear that after the pre-note to Boscombe, there had been no radar handover and the PA34 flight had been free-called so the level of service would be established during the initial RT exchange. This first call to Boscombe, however, occurred after the subject ac had passed at the CPA. Both ac were flying in Class G airspace where pilots are responsible for maintaining their separation from other flights through see and avoid. Although the Tutor would have been shielded from view by the PA34's wing and engine configuration during the later stages of the encounter, Members agreed that the Tutor was there to be seen for some considerable time prior to this as it converged from the PA34 crew's front R quarter. However, it appeared to be on a line of constant bearing where the ac would appear as a stationary object in the pilot's field of view with no relative movement making it difficult to visually acquire during a lookout scan. The student seated in the rear of the PA34 saw the Tutor but it passed unsighted to the operating crew, a part cause of the Airprox. Similarly, the PA34 was there to be seen by the Tutor pilot, approaching on a constant bearing from his forward L quarter; however, he saw it only as it passed O/H, effectively a non-sighting and the other part cause of the Airprox.

The TI passed to the PA34 flight on the Tutor to its SW was not assimilated by its crew. They reported 'visual' with the traffic but this was another ac, AC3, that had passed ahead from L to R and slightly above and which was by then to their SE. The Tutor pilot's sighting of the PA34 occurred at the CPA, too late to take avoiding action, but he instinctively levelled-off his ac. These non-sightings by both crews as the ac passed by luck with minimal separation, corroborated by the radar recording, left the Board in no doubt that an actual risk of collision existed during this encounter.

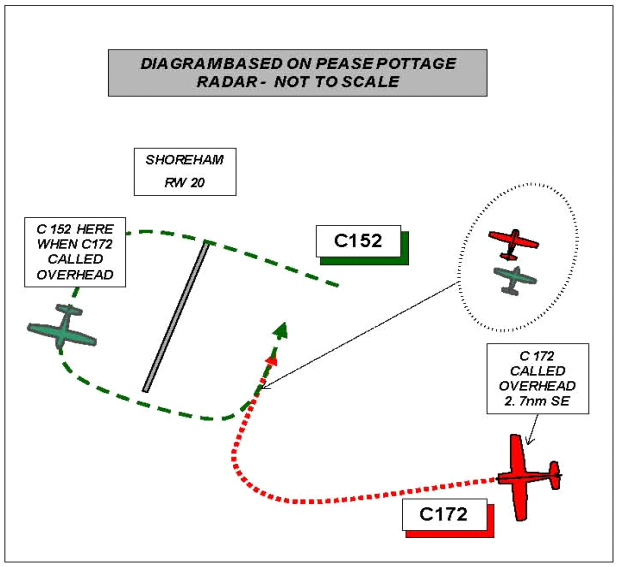
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A non-sighting by the PA34 crew and effectively a non-sighting by the Tutor pilot.

Degree of Risk: A.

AIRPROX REPORT NO 2011031

Date/Time:	9 Apr 2011 1612Z (Saturday)	
Position:	5050N 00019W (Shoreham DW RW 20 - elev 7ft)	
Airspace:	Shoreham ATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	C152	C172
Operator:	Civ Trg	Civ Comm
Alt/FL:	1100ft (QFE 1022mb)	1100ft
Weather:	VMC CLBC	VMC CAVOK
Visibility:	>10km	10km
Reported Separation:	0ft V/40m H	NR
Recorded Separation:	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE C152 PILOT reports flying a VFR instructional flight in a blue and white ac, in contact with Shoreham TWR, squawking 7000 [he thought] but Mode C was not fitted. Having been cleared for an overhead (O/H) join, he was in the overhead at 2000ft descending to be downwind at 1100ft, when a C172 [with a C/S that he recognised] reported at the Brighton VRP and was also cleared for an O/H join after requesting a L base join. He [the C152 pilot] descended dead side and flew cross-wind at the cct height of 1100ft then turned downwind heading 020° at 90kt. As he was rolling out of the turn onto downwind from crosswind he saw the C172 appear in his 11 o'clock, 40m away, descending onto downwind from above. The C172 then reported downwind before him and ATC then asked for his position; he responded that he was downwind behind the C172 that had just cut in front of him.

He reported the Airprox to TWR on the frequency in use and slowed his ac by using flap to reposition behind the C172. He assessed the risk as being medium.

After landing he went to the TWR and explained that the C172 had descended on the live side onto downwind traffic having not reached the dead side after being cleared for the overhead join. The C172 pilot reported at Brighton when he [the C152 pilot] was already in the overhead, leading him to believe that there would be no conflicting traffic.

THE C172 PILOT reports that at the time of the reported Airprox, he was flying a VFR local flight, squawking with Mode S and rejoining the Shoreham cct and in communication with TWR. He did not hear any Airprox call on the RT or receive any notification at the time; furthermore the Airprox reporting form was sent by email and went directly to his 'junk' folder so he did not see it for over a week.

He believes that the other ac came close behind him just after he had joined the cct at 1100ft.

He flew two O/H joins that day descending on deadside and crossing exactly over the upwind end of the RW; he also joined via base and cross-wind. He recalls that other ac had been flying wide ccts, not slowing down expeditiously and not making RT calls in the correct positions. On occasion ac were flying outside the ATZ boundary which made sequencing difficult. Since he was not given the timing of the incident, he could not recall the precise details and he saw many ac as Shoreham is always busy on Saturdays; however, he always slows down to achieve correct spacing with other ac. He does recall that on that day the cct sequencing was becoming hazardous due to ac flying wide ccts, others joining wide upwind, (not across the upwind threshold) and some flying standard O/H joins.

He did not see the other ac but assessed the risk as being low.

AIRPROX REPORT No 2011031

ATSI reports that the Airprox occurred in the Class G airspace of the Shoreham ATZ which is a circle of 2nm radius centred on RW 02/20 and extending to 2000ft aal (7ft).

The Shoreham controller was operating a combined Aerodrome and Approach control position, without the aid of surveillance equipment and RW20 was in use with a left hand traffic pattern. The controller reported the workload as being high but due to a staff shortage he was unable to split the two positions. As part of the tactical management of the circuit, the controller was instructing ac to join overhead which allowed them to position sensibly into the busy traffic pattern.

The UK AIP page AD 2-EGKA-1-7 (29 Jul 10), paragraph 6, states:

'c) Circuit heights are 1100ft aal for all runways.

d) Variable circuits at discretion of ATC.

e) Unless otherwise instructed aircraft joining the circuit will overfly the aerodrome maintaining 2000ft aal, until instructed to descend to circuit height on the inactive (dead) side of the runway in use and join the circuit by crossing the upwind end. Pilots should note that there would frequently be helicopters operating both 'liveside' and 'deadside' in the ATZ up to 600ft'.

CAA ATSI had access to radar recordings provided by NATS Swanwick and written reports from the controller and pilots.

The weather for Shoreham was:

METAR EGKA 091550Z 13010KT CAVOK 14/10 Q1023=

METAR EGKA 091650Z 11005KT CAVOK 14/10 Q1022=

At 1605:30 the C152 in receipt of a BS, reported N of Brighton pier at 2700ft and requested a join for ccts. The TWR controller replied, *"(C152)c/s roger circuits approved report er overhead at two thousand feet Q F E one zero two two",* the pilot responded, *"Q F E one zero two two report overhead (C152)c/s.*"

At 1608:30, the C172, in receipt of a BS, called at Brighton pier and requested a left base rejoin but TWR replied, *"(C172)c/s overhead join at the moment I'll advise if I can improve Q F E one zero two two"* and the pilot responded, *"overhead join (C172)c/s.*"

Using Mode S the C172 was observed on the radar recording approaching from the E.

ATSI noted that the controller did not obtain a readback of the QFE, did not give the RW in use, the cct direction or traffic information; however, the RT loading was high and it was evident that the circuit was extremely busy.

At 1609:40 the C152 pilot reported overhead and TWR responded, *"(C152)c/s descend deadside report downwind"* and the pilot acknowledged, *"report deadside (C152)c/s".* It is not possible to identify the C152 using the radar recording; the pilot's report states that the transpoder was selected ON with a code of 7000, however a primary only contact (with no SSR) can be seen approaching the overhead from the E co-incident with the RTF reports made by the C152 pilot.

At 1609:50 the radar recording shows the C172, 4.4nm E of the airfield indicating FL012, and following the coastline Westbound.

At 1611:02 the C172 reported overhead but the radar recording shows it was positioned 2.7nm SE of the airfield tracking W at FL016 (1843ft alt). The TWR controller responded, *"(C172)c/s descend deadside report downwind"* and the pilot acknowledged saying, *"descend deadside report downwind (C172)c/s".* At the same time, the primary contact is observed passing 0.5nm SW of the airfield tracking E and crossing the upwind end of the RW.

At 1611:46 radar recording shows the C172, 1.4nm SE of the airfield in a right turn at FL014 (Alt 1643ft), towards the begining of the downwind leg with the primary contact in the crosswind position, tracking E with the ac 1nm apart and converging; the radar return on the primary contact is then lost.

At 1612:32, radar recording shows the position of the C172 is 1.2nm to the E of the airfield, the pilot reporting, *"(C172)c/s downwind to land".* During the investigation, the controller stated that he expected both ac to join overhead in sequence and was not expecting the C172 to be ahead. The TWR controller then requested the position of the C152 saying, "(*C152) report your position"* and the pilot replied, *"(C152)c/s just er turned downwind been cut up by the Cessna*"; the C152 pilot was then instructed to follow the C172.

The Manual of Air Traffic Control, Part 1, Section 2, Chapter 1, Page1 Paragraph 2.1 states:

'Aerodrome Control is responsible for issuing information and instructions to aircraft under its control to achieve a safe, orderly and expeditious flow of air traffic and to assist pilots in preventing collisions between:

a) aircraft flying in, and in the vicinity of, the ATZ'

The controller's workload was high and in order to ensure that traffic was sequenced appropriately into the busy traffic pattern, he instructed both pilots to join overhead. The radar recording shows that when the C152 reported overhead, the C172 was 4.5nm E of the airfield. The overhead call from the C172 pilot was made when the aircraft was 2.7nm SE of the airfield, approaching the ATZ boundary. The C172 was then seen to route directly to the downwind position.

The C172 pilot did not correctly communicate the aircraft position to ATC. Rule 45 of the Rules of the Air (RoA), paragraph 6 (c) states:

'…….communicate his position and height to the air traffic control unit, ...at the Aerodrome on entering the zone and immediately prior to leaving it.'

The C172 pilot did not comply with the controller's instruction to join overhead the airfield. Rule 45, paragraph 3 states:

'If the aerodrome has an air traffic control unit the commander shall obtain the permission of the air traffic control unit to enable the flight to be conducted safely within the zone.'

Further Rule 12 (a) of RoA, states:

'the commander of the aircraft……shall:

conform to the pattern of traffic formed by other aircraft intending to land at that aerodrome or keep clear of the airspace in which the pattern is formed'

UKAB Note (1): Although the C172 shows on the radar recording (as outlined above in the ATSI report), the primary response believed to be the C152 had disappeared before the CPA. The separation could not therefore, be determined.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar recordings, reports from the air traffic controller involved and reports from the appropriate ATC authorities.

Although Members were aware of other recent incidents at Shoreham, in keeping with current practice, this incident was assessed in isolation and without reference to other agencies or reports.

In assessing the part played in this incident by the participants, Members noted that the C152 pilot had flown 'by the book' integrating safely into the visual fixed-wing cct and as expected by the Controller.

However, the Board considered this incident to be a serious case of flying indiscipline by the C172 pilot.

There is little doubt from the reports, the RT transcript and the radar recording, that at the time of the incident Shoreham was very busy, the ccts being flown were not all standard and the controller was working to his capacity. A GA Member observed that when non-radar equipped airfields are busy and the airspace permits, standard overhead joins are a straightforward way of ensuring safe sequencing of ac joining the visual cct and, wisely in the view of Members, the Controller elected to implement this. The Shoreham AIP entry, as detailed in the ATSI report above, makes it clear that, unless otherwise approved by ATC, this is the preferred method of joining the Shoreham cct; in this case ATC specifically and clearly rejected the C172 pilot's request to joinon left base, due to the heavy traffic load, and the pilot read-back the instruction indicating that he fully understood that he was required to join over head. Notwithstanding this instruction, Members agreed that there was no doubt that the C172 pilot had disregarded it, gave inaccurate position reports contrary to ROA Rule 45, and, as clearly described in the ATSI report, proceeded to join directly downwind. Furthermore, he did not integrate safely into the visual circuit pattern being formed by ac ahead (the C152) as required by the ROA Rule 12. Had the C172 pilot joined as instructed by the Controller, Members agreed unanimously, that the incident would most likely not have occurred.

A GA Member pointed out that, although ATC procedures might sometimes seem lengthy and inefficient, they are designed to ensure safety even in the busiest scenarios.

The Board was informed by the ATSI Advisor that the Controller was not aware that the C172 had joined the visual circuit downwind when he submitted his report in response to the reported Airprox; he became aware of the geometry of the Airprox only when it emerged during the investigation. There was some discussion by Controller Members as to whether the Controller could have noticed that the C172 pilot was not complying with his instruction to join overhead. They noted however, the high workload, that the control position faces in the opposite direction to that of the C172's approach and has a restricted view behind and none overhead; that being the case Members agreed that it would be unreasonable to expect the Controller to note that the C172 was not flying an overhead join and to attempt to correct the situation.

In assessing the risk, Members noted that the C152 did not see the C172 until it appeared 40m away in his 11 o'clock, descending from above; in the absence of any information to the contrary, it was accepted that this estimate of range was accurate. That being the case the C152 pilot was not in a position to take any avoiding action to influence events. Since during the C172's turn onto downwind the C152 would have been obscured by the former's floor then, on rolling out, it would be almost directly below, the C172 pilot did not see the C152 before the CPA.. In these circumstances there was, in the Board's unanimous view, an actual risk that the ac would have collided.

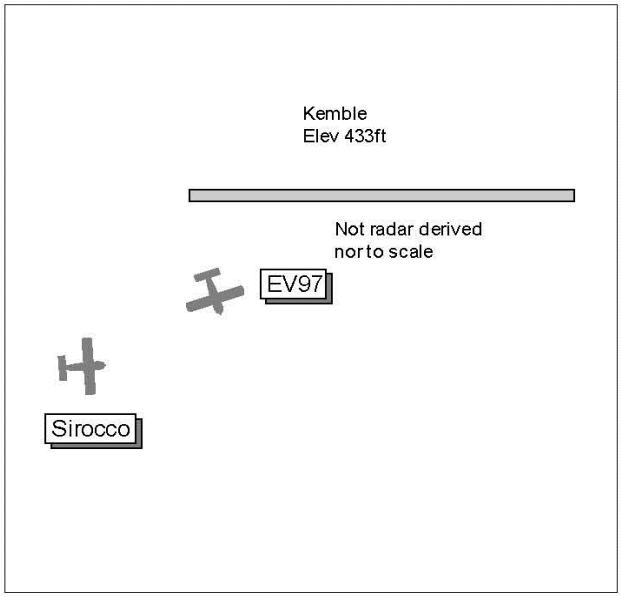
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The C172 pilot did not comply with the ROA or ATC instructions and gave incorrect position reports, flying into conflict with the C152 which he did not see.

Degree of Risk: A.

AIRPROX REPORT NO 2011032

Date/Time:	9 Apr 2011 1514Z (Saturday)	
Position:	5140N 00203W (O/H Kemble - elev 433ft)	
Airspace:	ATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Evektor EV97 Eurostar	Jurca Sirocco
Operator:	Civ Trg	Civ Pte
Alt/FL:	1500ft ↓ (QFE 1014mb)	1500ft↓ (QFE 1008mb)
Weather:	VMC	VMC HAZE
Visibility:	>10km	5000m
Reported Separation:	100ft V	150-200ft V
Recorded Separation:	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE EVEKTOR EV97 EUROSTAR PILOT reports flying a dual test flight with a PPL holder for revalidation of a NPPL, VFR and in communication with Kemble. The visibility was >10km in VMC. The PF joined O/H for RW08 from the W at 2000ft QFE 1014mb and at the midpoint made a gentle turn 30° R starting a descent. On realising his mistake the PF straightened out, climbed back to 2000ft and correctly turned L with the cct pattern, first over the live-side - where they encountered a Cessna inbound from the NW about 200ft higher - before then crossing the RW08 numbers as per CAA recommendation and starting a descent at 80kt. Their lookout to the W was into sun but in any event they did not see the Sirocco until it passed; it was almost certainly in a blind spot under their starboard wing. Looking up at the Cessna above to see how it was going to join they saw the Sirocco as it flashed past about 100ft below and a little behind their ac on a heading of 060°, close enough to give them a fright. At the time they were about 1500ft QFE in a gentle L turn descending deadside to cross the RW26 threshold numbers at cct height. He reported the 'Airmiss' to Tower. The Sirocco appeared to climb to 2000ft and proceeded to fly a wide LH cct outside the ATZ, for as they approached the end of the downwind leg the Sirocco was so far away he thought it was flying away. Afterwards, on reflection, both he and his student thought at the time that the Sirocco was a large ac (he commented that it looks like a Space Shuttle); perhaps this was a trick of the bright sunlight, so that his perception of the Sirocco's wide cct was a misjudgement. He thought the Sirocco pilot went straight into a large LH pattern after going through the O/H, intending to join at cct height 1000ft. He opined that he emphasised in training the importance of accurate flying in the ATZ, a FREDAH check on approach, confirmation of the QFE and joining O/H at 2000ft or in line with this and other standard procedures. Also a greater emphasis on listening out on the radio for the position of other traffic and on lookout for this and any other traffic.

THE JURCA SIROCCO PILOT reports flying solo inbound to Kemble VFR and in communication with Kemble on 118·9MHZ with transponder switched off. The visibility was 5000m in haze in VMC and the ac was coloured white/ green with no lighting fitted. Whilst joining for RW08 directly from the W descending on the deadside through 1500ft QFE 1008mb heading 090° at 120kt the other ac was not seen until it crossed above his flightpath from L to R by 150-200ft with minimal horizontal separation, too late to take avoiding action. He assessed the risk as high.

THE KEMBLE FISO reports on duty in the VCR when an Airprox was reported at 1515Z by the pilot of an EV97 Eurostar against a Jurca Sirocco. Both ac were joining via the O/H for RW 08LH in good VMC conditions (+10km, FEW 040, QFE 1014 [actually 1008mb]). Aerodrome traffic levels were light with 3 ac joining, 1 outbound VFR SE'ly and 1 pending departure. The Sirocco was the third of the 3 ac to request join and was given relevant TI on cct and joining traffic. At the time the Airprox was reported the EV97 was over the RW heading S and descending crosswind towards the deadside. The Sirocco was seen to join straight down the RW (heading 080°) at a level

slightly below the EV97. The Airprox was witnessed by the second FISO (on duty as VCR Assistant) who mentioned, a few moments before the Airprox was reported, that separation appeared to be compromised.

The pilot of the Sirocco was later interviewed by the Operations Manager later in the day who confirmed that he had not seen the Eurostar until after they had passed. The pilot of the EV97 confirmed that he was submitting an occurrence report to the CAA for investigation. Both pilots were reminded of the need for care to be taken whilst flying in the cct and in particular to joining at the correct heights.

ATSI reports that the Airprox was believed to have occurred at 1514, within the ATZ at Kemble Airport, which consists of a circle, radius 2nm, centred on RW08/26 and extends to 2000ft above the aerodrome elevation (436ft).

The Airprox was reported by the pilot of an EV-97 Eurostar Microlight operating on a local detail from Kemble. The second ac was a Jurca Sirocco, inbound to Kemble from Badminton.

A FISO service was provided at Kemble. Traffic levels were reported as light with RW08 in use.

CAA ATSI had access to RT recording and radar recording provided by NATS Swanwick, together with written reports from both pilots and the FISO.

Although not a requirement, Kemble do provide an RT recording facility, but on this occasion the recorder failed to record time signals. The transcription was therefore aligned to the time of the Airprox occurrence at 1514 UTC.

The FISO reported the weather conditions as good VMC (+10km FEW040). The written reports from the EV97 pilot and FISO indicate that the QFE was 1014, however the RT transcript and ATSU confirm that the QFE was 1008. The weather for Lyneham is provided;

METAR EGDL 091450Z 09010KT 9999 FEW045 BKN300 19/09 Q1023 BLU NOSIG=

At 1508:40, the EV97 pilot called Kemble Information and reported, *"(EV97)c/s returning from the west approximately four miles out for an overhead join."* The FISO replied, *"(EV97)c/s report overhead er for runway zero eight lefthand the Q F E one zero zero eight one aircraft descending deadside one aircraft joining from the northeast."* The EV97 pilot acknowledged, *"QFE one zero zero eight for zero eight left hand (EV97)c/s."*

At 1509:23, the Sirocco pilot called, *"(Sirocco)c/s is returning to you from Badminton present position five miles west of the field at two thousand feet er request joining instructions over."* The FISO replied, *"(Sirocco)c/s Runway zero eight the Q F E is one zero zero eight er circuit traffic is about to report downwind er I've got one joining from the northeast one other aircraft joining from the west."* The Sirocco pilot responded, *"(Sirocco)c/s runway zero eight lefthand Q F E one zero zero eight.*"

At 1511:23, the EV97 pilot reported O/H.

At 1512:35, the FISO advised another flight that was climbing towards the O/H before setting course, *".....look for traffic in the overhead descending deadside and traffic joining from the west via the overhead.*"

At 1513:39, the Sirocco pilot reported O/H and the FISO advised, *"(Sirocco)c/s one aircraft low over the piano keys one aircraft established base leg."* The Sirocco pilot replied, *"Roger"* and the FISO added, *"I've got one other Eurostar reported in the overhead unsighted to me.*"

At 1514:00, the EV97 pilot reported the Airprox, *"Er Kemble (EV97)c/s descending deadside I'd just like too report an Airmiss with the traffic going e-west to east at about fifteen hundred feet.*" This was acknowledged by the FISO followed by a crossed transmission believed to be to the Sirocco, *"Gol..... for zero eight."* The Sirocco pilot acknowledged the call with *"Roger.*"

The FISO's written report indicated that EV97 was O/H the RW heading S and descending towards the deadside and the Sirocco was observed to join straight down the RW heading 080°.

The EV97 pilot's written report indicated that the EV97 ac was at a height of 1500ft and the Sirocco was 100ft below.

Using the radar recording it was not possible to identify the ac concerned or the occurence itself; however, at 1514:12, radar recording shows three contacts in the Kemble overhead. One contact is crossing the threshold area of RW08 tracking S and another contact is tracking 085° and positioned 0·5nm S of the RW.

At 1517:32 the FISO asked the EV97 pilot, *"....confirm visual with the er Sirocco."* The EV97 pilot responded, *"Is er that the aircraft on and extremely wide left base over."* This FISO advised, *"affirm"* and the EV97 pilot confirmed the Sirocco was the ac involved in the Airprox.

The FISO provided information to both flights. The Manual of Flight Information Services, CAP410 Part B, Chapter 1, Page 1, Paragraph 2.1, states:

'The FISO has the following specific responsibilities:

a) issuing information to aircraft flying in the aerodrome traffic zone to assist the pilots in preventing collisions.

The written reports from both pilots indicated that they each sighted the other late.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, a report from the FISO involved and a report from the appropriate ATC authority.

With both the EV97 and Jurca Sirocco joining the cct, both crews were responsible for maintaining their own separation from other traffic through see and avoid. The EV97 pilot had reported approaching from the W to execute an O/H join and the FISO issued appropriate TI to aid their SA on other traffic, which included traffic joining from the NE, a Cessna. The Sirocco pilot had then called, also inbound from the W, and was given TI by the FISO, including that on the EV97. However, the Sirocco pilot did not declare his intentions of how he intended to integrate into the traffic pattern. After the EV97 pilot reported O/H the FISO informed departing traffic about the EV97 descending O/H and the Sirocco, which he believed was also joining via the O/H, the norm being a standard O/H join unless stated otherwise. About 1min later the Sirocco reported O/H and was told about the EV97 O/H but unsighted to the FISO. It was then that the Airprox occurred. Members sympathised with the EV97 pilot's predicament as he would not have been expecting the Sirocco to be joining as it did and unannounced, however Members agreed that both ac were still joining the cct to fit in with other traffic already established in the visual cct pattern. The EV97 crew were looking up at the Cessna above when the Sirocco was first seen as it passed slightly behind and 100ft underneath their ac, effectively a non-sighting and a part cause of the Airprox. The Sirocco pilot elected to join directly onto the deadside descending, only seeing the EV97 as it crossed from L to R 150-200ft above, with no time to take avoiding action, which Members agreed was effectively a non-sighting and the other part of the cause of the Airprox. It was clear that these 2 ac had passed each other by chance, neither pilot seeing each other's ac in time to affect the outcome, which led the Board to agree unanimously that an actual risk of collision had existed during this incident.

PART C: ASSESSMENT OF CAUSE AND RISK

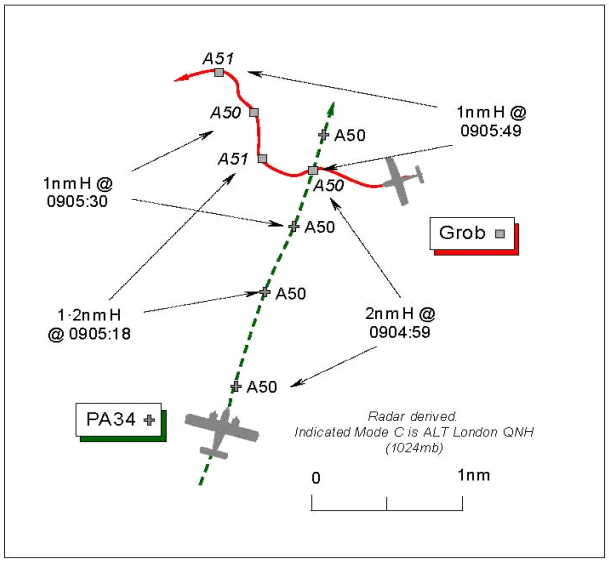
Cause: Effectively, non-sightings by the pilots of both ac.

Degree of Risk: A.

AIRPROX REPORT No 2011033

AIRPROX REPORT NO 2011033

Date/Time:	13 Apr 2011 0905Z	
Position:	5139N 00123W (10nm SE of Brize Norton A/D	
Airspace:	Oxford AIAA	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	PA34-200T	Grob Tutor T Mk1
Operator:	Civ Trg	HQ Air (Trg)
Alt/FL:	5000ft	NR
	QNH (1023mb)	NR
Weather:	IMC IICL	NR
Visibility:	10km	NR
Reported Separation:		
	Nil V/0.5nm H	NR
Recorded Separation:		
	Nil V/1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PIPER PA34-200T (PA34) PILOT reports he was conducting a local IFR training flight from Oxford and was tracking towards the OX NDB whilst in receipt of a TS from Brize RADAR on 124·275MHz. The assigned squawk was selected with Modes S and C on; TCAS is not fitted.

Heading 005° at a position 190° OX 11·5nm, flying level at the cloudbase of 5000ft QNH (1023mb) at 150kt, he spotted a light single-engined ac at a similar altitude within 0·5-1nm dead-ahead also at the base of cloud and in intermittent IMC. He took no avoiding action as the other ac – a Grob Tutor - was seen at the same altitude in a level turn and appeared to roll out on a heading of SW. Visual contact was intermittent and about 15-30sec after sighting the Grob, Brize reported the traffic, which by that time was no longer a risk. The Risk was assessed as 'medium'. An Airprox was not reported on RT, but filed through his company safety management system.

THE GROB TUTOR T MK1 PILOT, a QFI, did not provide a detailed account within his Airprox report, just a narrative. He commented that in response to this Airprox in Class G airspace in the vicinity of Wantage, he was conducting elementary flying training consisting of general handling and practice forced landings with a student, whilst in receipt of a TS from Benson. He has no recollection of the event as it was over 1 month ago and today – 20 May, the date of writing - was the first he had heard of it. He opined that if there had been any threat to his ac he would have remembered it vividly, and being under a TS with Benson APPROACH, they would have alerted him to it.

THE BRIZE NORTON ATC UNIT SUPERVISOR reports that the PA34 pilot experienced an Airprox with what he believed to be a Tutor. He was not the controller at the time and it has not been possible to obtain a report from the controller providing the TS at the time of the Airprox.

HQ 1GP BM SM reports that this Airprox occurred in Class G airspace between a Tutor operating VFR conducting GH and PFLs N of Wantage in receipt of a TS from Benson ZONE and a PA34 inbound to Oxford in receipt of a TS from Brize RADAR (RAD).

It took some time for the Radar Analysis Cell (RAC) to trace the crew of the Tutor and hence the fact that they were in receipt of an ATS from Benson; consequently, Benson ATC were unable to provide any input to the investigation. Due to an internal issue at Brize Norton, the unit did not commence reporting action until 2 months after the event; consequently, although they could provide an RT tape transcript, the controller could recall little of the event. This situation was exacerbated by the fact that the PA34 pilot omitted to report the Airprox to RAD.

The PA34 pilot reports operating IFR in VMC, albeit intermittent IMC flying at the base of cloud and spotting the Tutor at "a similar level within 1nm dead ahead…the aircraft was seen to be turning and appeared to roll out on a heading south-west. Approximately 15-30 secs after sighting Brize reported the traffic, which by this time was no longer a risk."

CAP774 states that:

'Pilots should be aware that a Traffic Service might not be appropriate for flight in IMC when other services are available.'

The Brize Norton Supervisor reports that the controller and unit workload was medium to low, a fact borne out by the RT transcript. That said, RAD's workload in the period leading up to the Airprox was constant. Furthermore, RAD recalls that:

'for whatever reason I felt behind the drag curve and the session felt busy/complex [and that] this fact was picked up by one of the other controllers.'

At 0901:12 the PA34 was identified and placed under a TS after which followed a continuous, albeit low-level, work load for RAD involving landline liaison and transmissions to other ac. At 0901:53, (the earliest point of the radar replay), the PA34 was approximately 18nm S of Brize Norton tracking NNE, with the Tutor 9nm N of the PA34, tracking E indicating 5000ft Mode C. At 0903:28, the Tutor commenced a turn, rolling out onto a westerly track at 0904:05, at which point the PA34 is 4·5nm SW, indicating 4800ft.

At 0905:18, the Tutor is just through the PA34's 12 o'clock with 1.2nm lateral separation existing; however, the Tutor commences a R turn onto NW thereby reducing the separation between the 2 ac, exacerbated by the greater airspeed of the PA34.

During the period 0905:07 to 0905:29, RAD was involved in the identification of and passing instructions to another unrelated ac. This unrelated ac does not appear on the replay and further investigation with BZN has suggested that this ac was an Oxford departure, placing it approximately 17nms N of the CPA. Immediately after RAD has completed this liaison with the un-connected ac and co-incident with the CPA, RAD passed TI to the PA34 at 0905:31 stating, "*traffic north 1 mile similar heading similar level*." At this point the Tutor is 1nm NNW of the PA34.

CAP774 states that:

'Traffic is normally considered to be relevant when, in the judgement of the controller, the conflicting aircraft's observed flight profile indicates that it will pass within 3nm and, where level information is available, 3000ft of the aircraft in receipt of the Traffic Service. However, controllers may also use their judgement to decide on occasions when such traffic is not relevant, e.g. passing behind or within the parameters but diverging.'

The safety of operations in Class G Airspace is predicated on the ability of aircrews to 'see and avoid' each other's ac, backed up with airborne equipment such as TCAS and the provision of ATSOCAS where pilots opt for a level of ATS appropriate to their task and meteorological conditions. CAP 774 is clear that whilst the provision of TS to ac in IMC is possible, it may not be appropriate when other services are available. In this instance DS was available and may have been more appropriate given the prevailing meteorological conditions.

Given RAD's lack of recall of the event it has proved impossible to state conclusively why TI was not passed earlier. One hypothesis is that RAD assessed the relative speeds of the ac, concluding that the PA34 would pass through the Tutor's 6 o'clock and that TI might not be required: re-visiting that assessment when the Tutor commenced their turn at 0905:21 reducing separation. An alternative hypothesis is that, although RAD did not have a high taskload, they were consistently engaged in tasks throughout the period prior to them passing TI, thereby delaying the passing of that TI. Moreover, based upon their statement, it is clear that RAD's perceived workload was high with them feeling "behind the drag curve." There are a number of potential psycho physiological explanations for this including pathological, the disruption of Circadian rhythm, fatigue and life-stresses. Although there is no clear evidence to identify a specific factor, RAD's psycho physiological state may have affected their ability to divide their attention between their tasks or to match their workrate to the task load, thereby delaying the identification of the confliction between the PA34 and the Tutor and hence the passing of TI.

AIRPROX REPORT No 2011033

This Airprox resulted from a late sighting by the PA34 crew, the late provision of TI by RAD and the meteorological conditions hampering their visual acquisition task. It has been impossible to determine conclusively why TI was not passed to the PA34 earlier than 0905:31.

HQ AIR (TRG) comments that both ac appear to have been operating close to the base of cloud cover where visual contact was reported by the PA34 crew to be affected by cloud. Despite this the PA34 sighted the Tutor before TI was given and no avoidance was required. The reporting delay was unfortunate in that it prevented the gathering of accurate data on the Tutor pilot's TI and visual status. It might reasonably be assumed that he received good TI and was visual with the PA34. Whilst the wisdom of operating close to the base of cloud cover even with a TS may be questioned, it may be the only way to complete a particular sortie profile. That said, any factor that reduces the ability to conduct an effective lookout must be given due regard by pilots and the ATC service upgraded or the profile limited accordingly if required.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, a transcript of the relevant Brize RAD RT frequency, radar video recordings, together with reports from the appropriate ATC and operating authorities.

The Board was disappointed that further detail was not available from Brize Norton and here it was evident that the PA34 pilot had not reported the Airprox on the RT to the controller providing the TS. No matter if a pilot subsequently elects to withdraw an Airprox report, which is entirely within their prerogative, reporting the Airprox on RT at the time immediately alerts the controller and the ATSU to take the necessary reporting action. In that way none of the essential detail necessary for a complete understanding of the Airprox is lost. The Board was briefed that the Airprox was received some 5 days after the event; once identified, the RAC had endeavoured to contact the Tutor pilot's unit on 12 separate occasions. All efforts proved fruitless until contact was eventually established through the Station Flight Safety Officer. Unfortunately, therefore, the Tutor pilot's report was not received until over 30 days after the Airprox had occurred. Consequently, the Benson ATC RT recordings were not available.

As the Tutor pilot was not aware of the Airprox until some weeks after the event, he could recall little detail of his sortie and his account contributed little to the understanding of this event; whether he saw the PA34 or not was unclear. Members recognised that the PA34 pilot was teaching an IFR procedure, flying towards the 'OX' beacon intermittently in IMC, just at the base of cloud in Class G airspace. Whilst the PA34 crew had availed themselves of a TS from Brize RADAR, in the GA pilot Member's view, if a DS had been available then this would have been a more suitable ATS whilst flying in IMC. The MAA Advisor suggested that if the PA34 had been flying at an IFR quadrantal level, it would have afforded some separation against other IFR transit traffic in level flight. Similarly, a DS might have assisted the Tutor pilot with his traffic avoidance responsibilities. The Tutor pilot, who was conducting general handling VFR, shared an equal responsibility to see other ac when operating in Class G airspace. Nevertheless, it remained the PA34 pilot's responsibility under the 'Rules of the Air' to 'see and avoid' the Tutor on his starboard side so that he could afford appropriate separation irrespective of whether RAD passed TI or not.

Notwithstanding the controller's relatively low but constant workload and any other higher priority traffic, the Board considered that the TI passed by RADAR at 1nm range had been issued at a relatively late stage. Nevertheless, by the time the TI was transmitted at 0905:31, the Tutor is shown on the radar recording in the PA34's 10:30 position, 1nm away. Consequently, if this TI was passed 15-30 sec after the PA34 pilot saw the Tutor dead-ahead, as he reports, then he had seen it at a range greater than his estimated 0·5-1nm, because the radar data shows the Tutor to be at a range of 2nm when in the PA34's 12 o'clock. Therefore, in the Board's view, there was enough time to avoid the Grob by a greater margin if need be when he saw it. However, avoiding action was not warranted it would seem, as the PA34 pilot reports the Grob was in a level turn and appeared to roll out on a heading of SW flying away from him – as replicated by the radar recording. Controller and pilot Members alike concluded that this had been a relatively benign event and agreed unanimously that this Airprox report had stemmed from a sighting of traffic operating in Class G airspace, where normal standards of safety had been maintained.

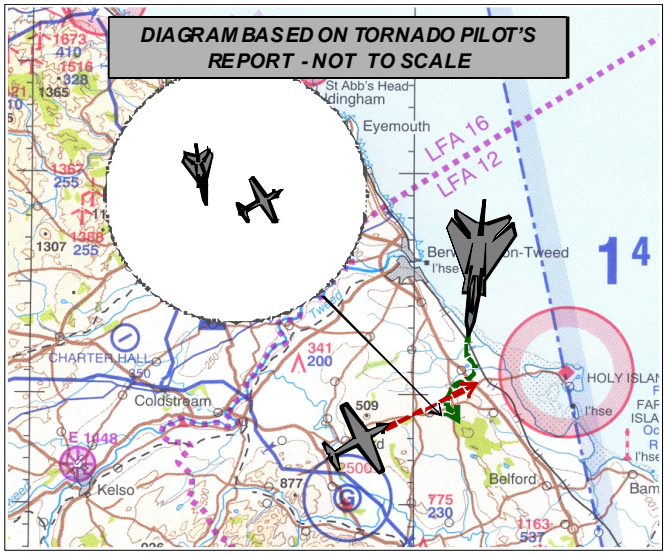
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Sighting Report.

Degree of Risk: E.

AIRPROX REPORT NO 2011034

Date/Time:	14 Apr 2011 1453Z	
Position:	5539N 00156W	(5nm SSE Berwick)
Airspace:	UKDLFS	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Tornado GR4	Tucano
Operator:	HQ AIR (Ops)	HQ AIR (Trg)
Alt/FL:	260ft MSD (RPS 1011mb)	250ft MSD
Weather:	VMC CLBC	VMC CLBC
Visibility:	20km	20km
Reported Separation:	<1000ft H	NK
Recorded Separation:	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE TORNADO GR4 PILOT reports flying a grey ac with all lights switched on, squawking 7001 with Mode C, as No 2 of a pair of Tornado GR4 ac conducting evasion training with a Hawk. They were heading 185° at 430kt and at 360ft and following a bounce by the Hawk they were separated from the flight lead by about 5nm, when the pilot saw a small ac in 1.30 position at about one mile range and slightly high. He instinctively manoeuvred to the L but after about 15° of turn, he quickly realised the ac was tracking from R to L. A further L turn would have put the Tornado belly-up to the ac and exacerbated the chance of a collision, so he reversed to the R and descended to 260ft agl. They passed below and slightly behind the ac, which was by then clearly identifiable as a Tucano (black with yellow sunburst on wings) and he assessed that they passed within 1000ft [H] of it. The Tucano was initially in straight and level flight but just before they passed it turned R (belly-up) to them. The time from initially sighting the Tucano to passing it was 7sec.

He had been conducting an aggressive all-round look out scan due to the knowledge of the presence of a bounce ac and this would have been a slightly different scan to that conducted on a normal low level navigational cruise.

He reported the incident after landing and informed Linton on Ouse [the Tucano base] and assessed the risk as being low due to his avoidance.

THE TUCANO PILOT reports that he was flying with an instructor in a black ac with yellow wing flashes and at the time was in the immediate area of the reported incident but neither pilot was aware of another ac. They were squawking 7001 with Modes C and S and TCAS 1 was fitted.

UKAB Note (1): The incident took place about 2nm inland from the coast in low, rolling, wooded terrain and neither ac shows on the recorded radars. The Tornado mission tapes were retained and reviewed but the incident is not recorded.

HQ AIR (OPS) comments that if the geometry of the incident is as reported by the GR4 pilot, the initial 15° of turn would have put the Tucano in the 2 o'clock. With the relative speeds (430kt vs 240kt) the GR4 would have been passing well ahead of the Tucano despite the fact that it was tracking to the E. The decision to reverse the turn may therefore have reduced the separation somewhat but provided him with greater confidence in the fact that the risk had been reduced. Without the benefit of any radar recording it is not possible to confirm the geometry precisely. However, if the GR4 pilot actually perceived the Tucano was tracking R to L, i.e. moving towards his nose even after the initial turn, it is likely that the Tucano was much closer to his nose at first sighting. In this case, the reversal of the turn was essential and a greater initial risk existed.

HQ AIR (TRG) comments that it is noted that the TCAS did not appear to highlight the confliction. This is not unknown in the low-level environment where terrain masking can reduce the effectiveness of the equipment but this incident occurred in a relatively flat area. This incident has reminded the Tucano community of the necessity of not relying on their electronic aids for spotting traffic and the need to maintain a robust visual scan. The crew made a turn shortly before the CPA and may well have been focussing their attention on acquiring a turn point or target in the lead-up to the incident. They are also likely to have been focussing more into the turn where the threat is generally considered to be higher.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac and reports from the respective ac operating authorities.

Despite there being no supporting data, the Board agreed that this had been a fairly routine encounter between two ac operating legitimately in the UKADLFS. Both ac were operating in good VMC and should have been visible to the other crew. The Tucano instructor had been instructing his student in low level flying techniques as the Tornado had been descending back to low level, initially at least, on a line of constant bearing. Members were unable to offer any explanation as to why the Tornado was not displayed on the Tucano TCAS1 as there were no obvious constraints; the Board endorsed HQ Air (Trg)'s comments regarding lookout. Members accepted the HQ Air reasoning for the Tornado reversing his direction of turn and possibly reducing the separation but, keeping the Tucano visible thereby removing any risk of collision.

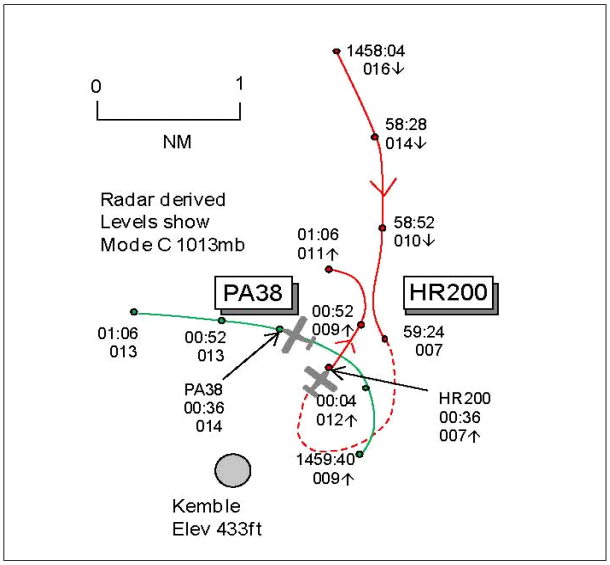
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A non-sighting by the Tucano crew and a late sighting by the Tornado crew

Degree of Risk: C.

AIRPROX REPORT NO 2011035

Date/Time:	17 Apr 2011 1500Z (Sunday)	
Position:	5141N 00202W (1nm NE Kemble - elev 433ft)	
Airspace:	ATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	PA38	Robin HR200
Operator:	Civ Pte	Civ Club
Alt/FL:	600ft↑ (QFE 1008mb)	1000ft↓ (QNH 1022mb)
Weather:	VMC CLBC	VMC HAZE
Visibility:	8km	3500-4000m
Reported Separation:	200ft V	500ft V
Recorded Separation:	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PA38 PILOT reports flying a solo sortie at Kemble VFR and in communication with Kemble Information on 118·9MHz, squawking 7000 with Mode C. The visibility was 8km flying 4000ft below cloud in VMC and the ac was coloured blue/white with nav and strobe lights switched on. He was turning onto the crosswind leg at 80kt following a touch and go from RW08 in a LH cct and climbing through 600ft QFE when he first saw another ac about 300-400m ahead, just L of the port side engine cowling, approximately 200ft below passing directly beneath. He called Tower and advised that an ac was approaching RW26 from R base having just passed beneath him. Kemble Tower did not respond to him but immediately advised other traffic to abort landing on RW26 as the RW in use was 08LH. The other ac's pilot apologised and aborted before Kemble Tower advised the pilot of a 3rd ac to turn R immediately; the position of this ac was unknown to the PA38 pilot. After reporting to the Tower post flight of his intention to file an Airprox, ATC had already briefed the other pilot of his error. Throughout his flight Kemble had advised all pilots that the RW in use was 08LH. He assessed the risk as medium.

THE ROBIN HR200 PILOT reports flying solo inbound to Kemble, VFR and in communication with Kemble Information on 118·9MHz, squawking with Mode C. The visibility was variable 5-6km out of sun; however, when flying directly towards the aerodrome at 1000ft QNH 1022mb at 90kt to enter the traffic pattern the afternoon sun reduced visibility to 3500-4000m. The ac was coloured white/red with nav and anti-collision beacon switched on. His approach path was severely restricted owing to considerable noise abatement areas surrounding the aerodrome. His request to ATC regarding areas to avoid (villages) received a reply of, "avoid all of them" so his approach was a weaving pattern to avoid villages and farms as they became visible. The aerodrome came in sight to the SW and he was in contact with ATC listening out for other traffic. He noted 1 departing ac about to take-off and 2 others in the cct; both of these ac he saw passed to the R. The ac taking-off became visible in the haze about 500-550m away and was seen to immediately take on a new course by turning L onto approximately 020° to cross the aerodrome boundary at an angle to the departure RW, presumably either to set course immediately or to comply with noise abatement procedure, or both. He turned R into the traffic pattern whilst the departing ac, a low-wing single-engine Piper type, was above his level and continued heading 020°, temporarily on a reciprocal heading about 500ft above. The departing ac's pilot called ATC stating, "Light ac below me approaching airfield". He continued turning R and was about to call ATC when he received an instruction, "Both ac to immediately turn R for avoidance"; both flights turned R instantly. At this time the other ac had overflown his ac above and presumably continued on course after the R turn. ATC directed him on to downwind cct procedure with 2 ac ahead which completed their ccts and landed. No ac followed his ac, he thought, as he flew downwind, base and final. After landing he reported to ATC and discussed the incident with the 'controller' and he apologised for any part he played in it. He assessed the risk as none.

THE KEMBLE FISO reports RW 08LH in use. Visibility about 8km in haze, sunny. Traffic levels were moderate. The Robin flight called and was given relevant information, with RW and cct correctly read back. He then requested a R base join and was accordingly requested to report R base. He duly did so and was requested to report final. The PA38 pilot then reported final for a touch and go, which he duly performed before a PA28 then lined up and departed. The Airport Manager, acting as assistant, then noticed an ac turning R base for RW26. He immediately requested the PA28 pilot to perform a R turn; the PA38 was not at this time visible from the tower, but its pilot made a call indicating that the other ac had passed just below him.

ATSI reports that the Airprox was reported to have occurred at 1500, within the visual cct and to the NE of Kemble Airport. The ATZ consists of a circle, radius 2nm, centred on RW08/26 and extends from SFC to 2000ft above the aerodrome elevation (436ft).

The Airprox was reported by the pilot of a PA38 in the LH cct and the other ac was an Robin HR200 inbound to Kemble from Gloucestershire.

A FISO service is provided at Kemble. RW08 was in use with LH ccts with traffic levels reported as moderate.

CAA ATSI had access to radar recording, provided by NATS Swanwick, together with written reports from pilots and the FISO. The radar recording showed a number of ac in the vicinity of Kemble squawking 7000. However it was not possible to identify the ac concerned or the occurence itself.

Although not a requirement, Kemble do provide an RT recording facility but due to a fault, no recording was available for the period.

The weather for Lyneham is provided;

METAR EGDL 171450Z 03004KT 9999 FEW040 SCT060 17/09 Q1023 BLU NOSIG=

The FISO's written report indicated that the HR200 called for joining and was passed the relevant information with the RW in use and cct direction. After a correct readback the HR200 requested a R base join and the FISO asked the HR200 to report R base.

The HR200 pilot's written report indicated that the field was to the SW (i.e. approaching from the NE). It was not clear why the pilot requested a R base join for RW08.

The PA38 flight was in the LH cct for RW08 and reported on final for a touch and go. After the PA38 departed from the touch and go, a PA28 lined up and departed. The FISO assistant, noticed an ac turning on a R base for RW26 and this was later identified as the HR200.

The PA38 pilot indicated that, after completing the touch and go, when crosswind in a climbing L turn at a height of 600ft, the other ac (HR200) was observed passing below. The PA38 pilot advised Kemble about the other ac (HR200).

The PA38 pilot indicated that he heard Kemble FISO advise the HR200 to abort landing on RW26 as the RW in use was 08 LH.

The HR200 pilot's written report indicated that the ac was out of position, due to the avoidance of noise sensitive areas in haze and sun conditions. The HR200 pilot discussed the incident afterwards with the FISO.

The pilot of the PA38 indicated that a report was made to Kemble Tower after the flight.

No MOR report was received from the FISO; however, an internal FISO report was forwarded at a later date. The Kemble FISO manual, page 36. Paragraph 10.1, states:

'Reporting of incidents shall be carried out in accordance with CAP 410, CAP 382 and the Air Navigation Order (ANO).'

It was noted that the current version of CAP410 dated 7 March 2002, does not align with the ANO (and reflected in CAP382). For example CAP 410, Part A, Chapter 8, Page 2, paragraph 5.4, relates to MOR reporting and states:

'Although mandatory reporting applies only to public transport aircraft registered in the UK or operating under the jurisdiction of a UK Operator, and all turbine powered aircraft, FISOs are to report all occurrences regardless of the category or nationality of the aircraft.'

Whereas the ANO Article 226 (3) states:

'This article applies to occurrences which endanger or which, if not corrected, would endanger an aircraft, its occupants or any other person.'

The HR200 inbound from Gloucestershire was considered to be approaching the airfield from the NE and it was not clear why, approaching from that direction, the pilot wanted to join on R base for RW08.

The pilot of the HR200 indicated that the ac was out of position, due to the avoidance of noise sensitive areas in haze and sun conditions.

ATSI RECOMMENDATION

It is recommended that CAA ATSD should review and update CAP410 to ensure the document is correctly aligned to UK legislation.

UKAB Note (1): The Clee Hill radar recording does not capture the CPA but at 1458:04 shows a 7000 squawk (possibly the HR200) approaching Kemble from the N with 3·3nm to run descending through FL016 (1870ft QNH 1022mb) which fades after the sweep at 1459:24 1·5nm NE of Kemble at FL007 (970ft QNH 1022mb). Another 7000 squawk appears 16sec later, possibly the PA38, 0·9nm E of Kemble indicating FL009 (1170ft QNH) in a L turn passing heading 040°. The PA38 continues the turn towards the downwind leg and at 1500:36 indicates FL014 when 1·1nm N of Kemble turning through heading 280°. At the same time a 7000 squawk appears, believed to be the HR200, 0·5nm SE of the PA38, tracking 030° indicating FL007 (970ft QNH) and climbing. The PA38 rolls out downwind at 1501:06 at FL013 (1570ft QNH) whilst the HR200 climbs to FL011 (1370ft QNH) and also turns L onto the downwind leg 1·7nm NNE of Kemble.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, radar video recordings, a report from the FISO involved and a report from the appropriate ATC authority.

Members could not understand the HR200 pilot's mindset. He had been informed that the RW in use was RW08 but had positioned onto R base and then final for RW26 and this had brought his ac into conflict with the departing PA38, causing the Airprox. The HR200 pilot had reported seeing the departing PA38 and 2 other ac in the cct so this should have alerted him to the fact that he was approaching the 'wrong end' of the RW as they were flying in the opposite direction to his cct pattern. Members agreed that there was no substitute for carrying out a standard O/H join, particularly when visibility is reduced, which allows the pilot concerned to orientate himself with the duty RW and integrate his ac into the pattern already established by other traffic in the cct. The PA38 pilot was undoubtedly surprised when, as he was turning onto the crosswind leg climbing through 600ft, he saw the HR200 300-400m ahead before it passed 200ft below. When the FISO became aware of the HR200's position – without an RT transcript there was no corroboration of what was said or when the transmissions were made – the HR200 pilot was informed of his error and the traffic sequence was re-established. The HR200 pilot reported sighting the PA38 and estimated that it passed 500ft above his level. Members believed that from the geometry of the encounter, with the HR200 fading at 970ft QNH on R base shortly before the PA38 appears climbing through 1170ft QNH (637ft QFE), the vertical distance between the ac was more likely to be in the region of those reported by the PA38 pilot - 200ft; if the separation had been 500ft, the HR200 would have been flying very close to the ground some distance from the RW. Taking all of these elements in account the Board considered that the flightpaths flown by both pilots had led to safety being compromised during this Airprox.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Robin HR200 pilot joined for RW26 when RW08 was in use, and flew into conflict with the PA38.

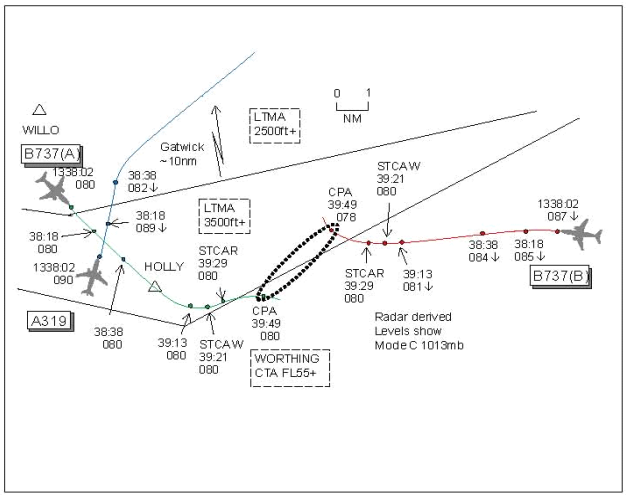
Degree of Risk: B.

AIRPROX REPORT No 2011036

AIRPROX REPORT NO 2011036

Date/Time: 14 Apr 2011 1340Z
Position: 5054N 00002E (16nm SE Gatwick)
Airspace: LTMA (Class: A)

	Reporting Ac	*Reported Ac*
Type:	B737-400(A)	B737-400(B)
Operator:	CAT	CAT
Alt/FL:	FL80	NR
Weather:	VMC NR	VMC NR
Visibility:	50km	NR
Reported Separation:	200ft V/2·5nm H	Not seen
Recorded Separation:	200ft V/3nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE B737(A) PILOT reports inbound to Gatwick IFR and entering the WILLO hold via HOLLY at 220kt and FL80. In a L turn at HOLLY opposite direction traffic was noticed also at FL80 descending heading towards WILLO heading 270°. ATC issued an avoiding action heading, reversing their turn. The AP was disconnected and the turn was reversed maintaining FL80; TCAS generated a TA and they saw minimum separation of 200ft/2·5nm. Prior to the TA another flight, an A319, declared a PAN, owing to a medical emergency, at FL100 inbound to HOLLY which was given a N'ly heading and immediate descent clearance towards their flight; this incident had raised their awareness.

THE B737(B) PILOT reports that being unaware of an Airprox until being informed post incident. Whilst inbound to Gatwick IFR another flight, an A319, suddenly declared an emergency and was quickly vectored ahead of other traffic, including their ac with associated rapid re-vectoring of various flights. At no time did he feel the safety of his flight was in any doubt nor recollect any TCAS TA or RA alerts.

THE LTC GATWICK INT DIR reports having not long taken over the position when an A319 flight declared a PAN with a pax in need of immediate medical assistance. The off-going controller, who was still at the desk, asked if she wanted to split the sector. She looked at the traffic levels and decided that it would probably be OK; it turned out to be the wrong call. She turned the A319 flight L onto 010°, telephoned the Tower, and then turned an ac, B737(B), at TIMBA L onto 270° to go behind, instead of in front of the A319. She then remembered thinking she had better descend the A319 as it was still at FL90. B737(A) was also on track HOLLY at FL80. Tower wanted more details about the pax so she asked the A319 crew for more details which were passed onto Tower. She had been aware of the ac she turned W to go behind the A319, B737(B), was not descending very quickly and was approaching B737(A) which was nearly at HOLLY and about to turn L. She gave the B737(B) flight a R turn onto 010° and then gave avoiding action R turn onto 120° to the B737(A) flight. Both flights then proceeded to flash white [STCA low severity alert] and then red [high severity] at FL80; she did not know if these two flights lost separation. Prior to being relieved she was unaware that there had been a loss of separation between the A319 and B737(A). She was uncertain how this had occurred.

ATSI reports that the Airprox occurred at 1339:18 UTC, in Class A, CAS, at a position 16·5nm, to the SE of Gatwick Airport.

The Airprox involved 2 Boeing 737-400 ac, B737(A) and B737(B). At the same time an Airbus A319 ac declared a medical PAN. All 3 ac were inbound for Runway 26L at Gatwick with 2 other ac ahead in the traffic sequence. B737(A) was inbound IFR from Glasgow, routeing from the NW to HOLLY. B737(B) was inbound from Cagliari (Sardinia), routeing from the SE to TIMBA.

The Gatwick INT controller had just taken over the position and was operating the sector bandboxed, providing a RCS as radar director. An authorised airline pilot visitor had been plugged into the sector prior to the controller taking over. The visitor and outgoing controller remained in the vicinity of the sector. Traffic levels were assessed by CAA ATSI as medium.

The controller was not initially aware of the Airprox and had reported an ATC Incident with a loss of separation between the A319 aircraft and B737(A).

CAA ATSI had access to RTF and radar recordings, together with the controller, unit and pilot written reports.

METAR EGKK 131020Z 23006KT 190V280 9999 SCT032 SCT040 13/08 1021=

The controller had just taken over the position and had planned a traffic sequence with 5 ac in the traffic pattern.

At 1336:30, 2 ac were already established in the pattern followed by:

B737(B) from the SE, descending to FL080 routeing to TIMBA,

B737(A) from the NW, at FL080 routeing to HOLLY then WILLO

A319 from the SW, descending to FL090 routeing HOLLY then WILLO.

At 1336:55, the B737(B) flight at FL096, 26nm SE of Gatwick, was turned L onto a heading of 290° and given descent to FL070. At this point the range between the 2 B737 ac was 23nm. The projected heading did not ensure separation from the WILLO stack. LTC MATS Part 2, GAT 4.6.1 states:

'If KK [Gatwick] INT vectors an aircraft that is at, or above, the Minimum Stack Level from one holding stack towards the other, the relevant flight progress strip is to be moved to the appropriate stack designator to indicate that it has become traffic to aircraft in that stack. KK SPT is to be kept informed.'

The controller decided not to move the strip of B737(B) from the TIMBA to WILLO stack (or 'cock-out' the strip which was the controllers prefered method). Had this been done it would have highlighted the conflict. The controller intended to monitor the interaction between the 2 B737 ac and planned to turn B737(B) R into the downwind traffic pattern before coming into conflict with B737(A).

The controller confirmed that the Vertical Stack Lists (VSLs) were not displayed and did not feel that the sector was busy enough to warrant them. Had the VSLs been displayed it may have helped to highlight the confliction. LTC MATS Part 2, DAT 8.9.6.1 states:

'….Where stack management is part of the role of the sector, ……, the appropriate VSL palettes should be displayed at all times,……'

At 1337:07, the A319 flight declared a medical PAN. The controller elected to change the order of the arrival sequence, giving the A319 priority, ahead of the 2 B737 ac. This changed the dynamics of the earlier plan. The controller removed the A319 fps from the WILLO display and held it, whilst advising the outgoing controller of the PAN. The strip was then moved to the fps display directly in front of the controller (note: this is common practice when ac are no longer in conflict). The outgoing controller offered to split the position but the INT controller assessed the workload as acceptable for bandboxed operations and declined the offer. Later, the INT controller acknowledged that this was the wrong decision.

At 1337:49, the distance between the 2 B737 ac was 16nm. B737(B) flight, now passing FL089, was turned L onto a heading 270°. Because of the increased workload and non-standard configuration of the strip management, the conflict between the B737 ac was not highlighted. The ATSU reports that the controller momentarily forgot about the presence of B737(A), most likely because the controller became focused (note: tunnelling effect) on moving the A319 forward in the approach sequence.

At 1338:01, the A319 flight, level at FL090 and converging with B737(A) at FL080, was instructed to descend to an altitude of 4000ft. This resulted in a loss of separation as the 2 ac passed. Because of the ac trajectories and

relative positions as the 2 ac diverged, STCA did not activate. The minimum separation was reported as 2nm and 400ft as the ac diverged. The written report from the pilot of B737(A) indicated the crew were aware of the early descent given to the A319, which heightened their situational awareness, as they monitored the A319 on TCAS.

[UKAB Note (1): The CPA between the A319 and B737(A) occurs at 1338:18 with the A319 0·5nm NE of B737(A), 900ft above and descending.]

The controller turned the A319 downwind and requested details of medical emergency. The pilot passed the details and confirmed that the company were aware and had requested an ambulance.

At 1339:13, the distance between the 2 B737 ac was 7nm. B737(B) was passing FL081 in the descent to FL070, with B737(A) maintaining FL080. The controller instructed B737(B) to turn R onto a heading of 010°. At the same time B737(A), on a SE'ly track and approaching HOLLY, was commencing a L turn towards WILLO.

The outgoing controller who was monitoring the situation, alerted the controller to the confliction and at 1339:19, the controller issued avoiding action, *"(B737(A))c/s avoiding action turn right heading one two zero degrees."* The B737(A), already commencing a L turn towards HOLLY, reversed the direction of turn. At 1339:49 radar recording showed the required minimum separation of 3nm was maintained with vertical separation of 200ft.

The Airprox was attributed to the Gatwick INT controller momentarily forgetting about B737(A), when providing vectors to B737(B), which brought the 2 ac into conflict. The crew of B737(A), already at a heightened state of awareness because of the loss of separation with the A319, became concerned about the proximity of B737(B).

A number of factors were considered to be contributory:

The controller did not accept the offer to split the sector which would have eased the workload and may have prevented the incident.

The medical PAN increased the workload significantly, resulting in the controller's change of plan and caused the controller to request for full details of the medical emergency, when these had already been passed to the company and an ambulance arranged.

The short period of time since the handover and the presence of a visitor in the vicinity of the sector were considered to have been an added distraction.

The controller was not using the vertical stack lists (VSLs) which may have alerted the controller to the potential confliction.

The controller's plan to turn B737(B) towards the WILLO stack, and monitor the separation as the ac descended, did not provide appropriate safeguards once the controller's attention was diverted by the medical PAN.

The controller did not correctly move the B737(B) strip to the WILLO stack in accordance with MATS Pt2 instructions. This would have highlighted the conflict.

The incident was resolved by the action of the outgoing controller, who, aware of the medical PAN, continued to monitor the situation and alerted the controller to the confliction. This showed good team resource management and resulted in avoiding action, which prevented a loss of separation between the 2 B737s.

The crew of B737(A) also monitored, on TCAS, the A319 being given early descent, which resulted in the loss of separation and which raised the level of awareness of the B737(A) crew.

The ATSU has completed a unit investigation and will make appropriate recommendations to:

Ensure that if a pilot in such circumstances has already arranged medical assistance, they simply advise ATC of the medical PAN.

Issue an OPNOT reminding controllers of the correct methods of strip moving when vectoring ac from the confines of one hold to another.

Ensure that the MATS Pt2 guidance for the use of VSLs is amended from 'should' be displayed at all times to 'shall' be displayed at all times.

CAA ATSI is content with the actions and proposed actions of the ATSU provider.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC authorities.

Members could add little to this report. When INT DIR changed her arrival sequence order, owing to the A319 emergency, she placed B737(B) on a new radar heading of 270° whilst it was descending to FL70, through the level of B737(A). A controller Member familiar with LTC operations noted that B737(B) was descending slowly when it would normally be expected to have descended below an ac in the HOLLY area. However, INT DIR had forgotten about B737(A) when she vectored B737(B) and this had brought the ac into conflict and caused the Airprox.

As she noted in her report, with hindsight the offer to split the sector should have been taken up but at the time the controller believed traffic levels were acceptable. Members applauded the Team Resource Management shown when the off-going controller, who had remained close-by and monitored the situation, pointed out the confliction prior to STCA activating. INT had just issued B737(B) flight a R turn onto 010° for sequencing behind the A319 before she issued an avoiding action turn onto 120° to B737(A). B737(A) crew was already at a heightened state, owing to the A319 flight having descended when it passed O/H their ac. They had noticed the approaching B737(B) and had promptly actioned the avoiding action turn away from it, resulting in no erosion of separation. All of these elements when combined allowed the Board to conclude that any risk of collision had been quickly and effectively removed.

PART C: ASSESSMENT OF CAUSE AND RISK

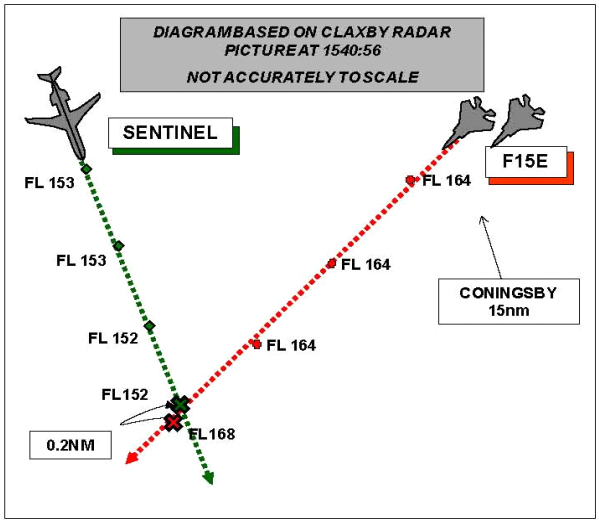
Cause: The Gatwick INT DIR vectored B737(B) into conflict with B737(A).

Degree of Risk: C.

AIRPROX REPORT No 2011037

AIRPROX REPORT NO 2011037

Date/Time:	1 Mar 2011 1541Z	
Position:	5251N 00010W (15nm S CONINGSBY)	
Airspace:	Lincs AIAA	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Sentinel	F15Ex2
Operator:	HQ AIR (Ops)	USAFE
Alt/FL:	FL150	NR
Weather:	VMC CAVOK	NR
Visibility:	20km	NR
Reported Separation:		
	500ft V/0m H	NR
Recorded Separation:		
	1600ft V/0.2nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE SENTINEL PILOT reports flying a grey ac on a training flight under IFR, with all lights switched on, under a TS from London Mil and squawking with Modes C and S. While heading 165° at 250kt on the climb-out from RAF Waddington, a pair of F15Es was seen to the left of the ac about 6nm away, above them but they appeared not to be closing. As they passed through FL140 the HP asked the NHP to check whether London Mil had them on Radar. On passing FL150 the pair was seen to be closing on a heading of 210° and on a collision course. At that point the TCAS generated a TA immediately followed by a RA of 'adjust vertical speed' suggesting a descent [he believed] to remain clear of conflict so he initiated a descent and the ac passed between 500 and 1000ft directly overhead. Once clear, the TCAS enunciated 'clear of conflict' and the pilot continued the flight as normal. He reported the Airprox to London Mil and assessed the risk as being medium.

THE F15E PILOT reports that he was contacted over 2 months after the event (see UKAB Note 1 below); he recalls that he was leading a pair of but could not recall precisely the mission details. He thought that they were in level flight on RTB and had just entered the Wash AIAA when his wingman called a radar contact. The pilot 'boresighted' the traffic, got a radar lock and shortly afterwards saw the traffic on their RHS at about 9nm. He could not initially tell the ac aspect because of its range but thought that it was going the same way.

About 15sec later he realised that they were on a collision course and saw that the traffic was continuing to climb up towards their formation. At about 3nm he saw that the Sentinel was not stopping its climb and he directed the pair to climb to avoid it; they climbed about 500-700ft and then passed directly over it.

He considered filing an 'incident report' and instructed that their tapes be retained for a couple of weeks, but he decided against reporting it because they had full awareness of the traffic from just inside 10nm and they thought they had passed more than 1000ft above the Sentinel.

The F15Es were under a TS from London Mil who only called the traffic after they had already passed it; he thought that the call was something like, 'Traffic left 9 o'clock 3 miles, Eastbound'.

He did not assess the risk.

UKAB Note (1): The incident was reported on ASIMS by the Sentinel pilot on the day following the event. The report was not released by the Station, however, until over 7 weeks later, hence the delay in contacting the F15E HQ and London Mil; fortunately the RT and radar recordings were still available.

UKAB Note (2): The recording of the Claxby radar shows the incident as depicted above. The Sentinel levels at FL153 (at 1540:43) then descends by 100ft before continuing its climb after the ac cross. The F15Es are initially level at FL160 but climb to FL170 as the ac cross before descending again.

HQ 1GP BM SM reports that this Airprox occurred in Class G airspace between a Sentinel operating IFR in VMC in receipt of a TS from LJAO (North-East TAC) and a pair of F15Es operating VFR in VMC, in receipt of a TS from LJAO (East TAC).

All altitudes stated are based upon SSR Mode C information derived from the radar replay unless otherwise stated.

Initially this occurrence was reported by the LJAO North-East TAC as a TCAS-RA report; when the Unit was advised 6-8 weeks later that this incident had been filed as an Airprox by the Sentinel crew [see UKAB Note (1)], the LJAO East TAC had no recollection of the occurrence other than that it was busy; consequently, there is no Defence Flight Safety Occurrence Report (DFSOR) from the LJAO East TAC. However, it appears from the transcript that in the period up until around 60sec before the commencement of the incident sequence at around 1540:03, LJAO East TAC had been operating under a relatively high workload, with 5 speaking units on freq which were geographically dispersed across the LJAO East/North-East AoRs. This workload had rapidly tailed off to 2 speaking units, with 2 formations of F15Es routing from EGD323C at medium level beneath Y70 to the East Anglian (EA) MTRA for GH. Research has demonstrated that psycho-physiological alertness reduces significantly immediately following a high to low workload transition and remains so for up to 15min, regardless of the individual's motivation for the task. Further research has proved that humans consistently over-estimate their level of psycho- physiological alertness.

LJAO North-East TAC described their task complexity as medium and workload as medium to low, with the Sentinel climbing out from Waddington on a South-Easterly track and a single Typhoon on a medium-level transit 6nm SE of the Sentinel on a similar track; consequently, LJAO North-East TAC's geographical focus was tight. It has not been possible to establish LJAO North-East TAC's workload prior to the incident sequence.

Both tracks worked by LJAO North-East TAC were identified and placed under an ATS by about 1539:41 at which point, from extrapolation of the radar data, about 7.8nm separation existed between the Sentinel and F15E formation. There are no further recorded landline conversations or transmissions to or from LJAO North-East TAC until 1540:09. At approximately 1540:03 LJAO East TAC requested from the F15E formation what levels they required for GH in the EAMTRA. At that point, the F15E formation was at FL160, 5.6nm E of the Sentinel climbing through FL141.

At 1540:09 the Sentinel called LJAO North-East TAC stating *"(Sentinel C/S) has traffic in the er in our ten o'clock, similar height, approximate range 5 miles, can you confirm?"* at that point, the F15Es were 5nm E of the Sentinel at FL160 which was climbing through FL144. In his report the Sentinel pilot said that, at that point, the F15Es appeared "not to be closing". LJAO North-East TAC responded at 1540:20, "*you got er Typhoon (*LJAO North-East TAC's other track) *left 11 o'clock five miles flight level hundred ah traffic left 9 o'clock at 3 miles flight level 160, appears to be a pair*". From the Sentinel pilot's report it is clear that they were monitoring the F15Es and as they passed FL150 assessed them to be on a collision course (at 1540:22 coincident with LJAO North-East TAC passing TI). The Sentinel pilot reported that it was at that point that the TCAS generated a TA closely followed by a RA of adjust vertical speed. Eleven sec later the Sentinel pilot advised LJAO North-East TAC that they were manoeuvring in accordance with a TCAS RA; at that point 2.7nm lateral and 700ft vertical separation existed, with the Sentinel indicating FL153 and the F15Es FL160.

At 1540:41 LJAO East TAC asked the F15E pilot to confirm the altimeter setting that they wished to operate on in the MTRA. This question was followed immediately, without pause, by LJAO East TAC passing TI to the F15E formation on the Sentinel stating, "*traffic er 12 o'clock half a mile crossing right to left indicating flight level 150 climbing*" with the F15E formation reporting, "*Tally.*" At this point 0.9nm lateral and 1200ft vertical separation existed suggesting that the Sentinel has descended in response to the TCAS RA and that the F15E formation had climbed to avoid the Sentinel, (as stated in their report).

The F15E formation reports that both elements of the formation were visual with the Sentinel at a range of about 9nm and at that stage they considered there to be no risk of collision. Although this is before the radar replay commences, by extrapolation of the data, it has been possible to determine that this would have been about 1539:31; the F15 leader reported that he realised that they were in conflict with the Sentinel around 15sec later.

At that point, again by extrapolation of the radar data, about 7nm lateral separation existed between the F15s and the Sentinel; the leader further reported that when they were about 3nm apart, he instructed the formation to climb over the Sentinel, which accords with the radar data.

As far as the Airprox element of this occurrence is concerned, the Sentinel and F15 crews acquired each other visually in good time, enabling them to monitor the situation and decide upon appropriate courses of action; initially both crews considered there to be no risk of confliction but updated that assessment as the range closed and took action to resolve the confliction. However, the timeliness of the TI provided to both ac requires further examination.

Given the question posed by LJAO East TAC to the F15E formation at 1540:41, immediately followed by the passing of TI to them, it is reasonable to suggest that the first time that LJAO East TAC perceived there to be a confliction was shortly after 1540:41, (during the transmission). Moreover, it is reasonable to suggest that, given their workload history, LJAO East TAC may have been suffering from reduced psycho-physiological alertness which served to delay their perception of the growing confliction. While LJAO East TAC passed TI to the F15E formation at 1539:17, which from reviewing the radar data may have been regarding LJAO North-East TAC's Typhoon, this TI immediately followed their period of high workload. There was then a period of about 39sec where LJAO East TAC made no transmissions and their workload appeared to be low.

Thirty eight sec elapsed between LJAO North-East TAC completing their initial RT liaison with the ac under their control at 1539:41 and the Sentinel requesting information on the F15s at 1540:09. It is inappropriate to discuss whether LJAO North-East TAC would have passed TI without the intervention of the Sentinel; however, given the gap between 1539:41 and 1540:09, best controlling practice suggests that the opportunity existed for a more timely warning to be given. It is possible that this missed opportunity may be grounded in reduced levels of psycho-physiological alertness caused by LJAO North-East TAC's workload history; however, it is not possible to substantiate this hypothesis.

Whilst LJAO East TAC and LJAO North-East TAC were obligated to provide TI earlier in accordance with CAP774, given the range at which the crews visually acquired each other's ac, this factor was neither causal nor contributory.

HQ AIR (OPS) comments that both elements could see each other and there was no risk of collision. The Sentinel had right of way and initially maintained its course; however, once the TCAS RA was generated, the crew responded. The F15Es avoided the Sentinel by a safe margin but flew close enough to generate the TCAS event. The delay of 7 weeks for the DFSOR to leave the station is unacceptable and will be investigated.

HQ 3 AF comments that both the Sentinel and the F15E pair had each other in sight from around 6nm and 9nm respectively and both subsequently took adequate avoiding action, one by following a TCAS RA and the other by climbing. However, in view of the convergence of the 2 tracks it is surprising that, according to the HQ 1Gp BM SM analysis, no coordination took place between LJAO(North-East TAC) and LJAO(East TAC) and both flights received little, if any, meaningful traffic information; the absence of either action should be considered a contributory factor.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

Members noted that this incident took place in Class G airspace where 'see and avoid' is the primary means of collision avoidance. Despite the good weather conditions, both pilots sensibly opted for a TS in order to assist with this responsibility.

Despite that there may have been inadequacies by both Controllers most Members were of the opinion that this was a TCAS RA incident rather than an Airprox. Both crews saw/were aware of the opposing ac/flight from an early stage, even before the respective controllers could have reasonably been expected to pass information regarding the other ac. That being the case avoidance was primarily the responsibility of the pilots and both had correctly exercised that responsibility thus removing any risk of collision. Despite that TI should have been passed

to both pilots as stated in the HQ 1 GP BM SM report above, it also followed that contrary to that report, the lack of such TI was not contributory to the incident.

While noting the F15 crew's decision to take vertical avoidance, Members pointed out that depending on the nature of the climb it would still (most likely) cause a TCAS RA, as was the case in this incident and the Sentinel pilot was obligated to react to that RA causing (avoidable) disruption to his planned flightpath. A small heading change by the F15 flight to pass behind the Sentinel would have avoided the TCAS RA.

PART C: ASSESSMENT OF CAUSE AND RISK

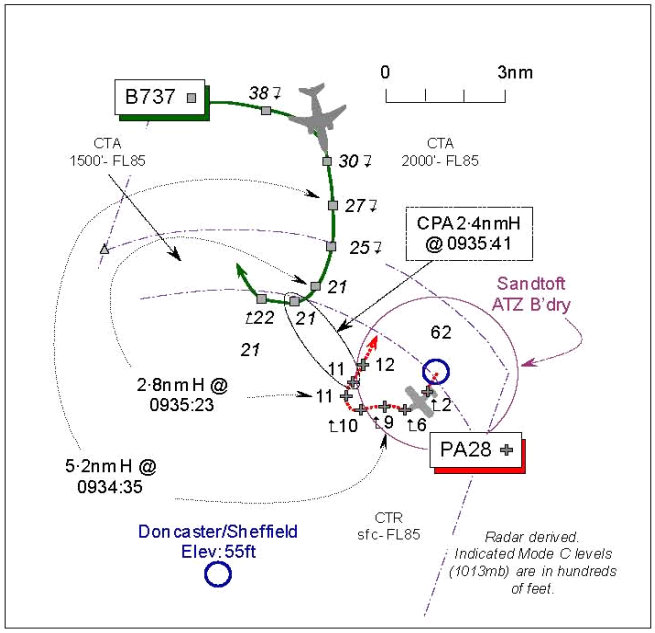
Cause: A conflict in Class G airspace resolved by the crews of both flights.

Degree of Risk: C.

AIRPROX REPORT No 2011038

AIRPROX REPORT NO 2011038

Date/Time:	5 May 2011 0935Z	
Position:	5334N 00056W (6·5nm NNE Doncaster/Sheffield - elev 55ft)	
Airspace:	Doncaster CTR	(Class: D)
Reporter:	Doncaster APR	
	1st Ac	*2nd Ac*
Type:	B737-800	PA28
Operator:	CAT	Civ Trg
Alt/FL:	2500ft↓	800ft↑
	QNH (1017mb)	QFE
Weather:	VMC CLOC	VMC CLOC
Visibility:	10km	9km
Reported Separation:		
APR	1000ftV/4nm H	
	4nm H	Not seen
Recorded Separation:		
	1000ft V/2·4nm H	



CONTROLLER REPORTED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE DONCASTER APR reports that he was vectoring the B737 for an ILS RW20. When it was approaching 8nm on a closing heading of 170° for the ILS an ac was observed squawking A7000 leaving Sandtoft on a SW'ly track. As the B737 reached 8nm and reported LLZ established the A7000 squawk was observed climbing, indicating 1300ft and continuing to route W. As the ac left the Sandtoft ATZ without any indication of a turn he gave avoiding action to the B737 flight of 'turn R heading 360°, climb altitude 2500ft'. Sandtoft were contacted by telephone and they stated that 1 ac was in the visual cct. The pilot of that ac, subsequently identified as the PA28, called on frequency requesting a BS for GH. As it was now identified the B737 was given a closing heading for the ILS and once 'established', was transferred to TOWER. The PA28 pilot was informed of the reporting action taken. Minimum separation was estimated to be 4nm and 1000ft.

THE B737-800 PILOT (B737) reports he was inbound to Doncaster IFR and in receipt of a RCS from Doncaster on 126·225MHz, squawking A6217 with Modes S and C. About 5nm from touchdown on the ILS to RW20 descending through 2500ft QNH (1017mb) at 170kt, avoiding action was requested by Doncaster ATC to avoid a PA28. The AP was disengaged and he thought a L turn, [but actually R], was initiated at 2500ft according to ATC instructions followed by a second approach. The PA28 was not seen but radar separation was given as 4nm as the PA28 penetrated CAS without ATC clearance. No TCAS alerts or warnings were received.

THE PIPER CHEROKEE WARRIOR II (**PA28) PILOT**, a flying instructor, reports flying a dual training sortie from Sandtoft, VFR and in receipt of an A/G Service from Sandtoft RADIO on 130·425MHz, squawking A7000 with Mode C. The visibility was 9km in VMC and the ac was coloured blue/white; no lighting was mentioned. After departing in crosswind conditions the ac was handled by his student, but he had to take control on initial climbout for the first cct and calm his student owing to the turbulent conditions. By the time the ac was under control in stable flight in the hands of the instructor climbing through 800ft QFE, the initial climb out had become extended leading to a wider cct than normal. The cct height at Sandtoft is 1000ft and the ATZ extends to 2000ft aal. Sandtoft A/G had no phone call to let them know that an ac was inbound or in the Doncaster cct. He did not see the B737 or any other ac at the time.

ATSI reports that the Airprox occurred at 0935:28, at a position 6nm NNE of Doncaster Airport within the Doncaster Class D CTR. The B737 was inbound to Doncaster, IFR, from Tenerife. The PA28 was operating on a VFR flight from Sandtoft aerodrome.

Sandtoft is positioned 7.5nm to the NE of Doncaster Airport and has an ATZ of a circle 2nm radius centred on RW05/23 and extending from the surface to 2000ft above aerodrome level (elev 13ft). The southwestern part of the ATZ lies within the Doncaster Sheffield CTR (Class D). The upper limit of the ATZ lies partly within Doncaster Sheffield CTAs (bases 1500ft and 2000ft amsl).

The Letter of Agreement between Doncaster and Sandtoft, states:-

3) Pilots of transponding aircraft remaining within the Sandtoft ATZ will be expected to squawk the 'VFR Aerodrome Traffic Pattern' conspicuity code (7010) in accordance with AIC 9/2007.

8) Doncaster Radar will inform Sandtoft via the direct line of all aircraft being vectored for an approach to runway 20. This telephone call should be made at approximately 20DME. Specific mention should be made of all arrivals of 'Heavy' vortex category.

10) Pilots must ensure that they are in receipt of an ATC clearance from Doncaster Radar 126.225 MHz before entering Doncaster Controlled Airspace.'

RW20 was the notified Runway in use.

The applicable Doncaster/Sheffield METAR for 0920Z - 14011KT CAVOK 12/06 Q1020=

At 0929:18, the B737 crew, in receipt of a Radar Control Service, established contact with Doncaster RADAR, in the descent to FL070 with information 'Quebec'. RADAR responded advising that information 'Romeo' was current, QNH 1020mb, with vectoring for the ILS RW20 and No 1 in traffic. The B737 crew was given descent to an altitide of 2500ft, QNH (1020mb) and was then vectored right hand for the ILS approach RW20. At 0933:13, the radar recording shows the B737 positioned 11.8nm N of Doncaster Airport on right base.

At 0930:55, the B737 crew was advised about an aircraft that would be entering the hold at 3500ft, RADAR instructing the B737 crew, "*...in the event of a go around not above 2 thousand 5 hundred feet Q-N-H 1-0-2-0....".* This was acknowledged correctly by the B737 pilot.

At 0933:33, the B737 crew was given a closing heading for the ILS, "[B737 C/S] *turn right heading of 1-7-0 degrees closing from the right report established when established descend with the glidepath."* The B737 pilot responded, *"Right heading 1 ???? er clear for the ILS* [B737 C/S]". At this point the radar recording shows a 7000 squawk [the PA28] appearing 0.5nm to the SSW of Sandtoft airfield tracking SW at low level.

At 0934:40, RADAR passed TI on the unknown traffic, later identified as the PA28, "[B737 C/S] *traffic er left 11 o'clock 4 miles er indicating a thousand feet believed to be remaining in the Sandtoft circuit."* The B737 pilot replied, *"We have on TCAS and we're established...*[B737 C/S]*....established on the ILS."*

At 0934:59, the radar recording shows the PA28 leaving the Sandtoft ATZ on a WSW'ly track towards the Doncaster final approach at FL010 (converts to altitude 1189ft QNH (1020mb), with 1mb equal to 27ft).

At 0935:07, RADAR gave avoiding action to the B737 crew, "[B737 C/S] *roger it's now avoiding action turn right heading 1-3 correction right heading 3-6-0 degrees that previously reported traffic still climbing and tracking towards."* The B737 pilot responded, *"er roger which altitude then right er 2 say again the heading,"* The RADAR controller replied, *"right 3-6-0 altitude 2 thousand 5 hundred feet.*"

The Manual of Air Traffic Control Services (MATS), Part 1, Section 1, Chapter 5, Page13, states:-

'15.2 The action to be taken by controllers when they observe an unknown aircraft, which they consider to be in unsafe proximity to traffic under their control, in various types of airspace is as follows:

(Class D). If radar derived, or other information, indicates that an aircraft is making an unauthorised penetration of the airspace, is lost, or has experienced radio failure – avoiding action shall be given and traffic information shall be passed.'

Although not a factor in the Airprox, ATSI noted that the radar controller did not use the correct avoiding action phraseology and did not pass the relative position, distance and heading of the PA28 [when it was issued].

MATS Part 1 App. E, Page 11, states:

'(A/c identity) avoiding action, turn left/right immediately heading (three digits) traffic ([left/right] number) o'clock (distance) miles opposite direction/crossing left to right/right to left (level information).'

At 0935:20, the radar recording shows the PA28, 2.3nm to the SW of Sandtoft, outside the ATZ in a R turn. The distance between the two ac is 3.3nm.

At 0935:28, the B737 crew reported at 2300ft, climbing back to 2500ft QNH and turning R heading 360°. The radar recording shows the distance between the aircraft as 2.8nm, with both ac in a R turn. The B737 is indicating FL021 (ALT 2289ft QNH) and the PA28 is indicating FL011 (ALT 1289ft QNH). The CPA occurs at 0935:41 at a range of 2.4nm with a minimum vertical separation of 1000ft Mode C.

At 0936:31, the PA28 pilot called Doncaster RADAR and apologised. At 0936:35, the radar recording shows the PA28 leaving the Doncaster CTR. Thereafter, the B737 was vectored for the ILS without further incident.

The PA28 pilot's written report indicates that a student was flying the ac, under the supervision of an instructor, in turbulent conditions with a crosswind. This resulted in a wider than normal cct. The pilot also commented that no call had been received by Sandtoft RADIO A/G Station regarding the inbound B737. Doncaster ATSU indicated that a call was made in accordance with the LoA. It was not possible to verify the phone conversations that occurred. The PA28 pilot required a clearance to enter the Doncaster Class D airspace before leaving the Sandtoft ATZ to the SW.

As the B737 turned onto the ILS for RW20, RADAR observed unknown traffic - the PA28 - in the vicinity of Sandtoft aerodrome. The controller considered it likely that the unknown traffic - the PA28 - was operating in the Sandtoft circuit and passed TI to the B737 crew. When it became clear that the unknown traffic - the PA28 - was leaving the Sandtoft ATZ on a WSW'ly track, the controller became concerned and gave avoiding action to the B737 crew in order to resolve the confliction.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequency, radar video recordings, reports from the air traffic controller involved and from the appropriate ATC authority.

In the absence of a landline transcript, it was not possible to resolve independently whether the Sandtoft A/G Operator was informed of the B737 inbound to Doncaster beforehand or, conversely, whether Sandtoft advised Doncaster about the circuiting PA28. However, it was plain that the PA28 pilot had not selected the appropriate squawk for an ac remaining within the Sandtoft A/D circuit in accordance with the LOA. Whether the PA28 pilot was intending to continue the flight outwith the ATZ, clear of CAS, had not been revealed by the PA28 pilot but the A7000 squawk might have been why the APR was perhaps paying close attention to the flight when the PA28 approached the ATZ/CTR boundary.

The PA28 instructor reports he had to take control of his aeroplane, in what were challenging wind conditions for his student. However, the radar recording clearly showed that the PA28 had entered the Doncaster CTR during his Crosswind to Downwind turn. The Board was surprised that the PA28 pilot had not seen the B737 at all. Nevertheless, it was evident that the PA28 pilot's excursion outwith the ATZ was quickly detected on radar by the alert APR who watched it carefully whilst keeping the B737 crew appraised through the transmission of TI. The crew also had the PA28 displayed on their TCAS but it was evident that the controller took positive action at an appropriate stage before TCAS was called upon to act. The Board agreed that the B737 crew had little impact on this Airprox other than that they had complied promptly with the avoiding action instructions issued by the Doncaster APR. Controller Members recognised that the APR had acted correctly and the radar recording reflects that the APR passed these instructions to the B737 crew, turning their ac off the LLZ and back into the pattern, moments after he observed the PA28 penetrating the Class D Doncaster CTR. The Members agreed unanimously that the Cause of this Airprox was that the PA28 pilot entered controlled airspace without clearance and into

conflict with the B737 established on the ILS. Furthermore, the APR's prompt action ensured that separation of 1000ft and 2·4nm was preserved, thereby removing entirely any Risk of a collision.

PART C: ASSESSMENT OF CAUSE AND RISK

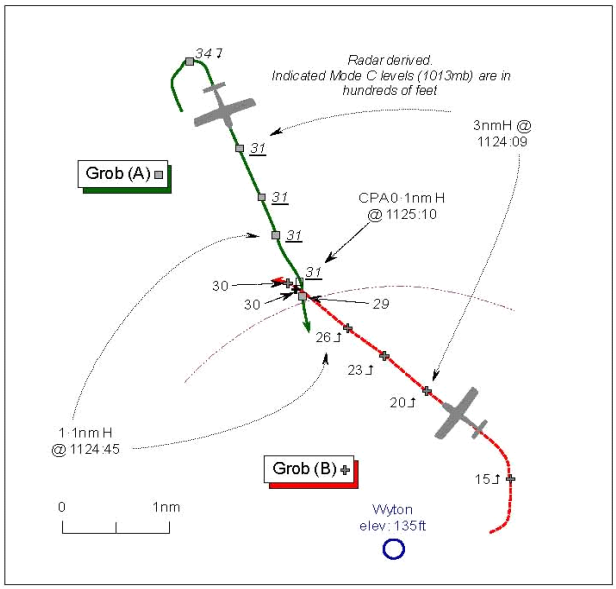
Cause: The PA28 pilot entered controlled airspace without clearance and into conflict with the B737 established on the ILS.

Degree of Risk: C.

AIRPROX REPORT No 2011039

AIRPROX REPORT NO 2011039

Date/Time:	4 May 1125Z	
Position:	5224N 00008W (347° Wyton A/D 2·7nm - elev 135ft)	
Airspace:	FIR/ATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Grob Tutor (A)	Grob Tutor (B)
Operator:	HQ Air (Trg)	HQ Air (Trg)
Alt/FL:	↓3000ft	↑3000ft
	QFE (1018mb)	RPS
Weather:	VMC	VMC
Visibility:	30km	>10km
Reported Separation:		
	Nil V/30-50m	NR
Recorded Separation:		
	100ft V/0·1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PILOT OF GROB TUTOR (A) reports he was the PIC of a VFR instructional sortie flying the ac from the LH seat, whilst on recovery to Wyton in perfect weather conditions with excellent visibility and no significant cloud. He was in receipt of a BS from Wyton TOWER on 119·975Mhz and a descent and overhead join had been approved.

About 3m N of the aerodrome, the recovery checks had been completed and he had demonstrated a lookout turn before initiating a descent. While teaching the cruise descent to 3000ft QFE (1018mb) heading S at 100kt, with a view to manoeuvring for the overhead join, another Tutor ac [the callsign of Tutor (B) was given] appeared from behind the left canopy bar in their 10-11 o'clock position at a similar height and in a shallow climb from L to R at an estimated range of no more than 100m. He took aggressive avoiding action by executing a descending turn to the L, passing below and 30-50m behind the other Tutor ac. The pilot of the other Tutor ac appeared to take no avoiding action and he assessed the Risk as 'very high'. He spoke with the PIC of Tutor (B) who, before his evasive manoeuvre, had not seen their ac.

A squawk of A7000 was selected with Mode C; Elementary Mode S is fitted, TCAS is not. The ac is predominantly white with a blue fin flash; the HISL and nav lights were on.

THE PILOT OF GROB TUTOR (B) reports he was airborne on a VFR training sortie from Wyton but was in receipt of a TS from Cottesmore ATC on 130·2MHz. Heading 330° in the climb at 80kt, he was informed by Cottesmore ATC of another ac 2nm to the N. Climbing through 3000ft, he thought 4nm N of Wyton but actually at a range of 2·7nm from the A/D, he dropped the right wing to have a good lookout and thought he saw something flash by underneath to starboard, but he could not be sure. He assessed the Risk as 'medium'.

A squawk of A7000 was selected with Mode C; elementary Mode S is fitted, TCAS is not. Although not specified the ac was presumed to have the same colour scheme as Tutor (A) – predominantly white with a blue fin flash. Wing-tip strobes lights, the nose taxi light and nav lights were all on.

THE WYTON AERODROME CONTROLLER (TOWER) reports that the pilot of Tutor (A) reported an Airprox at a position 3nm N of the aerodrome at 3000ft QFE (1018mb). The reported ac was also a Grob Tutor and believed to be another Wyton based ac. The runway-in-use was RW08, the prevailing visibility 30km and the A/D Colour State BLUE.

UKAB Note (1). The UK AIP at ENR-2-2-2-5, notifies the Wyton ATZ as a circle radius 2.5nm centred on RW08/26 extending from the surface to 2000ft above the aerodrome elevation of 135ft and active in Summer from Sunrise to Sunset. Wyton does not have a MATZ.

ATSI reports that the Airprox occurred at 1125:10, in Class G airspace, 2.7nm to the NNW of Wyton A/D and just outside of the Wyton ATZ.

Grob Tutor (A) was operating VFR on a training exercise and returning to Wyton for recovery, in receipt of a BS from Wyton TOWER. Grob Tutor (B) had departed VFR from Wyton on a training exercise, in receipt of a TS from Cottesmore ZONE.

Wyton TOWER and APPROACH (APP) were operating as separate positions without the aid of surveillance equipment.

The Wyton 1050 and 1150 UTC METAR:

1050Z 11009KT 9999 FEW040 SCT250 13/02 Q1023 BLU=

1150Z 14009KT 9999 FEW045 SCT250 14/02 Q1022=

Tutor (B) departed from Wyton's RW08 at 1122:15. The pilot of Tutor (B) reported switching to Wyton APP at 1122:57 and at 1123:50, reported calling Cottesmore.

Five seconds later at 1123:55, the pilot of Tutor (A) contacted Wyton APP for a visual recovery in receipt of information 'Echo' and was transferred to Wyton TOWER. At 1124:20 the pilot of Tutor (A) contacted Wyton TOWER and requested an overhead join. TOWER instructed Tutor (A) to join for RW08, QFE 1018mb, circuit clear. This was correctly acknowledged by the pilot of Tutor (A), in receipt of a BS.

At 1125:12 Tutor (A) reported the Airprox 2nm to the N of Wyton A/D, with another Tutor.

The written report from the pilot of Tutor (B), indicated that whilst climbing on a northwesterly track and in receipt of a TS, Cottesmore ATC informed him of another aircraft 2nm to the N.

The Wyton TOWER controller had advised Tutor (A) that the circuit was clear. The situational awareness of the pilot of Tutor (A) could have been aided if the Wyton TOWER or Wyton APP controllers had passed TI in general terms regarding the recent departure of Tutor (B). However, it is likely that the positions and routeings of both ac were unknown to Wyton and the pilot of Tutor (B) had quickly switched from TOWER to Wyton APP and then to Cottesmore ZONE.

At the time of the Airprox Tutor (A) was in receipt of a BS from Wyton TOWER operating to the N of the Wyton ATZ. The Manual of Air Traffic Services, Part 1, Section 1, Chapter 11, Page 4, paragraph 3.5.1, states:

'Pilots should not expect any form of traffic information from a controller, as there is no such obligation placed on the controller under a Basic Service outside an Aerodrome Traffic Zone (ATZ), and the pilot remains responsible for collision avoidance at all times. However, on initial contact the controller may provide traffic information in general terms to assist with the pilot's situational awareness. This will not normally be updated by the controller unless the situation has changed markedly, or the pilot requests an update. A controller with access to surveillance derived information shall avoid the routine provision of traffic information on specific aircraft, and a pilot who considers that he requires such a regular flow of specific traffic information shall request a Traffic Service. However, if a controller considers that a definite risk of collision exists, a warning may be issued to the pilot.'

HQ 1GP BM SM reports that Tutor (B) was outbound from Wyton VFR and was calling for a TS from Cottesmore ZONE, when Tutor (A) was positioning for an overhead join at Wyton, in receipt of a BS from Wyton.

The Airprox was not declared to Cottesmore at the time and with the length of time that elapsed between the submission of Tutor (B)'s report, the Cottesmore ATC personnel involved could not recall the incident. Consequently, this investigation is based upon the reports of the aircrew involved, the Cottesmore RT tape transcript and the retrospective recollection of Cottesmore ZONE.

Although Cottesmore airfield has closed, the LARS/ZONE task and Wittering APP tasks remain at Cottesmore ATC. Both control positions are manned throughout their notified operating hours and where it is identified that ZONE is busy, Wyton Tutor crews are pre-briefed to contact APP on UHF. In this case, the pilot of Tutor (B) called Zone on VHF at 1124:14 but was instructed to standby. At 1125:02, ZONE passed accurate TI to the pilot of Tutor (B) stating, "*traffic believed to be you has traffic 12 o'clock, half a mile, similar height*" which was acknowledged by Tutor (B).

Between 1124:14 and 1125:02, ZONE was called by 2 other flights, both being instructed to standby. Although the individual controllers involved in the occurrence were unable to recall any detail, subsequent analysis of the audio tapes by the unit identified that the control position was in the process of being handed over. The handover was completed at some point after 1129:23, with the new controller's voice evident at 1130:23. However, the off-going controller felt that the handover was commenced at around 11:24, almost co-incident with the pilot of Tutor (B)'s initial call, but they could not recall this with any clarity. Moreover, as there is no 'live-mic' recording, no details of the handover were recorded.

MAA RA 3003(2), through MMATM Ch 3 Para 4, states that:

'A change of controller should not be attempted until a suitable point is reached during the recovery of aircraft under control.'

The pilot of Tutor (A) reports that Tutor (B) "*appeared from behind the left canopy bar in our 10-11 o'clock position*." The radar replay depicts the Tutors on a constant relative bearing, in the position described by Tutor (A), until the range had decreased to 0·7nm at 1124:54. Shortly after this both Tutors turn, maintaining the confliction, with the CPA of 0·1nm occurring at 1125:10.

Based upon the tape transcript, there appears to be a burst of a higher taskload for ZONE at the point that the pilot of Tutor (B) calls at 1124:14. Moreover, given ZONE's response to Tutor (B) and the other 2 ac to, "*standby*", it is reasonable to argue that they were engaged in another task that is not evident on the tapes. This would support ZONE's recollection that they had just commenced the handover of the control position.

It is clear from the controller's subsequent actions that they correctly maintained control of the position in accordance with the regulation. Moreover, despite having not yet been able to identify Tutor (B) as it departed Wyton, ZONE passed TI to the pilot of Tutor (B) about Tutor (A) in as timely a manner as could be expected given the RT loading on the frequency.

Based upon Tutor (A) pilot's report, their late sighting of Tutor (B) appears to be as a result of the ac's constant relative bearing and position behind Tutor (A)'s canopy arch. It is likely that a similar explanation underlies the effective non-sighting of Tutor (A) by the pilot of Tutor (B). The ongoing embodiment of TAS to the Tutor fleet will serve as an effective additional safety barrier to similar recurrences.

HQ AIR (TRG) comments that the application of deconfliction plans at Wyton is under review by HQ 22 (Trg) Gp. Notwithstanding this, the pilot of Tutor (B) received accurate TI on Tutor (A), but at very close range, without any indication of whether it was on a converging heading. Whilst TAS may make such incidents less likely in the future, units still need to ensure they apply robust deconfliction systems, particularly around the airfield. With the known hazard of blind spots in the Tutor, an active lookout scan is required in order to cover these areas.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, a report from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

Members noted that the pilot of Tutor (B) had promptly left the Wyton APP frequency, called Cottesmore ZONE as soon as he passed the upper limit of the Wyton ATZ and that the crew of Tutor (A) had called 5sec after Tutor (B) had switched to ZONE. It was suggested that both pilots, who were equally responsible for avoiding each other's ac, might have potentially gained better SA on other aerodrome traffic from the pilots RT calls to APP, or possibly from a warning by the controller about the inbound ac, but such information might well have been incomplete without the benefit of radar data. Notwithstanding the completion of the Wyton Tutor fleet TAS embodiment

programme, the HQ Air Ops Member stated that the review of the Unit's deconfliction plans was still in progress. He also emphasised that the pilot of Tutor (B) might not necessarily have received any additional warning if he had stayed with Wyton APP whilst in the immediate vicinity of the ATZ. Nevertheless, as soon as the controller was able to do so, Tutor (B) had been given TI by ZONE and Members commended the Cottesmore controller for this prompt call. Unfortunately, Tutor (B) pilot was unable to make use of this TI before he caught a fleeting glimpse of Tutor (A) as it flashed by underneath to starboard. Therefore, in the Board's view the first part of the Cause was effectively a non-sighting by the pilot of Tutor (B).

Fortunately, the crew in Tutor (A) had spotted the other ac just in time, as it appeared from behind the canopy bar in their 10-11 o'clock but only 100m away in a shallow climb, and took aggressive avoiding action, descending and turning to the L to pass below and 30-50m behind Tutor (B). The radar recording reflected that Tutor (B) was beneath Tutor (A)'s nose and closing on a steady relative bearing immediately before the Airprox occurred. All this led Members to conclude that a late sighting by the crew of Tutor (A) was the other part of the Cause.

The descending L turn had enabled the pilot of Tutor (A) to manoeuvre away he reports, but the radar recording reflected that horizontal separation was no more than 0·1nm – 185m – and from his account was a lot less at an estimated 30-50m. A test pilot Member commented that at these distances this class of aeroplane does not have a rate of roll high enough to facilitate swift avoiding action by turning away. Such aeroplanes take time to respond to a pilot's control inputs and change their flight path to a significant extent; another pilot Member added that an instinctive bunt might be all that could be achieved at very close quarters. Although Tutor (A) had descended 200ft in one sweep of the radar (4sec data update rate), only 100ft of vertical separation had resulted against Tutor (B) as it levelled: one CAT pilot Member considered this was sufficient to avert an actual Risk of collision, however, this was a solitary view. The overwhelming majority of the Members perceived that, although the pilot of Tutor (A) had managed to react in the short time available at these close quarters, it was barely effective and the Board concluded that an actual Risk of collision had existed in the circumstances reported here.

PART C: ASSESSMENT OF CAUSE AND RISK

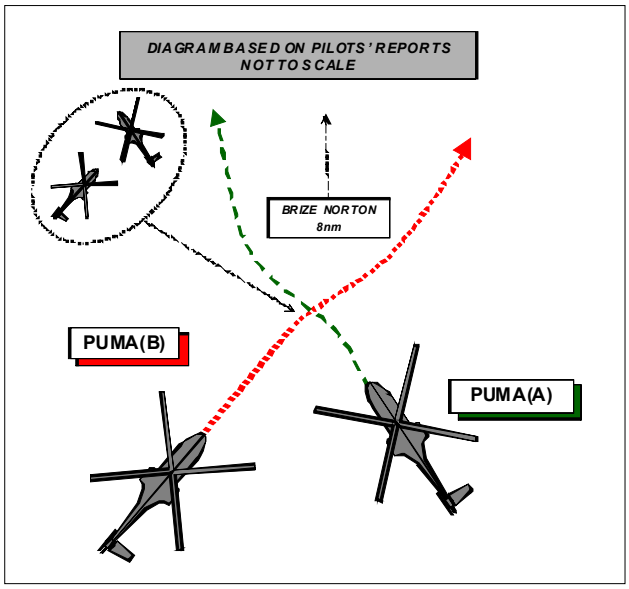
Cause: Effectively a non-sighting by Tutor (B) pilot and a late sighting by Tutor (A) crew.

Degree of Risk: A.

AIRPROX REPORT No 2011040

AIRPROX REPORT NO 2011040

Date/Time:	11 May 2011 2128Z	
Position:	5137N 00133W (2nm SE Faringdon)	
Airspace:	UKNLFS	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Puma	Puma
Operator:	HQ JHC	HQ JHC
Alt/FL:	250ft agl (RPS 1017mb)	300ft (RPS 1017mb)
Weather:	VMC CLBC	VMC CLBC
Visibility:	10km	20km
Reported Separation:	0 V/200m H	50ft V/300m H
Recorded Separation:	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

PUMA (A) PILOT reports that during a night tactical training sortie, while operating on NVDs in Night LFA 1, displaying standard nav and red strobe lights, IR formation lights, and in receipt of a BS from Brize, they unexpectedly came within 200m of another Puma (Puma B) in flight.

Both sorties were due to lift at the same time, were de-conflicted during Night Brief and out-briefed at the Joint Ops Desk; however, they (Puma (A)) departed 15min late.

While in LFA 1, S of BZN CTZ, the other Puma lifted from Field 4 to Field 8 and called changing frequencies from Benson App to Brize Zone. He saw it an estimated 8km away and continued to call Brize Zone for a zone crossing while heading 330° at 120kt. The other ac was already working Brize Zone and its crew had not identified them.

They were in a medium workload situation and the Brize frequency was busy but eventually he gave a position report and requested clearance to cross the CTZ. At that point they thought the other Puma was 2km away in their 9 o'clock and he thought that it would to cross behind them but on his second glance the captain realised that it was only 200m away and took avoiding action by breaking [presumably left].

After consultation on the ground, the other Puma pilot was only aware of them crossing through his 12 o'clock position, 200m away, when the position call was made and they [the reporting Puma] took avoiding action. He assessed the risk as being Medium.

Both crews then continued their flight without further incident.

PUMA (B) PILOT reports that he was flying a Night Competence to Instruct (C2I) sortie in the RAF Benson local area. They were displaying red HISLs, nav lights and NVG formation lights and were in receipt of a BS from Brize Zone. They had a comprehensive deconfliction brief before takeoff and the initial part of the sortie was flown without incident. On lifting from the second training field, the crew was aware of another Puma operating at another Benson training field nearby but noted that they were still orbiting the field and not a confliction.

They then transited towards a training field close to the edge of Brize Norton CTZ and changed to the Brize Zone frequency iaw local procedures. Bearing in mind the previously noted location of the other Puma and that it still had to carry out an approach and landing at the field, it was assessed that it would be well ahead, although they were not visual with it at that stage. Shortly after initial contact with Brize, while heading 040° at 100kt, in a moderate workload situation, they heard the other Puma call up for a transit from the training field to a Brize VRP

to the W of the CTZ earlier than expected, which caused the HP/Captain to look for the ac. Shortly after this, he saw the Puma almost directly ahead of them at a distance that was assessed to be 200-300m.

While continuing without manoeuvring would not have resulted in a collision, the HP elected to carry out a gentle level right-hand turn to increase the separation between the ac. Once both ac were well clear, contact was established on the FM radio to confirm that both crews were aware of what had just occurred and to confirm that it would be discussed further on the ground. He assessed the risk as being low and the sortie was continued without further incident.

The crew commented that both crews had been operating with poor-quality 3rd-generation NVG. The deconfliction plan was robust and both crews were aware of the rough location of the other ac. The issue arose because the crew of the other Puma assessed that the distance between ac was considerably greater than it actually was due to the difficulty of judging distance on NVG. This was compounded because the crew were operating on a different frequency and did not hear the call that the other ac was lifting from the field site, having conducted their approach considerably quicker than had been anticipated. Both crews believed that the incident had been caused by the single U/VHF radio in the Puma HC1; had the crew of Puma (B) been aware that Puma (A) had lifted from the field site earlier than expected, they would have had much better SA.

HQ 1GP BM SM reports that at the CPA both Pumas were in receipt of a BS from Brize Zone.

Due to the low alt of the ac, the Airprox was not visible on the radar recording, although both ac did paint intermittently both before and after the incident. That being the case, this report is based on the pilots' reports and the RT transcript.

Both Pumas called Zone within a short period of each other between 2126:45 and 2126:53, with Zone answering Puma (B) first, placing it on a BS. On their initial call, Puma (B) stated that they would be, "*operating to the south of the Zone into a er Benson field eight, just up against the edge of the Zone*" and Puma (A) stated on the initial call at 2127:52 that they were, "*two miles south of Faringdon, visual with the other traffic, request Faringdon Burford crossing at er low level*".

Based upon the pilot's reports, it is reasonable to assume that the Airprox occurred shortly after 2127:52 and that Puma (A) crew was visual with Puma (B). This is supported by the statement in Puma (A) pilot's report that he thought that they sighted Puma (B) at a range of 2km but quickly realised that the separation was far less. From an ATM perspective, Zone was not in a position to affect the outcome of this occurrence.

UKAB Note (1): The very intermittent radar data from the Clee Hill recording broadly supports the diagram above.

HQ JHC comments that this incident occurred when all reasonable measures for deconfliction had been taken on the ground prior to launch. A combination of events – the late launch of one ac, the misjudging of distance on NVG and the early completion of a serial, resulted in the two ac unexpectedly coming into close proximity with each other. It is recognised that the preference would be to conduct essential low flying training elsewhere in the UK in areas of lower density airspace, but the current bounds of the NRR make this difficult. This HQ has already articulated the mitigation measures in place in NRR1 in recent Airprox discussed at the UK Airprox Board.

It is clear that the fitting of TCAS, which is being actively pursued by this HQ, would have significantly helped to prevent this incident. The CO of 230 Sqn is, in addition, investigating the use of the VHF-FM radio for deconfliction between Benson based squadrons.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

Procedural deconfliction is precisely that, it is only accurate at a specific time and is dependent on there being no late changes to routes or timings, both of which are often tactically necessary and therefore commonplace; nonetheless such 'deconfliction' is helpful provided that its limitations are clearly understood; further, it can be very difficult in multi-aircraft situations. It was not clear to the Board whether this particular deconfliction plan contained

contingencies for delays or rerouting but in this situation where only 2 ac were involved, Members considered that, despite the difficulty, the delay of Puma (A) should have been relayed to Puma (B) and the effect of that delay assimilated by both crews.

Notwithstanding any deconfliction plan and that it was night, the incident took place in the 'see and avoid' environment of a multi-user night low flying area. Although the crew of Puma (A) 'saw' Puma (B) they initially misinterpreted its range and therefore underestimated the threat it posed; the crew of Puma (B) on the other hand did not see Puma (A) until it was 'ahead' of them and flying away. The Board interpreted this as being an 'effective non-sighting' by Puma (B) crew. When assessing the part played by Crew (A), there was much more discussion. The Board had no information on the part played by cultural lighting or terrain but assumed that they had not been significant factors since the ac was seen by at least one crewmember; its range, however, was initially overestimated significantly. While accepting the difficulty of estimating range at night, a Member familiar with NVG operations expressed surprise, as in his experience the opposite (i.e. an underestimate) is more usual.

Although the flight paths of the two ac were such that they were not going to collide, Members considered that there had been a compromise of normally accepted safety margins.

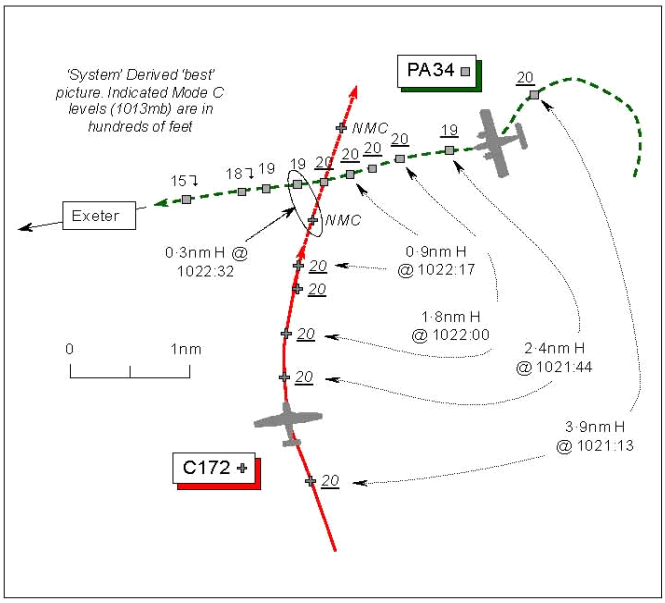
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Effectively a non-sighting by Puma (B) crew and a late appreciation of Puma (B)'s range by Puma (A) crew.

Degree of Risk: B.

AIRPROX REPORT NO 2011041

Date/Time:	13 May 2011 1022Z	
Position:	5045N 00316W (5·8nm E of Exeter - elev 102ft)	
Airspace:	London FIR	(Class: G)
Reporter:	Exeter ATC	
	1st Ac	*2nd Ac*
Type:	PA34-200T	C172
Operator:	Civ Trg	Civ Club
Alt/FL:	2200ft	2300ft
	QNH (1021mb)	(N/K)
Weather:	VMC CLBC	VMC
Visibility:	10km	>10km
Reported Separation:	100-200ft V/½nm H	100ft V/300-400m H
Recorded Separation:	0·3nm H	



CONTROLLER REPORTED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE EXETER APPROACH RADAR CONTROLLER (RADAR) reports that he liaised with Plymouth MILITARY (MIL) [a LARS ATCRU] regarding the intentions of an A4540 squawk observed 7nm SE of Exeter. [UKAB Note (1): This was reported to be an Apache helicopter at the time, but the reported ac was subsequently positively identified by the RAC as the subject C172.] Plymouth MIL advised that they were no longer providing an ATS; the pilot had been instructed to squawk A7000 and leave the frequency. However, the ac continued to squawk A4540 and tracked northbound towards the final approach to RW26 at the same level as the PA34 which was at 8nm Final on an ILS approach. Two calls were made on 128·975MHz in an attempt to raise the pilot but neither met with a response. The PA34 crew was passed TI twice about the unknown ac and after the second call the pilot reported visual with an aeroplane. The PA34 Examiner subsequently telephoned to advise he believed the reported ac was a C172.

The squawk was lost as it tracked through the RW26 FAT, before a contact appeared squawking A7000 continuing towards Dunkeswell. Further investigation lead to a possibility of the ac being a C172 based at a local aerodrome.

The 1020UTC Exeter METAR: 230°/6kt 190°V280°; >10km Nil Wx; SCT 032, SCT040 QNH1021. Wessex RPS 1015mb; Portland RPS 1017mb.

THE PIPER PA34-200T PILOT, reports he was the PIC conducting an Instrument Rating examination of a candidate, executing an ILS approach to Exeter's RW26 under IFR in VMC, but with IF screens in place. They were in receipt of a TS from Exeter RADAR on 128·975MHz and the assigned squawk was selected with Mode C; neither TCAS nor Mode S are fitted.

RADAR had advised them of unknown traffic from about 8nm Final on the ILS. At about 6nm Final to RW26, heading 260° at 120kt, level at 2200ft Exeter QNH (1021mb) flying about 200ft below cloud, they obtained visual contact with the other ac about 1nm to the S. It was a high-wing single-engine aeroplane - probably a C172 – approaching from their 10 o'clock, 1nm away at a similar altitude and crossing obliquely astern from their 10 o'clock into their 5 o'clock. The pilot under examination continued to fly the approach whilst he as PIC monitored the other ac visually as it passed about 100-200ft below his ac and ½nm astern at the closest point. No avoiding action was taken as none was necessary following the visual sighting. He assessed the Risk as 'low' in the prevailing conditions, but highlighted the lack of protection given to published instrument approaches in the 'Open FIR'. His ac is coloured white with black detailing; the HISLs and landing lights were on.

AIRPROX REPORT No 2011041

THE REIMS CESSNA-F172M PILOT (C172) reports that at the reported time of the Airprox, he was returning to Dunkeswell from a local VFR solo sightseeing flight with 2 passengers. He had been in receipt of a BS from Plymouth MIL but could not recall the squawk assigned; Mode C was on. Neither TCAS nor Mode S are fitted. The ac is coloured white and blue; the wingtip HISLs were on.

His route had taken him westbound along the coast from Lyme Regis to overhead Sidmouth before turning N for Dunkeswell. About 2-3nm due N of Sidmouth, heading N in a level cruise at 2300ft at 100kt, some 500ft below and 10km clear of cloud, he saw the other ac late about 300-400m away, crossing ahead from R – L. At the closest point the other ac – a cream coloured PA34 – passed about 100ft above his ac 300-400m away with a 'low' Risk. He did not consider that any avoiding action was necessary to maintain flight safety and none was taken.

In retrospect, given their proximity to Exeter Airport, it would have been appropriate to have called Exeter RADAR earlier on 128·975MHz before calling Dunkeswell RADIO to join their cct.

ATSI reports that the Airprox occured in Class G airspace, 5·8nm to the ENE of Exeter Airport. The PA34 was an IFR training flight, making an ILS approach to Exeter's RW26 in receipt of a TS from Exeter RADAR. The C172 was a VFR flight operating from Dunkeswell A/D, routeing along the coast from Lyme Regis to Sidmouth, before turning N.

At 1017:55, the radar recording shows an unknown contact [the C172] 10nm to the SE of Exeter Airport, squawking A4540 [Plymouth (Mil)], tracking W along the coastline, indicating 2000ft (1013mb) (converts to an altitude of 2216ft Exeter QNH (1021mb) at 1mb/27ft). The PA34, squawking A0422, is 3.5nm NE of Exeter Airport, tracking eastbound and outbound for an ILS approach to RW26.

At 1020:30 the radar recording shows the C172 7.2nm SE of Exeter, turning R onto a northerly track towards the final approach for RW26 and still displaying a Plymouth (Mil) squawk of A4540. RADAR liaised with Plymouth Mil and the controller's report indicated that Plymouth Mil advised that the ac had left their frequency and been told to squawk A7000.

At 1021:14, RADAR passed TI to the PA34 crew about the C172, *"...unknown traffic 10 o'clock range 3 miles intentions unknown appears to be crossing left to right indicating same level at the moment descending."* The PA34 pilot replied, *"keeping a good lookout* [PA34 C/S]." The radar recording shows the PA34 on an 8nm Final indicating 2000ft (1013mb) [2216ft QNH] and the unknown C172 in the PA34's 10 o'clock at a range of 4nm indicating 2100ft (1013mb) [2316ft QNH]. The PA34 pilot reported localiser established at 6.8 DME.

At 1021:45, RADAR updated the TI, "[PA34C/S] *the unknown traffic* [C172] *again now in your 11 o'clock range 2 miles appears to be crossing left to right indicating 2 thousand 2 hundred feet same level.*" At 1022:00, RADAR tried unsuccessfully to establish RT contact with the unknown ac; however, at this point the PA34 pilot reported visual with the unknown C172.

[UKAB Note: The radar recording shows the C172, in the PA34's 10 o'clock at 1.8nm, both ac indicating 2000ft (1013mb) (2216ft QNH) at about the point the PA34 pilot reported visual contact. The SSR label of the C172 disappears at 1022:17, leaving only intermittent primary radar returns until the pilot selected A7000 after the ac had passed. The CPA occurred at 1022:32, when the C172 is shown passing 0·3nm to port of the PA34 before drawing astern, the PA34 indicating 1900ft (1013mb) – about 2116ft QNH.]

The PA34 was in receipt of a TS from Exeter RADAR. When it became apparent that the unknown traffic, squawking A4540 was likely to come into conflict with the PA34, the Exeter RADAR controller tried to obtain the ac's intentions from Plymouth Mil. RADAR passed TI to the PA34 crew on the unknown traffic. When this TI was updated, the PA34 pilot sighted the C172 and continued to monitor the ac until it had passed.

The Manual of Air Traffic Services (MATS) Part 1, Section 1, Chapter 11, Page 5, paragraph 4.1.1 and 4.5.1, states:

'A Traffic Service is a surveillance based ATS, where in addition to the provisions of a Basic Service, the controller provides specific surveillance derived traffic information to assist the pilot in avoiding other traffic. Controllers may provide headings and/or levels for the purposes of positioning and/or sequencing; however, the controller is not required to achieve deconfliction minima, and the avoidance of other traffic is ultimately the pilot's responsibility.

The controller shall pass traffic information on relevant traffic, and shall update the traffic information if it continues to constitute a definite hazard, or if requested by the pilot. However, high controller workload and RTF loading may reduce the ability of the controller to pass traffic information, and the timeliness of such information.'

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequency, radar video recordings, a report from the air traffic controller involved and reports from the appropriate ATC authority.

It was evident that RADAR had detected the potential for a confliction with the unknown ac and passed comprehensive TI to the PA34 crew twice. After the controller's second transmission of TI at a range of 2nm, the PA34 PIC reported visual contact with the C172; the radar recording reflects this was when the conflicting ac was 1·8nm away and slightly more distant than the PA34 pilot's estimate of 1nm. The Board noted that the PIC of the PA34 was content to allow the pilot under examination to continue to fly the approach, whilst he monitored the other aeroplane visually and watched as the C172 crossed obliquely astern from their 10 o'clock into their 5 o'clock, at a similar altitude, before the twin was descended on final approach. Whilst in this situation the C172 pilot was required by the 'Rules of the Air' to 'give way' to the PA34 on his right he reports that he had not seen the twin until it was about 300-400m away, crossing ahead from R – L, and somewhat later than the PA34 P-i-C. The Members agreed unanimously that the late sighting by the C172 pilot of the PA34 was the Cause of this Airprox.

Recorded radar data shows that before their tracks crossed both ac were at the same altitude – 2216ft amsl. Although the Board recognised that this Airprox occurred in Class G airspace, where both pilots were operating legitimately in accordance with the ANO, Members considered it unwise that the C172 pilot flew at pattern altitude through a promulgated IFR approach 'feather' that is clearly marked on VFR charts. Plainly the C172 pilot had to cross through the extended centre-line to reach his home base at Dunkeswell at some stage, but pilot Members concurred with his own expressed view that it would have been better airmanship to have done so whilst in communication with Exeter RADAR who could have provided an earlier warning about the PA34 in their ILS pattern.

The radar recording shows the separation at the CPA was 0·3nm and although the C172 pilot saw the PA34 late, it seems he saw the PA34 in time to ensure that he passed clear astern. Neither the PA34 pilot, nor the C172 pilot considered that avoiding action was warranted. Furthermore pilot Members considered the PA34 PIC was always in a position to take control and effect robust avoiding action if need be. Therefore, in these circumstances, the Board concluded that no Risk of a collision had existed.

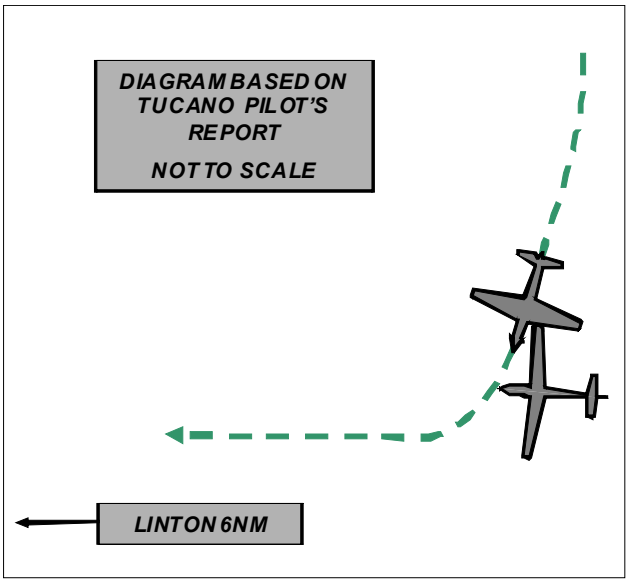
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A late sighting by the C172 pilot.

Degree of Risk: C.

AIRPROX REPORT NO 2011042

Date/Time:	19 May 2011 1238Z	
Position:	5403N 00100W (6nm E Linton - elev 53ft)	
Airspace:	Lon FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Tucano	Untraced Glider
Operator:	HQ AIR (TRG)	NR
Alt/FL:	2500ft	NR
	(QFE 1015mb)	NR
Weather:	VMC CAVOK	NR
Visibility:	40km	NR
Reported Separation:	100ft V/Nil H	NR
Recorded Separation:	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE TUCANO PILOT reports that he was flying a black ac with all lights on, on a dual local training flight from Linton-on-Ouse, squawking 4576 [he thought] with modes C and S; TCAS1 was fitted. While heading 240° at 260kt and at 2500ft (QFE) on recovery to Linton-On-Ouse in receipt of a BS, a contact with height unknown was passed by Linton APP. Despite keeping a good lookout no ac was seen and, as there was no contact on TCAS, they suspected the contact to be a glider. Just before turning R to line up on the extended C/L for RW28, the handling pilot caught sight of a white, low-wing glider flying from left to right immediately in front of them and level with their ac. He bunted hard to -0.5G to avoid a collision and flew underneath a white low-wing glider in straight and level flight, clearing it by about 100ft. He assessed the risk as being very high [and reported the incident to TWR on first contact].

UKAB Note (1): Despite extensive procedural tracing action, the glider could not be identified.

LINTON-ON-OUSE APPROACH CONTROLLER (APP) reports that at about 1240 [1237:01 from transcript] the Tucano called for a visual recovery. The aerodrome details were passed and the ac turned towards the aerodrome [and a BS was agreed]. As the ac turned he noticed a non squawking (primary) contact 1nm S of its position, tracking NW. He passed TI to the pilot, who replied that he was 'looking'; he then reported visual and changed frequency to TWR.

UKAB Note (2): The Tucano shows on the Great Dun Fell radar recording throughout, initially squawking 4577. It changed squawk to 4506 at 1238:35 then turned R onto the RW28 15sec later. The glider does not show at any time.

HQ 1GP BM SM reported that this Airprox occurred between a Tucano on a VFR recovery at 2500ft QFE, in receipt of a BS from Linton APP and an un-traced glider, 6nm E of Linton-on-Ouse.

The Airprox does not appear on the radar replay, consequently this investigation has been based on the tape transcript and reports of the pilot and controller involved.

At 1237:01, the Tucano pilot free-called APP for a visual recovery and was passed the airfield details and placed under a BS in accordance with the Linton FOB.

APP reported that as the Tucano turned to position for the recovery he noticed a primary radar contact and passed TI stating, "*traffic believed to be you has traffic south, one mile, tracking north-west, no height information*". The

next transmission from the pilot was at 1238:19 stating, "*field in sight, squawking circuit, to tower*" which was acknowledged by APP.

It would appear that the CPA occurred shortly before 1238:31 with the Tucano's first call on the TWR freq being, "*Er, Tucano C/S just gone underneath the glider";* 21sec later at 1238:52 and without a further transmission from the Tucano, TWR broadcast joining instructions to the Tucano.

[UKAB Note (3): At 1238:28 the Tucano was descending through FL026.]

In accordance with the service principles laid down within CAP774, APP deemed that a collision risk existed for the Tucano and provided the crew with TI. The ac captain and NHP at the time of the occurrence later stated that they wished to add their thanks to APP for the TI which was, "timely and focussed our attention and lookout at a time when we were also concentrating on the recovery and 'gaining visual' with the airfield".

Gliding activity within the Vale of York has been recognised at Linton as their greatest risk. The Stn has taken action to attempt to mitigate this risk and continues to engage with the local flying community to raise awareness of their operations. In terms of the Airprox itself and to paraphrase the Stn Cdr's comments, having received TI which alerted them to the presence of the glider, the crew visually acquired it, albeit later than ideal and took action to prevent a collision.

HQ AIR (TRG) comments that Linton is taking steps to reduce the risk from local gliding activity. Non-squawking, difficult to see ac, flown in the vicinity of approach paths to military airfields however, continue to be a significant hazard.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included a report from the Tucano pilot, transcripts of the relevant RT frequencies, radar recordings, a report from the air traffic controller involved and reports from the appropriate ATC and operating authorities.

An experienced Gliding Member was concerned that glider pilots might be perceived by the Board as being non-cooperative by not filing reports and by operating close to military airfields. He opined that they were just as safety-aware as other airspace users and many of their safety initiatives go unnoticed. Most are, however, part-time pilots and the education process is necessarily continuous and unrelenting; he accepted that the Military authorities wish to raise the profile of the risk of collisions with gliders and concurred this position. He also briefed that if the Tucano pilots report that the ac involved was a 'low-wing' glider, was accurate, in his opinion, it would most likely have been a motor glider; if that were the case, it could have taken off from anywhere in the UK and would therefore be very difficult to trace.

The Board commended the vigilance of the APP Controller for pointing out the intermittent primary only radar contact to the Tucano crew (on a BS) while they were descending and turning into conflict with it; this, Members considered, had been a significant factor in raising their level of lookout and had possibly lead to them seeing the glider, albeit later than optimum. The crew did, however, see the glider just in time for their 'bunt' to take effect and thereby prevent any risk of collision; the lateness of this reaction, however, convinced Members that there had been a reduction of normally accepted safety margins.

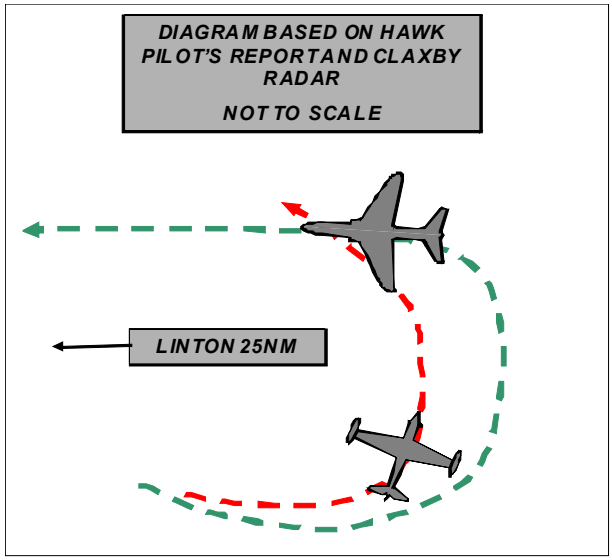
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Possibly a non-sighting by the glider pilot and a late sighting by the Tucano crew.

Degree of Risk: B.

AIRPROX REPORT NO 2011043

Date/Time:	17 May 2011 1410Z	
Position:	5408N 00031W	(25nm E Linton)
Airspace:	London FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Hawk T Mk1	Untraced Light ac
Operator:	HQ AIR (Ops)	NK
Alt/FL:	2000ft (RPS 1011mb)	NK
Weather:	VMC CLBC	NK
Visibility:	20km	NK
Reported Separation:	0ft V /1000ft H	NK
Recorded Separation:	NK	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE HAWK T MK1 PILOT reports flying a dual Forward Air Controller (FAC) training sortie in a NOTAMed area in the Yorkshire Wolds [see UKAB Note (2)] in a black ac with all lights switched on, squawking 7001 with Mode C; TCAS and Mode S were not fitted. Following the completion of a simulated ground-directed target attack profile at low level, the ac was repositioned overhead the target area in a steady level left turn at 2000ft amsl and 300kt in order to complete a high workload RT debrief for the student FAC. After one orbit the rear seat pilot made the captain aware of a white light ac with 'podded wingtips' and displaying white strobes, 1000ft away, co-altitude and maintaining a constant 'nose on' attitude towards them. He attempted to change the geometry between the two ac but it had no effect and he thought that the ac was deliberately following their flight profile.

In order to terminate the conflict he was forced to level the wings and accelerate his ac away from the following ac and, once safe separation between the two ac was established, the debrief was continued. The light ac was then seen to depart to the NW whereupon a waggle of the wings was observed.

He reported the incident by telephone and ASIMS on landing and assessed the risk as being medium.

THE HAWK UNIT station commander commented that the light ac pilot displayed poor airmanship, through apparently deliberate penetration of a correctly promulgated NOTAM.

UKAB Note (1): The Hawk shows on the radar throughout the incident manoeuvring aggressively in the target area. The light ac does not show at any time and could not be traced.

UKAB Note (2): The exercise was NOTAMed as follows:

H1637/11 NOTAMN

Q) EGTT/QWELW/IV/BO /W /000/190/5406N00035W005

A) EGTT B) 1105170800 C) 1105171530 E) FORWARD AIR CTL EXER. FAST JET ACFT WILL CONDUCT HIGH ENERGY MANOEUVRES WI 5NM RADIUS 5406N 00035W (YORK WOLDS, N YORKS). MAJORITY OF ACTIVITY BLW 5000FT. NON-EXER MIL CREWS CTC JACKPOT CONTROL ON 297.725MHZ OR 137.075MHZ. CTC 01677 456161. 11-05-0462/AS 3 F) SFC G) 19000FT AMSL)

HQ AIR (OPS) comments that without input from the untraced aircraft it is difficult to assess its intentions. However, it would appear that it was visual throughout and there was no actual risk of collision. A warning about

the activity and its location was issued and it is disappointing that this appears to have been deliberately ignored. The Hawk pilot was wise to use his superior performance to separate from the subject traffic.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the Hawk pilot, radar recordings, and a report from the Hawk operating authorities.

It was unfortunate that the second ac (ac 2) could not be traced as a pilot's report would have facilitated a fuller investigation of this incident. Members opined that there are not many ac types (with tip tanks/pods and a bubble canopy) that fit the reported description of the untraced ac as amplified by the Hawk pilot by telephone to the UKAB; further in order to fly the profile reported the ac 2 must have been capable of fairly high performance. Members also noted that the ac had not been squawking, which most likely excluded military ac; also that it did not even show as a primary contact in an area where radar performance is fairly good, thus also probably excluding ac such as a (red and white) Jet Provost which is otherwise similar to the description. There is one fairly high performance light training ac on the UK register with a colour scheme that matches that reported but it is based well away from Yorkshire and it was established that it was not airborne on the day of the incident.

Members agreed that it was disappointing that the pilot of the ac 2 had apparently deliberately disregarded the military NOTAM; although the NOTAMed area was not an 'exclusion', Members considered that it would have been good airmanship to treat it as such.

Although the pilot of the ac 2 apparently considered his manoeuvres safe as he had probably deliberately 'tracked' the Hawk, Members again agreed that this had been most unwise although, not in contravention of the ANO [although probably in breach of military regulations if they applied]. Since the pilot of ac 2 had selected the separation and had the Hawk in sight throughout, most Members agreed that, while he had been unwise and probably too close, there had been no conflict and that this incident was a sighting report with no risk of the ac colliding; one pilot Member however, disagreed and suggested that there had been a conflict and that the Hawk pilot had resolved it.

PART C: ASSESSMENT OF CAUSE AND RISK

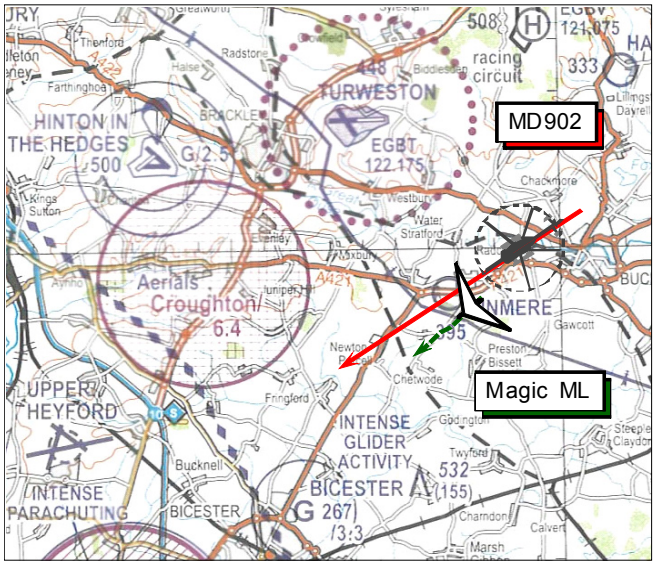
Cause: Sighting report.

Degree of Risk: E.

AIRPROX REPORT No 2011044

AIRPROX REPORT NO 2011044

Date/Time:	20 May 2011 0952Z	
Position:	5159N 00103W (5nm E of Croughton)	
Airspace:	London FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Magic Laser Flexwing ML	MD902 Explorer
Operator:	Civ Pte	Civ Comm
Alt/FL:	2000ft amsl	<1000ft amsl
Weather:	VMC CLBC	VMC CLBC
Visibility:	50nm	>10km
Reported Separation:	300ft V/nil H	500ft V/100ft H
Recorded Separation:	Not recorded	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE MAGIC LASER FLEXWING MICROLIGHT PILOT (MAGIC ML) reports that he had departed from a private strip at Buttermilk Hall Farm [about 5nm SSW of Northampton] for Oaklands [N of the Brize CTR] and was flying a level cruise at 2000ft, some 2000ft clear below cloud with an in-flight visibility of 50nm. In transit, passing about 5nm E of Croughton aerials heading 230° at 45kt, a dark blue and white helicopter passed 300ft directly beneath his Magic ML on the same heading. The helicopter – the MD902 – passed so close that the severe turbulence from the blades caused his ML to dive almost vertically down and turn to the R; an immense effort was required to resume level flight after descending about 200ft during the recovery. He assessed the Risk of collision as 'medium' but the risk to his life was 'very high'. He stated that the severe turbulence from the helicopter needed extreme corrective measures to escape from an almost irrecoverable position.

His Magic ML's wing has a white top surface and yellow under surface. He was not in communication with any ATSU.

THE MD902 EXPLORER HELICOPTER PILOT (MD902) reports that he was in transit from Wyton to a field location within the Brize Norton CTR under VFR and in receipt of a BS from Brize ZONE on 124·275MHz. The assigned squawk was selected with Modes C and S; TCAS is fitted.

In level flight in VMC, not above 1000ft and more likely 500-600ft, on a direct track passing E of Croughton aerial farm at 125kt with the A/P engaged, both he and his front-seat observer saw the ML ahead at the same time, late, some 15sec before passing 100ft horizontally and 500ft vertically clear beneath the ML.

They had approached the ML from astern and it looked to be in a level cruise, flying straight and level, but he added candidly that the late visual sighting could only be attributed to its static position in the upper windscreen. Their heading was the same as the ML's but he assessed that they were slightly to the side of the ML, well below and clear of it and so continued to pass it.

He could not recall any other specific details as they simply continued their flight and he had not expected that their flight path would cause undue alarm. Once ahead, in acknowledgement of their proximity he may have 'waggled his wings' as he would generally do to indicate they had sighted the other traffic, but he cannot recall in this instance if he did so.

He assessed the Risk as 'none' and stated their transit altitude had been chosen to remain clear of extensive light fixed-wing & glider traffic that day.

THE BRIZE NORTON ZONE CONTROLLER reports that he was operating 119·00MHz at the reported time of the Airprox, but because of the intervening period between the occurrence and when he was told about it, he could recall nothing of significance. From the FPS the MD902 helicopter pilot was under a BS outside the Brize CTR, when he called on the frequency at 0948Z; the flight was transferred to Brize TOWER at 1003Z. No report of an Airprox was made on the frequency.

UKAB Note (1): The RT transcript reveals that the MD902 pilot reported in transit "..not above 1 thousand feet.." and was subsequently "..cleared to enter Brize controlled airspace not above height 1 thousand feet on the Brize Q-F-E 1-0-0-9".

UKAB Note (2): Analysis of the LATCC (Mil) Clee Hill Radar recording shows the MD902 as an SSR contact only, identified by its discrete squawk, transiting the Airprox location near Finmere (elev: 395ft amsl), however, the Magic ML is not evident at all. The MD902 maintains a transit altitude of 900-1000ft throughout and is shown at 0952:56, at a position 5nm E of Croughton tracking 235° level at an altitude of 1000ft London QNH (1019mb) – equating to a height of broadly 600ft agl.

HQ 1GP BM SM reports that this Airprox occurred east of Croughton and approximately 25nm ENE of Brize Norton.

Although the MD902 is visible on the radar recording, the ML is not. Moreover, no mention is made on the Brize ZONE RT transcript of the MD902 crew being visual with a ML. Whilst the Clee Hill Radar is available to Brize controllers and was the source of the radar recording, it is a selectable option, rather than a composite radar picture together with the Brize Norton ASR/MSSR. It has not been possible to determine which radar source ZONE was utilising at the time of the Airprox.

The Brize ZONE controller involved was wholly unaware that an incident had occurred at the time and could not recall any events when made aware of the Airprox.

From an ATM perspective, ZONE was providing a BS to an ac that was likely to be operating at or below the vertical limits of their radar coverage and had no reason to suspect that a collision risk existed. Moreover, whilst the MD902 pilot was visual with the ML, it is clear that the Magic ML pilot was concerned about the rotor blade turbulence, rather than the physical position of the MD902.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequency, radar video recordings, a report from the air traffic controller involved and reports from the appropriate ATC authority.

The ML pilot reports he was flying at an altitude of 2000ft whereas the MD902 pilot was maintaining a level cruise at an altitude not above 1000ft – as indicated on Mode C from the recorded radar data. The ML pilot estimated the vertical separation at 300ft before he was affected by turbulence and the MD902 pilot estimated 500ft. A Member suggested that the helicopter pilot might have been better placed to judge the separation from below and helicopter Members agreed that the MD902 pilot would not have thought that 500ft separation could have posed a hazard to the ML; furthermore the MD902 pilot reports a slight lateral offset as he overtook the ML. By the time the ML pilot had recovered to level flight he had lost 200ft putting him between 100ft and 300ft above and behind the helicopter and in a position where he was more likely to be affected by its wake. Whilst the recorded radar data suggested that the vertical separation might have been somewhat more than either of the pilots' estimates, without a comparable indication from the ML, which was not fitted with a transponder, this could not be resolved with any degree of certainty.

The ML was seen by the helicopter pilot late he reports, 15sec before he flew under it – a sighting range of about 0·33nm away at a closing speed of 80kt. However, the ML would have remained on a constant bearing with no crossing motion to draw attention to it as the MD902 approached from astern. With the yellow wing under-surface of the ML possibly quite difficult to see against a background cloudscape, the MD902 pilot probably saw the ML as soon as was feasible in these circumstances.

Instances of ML and ultra-light pilots being concerned by the wake vortex/turbulence created by passing helicopters are not new to the Board. What was unusual in this case, however, was that the MD902 had under-

flown the flexwing ML with its pilot reporting that the severe turbulence from the helicopter needed extreme corrective measures to escape from an almost irrecoverable position. The wake turbulence associated with downwash and rotor blade tip vortices are known hazards to ac flying behind and below helicopters, but at these distances any detrimental effects on the aerodynamic lift properties of a flexwing ML flying above the MD902 were thought by some pilot Members to be negligible. The Board counts within its Membership several highly experienced fixed-wing test pilots and military and civilian helicopter pilots, who understood fully the dangers inherent in passing close to a ML. However, the effects of helicopter rotor downdraught on MLs passing above the rotor 'disc' was not clear to them at all as it was generally accepted, rightly or wrongly, that there was 'clean' air above the rotor disc with significantly disrupted air below, astern and flowing to either side. Therefore, whilst not doubting the sincerity of the ML pilot's report in any way, Members considered alternative causes for the effect described by the ML pilot. It seemed feasible that the startling effect of hearing and then seeing the under-flying helicopter at close quarters could have distracted the ML pilot to such an extent that he almost lost control of his aircraft. Alternatively, coincidental atmospheric turbulence might have caused the effects reported. However, the Board was concerned that there have been a number of incidents in which ML ac/para gliders/hang gliders etc appear to have been affected by helicopters at unexpected distances and aspects. A test pilot Member was keen to ensure that this was resolved and with this in mind the Chairman undertook to investigate whether there is any existing research into the phenomenon.

[Post Meeting Note: Enquiries with the CAA's Fluid Dynamics specialists raised doubts that such a 'suck down' effect would exist, but they continue to look into this possibility in some detail and will submit their views to the Board.]

Following on from previous Airprox where helicopters had over flown MLs and para gliders, Members were keenly aware that the Board was charged with assessing the Risk of a collision between the two ac and not the risk associated with the helicopter's rotor downwash. This was not in any way meant to diminish important safety lessons - but it was not strictly within the Board's remit when assessing the inherent Risk of a collision. Moreover, the Board only considered what had actually occurred and not what might have happened if circumstances had been slightly different. After a wide-ranging debate, Members concluded that the Cause of this Airprox was that the MD902 pilot flew close enough to cause the flexwing ML pilot concern. Whilst Members recognised that the safety of the ML had not been assured until he regained controlled flight, in so far as the collision risk was concerned both pilots had operated in accordance with normal rules and parameters.

PART C: ASSESSMENT OF CAUSE AND RISK

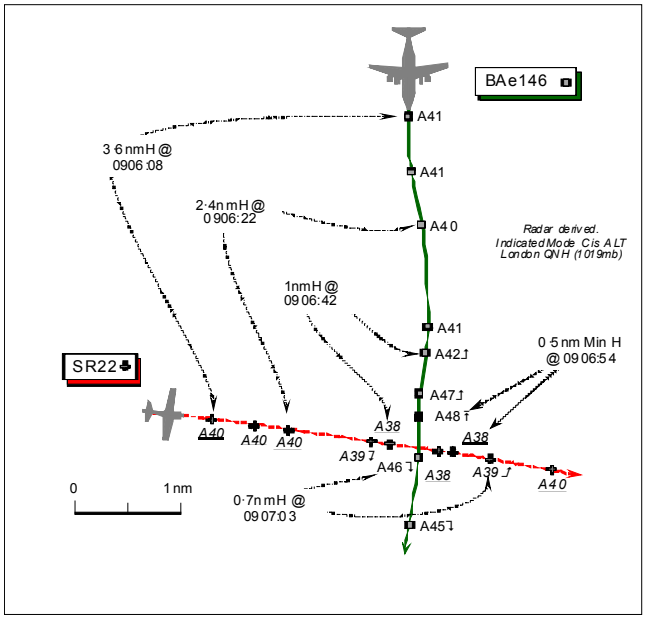
Cause: The MD902 pilot flew close enough to cause the flexwing ML pilot concern.

Degree of Risk: E.

Recommendation: The Board was concerned that there have been a number of incidents in which Microlight/para gliders/hang gliders etc appear to have been affected by helicopters at unexpected distances and aspects. Director UKAB was charged to investigate whether there is any existing research into the phenomenon.

AIRPROX REPORT NO 2011045

Date/Time:	19 May 2011 0906Z	
Position:	5208N 00003E (5½nm SW of Cambridge)	
Airspace:	London FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	BAe146	Cirrus SR22
Operator:	HQ Air (Ops)	Civ Pte
Alt/FL:	4000ft	4000ft
	QNH (1018mb)	QNH (1018mb)
Weather:	IMC CLBL	VMC NK
Visibility:	30km	>10km
Reported Separation:		
	400ft V/<1nm	NK
Recorded Separation:		
	Nil V @ 2·4nm H	
	0·5nm Min H @ 1000ft V	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE BAe146 PILOT reports he was in transit to Northolt on an IFR flight, routeing SIVDA to BARKWAY (BKY), and had descended wings level at 230kt from FL100 to 4000ft London QNH (1018mb) into cloud with London MILITARY [LJAO E-TACTICAL] under a TS. A squawk of A4671 was selected following a handover to Luton RADAR, but before two-way RT was established with the Luton controller, heading 200° 10nm N of BARKWAY (BKY), TCAS showed traffic at the same altitude of 4000ft moving R to L. Flying in between cloud layers with FEW at 5000ft, TCAS enunciated a CLIMB RA and the guidance was followed, ascending to an altitude of about 4600ft, before returning to their previously 'cleared' level. The other ac – a white civilian low-wing single-engine propeller driven aeroplane - passed less than 1nm in front and 400ft below their ac with a 'high' Risk of collision. No TI had been given by London MIL. Once they had established RT comms, Luton RADAR asked whether details of the other ac had been passed to them on handover. Luton stated they would complete a report on the incident. The recovery to Northolt was completed without further incident.

THE CIRRUS SR22 PILOT reports he was had departed from Gloucestershire Airport under VFR and was in receipt of a BS from Cambridge. A squawk of A7000 was selected with Mode C. TCAS is not fitted; elementary Mode S is fitted.

Flying an E'ly heading at 150kt, established in a level cruise at 4000ft QNH, below cloud in VMC, ATC had advised of other traffic but it was not seen.

His ac has a white colour-scheme; the HISLs and nav lights were on.

THE LATCC (MIL) LJAO EAST TACTICAL CONTROLLER (E-TAC) reports screening a UT whilst controlling the BAe146 inbound to Northolt under a TS, with a PLANNER in situ. As far as could be recalled everything was normal, with timely calls of TI. As the event took place over 24hr ago he could not recall any other detail.

THE LATCC (MIL) LJAO EAST PLANNER CONTROLLER (E-PLAN) could not recall the event.

THE LUTON INTERMEDIATE RADAR CONTROLLER (RADAR) reports that a radar hand-over was given by London MIL who were providing a TS to the BAe146 inbound to Northolt; it was agreed that it would be accepted at 4000ft London QNH. London MIL was asked if TI had been passed on 2 contacts ahead and he was told that it had. One of those contacts was tracking eastbound indicating 4000ft QNH. The BAe146 pilot called and declared that he had responded to a TCAS RA against the unknown ac and was now returning to 4000ft from

4600ft. There was traffic inbound to Luton tracking W to go through the Luton 'gate', but this traffic was still descending through 6500ft QNH and so unaffected.

The BAe146 pilot was later asked if London MIL had passed TI, he said that they had not but as they were IMC he had reacted to the RA. He also said that they got a late visual sighting of the ac through a gap in the cloud.

He opined that as TI had not been passed when providing a TS, coupled with the instruction to change frequency so close to an unknown ac, this seemed very dangerous. Especially as this could have led to a loss of separation with other Luton traffic. The pilot advised that he would be filing a report.

ATSI endorsed the report provided by NATS Ltd relating to the involvement of Luton RADAR in this Airprox, an abridged version of which is included below.

NATS LTD reports that the BAe146, had been operating outside CAS under the control of London MILITARY (LJAO E-TAC) and at 0858 was pre-noted to Luton RADAR for a 'Charlie' arrival inbound to Northolt. Luton RADAR was being operated by a trainee monitored by an instructor. At this time the BAe146 was outside the range at which Luton RADAR was operating so the controller asked for the ac to be handed over later, when it was within 30nm of Luton.

At 0904:21, the BAe146 was seen on radar to change from the LJAO East squawk to A4671 - the Luton RADAR squawk. Shortly afterwards, Luton RADAR answered a telephone call from LJAO but was interrupted by the RT. The telephone call continued at 0905:03 with LJAO E-PLAN offering a handover of the BAe146:

Luton RADAR: *"Roger, I've got the details..."*.

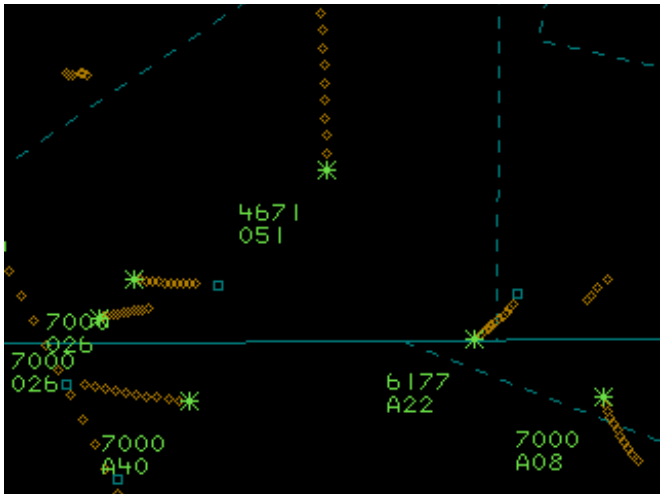
LJAO E-PLAN: *"He's* [the BAe146] *currently Cambridge, North West, 7 miles, tracking south, squawking 4-6-7-1"*.

Luton RADAR: *"Identified"*.

LJAO E-PLAN: *"Descending Flight Level 4-0, traffic service"*.

Luton RADAR: *"..OK have you called the traffic in his 1 o'clock and 10 o'clock?"*

The traffic visible to Luton RADAR at this time is shown on the radar snapshot below:



LJAO E-PLAN: *"Affirm all traffic around that area called"*.

Luton RADAR: *"Roger OK traffic service, 1-2-9 decimal 5-5-0 Q-N-H 1-0-1-8"*.

LJAO E-PLAN: "*1-2-9 decimal 5-5-0 and QNH was what sorry"*

Luton RADAR: *"1-0-1-8 millibars".*

LJAO E-PLAN: *"1-0-1-8 do you want him on that now?"*

Luton RADAR: *"yes please 4 thousand feet".*

LJAO E-PLAN: *"Roger 4 thousand feet 1-0-1-8."*

Luton RADAR: *"Thank you, co-ordinated".*

At 0906:08 while the Luton RADAR controller was speaking to Luton TOWER a high severity STCA warning was generated. This downgraded to a low severity warning at 0906:12 before almost immediately upgrading again to a high severity alert at 0906:18.

The pilot of the BAe146 made his initial report on the frequency at 0907:04:BAe146 pilot: "Luton [BAe146 C/S] *with you...just had a T..traffic R-A..4 thousand 5 hundred feet at this moment in time recovering to 4 thousand feet 1-0-1-8".*

Luton RADAR: *"From radar you appear to be clear of that traffic now and Q-N-H 1-0-1-8 millibars it's a traffic service."*

This was acknowledged by the pilot of the BAe146 before instructions for a 'Charlie' arrival for Northolt were passed and acknowledged.

At 0914:25, the Luton RADAR Instructor enquired, "[BAe146 C/S] *just out of interest, on your handover when you got transferred from the military, had they passed the traffic that you had the TCAS with?"* The pilot of the BAe146 replied, *"Negative…we'll file a report… (unintelligible),they offered 4 thousand feet and we were I-M-C although we did see the traffic in a gap in the cloud. It passed below us and we got within 600ft over the top."* The Luton RADAR Instructor acknowledged *"..roger I'll do the same because they said they were going to pass the traffic so I'll file as well."* The BAe146 pilot was then instructed to contact Northolt APPROACH.

From both the radar recording and the Airprox report from the BAe146 pilot, it is clear that having been handed over from London MILITARY, but before establishing contact with Luton RADAR, the BAe146 pilot had received and responded to a TCAS RA. Radar shows the maximum level reached by the BAe146 was 4800ft.

The decision of the BAe146 pilot to accept a TS whilst flying in IMC outside Controlled Airspace rather than a DS may have had an effect. CAP774 Chapter 3 para 3 states:

'Pilots should be aware that a Traffic Service might not be appropriate for flight in IMC when other services are available.'

HQ 1GP BM SM reports that this Airprox occurred approximately 10nm N of BKY between a BAe146 flying IFR in IMC and an SR22 operating VFR in VMC, in receipt of a BS from Cambridge. Although at the time of the Airprox the BAe146 was switching to Luton RADAR, the incident sequence starts whilst the ac was in receipt of a TS from LJAO E-TAC, 51 sec prior to the CPA.

On completion of an air test, the BAe146 began to route towards BKY via SIVDA descending to 4000ft London QNH and, at 0859:00, was pre-noted by E-TAC to Luton RADAR. E-TAC was under training with two other ac pre-noted to them but only the BAe146 was on frequency at the time of the occurrence.

At 0904:40, E-TAC passed TI to the BAe146 crew on an unrelated ac squawking A7000, calling, "*multiple contacts..right 1 o'clock..range of 5* [7.3nm] *and 6 miles* [8.7nm]*, indicating 3 thousand feet and below.*" The BAe146 crew replied that they were, "*looking..those contacts on TCAS*." At this point the SR22 is 2nm S of the 2 unrelated ac.

At 0905:03, E-PLAN commenced a handover on the BAe146 to Luton APP during which, at 0905:10, E-TAC passed TI to the BAe146 on unrelated traffic descending into Luton.

All ac in receipt of an ATS from LJAO, LAC, TC or PC are depicted as "foreground tracks" with full data blocks, whilst other ac are displayed as "background tracks" with limited data blocks showing only the SSR Mode C. There is no colour or brightness change between foreground or background tracks on the LJAO surveillance displays. The Unit investigation states that the SR22's data block was obstructed from E-TAC's view by the data block of high-level GAT. Analysis of the radar replay demonstrates that 0905:10 is the latest point at which the data block from the high-level GAT ac could have obscured this view, taking into account the possible variations of label orientation on the E-TAC surveillance display.

As the handover between E-PLAN and Luton RADAR drew to a conclusion at 0905:18, Luton asked, "*have you… called the traffic in his 1 o'clock and 10 o'clock*?" E-PLAN replied, "*affirm, all traffic around that area has been called*." At that point the unrelated ac squawking A7000 on which TI had been passed were approximately in a 2 o'clock position. The SR22 is in the BAe146's 1 o'clock at 7.7 nm with 1300ft of vertical separation existing; a second ac inbound to Luton is in the BAe146's 10 o'clock position. At this point, TI had not been passed on either the SR22 or the second Luton inbound.

At 0905:30, E-TAC passed TI to the BAe146 on the second Luton inbound, with the handover of the BAe146 between the E-PLAN and Luton terminated at 0905:39. At this point, 6·7nm lateral and 1000ft of vertical separation exist between the SR22 and BAe146. At 0906:07, the BAe146 crew acknowledged E-TAC's instruction to contact Luton RADAR, at which point 3·6nm lateral and 100ft vertical separation exist.

At 0906:42, with lateral separation reducing to 1nm but vertical separation increasing from 400ft as the BAe146 climbed through 4200ft London QNH, the BAe146 pilot's response to the TCAS RA CLIMB can be seen. Minimum horizontal separation occurred at 0906:54 with 0·5nm lateral and 1000ft vertical separation established after the tracks had crossed.

[UKAB Note: The BAe146 contacted Luton RADAR at 0907:04; however, this occurred after the SR22 had crossed ahead of the BAe146 and after the CPA.]

There are two causal/contributory aspects to this Airprox: those of the provision of an ATS and the BAe146 pilot's decision to fly in IMC in receipt of a TS, through airspace that the Unit acknowledges as being "congested." This report will assess the former.

LATCC (Mil)'s investigation identified that E-TAC's view of the SR22's SSR data block was obstructed by the data block of an overflying GAT ac. Furthermore, the range scale used on the surveillance display will have reduced the "on-screen" angular difference between the SR22 and the unrelated SSR 3A 7000 traffic, on which the BAe146 was passed TI, to the point that the ability of E-TAC to differentiate the traffic was compromised. However, analysis of the radar replay suggests that E-TAC would have had an un-obstructed view of the SR22's data label from 0905:10, some 54 sec before E-TAC transferred control of the BAe146 to Luton. Given the proximity of the SR22 at 0904:40 to the un-related ac squawking A7000 on which E-TAC passed TI, it is possible that E-TAC sub-consciously later discounted the SR22 as a conflict, believing that they had passed TI on it. This perception may have been reinforced by the statement from the BAe146 crew that they could see those contacts on TCAS. This hypothesis is given weight by the absence of TI on the SR22 to the BAe146 from 0904:40, despite the fact that the confliction is evident. Although only 24-hours had elapsed between the incident and completion of their DFSOR, E-TAC was unable to recall any detail of the occurrence. Consequently, whilst we can draw the conclusion that from E-TAC's perspective nothing untoward occurred, we are unable to prove conclusively that E-TAC believed that they had passed TI on the SR22. However, as E-TAC was manned by a trainee and instructor, the fact that the cognitive error was not picked up by the instructor suggests either that the instructor also suffered the same error or that their ability to monitor the trainee was impaired - no information was available to determine which of these hypotheses is correct.

Another aspect that requires assessment is the radar handover conducted between the E-PLAN and Luton RADAR. The phraseology used by Luton at 0905:18 when asking whether TI had been passed is ambiguous, in that it does not specifically identify to which traffic he is referring. However, it is reasonable to argue that it did contain enough information for E-PLAN to have been able to deduce which ac Luton were referring to. Based upon the available evidence, it seems reasonable to argue that the E-PLAN, having heard E-TAC pass TI to the BAe146 crew, assumed that all the relevant traffic had been called.

Given the absence of TI from E-TAC on the SR22, the remaining ATM related safety barrier was penetrated when the E-PLAN assumed that E-TAC had passed all relevant TI. Following this, the remaining safety barriers were 'see and avoid' - that had been prejudiced by flight in IMC – and TCAS, which subsequently enabled the BAe146 pilot to resolve the confliction.

This Airprox represents a confliction in Class G airspace that was resolved by the pilot of the BAe146 [responding to the TCAS RA]. The lack of TI from E-TAC to the BAe146 crew about the SR22, compounded by the assumption by the E-PLAN that all relevant TI had been passed, should be considered as contributory factors.

HQ AIR (OPS) comments that whilst the SR22 contact was not specifically called, the TI passed advised of multiple traffic within a few miles of it. The TI contained no information regarding the direction of travel or speed of the contacts so it is unclear why further detail or updates were not requested. This would have been required for the crew to reliably discharge their responsibility to avoid a collision. In the event, reliance was placed on following TCAS warnings to prevent a collision rather than:

a) gaining visual contact and self-separating (not possible IMC).

b) taking positive separation in azimuth or altitude based on a mental air picture formed from TI (not possible without detailed TI and continued updates).

c) requesting a Deconfliction Service to allow ATC to provide separation based on their air picture.

By being in receipt of a radar service, the crew had complied with guidance in MRP RA 2307, para 26, although this is worded as a directive. The advice in CAP 774 is valid but it is not clear whether the BAe146 crew considered the use of a DS. Such advice, and greater guidance on actions required to safely operate in IMC under a TS could usefully be included in the MRP.

HQ Air will use this and other Airprox examples to highlight the reasoning behind the CAP774 advice to adopt a DS in IMC where possible, to highlight the difficulties of collision avoidance based solely on TI, and particularly to highlight the limited responsibilities of ATC when providing TI.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the LATCC (Mil) and Luton RADAR RT frequencies, radar video recordings, reports from the three air traffic controllers involved and reports from the appropriate ATC and operating authorities.

It seemed to the Members that the cloud base in the vicinity of this Airprox was somewhat patchy, but evidently close to 4000ft, as the reporting BAe146 pilot flying IFR reports being in cloud at this altitude, whereas he subsequently saw the SR22, whose pilot was operating below cloud under VFR. Although the BAe146 was not seen by the SR22 pilot, the radar recording illustrated a slight descent by the SR22 as the tracks crossed, which suggested to some that the pilot might have descended slightly to maintain VMC. Whilst coincidentally this had increased the vertical separation at a critical point, a GA pilot Member observed that it was always preferable to maintain good clearance below the cloud base so that traffic descending through cloud might be detected in good time, especially when flying relatively fast aeroplanes such as the SR22.

It was explained that the BAe146 pilot's Unit invariably attempts to route via CAS whenever possible and the Command had highlighted the advantages of a DS to assist crews in discharging their responsibilities to avoid other ac when flying IMC in Class G airspace. However, controller Members who regularly control traffic in this environment explained that, given the intensity of traffic operating in the 'Open FIR' beneath the London TMA, it can be difficult to achieve the specified deconfliction minima when threading ac through areas of high density traffic. Nevertheless, crews should still ask for a DS where appropriate. The HQ 1 Gp BM SM Advisor added that reductions of service specifically cater for situations where a controller, in endeavouring to provide the best radar service possible in a high intensity situation, is unable to achieve the desired minima against every observed contact. The CAA Standards and Policy Advisor stressed that avoiding action instructions issued under a DS by controllers are provided as 'advice', aimed at achieving specified deconfliction minima; this 'advice' can be accepted or not as the case may be.

Whilst the general consensus was that a DS might have been more appropriate here for an airliner operating in Class G airspace, the BAe146 crew had requested and was in receipt of a TS with LJAO E-TAC with the reasonable expectation of having conflicting traffic in the vicinity pointed out to them. Although the BAe146 crew had not been appraised specifically about the presence of the SR22 within the TI provided earlier, they had been told about, "*multiple contacts..indicating 3 thousand feet and below*". Notwithstanding the Command's view that the BAe146 crew could have asked for further detail or updates, given E-TAC's descent instruction to 4000ft QNH, thereby providing 1000ft above the traffic reported at 3000ft and below, the BAe146 crew might well have been content to track the ac reported by E-TAC on TCAS, unaware of the SR22 themselves at that stage. Evidently E-TAC had not specifically identified the threat of the SR22 that was plainly indicating level flight at 4000ft QNH before the BAe146 was switched to Luton RADAR. Controller Members focused on the prompt given by Luton RADAR to E-PLAN during the handover; the military Area controller Member perceived there was an unfounded assumption on the part of E-PLAN that the SR22 had been called within the TI about the multiple contacts. Members accepted that the terminology used by Luton RADAR, who had done their best to point out the conflicting traffic, should have readily identified the SR22 at the same altitude as the BAe146 to E-PLAN, who should have taken stock of what had and had not been called, so it was unfortunate that the latter did not react more positively or ask E-TAC to simply call it in, which did not occur. Consequently, specific TI had not been given to the BAe146 crew about the SR22 before E-TAC switched the flight to Luton RADAR. The Board agreed that the absence of specific TI from E-TAC about the SR22 was part of the Cause of this conflict in Class G airspace.

The BAe146 crew switched frequency at the critical moment, just as STCA activated, thus they were denied any further input from ATC until TCAS alerted them to the presence of the SR22 and prompted them to take their own avoiding action by responding to the CLIMB RA. This enabled them to resolve the conflict and achieve 900ft of vertical separation above the SR22 during the manoeuvre as the latter crossed ahead and drew to port which, assisted by the slight descent of the SR22, increased to 1000ft at the closest point. Moreover, it was clear from the Luton RADAR RT transcript that the BAe146 crew had managed to spot the SR22 through a gap in the cloud during the occurrence. After weighing all these factors carefully the Cause of this Airprox was unanimously agreed by the Members to be, in the absence of specific TI, a conflict in Class G airspace resolved by the BAe 146 crew using TCAS; the crew's prompt response to the TCAS RA, coupled with the visual sighting, effectively removed any Risk of a collision.

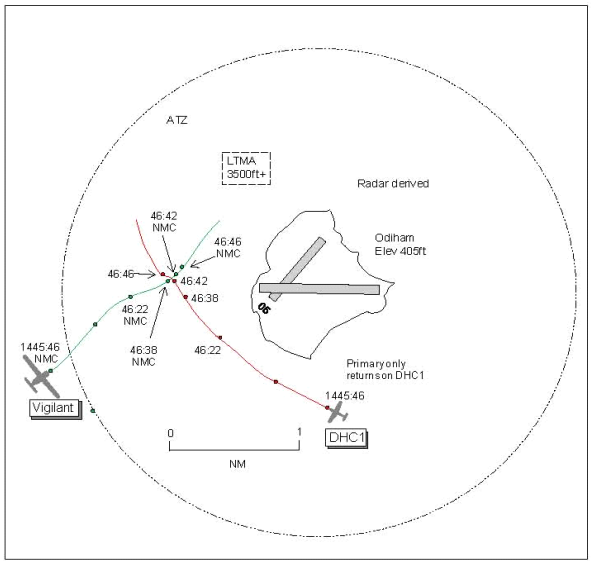
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: In the absence of specific TI, a conflict in Class G airspace resolved by the BAe 146 crew using TCAS.

Degree of Risk: C.

AIRPROX REPORT NO 2011046

Date/Time:	21 May 2011 1447Z (Saturday)	
Position:	5114N 00058W (1nm W Odiham - elev 405ft)	
Airspace:	ATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Vigilant	DHC1
Operator:	HQ Air (Trg)	Civ Club
Alt/FL:	750ft	1000ft
	(QFE 1003mb)	(QFE 1004mb)
Weather:	VMC CLBC	VMC CLBC
Visibility:	30km	10km
Reported Separation:		
	20ft V/100m H	NR
Recorded Separation:		
	<0·1nm	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE VIGILANT PILOT reports flying dual training sortie from Odiham VFR and in communication with Odiham Radio on 122·1MHz, squawking 3647 with NMC. The visibility was 30km flying 2000ft below cloud in VMC and the ac was coloured white/dayglo orange with HISLs and landing light switched on. He was a 'B' Category instructor tasked to complete a Gliding Induction Course (GIC) with a Trainee Cadet. The RW in use was RW23 with a RH cct. The RAF Gliding and Soaring Association (RAFGSA), using conventional gliders, were operating from the grass with a LH cct. The RAFGSA DHC1 was using the RW for aerotow operations, departing in the LH cct and rejoining to land from a RH cct. On completion of the GIC exercise a downwind rejoin was planned. He approached Odiham from the NW abeam Old Basing town where a 2min to rejoin call was made to Odiham Radio before he then joined the Vigilant cct through an extended downwind. He was slightly upwind of the normal downwind radio call position heading 050° at 60kt at 750ft QFE 1003mb, owing to thermic conditions, when he then heard another ac's pilot transmit "downwind to land". He was not visual at the time and he immediately made a transmission of "downwind not visual one ahead" for better SA of the other ac. He completed a lookout scan and a red and white coloured DHC1 appeared from below and behind the starboard wing approximately in his 3 o'clock range 100m and 100ft below. The DHC1 had a tow rope attached and was seen to be manoeuvring sharply L to avoid his ac by passing behind. Both he and DHC1 then completed the cct and landed in turn. He assessed the risk as medium.

THE DHC1 PILOT reports flying a local sortie from Odiham, VFR and in communication with Odiham Radio on 122·1MHz; no transponder was fitted. The visibility was >10km flying 2000ft below cloud in VMC and the ac was coloured red/black with nav and strobe lights switched on. Having completed a tug release detail he rejoined the powered cct for RW23 RH cct from the deadside onto the crosswind leg from the upwind end of the RW, as per SOPs. As is normal, whilst complying with the ANO Rule 12, he used the time on the deadside to identify other traffic and conform to the current cct pattern. Before entering crosswind he identified all cct traffic including the reporting Vigilant flight, never losing sight of it. The Vigilant was observed to be on what appeared to be a very wide downwind leg in the process of correcting course to reach the normal downwind position at the start of the upwind end of the RW, not on a reciprocal RW track but tracking nose-in towards the RW. When he levelled his ac to enter crosswind he could see the Vigilant still some way off flying level upwind of the RW slightly L of his ac's nose but at least 100ft below his level. As he had the ac fully in sight before he entered crosswind there was never any risk of collision. His track and position was entirely consistent with entering the crosswind for joining the cct, as illustrated in CAP413, namely across the upwind end of the RW, tight in and perpendicular to it. He progressed along the crosswind leg at 1000ft QFE at 80kt, adhering to the CAP413 guidance to 'Watch for existing circuit traffic and adjust your flightpath to sequence safely' whilst keeping the reporting ac in sight. He had to judge whether such an ac that is on the downwind leg but not yet abeam the upwind end of the RW is sufficiently far upwind that he could sequence safely by turning downwind well ahead of it from his crosswind leg or whether such a

manoeuvre would cause a conflict in which case it would be normal and safe to give way and fit in behind the ac and enter downwind behind it. This latter case was exactly what he did by altering course behind the reporting ac. He believed that there was no Airprox and that as he was watching the other ac at all times from before entering the live side of the cct and was taking sensible actions to ensure separation, there was no risk of collision. He went on to say that because the reporting ac was on the downwind leg but in the process of establishing a more normal distance from the RW by the upwind end, both ac were not at the usual 90° closing angle. This he believed would have given the other pilot an illusion that there was something odd when he altered course to widen his crosswind leg further upwind to position behind the other ac.

UKAB Note(1): The UK Mil AIP at ENR AD 2-EGVO-17 Para 2.17 promulgates the Odiham ATZ as a circle 2nm radius centred on mid-point RW09/27 N511402.90 W0005634.17 from SFC to 2000ft aal; aerodrome elevation 405ft. Para 2.23 Additional Information Para 1 states 'Glider flying during daylight hours (outside ATC Ops hrs contact Odiham Radio or Kestrel Base on 122·1MHz). Special Procedures Para 3 states 'Rwy 05/23. Use restricted to ground and hover manoeuvres by Odiham hel and light ac only.'

UKAB Note (2): Odiham ATC was closed at the time of the Airprox. Frequency 122·1MHz was not recorded.

HQ AIR (TRG) comments that despite the DHC1 pilot's comprehensive report, there is no mention of an initial joining report call iaw CAP413. This would have aided the Vigilant pilot's awareness of other joining traffic. However, without a transcript it is not possible to say that one was not made. Joining a cct at an uncontrolled airfield requires sound lookout and self positioning of traffic and is complicated when ac join unannounced from different directions. The Vigilants are confined to the cct side because of conventional gliders operating on what would otherwise be the 'deadside'. As such, they cannot fly overhead joins and will join the downwind leg either from upwind or at 90 degrees. It is disappointing to note that the DHC1 pilot, with the Vigilant in sight, whilst reportedly trying to assess whether to fit in ahead or behind the Vigilant, continued to a point where separation was reduced to a degree that alarmed the Vigilant pilot. An early turn to position ahead or behind the other joining ac would have avoided the situation. Whilst the DHC1 pilot called 'downwind' he never was according to the Vigilant pilot's report and the radar trace, and the call was therefore contrary to CAP413, being neither on the downwind leg or abeam the upwind threshold. The call did, however, alert the Vigilant pilot to his presence, albeit rather later than necessary. It is unclear which ac, if either, was technically established in the cct at the point the Airprox was called. This incident is probably a conflict between 2 ac joining the visual cct on differing profiles, not aided by incomplete comms. Air Cmd are engaging with RAF Odiham to ensure that cct procedures between Vigilant and Gliding Club ac are robust and to ensure that Club ac conform to the standard RT procedures in the cct.

UKAB Note (3): The Heathrow radar recording at 1445:46 shows the Vigilant 2·2nm WSW of Odiham tracking 050° squawking 3647 NMC. At the same time a primary only return is seen, believed to be the DHC1, 0·9nm S of Odiham tracking 305°. The Vigilant then enters the ATZ on a steady track with the DHC1 converging from its 2 o'clock position. At 1446:22 the Vigilant is seen to have turned R approximately 20° whilst the DHC1 converges from its 0130 position range 0·75nm whilst crossing the extended C/L RW 05/23 onto a crosswind leg. Sixteen seconds later, 1446:38, the Vigilant is seen to have turned L onto a downwind track and is about to pass through the DHC1's 12 o'clock range 0·2nm. The next sweep at 1446:42 shows the DHC1 passing <0·1nm behind the Vigilant and turning sharply L before regaining a NW'ly track.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, radar video recordings and reports from the appropriate operating authorities.

The HQ AIR Trg Member informed the Board that the Flying Order Book did not include details of the glider-tug operations, hence the dialogue between HQ AIR and Odiham. An experienced GA/Gliding Member commented that at any airfield where non-standard ccts are flown, the documentation/orders/instructions should make it clear exactly how ac are segregated or how pilots are expected to integrate. Tug ac pilots are renowned for executing tight ccts on recovery as their overall goal is to climb to 2000ft to drop off a glider and then descend to land as quickly as possible in order to collect the next glider. At other gliding sites tug operations are normally carried out on the same side as the gliders with other traffic flying ccts on the opposite side of the airfield. Although the primary means of integrating into the cct is visually, RT calls by pilots improves the SA of other pilots on frequency, hence the need for timely and accurate position reports. In this Airprox, both flights were returning to join the cct, the

Vigilant flight joining downwind and the DHC1 crosswind. Without an RT transcript it was unclear what transmissions were made by either pilot; however, it was clear the Vigilant pilot was unaware of the DHC1's presence until a very late stage. His first knowledge of the DHC1 was when its pilot called downwind and, as he was unable to see it, he broadcast his own downwind position. He then visually acquired the DHC1 in his 3 o'clock range 100m and 100ft below when it was apparently still crosswind and about to turn downwind. The DHC1 then turned L and manoeuvred behind his ac. Meanwhile the DHC1 pilot had visually acquired the Vigilant during his rejoin and had continued with his intended cct pattern whilst monitoring the Vigilant's progress. It appeared to Members that the DHC1 pilot had 'pressed on' with his chosen flightpath leaving it until the last minute before manoeuvring his ac to avoid the Vigilant which was effectively in the piece of airspace that he had intended to use. Members agreed that the DHC1 pilot should have altered his flightpath earlier and that he had flown unreasonably close to the Vigilant causing its pilot concern. Although the visual sighting and actions taken by the DHC1 pilot were enough to remove the actual collision risk, the Board concluded that the ac had passed with margins reduced to such an extent that safety had been compromised during this encounter.

PART C: ASSESSMENT OF CAUSE AND RISK

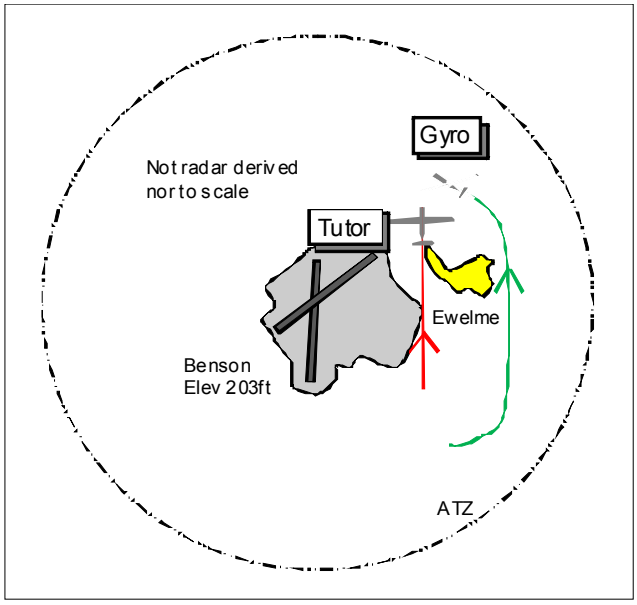
Cause: The DHC1 pilot flew unreasonably close to the Vigilant, causing its pilot concern.

Degree of Risk: B.

AIRPROX REPORT No 2011047

AIRPROX REPORT NO 2011047

Date/Time:	8 May 2011 1431Z (Sunday)	
Position:	5138N 00105W (1nm NNE Benson - elev 203ft)	
Airspace:	ATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	MT03 Gyroplane	Grob Tutor T Mk 1
Operator:	Civ Trg	HQ Air (Trg)
Alt/FL:	500ft (QFE)	800ft (QFE)
Weather:	VMC CLOC	VMC NR
Visibility:	>10km	30km
Reported Separation:	20-30m	30ft V/100yd H
Recorded Separation:	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE MT03 GYROPLANE PILOT reports flying a dual local sortie from Benson, VFR and in receipt of an Aerodrome Control Service from Benson Tower on 127·15MHz, squawking 7000 with Modes S and C. The visibility was >10km in VMC and the ac was coloured yellow/blue with nav and strobe lights switched on. He was flying with a fully qualified gyro pilot, who was seated in the front, with himself as Capt in the rear. They had previously carried out 1 cct with a touch and go RW19 and whilst downwind they called for a further touch and go. They were flying the wide 'flying club' cct and once they had passed to the E of Ewelme and were directly O/H a wood to the NE of Ewelme he called final for a touch and go. ATC responded "clear to land" and he started a gentle L turn and descent. He was aware that a Tutor had called downwind but could not remember ATC's response and would have thought ATC would have indicated "one ahead". He continued with his gentle L turn adhering to the oval cct doctrine. When he was adjacent to what would have been the old narrow cct his crewmate stated that they had an ac approaching from their L. Turning through heading 300° at 500ft QFE and 80mph he looked L and saw an ac, not the reported Tutor, in the downwind position on the flying club cct and at the same time saw the shadow of an ac approaching directly from his L. His crewman became more animated, informing him that it was getting closer. His crewman shouted that it was very close before taking control and commencing a steep diving turn to the R. At this point he, the Capt, spotted the Tutor closing at a similar height before it passed 20-30m above and to their L. He broadcast on the radio "he's just missed us" and believed the Tutor pilot made some response, possibly an apology. ATC then informed them that their permission to land had been revoked and he called going around, allowing the Tutor to land ahead of them. He carried out a short orbit before landing. He had not heard radio calls from the Tutor pilot when the ac was downwind asking for confirmation of his gyroplane's position and no deconfliction advice from ATC. He assessed the risk as high.

THE TUTOR PILOT reports flying a dual training sortie from Benson and in receipt of a BS from Benson Tower on 127·15MHz; the ac's transponder was switched off. The visibility was 30km in VMC and the ac was coloured white; no lighting was mentioned. The student was flying a low level cct LH RW19 and in reply to their downwind call they were told "one ahead". He then heard another ac's pilot call "final" and be cleared by ATC. By the bottom end of the downwind leg heading 010° level at 800ft QFE, despite looking intently into the expected area for the other ac, (down to the L, up the extended approach and dead ahead) neither he nor his student had him in sight. He looked R in his 2 o'clock position and saw a blue/yellow autogyro about 100yd away and 30ft below, belly-up to him banking and descending sharply to the R, already taking avoiding action. The autogyro was operating from the Benson Flying Club in accordance with the FOB which requires an extremely wide cct for noise abatement. The ac is very slow and small, hence difficult to see. He, the Tutor Instructor, was flying a low level cct as per Tutor Instructor's/Student's Study Guide. Although both ac carried transponders, his was switched off iaw Benson SOPs

whilst the autogyro pilot reported his transponder was switched on. Also his Tutor's TAS was off iaw current advice for cct work.

THE BENSON AERODROME CONTROLLER reports the Ground and Tower frequencies were bandboxed. At 1420 the Gyro pilot called for a L base rejoin to RW19 having been operating in the vicinity of Benson listening out on frequency. At the time the subject Tutor flight on was frequency conducting visual ccts and another Tutor was at the hold. The Tutor pilot called "final" for a touch and go prior to the Gyro reaching L base and was given clearance. The Gyro pilot was initially unable to see the Tutor so he orbited clear of L base and when visual, integrated into the cct L base. The Gyro pilot was given clearance for a touch and go after the Tutor finished its approach. The Tutor climbed to glide downwind and the other Tutor was lined-up for departure awaiting the Gyro to turn downwind whilst 2 other Tutors taxied. After being issued with take-off clearance, the departing Tutor's pilot asked what the Gyroplane's intentions were, to which he said that he believed it to be doing at least 1 cct. The subject Tutor's pilot called final for touch and go and was told to continue, owing to the departing Tutor pilot asking about the Gyroplane's intentions, but was then given clearance shortly thereafter. As the departing Tutor flight transferred to Approach the Gyroplane pilot called downwind to touch and go and then taxi to dispersal. Another Tutor flight at the hold was then cleared for take-off whilst the subject Tutor flight, which was about to turn downwind, requested a low-level cct which was approved. The Tutor pilot called downwind low-level for a full-stop and was told 1 ahead and a few seconds later the Gyroplane pilot called final but was briefly told to continue for a vehicle to cross the RW. About 30sec later the Tutor pilot called final and was told to continue for the Gyroplane which was still on final. A few seconds later the Gyroplane pilot called asking for confirmation of who had right of way and was told that it was him. It then became apparent that the Tutor had got close to or ahead of the Gyroplane although he was unable to determine this straightaway from their visual aspects from the Tower. The Tutor pilot apologised and asked if he could continue. The controller asked the Gyroplane pilot if he wanted to finish his approach or go around to which he replied "whatever is the easiest". By now he could see that the Tutor was ahead so he revoked the Gyroplane flight's clearance to ultimately go around and allow the Tutor make its approach. Both flights eventually made their respective approaches and taxied back.

HQ 1GP BM SM reports that this Airprox occurred at RAF Benson between a Stn-based Grob Tutor operating in the low-level visual cct and a Gyroplane, operated by the RAF Benson Flying Club, on final to RW19.

Given the low altitude of the Airprox, no radar replay was available.

Wx conditions were appropriate for visual circuit operations with VMC, 30km visibility in nil weather and FEW at 4200ft.

At 1429:05 the Gyro pilot reported, *"(Gyro c/s) downwind one nine touch and go and er then er taxi for dispersal",* which was acknowledged by TWR with, *"(Gyro c/s) surface wind one nine zero one six knots".* At 1430:09 the Tutor reported, *"(Tutor c/s) downwind, low, full-stop"* and TWR replied, *"(Tutor c/s) one ahead surface wind one nine zero one six knots",* which was acknowledged.

Shortly afterwards at 1430:24 the Gyro pilot reported, *"…final one nine touch and go"* and, after being briefly continued due to a vehicle crossing the RW, was, *"…cleared touch and go and taxi back"* at 1430:45.

The Tutor pilot reported that as they reached the end of the downwind leg, "despite looking intently into the expected area for the other ac (down to the left, up the extended approach and dead ahead), neither of us had seen him. I looked out to the right two o'clock position and saw a blue and yellow autogyro."

At 1431:18 the Tutor pilot reported final and was instructed by TWR to, *"…continue approach",* which was acknowledged. In reply, at 1431:38 the Gyro pilot stated on freq that they were, *"…bit confused now, does that er, Tutor got right of way?"* which suggested that the Gyro pilot believed that the instruction to the Tutor to *"continue approach"* has placed it ahead of the Gyro. TWR replied, *"(Gyro c/s) negative you're number one."* Immediately after at 1431:45 the Gyro pilot is heard to say on freq, *"yeah we're just missing"* which, according to their report, was just after the CPA.

Both the Tutor and the Gyro pilots make reference to distinctive visual circuit patterns. However, the Stn Flying Order Book (FOB) only states that visual ccts are to be conducted to the E of the airfield for noise abatement, avoiding direct overflight of specific villages and that when the airfield is open 'oval (military) patterns are to be flown' by flying club ac. No mention is made of different visual cct patterns for different ac types and there is no

graphical representation of any visual cct pattern within the FOB. Subsequent conversation with ATC at RAF Benson has found that the AEF/UAS operate a circuit inside Ewelme, whereas Rotary Wing and the Stn Flying Club operate a wider cct, outside Ewelme.

After the Gyro pilot's, *"just missing"* transmission the Tutor pilot then transmitted *"Tutor c/s in that case apologies err am I allowed to continue to land."* At 1431:55, the TWR controller is heard to transmit, *"Gyro c/s where are you are you happy to go first Gyro c/s or are you going to go-around."* The Gyro pilot replied, *"Yeah I think so I'll slow down as I believe there's one behind me as well I'll do whatever you want me to."* Subsequent investigation has found that given the small size and low speed of the Gyro it is known amongst ATC personnel to be incredibly difficult to see within the visual cct, more so in certain Wx/light conditions. This point is also highlighted by the Tutor pilot.

Given that both ac are station-based, it is reasonable to argue that TWR could have expected the Tutor pilot to be aware of the Gyro's cct pattern. Moreover, given that both ac had been established within the visual circuit for 10min 22sec prior to the Airprox and that they were both operating on the same freq, it is reasonable to argue that TWR could have expected the Tutor to be both aware of the Gyro and, given the circuit priorities stated on the freq, visual with the Gyro prior to turning finals. Finally, although the Hi-Brite display was available to TWR, nothing in the incident sequence would have prompted them to use it until the transmission by the Gyro at 1431:38. Given that the CPA occurred at around 1431:43, no time existed to allow them to view the Hi-Brite, assimilate the information and provide a timely warning. On the basis of these arguments and given the difficulty of the visual acquisition task for TWR in sighting the Gyro, there was no opportunity for TWR to have affected the outcome of the Airprox.

In terms of the active shortcomings within this Airprox, although the Tutor pilot knew that the Gyro was ahead of them in terms of cct priority and that they were unsighted of it, they committed their ac to the final turn. However, there are a number of latent conditions and contributory factors that can also be identified, one of which may have contributed directly to the Tutor being unable to sight the Gyro.

Akin to Airprox 085/10 between a Hawk and Tutor at RAF Leeming, a lack of graphical representation within the FOB of the disparate visual ccts may have contributed to a lack of awareness by both pilots of each other's visual cct pattern. This hypothesis is supported by the description of the Tutor pilot's visual scan immediately preceding the Airprox, which appears to have excluded the area to the R of the nose.

Notwithstanding that this appears to be an isolated incident, the operation of 2 distinct cct patterns, one inside the other, was a further latent condition and, allied with the Tutor pilot's restricted visual scan, a direct causal factor. Whilst RAF Benson has taken immediate action to stop simultaneous Tutor and flying club operations, this has not addressed the issue of the disparate cct pattern between the Tutors and rotary wing ac; consequently, a possible re-occurrence of this incident has not been prevented.

Finally, all ac types are mandated to operate to the E of the airfield for noise abatement, rather than, arguably, operational necessity or safety. This is the final latent condition which can be seen as a causal factor.

This Airprox resulted from the decision of the Tutor pilot to commit to a final turn without being visual with the Gyro ahead, which was operating in a different cct pattern.

RECOMMENDATIONS

BM SM has requested that HQ 22 (Trg) Gp provides guidance to operators on mixed cct patterns with differing ground tracks.

BM SM has requested that RAF Benson, through JHC, conducts a Stn-level review of visual cct operations including, but not limited to, the operation of dis-similar ac types and the imperative to operate solely to the E of the airfield.

SATCO BENSON reports that whilst a graphical representation of the RAF Benson visual ccts is now included within the FOB to raise awareness amongst the aircrews, ATC remain concerned that the point of confliction on the base-leg/final turn remains due to the cct.

HQ AIR (TRG) agrees that the potential for conflict caused by the fact that the dissimilar ccts overlap make them unacceptable. Lapses in lookout are inevitable so deconfliction plans based solely on maintaining visual contact between dissimilar types (speeds or patterns) are not robust. That said, the FOB did require flying club ac to conform to 'oval (military) patterns'. It would appear that the flying club pattern conformed to the letter if not the spirit of the order, which would have been included to avoid just this sort of conflict. The safe integration of Stn-based ac is an implicit responsibility of the Stn Cdr, which he discharges through the FOB. Thus, SATCO's concerns should be staffed to the Stn Cdr for resolution of safety concerns and to ensure that operational, training and other priorities are balanced appropriately.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

Members agreed that the underlying factor of this incident was the 2 different cct patterns which overlapped causing potential conflict in the base-leg/final area. The Gyroplane pilot was flying a wider 'oval' cct, in accordance with the procedures for Flying Club ac, and ATC had correctly issued the sequence to the Tutor pilot, *"…one ahead…",* when he called downwind. The Gyroplane pilot then called 'final' as he turned onto base-leg, which is normal when flying the military 'oval cct'. The Tutor pilot heard this call but did not assimilate that the flightpath flown by the Gyroplane would place the ac outside of, but turning towards, his tighter cct inside Ewelme. The Tutor pilot then flew into conflict with the Gyroplane on final which caused the Airprox.

The Gyroplane pilot was cognisant of the Tutor in the cct behind him and saw its shadow but was unable to see it immediately. The pilot seated in the front took control and flew a steep diving turn to the R as the Tutor passed about 20-30m away above and to their L. The Tutor pilot only saw the Gyroplane in his 2 o'clock as it was taking avoiding action, he estimated 100yd away and 30ft below. Members acknowledged that ATC had difficulty seeing the Gyroplane owing to its size and the ongoing problems with the Tutor ac showing intermittently on the Hi-Brite display. The ADC only became aware of the problem when it was brought to his attention by the Gyroplane pilot querying who had right of way after the Tutor pilot called final and was told to continue approach. Taking all of these elements into account, the Board believed that the visual sighting and prompt action taken by the Gyroplane flight was enough to remove the actual risk of collision but the ac had passed with separation margins reduced such that safety was compromised during this encounter.

PART C: ASSESSMENT OF CAUSE AND RISK

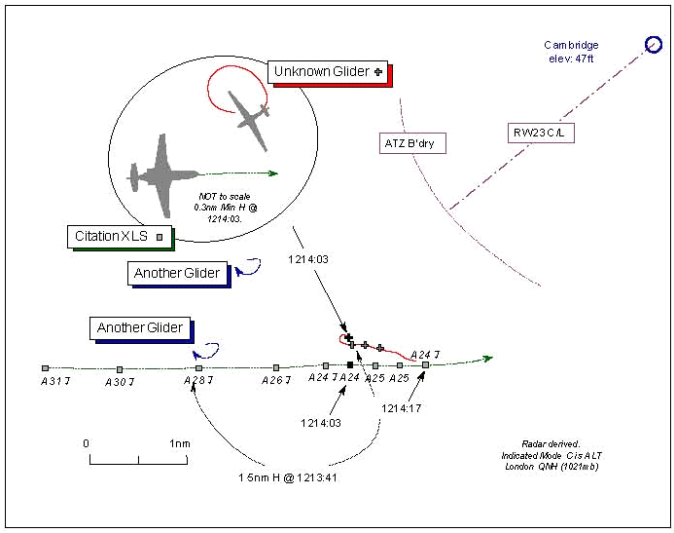
Cause: The Tutor pilot flew into conflict with the Gyroplane on final.

Degree of Risk: B.

AIRPROX REPORT No 2011048

AIRPROX REPORT NO 2011048

Date/Time:	31 May 2011 1214Z	
Position:	5209N 00011E (4nm SW of Cambridge A/D - elev 47ft)	
Airspace:	London FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Citation XLS	Untraced Glider
Operator:	Civ Comm	NK
Alt/FL:	2400ft↓ QNH (1019mb)	NK
Weather:	VMC CLBC	NK
Visibility:	>10km	NK
Reported Separation:	100ft-200ft V/200yd H	NK
Recorded Separation:	0·3nm H - see Note (3)	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE CESSNA CITATION CE-560XLS (C56X) PILOT reports he was inbound to Cambridge from Oxford under IFR in VMC; his ac was crewed with two pilots. Cambridge APPROACH instructed them to contact TOWER and they had been cleared to join the visual cct to RW23, LH downwind for a visual approach. As they established contact with TOWER, about 4nm SW of the A/D heading 120° at 200kt passing 2400ft QNH (1019mb) in a shallow descent, he spotted a white glider thermalling in his L 10:30 position 0·2nm away nose-on at a similar altitude. The mid-wing single-seat glider was in a RH turn and climbing gently in a thermal. Disconnecting the A/P, he hand flew the ac, making a very gentle turn to the R away from the glider, passing 200yd to the S and 100-200ft above it. Had he done nothing they would not have collided because of their relative flight paths, they would have flown closer than his estimated 200yd horizontally. He does not believe the glider pilot saw his Citation until it was too late as the glider made a distinct wing-wobble at the point he believes the glider pilot might have gained visual contact. At this point he was already positioning his Citation away from the glider that he thought was on the edge of the lateral ATZ boundary, virtually aligned with the centreline of RW23. [UKAB Note (1): Albeit that at an altitude of 2200ft the glider would have been about 150ft above the upper limit of the ATZ.] It was obvious that Cambridge ATC was unaware of the glider's presence and was not in communication with it. The lack of any TCAS warning suggests the glider was either not equipped with a transponder or was simply not squawking.

In his view, it was pure good fortune that placed his Citation in a position that did not require violent avoiding action, hence his assessment of the Risk as 'medium-to-high'.

THE RADAR ANALYSIS CELL (RAC) LATCC (MIL) report that despite extensive tracing action the reported glider could not be traced.

THE CAMBRIDGE AERODROME CONTROLLER (ADC) reports that the Citation XLS had been cleared for a visual approach to join LH downwind for RW23. The pilot reported passing a glider at the start of the downwind leg, which was acknowledged. The Airprox occurred outside the ATZ and the glider was not visible from the VCR. Radar was not available.

ATSI reports that the Airprox occurred in class G airspace at 1214:03, 4·2nm SW of Cambridge A/D. This position is outside the Cambridge ATZ, which extends to a height of 2000ft aal above the A/D elevation of 47ft and is bounded by a circle 2½nm radius centred on the mid-point of RW23.

It is not clear where the glider – which remains untraced - was operating from. A gliding site is situated at Gransden Lodge, which is notified in the UK AIP as a Glider Launching Site, active from sunrise to sunset, with a

vertical limit of 3000ft above ground level (altitude 3300ft). Gliders operate daily from Gransden Lodge subject to weather conditions. Cambridge MATS Part 2, Section 1, Page 29, paragraph 10.4 Gliding Sites, states:

'Gliding takes place at Gransden Lodge 10nm SW of Cambridge. Gransden shall be considered always active although details are usually faxed to ATC when gliding events are scheduled.'

No information or NOTAM had been received regarding any additional gliding event at Gransden Lodge. [UKAB Note (2): RAC's enquiries through Gransden Lodge did not identify any glider pilots who might have been involved in the Airprox reported by the C56X pilot.]

The Airprox occurred on a Tuesday and the UK AIP promulgates the hours of Cambridge Radar, in Summer, as 0800-1700 UTC and by arrangement . The ATSU reported that the provision of a radar service is subject to the availability of suitably qualified staff. No withdrawal of radar service had been promulgated by AIS NOTAM.

Cambridge APPROACH (APP) was providing an Approach (Procedural) Control Service, without the aid of surveillance radar. The ATSU reports that the APPROACH controller on duty was not radar rated and was therefore only able to provide an Approach Procedural Service.

The 1150 UTC Cambridge METAR: 26014KT 230V300 9999 SCT040 15/07 Q1019=

At 1211:40, the C56X crew called Cambridge APP, *"..Cambridge RADAR good afternoon* [C56X C/S] *in the descent 3 thousand feet Q-N-H 1-0-1-9 information Echo Citation Excel."* APP responded, "[C56X C/S] *Cambridge APPROACH unfortunately non radar this afternoon latest information Echo current Q-N-H correct clear to the Charlie Alpha Mike 3 thousand feet for the no delay procedural I-L-S approach runway 2-3."* This was acknowledged correctly by the C56X crew.

At 1212:13, the C56X crew indicated that a visual approach was acceptable. The C56X crew reported field in sight at 1212:40, and was cleared for a visual approach to join downwind LH RW23, initially not below 1600ft. APP passed TI to the C56X crew on a formation of two Cessna ac W of Cambridge, routeing around the city, not above 1300ft. This was acknowledged by the C56X crew and the flight transferred to Cambridge TOWER at 1213:10.

At 1213:30, the C56X crew called TOWER, *"...in the descent 2 thousand feet just crossing the extended...centreline to the..west."* The TOWER controller instructed the C56X crew to report downwind and confirmed the QNH as 1019mb.

At 1214:16, the C56X pilot reported, *"..TOWER* [C56X C/S] *we just passed a glider probably within 3 hundred feet..altitude 2 thousand 2 hundred extended centreline to the west",* which was acknowledged by TOWER. At 1217:12, the C56X pilot confirmed that the glider was just outside the Cambridge ATZ. The TOWER controller's written report indicates that the glider was not visible from the VCR.

The C56X was in receipt of a Procedural Service. The Manual of Air Traffic Services, Section 1, Chapter 11, Page 10, paragraph 6.1.1, states:

'A Procedural Service is an ATS where, in addition to the provisions of a Basic Service, the controller provides restrictions, instructions and approach clearances, which if complied with, shall achieve deconfliction minima against other aircraft participating in the Procedural Service. Neither traffic information nor deconfliction advice can be passed with respect to unknown traffic.'

ATSI Recommendations:

CAA ATSI recommends that Cambridge ATSU promulgates any withdrawal of the radar service outside of the notified hours of operation by NOTAM.

CAA ATSI recommends that Cambridge ATSU, in the absence of radar, and during the notified of hours of gliding activity, remind pilots, that the Gransden Lodge Gliding Site is active.

[UKAB Note (3): An analysis of several recorded radar sources shows four intermittent contacts likely to be gliders operating just prior to the Airprox to the W and SW of Cambridge. At 1213:41, the C56X is shown descending

through an altitude of 2800ft London QNH (1021mb), 5·2nm SW of Cambridge A/D and passing the last known location of a glider that had faded from radar 30sec earlier. The radar recording shows the C56X levelling at 2400ft at 1214:03, the altitude the Airprox occurred, some 4·2nm SW of the A/D whilst passing a contact in the C56X's 9 o'clock at a range of 0·3nm and believed to be glider reported by the C56X pilot, which had previously been tracking W but is shown in a R turn as reported. The glider then fades from radar.]

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included solely a report from the C56X Citation pilot, transcripts of the relevant RT frequencies, radar video recordings together with reports from the air traffic controller involved and the appropriate ATC authority.

It was unfortunate, despite the best endeavours of the RAC at LATCC (Mil), that the glider pilot could not be traced. Although Gransden Lodge is the closest gliding site (GS) to the position of the Airprox, there was no suggestion that the glider emanated from this GS; it could have come from much further afield. However, it is unfortunate that the assessment of this Airprox clearly lacks the glider pilot's perspective of the occurrence and is thus not comprehensive.

The Board noted the unavailability of the Cambridge ASR during the period of this Airprox but controller Members recognised the difficulties of maintaining radar services, especially the training of controllers. The Board was briefed that whilst the CAA is keen to see improvements in the availability of radar services at Cambridge, the unit's own aspiration is to provide a radar service throughout their operating hours and endeavours to do so where possible. The Board endorsed the ATSI recommendations. That said, gliders, with a composite structure are extremely difficult to detect and track on primary radar. The Board appreciated that even if a radar controller had been on watch there was no guarantee that the glider would have been continuously displayed and a warning provided by the controller. As it was in the prevailing good weather conditions the C56X pilot had elected to continue with a visual approach.

The C56X pilot reported that the glider pilot might have seen his ac, based on the latter's percieved wing wobble, but a glider pilot Member thought this unlikely and it was not feasible to draw definite conclusions on that aspect. The Member explained that glider pilots are quite used to flying in close proximity to other gliders in thermals and if the approaching C56X had been seen in good time the pilot might not be at all concerned – even at the minimal distances reported here. Whilst others might consider that the glider was operating without due regard for Powered A/D traffic – on the climb-out to RW23 and at the start of the Downwind leg near the ATZ - the recorded radar data reflects that the glider pilot was operating quite legitimately, some 1½nm clear of the Cambridge ATZ boundary, in Class G airspace where 'see and avoid' prevails and not in close proximity to the ATZ as the C56X thought. Moreover, the C56X pilot was required by the Rules of the Air to give way and avoid the glider in these circumstances, which he did successfully with appropriate regard for the glider pilots limited ability to manoeuvre, albeit that he had spotted the thermalling white glider at a similar altitude only 0·2nm away nose-on. Nevertheless, pilot Members understood that such ac with a small cross-sectional area, viewed head-on co-alt, are difficult to spot. Therefore, based on the limited information available, the Members agreed unanimously that while this Airprox had stemmed from a late sighting by the C56X Citation pilot, he had seen the glider in sufficient time to manoeuvre away from it in a manner that did not require a robust response. The radar recording suggesting that the horizontal separation he afforded was a little more than the 200yd to the S he reported. Moreover, Members noted his comment that 'had he done nothing they would not have collided', all of which led the Board to conclude that no actual Risk of collision had existed.

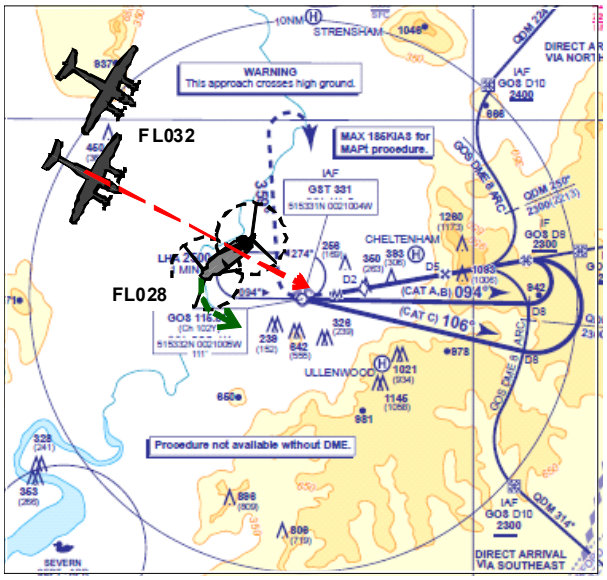
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A late sighting by the Citation pilot.

Degree of Risk: C.

AIRPROX REPORT NO 2011049

Date/Time:	31 May 2011 1237Z	
Position:	5155N 00215W (Gloucestershire Airport- elev 101ft)	
Airspace:	Lon FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Chinook	King Air
Operator:	HQ JHC	HQ AIR (Trg)
Alt/FL:	3000ft (QNH 1021mb)	3000ft (QFE 1003mb)
Weather:	VMC CLBC	VMC CLBC
Visibility:	40km	20km
Reported Separation:	150ft V/500m H	400ft V/0m H
Recorded Separation:	400ft V/ 0.1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE CHINOOK PILOT reports flying an IFR approach to Gloucestershire on a training flight in receipt of a BS from them, squawking 7000 with Mode C and S in a green ac with all appropriate lights switched on but TCAS was not fitted. While established in the GST NDB hold for RW27 at 3000ft, heading 274° at 120kt, on the Gloucestershire QNH of 1021mb, a two-ship [blue and white, military] King Air formation flew over the top of their ac in straight and level flight. They were spotted initially by the HP and then the Crewman, shortly before they flew O/H and they were estimated to be less than 200ft above the ac. They tightened their left hand turn to avoid them and reported the incident on landing, assessing the risk as being high.

THE KING AIR PILOT reports leading a formation of two blue and white ac with all lights on, on a training flight from Cranwell to Lyneham, squawking as directed with Modes C and S and in receipt of a TS from Lyneham APP. They were heading 100° at 170kt, 5nm NW of GST, as a formation (2x King Airs) had just effected a join-up at 3000ft (QFE) utilising the TS from Lyneham and had just informed Lyneham that they were ready for radar vectors for recovery. Lyneham App called traffic in their 10 o'clock slightly below to the formation and almost immediately they received a TCAS TA from the reported traffic [see Mil ACC report below] which they quickly identified as a Chinook, estimating it to be 1.5nm away. They monitored the Chinook visually, and on TCAS, as it passed below them, the TCAS indicating that it was 4-500ft below, so he decided that the best course of action was to maintain track and altitude, as he perceived there to be no risk of collision. They then recovered to Lyneham with no further incident. He was informed of the Airprox by London Mil and assessed the risk as being low.

ATSI reports that this Airprox occurred at 1236:40 UTC, in Class G airspace, 2.8nm to the NW of Gloucestershire Airport (Gloster).

The Chinook was carrying out a VFR training flight and was entering the GST (Gloucestershire) NDB hold, prior to commencing an NDB approach. An Airprox report was not received by Gloucestershire until later in the day when the Chinook pilot rang ATC to report that a formation of two King Air ac had passed in close proximity while he was in the hold.

The controller was providing a combined Aerodrome and Approach Control Procedural service without the aid of surveillance equipment. The UK AIP entry for Gloucestershire, Page AD 2-EGBJ-1-6 (8 Apr 10), Paragraph 2.18, states:

'Radar services (Primary only) within 25 NM below FL80, availability subject to manning. Use of 'Radar' suffix denotes availability only. Provision of a specific radar service is not implied.'

AIRPROX REPORT No 2011049

CAA ATSI had access to radar and RTF recording, controller and pilot written reports.

METAR EGBJ: 311220Z RWY27 29010KT 9999 FEW030 16/02 Q1021=

At 1226:05, the Chinook pilot called Gloster Approach, reporting 13nm on the GLS 245 radial, climbing to 3000ft on the QNH of 1016; the pilot requested a transit through the overhead and a BS was [initially] agreed.

At 1226:31, the Chinook advised, *....change of intention we'd actually like to pick up the procedure NDB DME for runway two seven with one time hold if that's possible";* App responded, *"(Chinook) c/s affirm still under a Basic Service IFR traffic outbound just airborne from the southwest three thousand feet is a twin squirrel",* the pilot acknowledged and requested a TS. Approach offered a Procedural Service either at a higher level at the Beacon or, for the Chinook to provide own deconfliction against the Twin Squirrel; the pilot replied, *"er Chinook) c/s er no problem we'll remain VFR and er take a Basic Service off you."*

At 1227:11, App instructed, *"(Chinook) c/s report approaching the Golf Seirra Tango at altitude three thousand feet under a Basic Service"* and this was acknowledged.

At 1234:00, the radar recording showed the Chinook crossing the GST (NDB), tracking NE, indicating FL027 prior to commencing a left turn to enter the hold. The recording also showed two ac (later reported as the King Airs) displaying SSR codes 4501 and 4502 (Lyneham). The King Air pilot's report indicated that they were in receipt of a TS service from Lyneham App.

The two ac were indicating FL033 and FL043 respectively and the radar recording showed the ac converging; the ac squawking 4502 descended to FL027 and its transponder is turned off at 1235:00 as the ac formated.

At 1235:22, the controller advised, *"(Chinook) c/s and erm IFR traffic is clear now er you're under a Procedural Service";* this was acknowledged by the Chinook pilot.

At 1235:39 the radar recording showed the Chinook, 1.6nm N of GST, tracking W, indicating FL026 (converting to an alt of 2816 ft, with QNH 1021 and 1mb equating to 27ft). The recording also showed the formation 6.3nm NW of GST, indicating FL033 (converting to 3516ft) and converging with the Chinook.

At 1236:10, radar recording showed the Chinook maintaining FL028 (3016ft) and the formation indicating FL033 (3516ft) with the distance between the ac as 2.6nm.

The radar recording showed the Chinook commencing a left turn in the hold at 1236:36, with the distance between the ac being 0.5nm and with 500ft vertical separation; it was not possible to determine the level of the non-squawking ac. The last radar derived level at 1235:00, indicated FL27 (2916ft).

The ac tracks crossed at 1236:43 at a position 2.7nm NW of GST, with the vertical separation indicated as 500ft [400ft on the Clee Hill radar recording]. Radar then showed the ac tracks diverging with no change in the indicated Mode C level.

The Chinook was in receipt of a Procedural Service and the formation was unknown to the Gloster App controller. The Manual of Air Traffic Services (MATS) Part 1, Section 1, Chapter 11, Page 10, states:

'A Procedural Service is an ATS where, in addition to the provisions of a Basic Service, the controller provides restrictions, instructions and approach clearances, which if complied with, shall achieve deconfliction minima against other ac participating in the Procedural Service. Neither traffic information nor deconfliction advice can be passed with respect to unknown traffic.'

HQ 1GP BM SM reports that the Chinook was operating VFR, in VMC, on an NDB approach in receipt of a PS from Gloucester App. The King Airs were operating VFR, completing a formation rejoin prior to a visual recovery to Lyneham in receipt of a TS, reduced due to poor radar performance from Lyneham App.

The King Air formation was at 3000ft on Lyneham QFE 1003mb, whilst the Chinook reports operating within the GST NDB hold at 3000ft Gloucester QNH 1021mb (equating to 540ft vertical separation).

APP was operating band-boxed as APP and Zone and providing an ATS to 5-speaking units on 2 VHF frequencies.

At 1234:24, APP passed TI to King Air leader on a primary-only contact stating "*pop-up traffic err your 12 o'clock, 3 miles, similar heading, no height information*" which was acknowledged [this related to a primary only contact about 7nm NW of the Chinook]. At that point, the reporting Chinook was 10.5nm ESE of the formation and King Air (B) was 1.1nm NE of leader on a parallel track, 400ft above but descending to rejoin him. No further TI was passed to either member of the King Air formation throughout the remainder of the incident sequence.

King Air A stated in his report however that APP passed them TI on 'traffic in our 10 o'clock, slightly below [and that] almost immediately we received a TCAS TA from the same traffic which we quickly identified as a Chinook'.

At 1236:12 King Air leader reported "*holding hands, ready to accept vectors*" and at that point the Chinook was 1.2nm E of them.

The CPA occurred at 1236:41, 26.3 nm NW of Lyneham (2.7nm NW of GST), with the Chinook crossing from left to right 0.1nm in front of the King Airs.

In terms of the Airprox itself, it appears reasonable to argue that through the action of confirmation bias and because the subject of the TI passed at 1234:24 was non-squawking, the pilot of King Air (A) miss-perceived that the TI related to the contact that they could see on the TCAS display. Notwithstanding this, the King Air pilot was able to visually acquire the Chinook in sufficient time to assess that they had adequate separation and that no avoiding action was required.

Notwithstanding the distance of the CPA from Lyneham, given that the King Air formation was in receipt of a TS they were, therefore displayed on the Lyneham radar display. Moreover, it is reasonable to assume that the Chinook was also displayed on the Lyneham surveillance display given that it was only 540ft below the formation. It has not been possible to determine why APP did not pass TI to the King Airs regarding the Chinook.

In his report, SATCO Lyneham raised a significant issue by highlighting the limitations of the radar service provided by Gloster and questioning the appreciation by many crews of the level of awareness of Gloucestershire traffic not in receipt of an [App] service. In this instance, the Chinook was operating IFR in receipt of a BS, it would not have been afforded any protection whilst flying the NDB procedure, other than that provided under 'see and avoid'.

Although the result was not intended, the TI passed by Lyneham App, in association with TCAS information, allowed the King Air formation to 'see and avoid' the Chinook.

HQ JHC comments that it is apparent that the Chinook pilot misjudged the separation between the ac; from the radar report and the TCAS information, the vertical separation was likely to have been in the region of 400ft. However, the Chinook pilot reports that they took avoiding action and assessed the risk of collision as high. It is possible that the Chinook crew did not appreciate that a Procedural Service only gives information that, if complied with, achieves deconfliction minima on other ac participating in the Procedural Service – and does not provide deconfliction minima with all ac.

HQ AIR (TRG) comments that the availability of TCAS aided the King Air crew in visually acquiring the Chinook. Whilst it was assessed visually that there was no risk of collision, and it appears that the crew felt they could maintain the separation which existed, it might have been prudent to increase the vertical separation or create some lateral separation. TCAS RA was not selected, which is iaw 22 (Trg) Gp and local TCAS orders and SOPs, because of the relative poor manoeuvrability of a close formation. The apparent confusion over the TI called and the traffic that was actually sighted highlights the potential for any TI to be misinterpreted and for an incorrect mental air picture to be formed; apparently, the subject of the TI was not sighted. This incident highlights the importance of a continued and comprehensive visual scan in order to pick up those aircraft that may not appear on TCAS or on the controllers radar, or which may not be passed for whatever reason. The ultimate responsibility for collision avoidance remains with the ac crews.

AIRPROX REPORT No 2011049

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

Members observed that Gloucestershire instrument pattern is frequently very busy with procedural, mainly training traffic, and that Gloster Radar is only available by prior arrangement and has no SSR. They agreed that it is wise to avoid the area of the approach and hold even if in receipt of a radar service from another unit; if this is not possible, pilots should call Gloster App who will advise them of the traffic situation (as they know it). Controller Members added that this advice should also be noted by controllers at adjacent units who should, if possible, route traffic away from the hold and advise that it is active.

Notwithstanding that the Chinook was arguably IFR and the King Airs were VFR, the incident took place in Class G airspace where the normal 'see and avoid' principle applies. In this encounter the opposing ac were almost head-on and both were required to give way under the RoA. The Chinook had just commenced a left turn inbound to the beacon and the pilot tightened that turn. The King Air leader recognised that he was also required to give way but considered that adequate vertical separation already existed and so he 'stood on'. While the vertical separation might seem to have been adequate, had the King Air formation made, even a small track alteration and not overflown the Chinook, it would have signalled to its crew that the King Air crews had seen it and thus most likely removed any concern that they had. In common with most other ac, the visibility from the Chinook above and behind is limited, and therefore the ability of the crew to judge safe separation is equally limited; even more so when in a turn. It was the view of one experienced pilot Member that, despite that the King Air formation leader considered the vertical separation adequate, they had flown unnecessarily close to the Chinook.

It was observed that (anecdotally) there seemed to be widespread misunderstanding by pilots of their responsibilities when operating under a Procedural Service in Class G airspace - whether IFR or VFR in both IMC and VMC (although they may be separated from other participating traffic) pilots are wholly responsible for collision avoidance.

Controller Members endorsed the HQ 1Gp BM SM view that in the circumstances prevailing, Lyneham App should have provided TI to the King Airs regarding the Chinook, since it should have been apparent to the controller that it was in confliction, both laterally and vertically. It was fortunate however, that the TI that the controller passed regarding the other (non-squawking) contact enabled the King Air crew to acquire the Chinook visually (but apparently not the contact to which the TI referred). Notwithstanding the limitations of a TS, Members thought that Lyneham could have provided the King Airs with a better service.

The HQ Air (Trg) Member observed that there had been a number of incidents recently where military crews had not used all the information available to them (including TI and TCAS) to avoid conflicting traffic by greater margins. He informed the Board that HQ Air would be conducting an education programme to improve awareness. The ATSI Advisor pointed out that the post incident procedure would have been much smoother had the Chinook pilot reported the incident to Gloster App on the frequency in use at the time.

When considering the risk, a majority of Members considered the normal safety standards had been maintained and therefore there was no risk of collision.

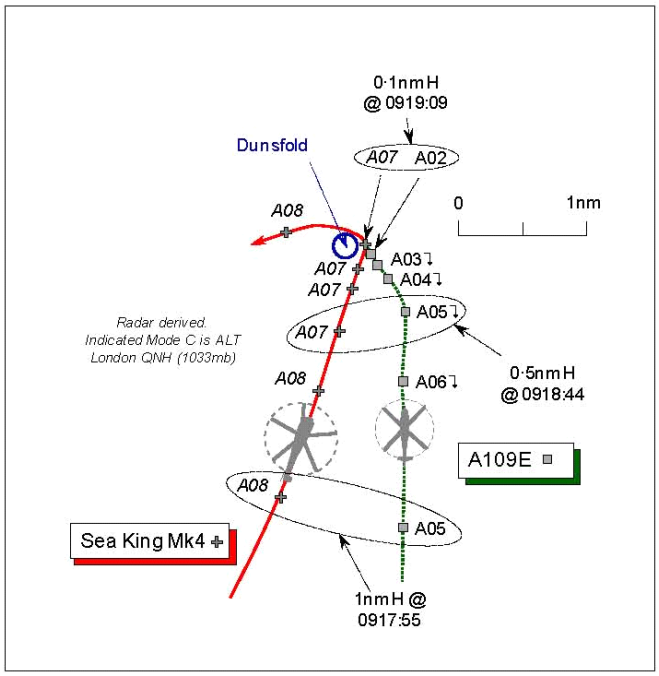
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Chinook crew was concerned by the proximity of the King Air formation.

Degree of Risk: C.

AIRPROX REPORT NO 2011050

Date/Time:	2 Jun 2011 0919Z	
Position:	5107N 00032W (Dunsfold A/D - elev 172ft)	
Airspace:	London FIR	(Class: G)
Reporter:	Dunsfold A/G	
	1st Ac	*2nd Ac*
Type:	Agusta 109	Sea King Mk4
Operator:	NK	MFTR/Civ Test
Alt/FL:	NK	700ft QNH (NKmb)
Weather:	NK NK	VMC CLBC
Visibility:	NK	>10km
Reported Separation:		
Dunsfold A/G:	slightly higher	
	NK	700ft V/1nm H
Recorded Separation:		
	200ft Min V @ 0·5nm H	
	0·1nm Min H @ 500ft V	



A/G OPERATOR [CONTROLLER] REPORTED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE DUNSFOLD AIR/GROUND RADIO OPERATOR (A/G), who is also a licensed ATCO, reports that he was operating from the Control Tower at Dunsfold [situated S of the midpoint of RW07/25] on 119·100MHz when he became aware of a helicopter engine noise behind him. He looked around and saw a white coloured Agusta 109 (A109) helicopter approaching the southern aerodrome boundary at low level at about 400-500ft agl, which flew overhead the Tower descending steadily until it was obscured by the roof and he lost sight of it. As the A109 flew back into view again, he saw a large green Sea King helicopter that veered across ahead of the A109 from R to L, he perceived, at almost the same height, but slightly higher. The incident appeared to take place he thought at a height of about 100ft above the mid-point of the RW. Neither pilot called Dunsfold RADIO on 119·100MHz. The engine noise from the A109 flying above the VCR masked the sound from the Sea King helicopter, so he had seen it late, without any audible warning of its approach. The Sea King then made a slow turn in the Dunsfold overhead and departed to the NW at low-level.

The A109 landed next to a fuel bowser to the N of the RW and was met by an individual who began to refuel the ac once it had shut down. The bowser operator was expecting the A109 as he had received a text message from the pilot saying he was inbound, but the arrival of the A109 had not been notified to him as the A/G Operator. He called Farnborough RADAR immediately who advised that they were not talking to any traffic in the Dunsfold area. Another person who had been monitoring the A/G frequency on the ground also observed this occurrence, and at the time of the incident a high performance vehicle was using the RW for pre-arranged test runs. Subsequently, he went across the A/D to speak to the helicopter pilot and ask him if he was visual with the Sea King and to ask why he did not call on the A/G frequency – 119·100MHz. The A109 pilot's response was 'what helicopter' and stated that he had not called on the A/G frequency because he had 'forgotten it'.

Although the incident took place in Class G airspace at an unlicensed aerodrome without an ATZ, the A/G Operator perceived that both helicopters came within an unsafe distance of one another. This, combined with a non-sighting by the A109 pilot during a late stage of the approach and the omission.

of both pilots to call Dunsfold RADIO, especially when a high performance car was using the RW, led him to make this report.

UKAB Note (1): From a subsequent telephone conversation with the A/G Operator it seems that PPR approval had been given to the A109 pilot to operate at the A/D, but the A/G Staffs had not been informed.

THE AGUSTA 109 PILOT's company was contacted many times by the UKAB Secretariat, but to date no report has been provided.

THE SEA KING PILOT reports he had departed from Fleetlands, VFR and was conducting a post maintenance test flight in VMC whilst in receipt of a BS from Goodwood INFORMATION on 122·45MHz. The helicopter is coloured Dark Green with RN markings. The upper and lower white HISLs were on.

Flight safety critical systems (main rotor and tail rotor vibration levels plus both engine power performance indexes and max contingency levels etc) had been proven and were all within limits. At this stage of the flight they were testing the accuracy of the Doppler plot compared to the GPS plot prior to testing the ILS at Odiham and subsequently returning to Fleetlands. During the navigation plot check they routed to on-top Petworth, thence to on-top Dunsfold and to on-top the MID beacon.

Heading 260°, overflying Dunsfold at an altitude of 700ft at 90kt, his observer who was sat in the LHS, saw an A109 take off from the aerodrome below, he thought, that transitioned into their 7o'clock as they were heading W, the A109 appeared also to be heading W. There was no conflict hence they maintained a steady heading, altitude and speed whilst his observer continued to call out the A109's position by clock code, which remained in their 7o'clock. Since the A109 had just transitioned, his Sea King's speed was greater so they waited until there was sufficient lateral separation before turning SW to route towards the MID beacon. He estimated the minimum horizontal separation from the small helicopter as 1nm and the Risk 'none'.

ATSI reports that the Airprox occurred in the vicinity of Dunsfold A/D, in Class G airspace between the A109 and a Sea King Mk4 helicopter.

Dunsfold provide an A/G Service without an ATZ. Neither helicopter crew was in communcation with Dunsfold RADIO. The written report from the pilot of the Sea King indicated that he was in communication with Goodwood INFORMATION. Goodwood provide a FIS, but the incident was not reported to them and no RT recording was available.

The Gatwick METAR for 0920 UTC: VRB08KT 9999 SCT034 20/11 Q1034=

Goodwood provide a FISO service and provide TI to ac flying in the vicinity of Goodwood aerodrome. It is not clear why the Sea King remained on the Goodwood frequency.

UKAB Note (1): At 0918:44, the radar recording shows two contacts separated by 0.5nm, approaching the southern boundary of Dunsfold A/D. The Sea King is the westerly of the two contacts squawking A7000 and indicating an altitude of 700ft unverified Mode C London QNH (1033mb); the easterly contact - the A109 – is at an altitude of 500ft unverified Mode C London QNH. The two helicopters converge and at 0919:09, the distance between the two ac is 0·1nm, with Sea King indicating an altitude of 700ft and crossing ahead of the A109 from the latter's L to R; meanwhile the A109 has slowed and indicates an altitude of 200ft. The Sea King then turns and departs to the W at an altitude of 800ft. The A109 is last shown at an altitude of 100ft and shortly afterwards this contact fades from radar overhead Dunsfold A/D.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included a report from the A/G Station operator, a report from the Sea King pilot, radar video recordings, together with a report from the ATC authority.

Whereas the Board normally receives reports from pilots or controllers, this was an unusual Airprox insofar as it had been originated by an A/G operator. There were, however, precedents for this and the Board recognised that the A/G Station operator involved here is also a licensed ATCO. Furthermore, the initial review of the occurrence had revealed some significant issues worthy of investigation. The Board was briefed that, despite repeated requests through the company, the A109 pilot had not provided a report. Consequently, Members were denied the A109 pilot's perspective on this Airprox and could, therefore, only base their assessment on the limited information available. Board Members expressed their disappointment at the lack of timely action by the company

and the absence of a report from the A109 pilot, which prevented the Board from making a full assessment of the incident.

It was plain that neither of the pilots involved had established two-way RT communication with Dunsfold RADIO on their published frequency, thus the A/G operator was not aware of either flight before they flew into view. Whilst recognising that Dunsfold was now an unlicensed aerodrome with no ATZ and offering only limited ATS facilities, Members familiar with this area are aware that it is still used extensively by a broad range of ac operators. Moreover, other activities not compatible with aviation evidently occur on the A/D. Pilots need to be aware of what is happening, what other ac might be operating in the vicinity and where they can operate safely, which is best accomplished by operating on the frequency established for that purpose. To that end any pilot operating into the A/D, or in the immediate cct area, should be in contact with Dunsfold RADIO, to ascertain information useful for the safe and efficient conduct of the flight. Although the A109 pilot should have been able to see, cross cockpit, the larger dark green Sea King to port, the A/G operator's report suggested that the A109 pilot was unaware of the close proximity of the Sea King as he made his approach; whilst there was no reason to doubt the veracity of the A/G Operator's report, this could not be substantiated without the pilot's account. Therefore the Board agreed that the first part of the Cause was, probably a non-sighting by the A109 pilot.

From the Sea King pilot's comprehensive account, it was evident that he had not detected the presence of the smaller A109 to starboard as they approached Dunsfold from the S and it was not until their Sea King turned westbound over the A/D that the A109 was seen. Moreover, his observer had not realised that the A109 was landing; when spotted, it was most probably positioning across the main RW to the N side for refuelling before it was obscured from view as it drew aft. Since it had not been seen beforehand, it was presumed to be departing from the A/D. The Board was briefed that subsequent discussions with the Sea King pilot had revealed that on previous flights he had attempted to establish communications with Dunsfold RADIO, but two-way RT had proved somewhat erratic, the pilot suggesting that the operator might be using a hand-held VHF radio. Even though communication might be difficult, and it was accepted that the test flight was an intensive task, helicopter pilot Members opined that better airmanship was always to call on the RT when operating in the immediate vicinity of an A/D, otherwise remain clear of the cct area, as is required by the 'Rules of the Air'. The HQ JHC Member said that it was normal practice for test flights from Boscombe Down to obtain an ATS and other pilot Members agreed that the acquisition of a service, perhaps even a radar service from Farnborough, would be a useful adjunct to the crews' visual scan on high workload test flights. Controller Members recognised that Farnborough LARS would not be able to offer much of a radar service at the altitudes reported here, but in this locale they could probably provide a more useful ATS than Goodwood INFORMATION; Gatwick was suggested as another helpful ATSU who might afford a service. Regarding the actual encounter, the recorded radar data clearly shows the A109 passing to starboard and no less than 200ft below the Sea King whilst approaching Dunsfold A/D. The A109 was there to be seen forward of the beam from a range of 1nm the radar recording reveals and broadly in the Sea King pilot's field of view from that point. Therefore, the Board concluded that the other part of the Cause was, effectively, a non-sighting by the Sea King crew.

Some perceived that this was a Risk bearing Airprox because both ac were flying towards the same point on converging tracks at close quarters, both pilots being unaware of the other helicopter it would seem. Any separation that did exist was thus fortuitous. However, it was evident from the radar data that the A109 was always below the Sea King before it commenced final descent to land on the A/D, and at the point of minimum horizontal separation as the Sea King turned overhead the recorded Mode C, albeit unverified, indicated it was 500ft above the A109, not the 100ft perceived by the A/G operator. This convinced other Members that any Risk had been effectively removed. Although the Board was content to assess the Cause of this Airprox, further discussion then ensued as to whether there was sufficient evidence available to enable the Members to assess the Risk of collision. Moreover, it is not within the Board's remit to consider the safety implications of any conflict with a vehicle that might have been using the RW when the A109 landed. Following a wide ranging debate, Members concluded that without an account from the A109 pilot there was insufficient information available to reach a meaningful conclusion on the inherent Risk.

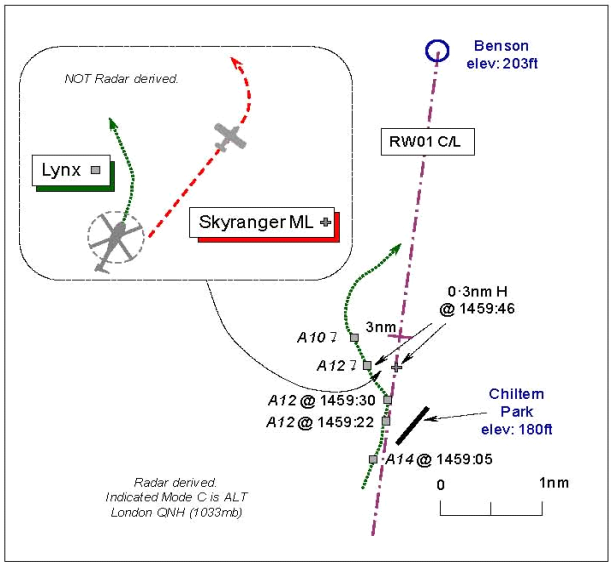
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Effectively a non-sighting by the Sea King crew and probably a non-sighting by the A109 pilot.

Degree of Risk: D.

AIRPROX REPORT NO 2011051

Date/Time:	2 June 2011 1459Z	
Position:	5133N 00106W (3½nm S of Benson - elev 203ft)	
Airspace:	Benson MATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Lynx AH Mk7	Skyranger ML
Operator:	HQ JHC	Civ Pte
Alt/FL:	900ft ↓	400ft
	QFE (1027mb)	QFE
Weather:	VMC CLBC	VMC CAVOK
Visibility:	25km	10km
Reported Separation:		
	NR	NR
Recorded Separation:		
	Not recorded	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE WESTLAND LYNX AH Mk7 PILOT reports flying a training sortie from Odiham and was conducting an SRA at Benson to RW01RHC in VMC. He was in receipt of a TS from Benson TALKDOWN (TD) on 277·675MHz. A squawk of A3617 was selected with Mode C; neither Mode S nor TCAS is fitted.

Established on the centre-line at 100kt, heading 020° whilst approaching 900ft QFE (1027mb) in the descent under terminal guidance, a small civilian ac – the Skyranger Microlight (ML) that had been spotted from about 4nm Final – was seen to line up on a private strip [Chiltern Park] about 3nm S of the A/D. He saw the ML roll and take off and, as he was visual with it at this point, it was not a problem. As it lifted off, the TD controller called traffic in their 1 o'clock, slow moving; the ML then executed a L turn which would have brought it into conflict with them, but at the same time the controller issued a 40° avoiding action L turn. He saw the ML pass behind with a 'medium' Risk but did not report the separation. The SRA was completed and after returning to base he contacted Benson ATC and discussed the incident with the controller.

His helicopter had a grey/green camouflage scheme; ac lighting was not specified.

THE SKYRANGER 912S MICROLIGHT PILOT reports he was departing from Chiltern Park aerodrome for a local VFR flight. His ML is coloured red and white and the strobe lights were on. Their normal procedure is to telephone Benson ATC to inform them of their operational status prior to any take-off from Chiltern Park, but because of a misunderstanding, Benson had not been informed of their active status.

After take-off from RW04 at Chiltern Park, he turned L onto the crosswind leg of a standard LH cct at 70mph, ascending to an intermediate height of about 400ft QFE. Soon after take-off he was contacted on the radio by the Chiltern Park aerodrome manager, who advised him that he had passed close to a helicopter on final approach to Benson. The Manager wanted to ascertain if he had contacted Benson to advise them of their active status, but he had to acknowledge that he had not done so and immediately radioed Benson ZONE on 120·9MHz to apologise for the omission.

The Lynx helicopter had turned away from its original path before he had turned onto the downwind leg, and, being camouflaged, was not seen. The Downwind leg of RW04/22 at Chiltern Park runs close to the FAT for Benson's RW01, about 3·5nm from the touchdown point of RW01. Military helicopters are known to approach Benson at low-level, often below Chiltern Park's cct height of 700ft, and, on occasion, after Chiltern Park has notified Benson as being 'active'.

Due to an increase in incidents involving military ac recently, the current arrangements with Benson, which are detailed in a LOA, are being reviewed. Changes have been proposed to the Chiltern Park cct pattern to deconflict traffic and other measures are under consideration by Chiltern Park management, for discussion with Benson in the near future.

He suggests he shall now call Benson ZONE on the RT- or TOWER if ZONE is closed - at the holding point to request information on current traffic movements before returning to the Chiltern Park frequency, as is required by the Chiltern Park Flying Orders.

THE BENSON TALKDOWN CONTROLLER (TD) reports he was conducting a SRA to RW 01RH for the Lynx AH Mk7. The meteorological conditions were good - sfc wind 040°/8kt, 25km visibility and FEW cloud at 3800ft. As the ac was approaching the 4nm point he noticed a primary radar return that had just 'painted' to the E of the centreline at the 3½nm point. Immediately, he called the radar return to the Lynx pilot as, in his judgement, it indicated that the primary return could be an ac climbing out of Chiltern Park, situated to the S of Benson A/D. The Lynx pilot did not call visual at that point; in the controller's view, as the unknown ac turned straight towards the Lynx on the centreline at the 3½nm point, there was a definite risk of collision. Avoiding action was given to the Lynx pilot of a L turn onto a heading of 330° to ensure that the risk of collision would be avoided. The Lynx pilot then called visual with the unknown ac and he was then able to continue with the SRA and complete the approach.

THE BENSON SUPERVISOR (SUP) reports that all positions in the ACR were reasonably busy with APP/DIR bandboxed. Whilst facilitating an internal pre-note between APP and ZONE he observed a 'non-squawker' relatively close to the A3617 Benson squawk which he knew to be the Lynx conducting an SRA. He immediately moved to a position behind TD who was conducting the SRA to increase his own situational awareness and quickly ascertained that the Lynx pilot had not reported visual with the non-squawker and observed it taking controller initiated avoiding action to maintain separation. The Lynx was then easily vectored back towards the centre-line and a clearance obtained at 3nm.

Praising TD for his actions, he then followed the non-squawker on ZONE's display whilst trying to ascertain if Chiltern Park had called active at any point. Shortly thereafter a VDF trace was observed passing through the non-squawker; the pilot identified himself with the Skyranger ML's registration having just climbed out of Chiltern Park without 'activating' the airfield IAW local agreements. The ZONE controller acknowledged an apology from the ML pilot and reminded him of the necessity to call. A few minutes after this, the ATC assistant in the VCR relayed a message that Chiltern Park was now 'active' and the person that had called in had apologised for how close the Skyranger ML got to the Lynx, something he had observed from the ground.

HQ 1GP BM SM reports that this Airprox occurred between a Lynx conducting an SRA at Benson in receipt of a TS from Benson TALKDOWN (TD) and a ML departing Chiltern Park airfield VFR.

This Airprox does not appear on the LATCC (Mil) radar recording, although the Lynx is visible throughout the incident sequence. [UKAB Note (1): A primary radar contact appears on the Heathrow Radar recording at 1459:46, 0·3nm E of the Lynx which may or may not be the reported Skyranger ML. At this point the Lynx is indicating 1200ft London QNH (1033mb), which broadly equates to 1020ft Benson QFE (1027mb) - about 1040ft above Chiltern Park aerodrome's elevation of 180ft.]

TD was manned by a relatively inexperienced first tourist controller who had been awarded their SRA endorsement that morning. The controller states that as the Lynx "was approaching the 4nm point I noticed a primary radar return with no height information that painted just to the east of the centre-line at the 3½nm point." At 1459:04, TD passed TI to the Lynx stating, *"…traffic right 1 o'clock 1 mile manoeuvring, no height information"*, which was not acknowledged by the Lynx pilot.

TD then goes on to state that in their opinion, as the ML turned into confliction with the Lynx, there was a definite risk of collision and, at 1459:20, instructed the Lynx crew, *"avoiding action, turn left immediately heading 3-4-0 degrees, traffic right 1 o'clock 1 mile crossing right - left no height."* At 1459:31 the Lynx pilot reported visual, with the avoiding action turn becoming evident on the radar replay at 1459:33.

Neither pilot provided an estimate of the minimum separation, with the ML pilot stating that they had not been visual with the Lynx until after the CPA.

JSP 552 405.135.20 provides regulation for the separation and avoidance of other contacts whilst providing a PAR. It specifies that irrespective of ATS, when a collision risk is apparent in both elements of the PAR display involving an un-notified radar contact:

'advice on suitable action for collision avoidance together with information on conflicting traffic [is to be given].'

There is no comparable regulation contained within JSP 552 405.125 which pertains to the conduct of an SRA.

In this instance TD provided relevant and accurate TI to the Lynx pilot and, when the controller perceived a risk of collision to exist, provided deconfliction advice to the Lynx pilot. Although the Lynx pilot was visual with the ML throughout the incident sequence, TD fulfilled their perceived duty of care by offering deconfliction advice.

In terms of the regulatory difference between the provision of a PAR and a SRA, the absence of comparable regulation, whether consciously or unconsciously, caused TD to apply an incorrect regulation. In this instance, this transfer of training had a positive outcome; however, a different set of contextual conditions or a different interpretation of the regulations may have produced a different, negative outcome. Following a procedure which has not been designed for the specific situation could have unforeseeable and undesirable results, with deficiencies or differences in regulation or procedure being identified as causal or contributory factors in many air accidents and incidents.

Consequently a recommendation has been made to the MAA Op Gp – ATM Division – relating to a review of JSP 552 405.135.20 and JSP 552 405.125 and the provision of additional guidance; a reply is awaited.

HQ JHC comments that despite the fact that there is an absence of regulation for an apparent collision risk whilst on an SRA, when the controller passed relevant TI to the Lynx, it is disappointing that it was not acknowledged by the Lynx pilot. Whilst the avoiding action was successful, it is not considered good airmanship for a pilot to be visual with an aircraft of concern but not relay this information to the controller, although it is acknowledged that the final stages of an instrument approach creates a high workload in the cockpit. It is probable that the Lynx pilot would have taken avoiding action himself at the same point should the controller not have given avoiding action advice so promptly.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the Benson RT frequency, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

The Board noted the recommendations made by HQ 1GP BM SM to the MAA Op Gp – ATM Division – relating to a review of JSP 552 and the provision of additional guidance for SRA controllers. The CAA SRG Strategy and Standards Advisor considered there was sufficient guidance for controllers about collision avoidance action when providing a TS or DS within CAP774, which details air traffic services outside CAS. However, controller Members opined that at military A/Ds the Talkdown controller might not, in some cases, also be validated on Radar Director or Radar Approach and agreed that a review of the guidance applicable to Talkdown controllers conducting SRAs would be worthwhile, which the MAA Advisor confirmed was being undertaken.

Notwithstanding any lack of official advice, the Board commended the Benson TALKDOWN controller for his swift appreciation of the situation and appropriate reaction to the conflict through the transmission of avoiding action to the Lynx crew, in this instance all the more so because of the controller's inexperience. Nevertheless, it was apparent from the Lynx pilot's report that in the prevailing good weather he had spotted the Skyranger just before it took off and watched it turn L downwind. This was before the controller spotted the aeroplane on radar himself and issued the avoiding action L turn away from the Skyranger, which was promptly complied with by the Lynx crew.

The Skyranger pilot's frank admission that he had not notified Benson ATC that he would be flying at Chiltern Park, as is normal procedure in accordance with their LoA, was plainly a significant omission. This denied Benson ATC any prior warning that might have been taken into account during the Lynx's approach. The absence of prior notification was to some a significant factor, and discussed at length in terms of airmanship; one Member suggested that the Skyranger pilot took off into conflict with the Lynx. However, the Skyranger pilot's omission did

not finally figure in the Board's determination of the Cause of the Airprox. Within the MATZ, where specific rules apply to military pilots, but outside the ATZ, where Rule 45 of the Rules of the Air applies within, it is all Class G airspace where the VFR entreat civilian pilots to 'see and avoid' other ac. There is no national requirement for civilian flights to be in communication with Benson ATC within the MATZ, albeit that good airmanship dictates close observance of the guidance within the UK AIP relating to MATZ crossings. It is, therefore, not a 'known traffic environment' and under the TS afforded to the Lynx crew no stipulated deconfliction minima apply. Clearly, observance of the LoA with Benson ATC engenders a safe and harmonious working relationship between these two closely located facilities and good airmanship necessitates compliance. However, the Board concluded the fundamental Cause of this Airprox was a conflict in Class G airspace resolved by the Talkdown Controller.

The Skyranger pilot had not spotted the Lynx, either before take-off or during his cct, and was only aware of the conflict from the A/D Manager's RT call. This was not a warning of the helicopters approach it would seem and occurred after the event. Members warned against alarming or distracting pilots in the air and it was far better to talk about it on the ground rather than provoke concern whilst airborne. Conversely, the Lynx pilot had the aeroplane in view throughout until it drew astern. Prompted by the controllers avoiding action, the Lynx was steered away from it and then back onto the SRA with little difficulty the controller reported and the Lynx crew could have taken more robust action if need be. The Board concluded, therefore, that no Risk of a collision had existed in these circumstances.

PART C: ASSESSMENT OF CAUSE AND RISK

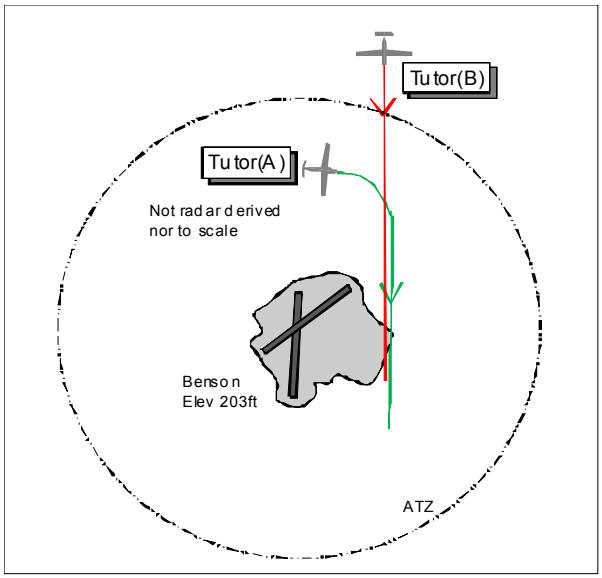
Cause: Conflict in Class G airspace resolved by the Talkdown Controller.

Degree of Risk: C.

AIRPROX REPORT No 2011052

AIRPROX REPORT NO 2011052

Date/Time:	2 Jun 2011 1322Z (Saturday)	
Position:	5137N 00105W (0·5nm ESE Benson - elev 203ft)	
Airspace:	ATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Tutor(A)	Tutor(B)
Operator:	HQ Air (Trg)	HQ Air (Trg)
Alt/FL:	800ft (QFE)	850ft↓ (QFE)
Weather:	VMC CLBC	VMC CLBC
Visibility:	10km	10km
Reported Separation:	100ft V/150ft H	50ft V/75m H
Recorded Separation:	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE TUTOR(A) PILOT reports flying a solo cct consolidation exercise at Benson, VFR and in communication with Benson Tower on 127·15MHz; the ac's transponder was switched off. The visibility was 10km below cloud in VMC and the ac was coloured white with HISLs and nav lights switched on. He was late making a downwind call on RW01 because when he was ready, about a third of the way down the RW, he was unable to call owing to other traffic communicating with ATC. Heading 190° at 800ft QFE and 80kt he made a routine lookout to the R, by now he was two-thirds of the way down the RW, he noticed another Tutor, Tutor(B), about 100ft higher and 150ft away in his 4 o'clock. He believed that both he and the Tutor(B)'s pilot saw each other at the same time because the other Tutor initially broke R as its pilot called ATC before then conducting a LH orbit. During this period he maintained straight and level flight and watched to see what Tutor(B) was doing. Once Tutor(B) was clear he was able to call "downwind" and was cleared for a touch and go after another Tutor, Tutor(C) that was already on final. He assessed the risk as high.

THE TUTOR(B) PILOT reports flying a dual sortie from Benson VFR and in communication with Benson Tower on 127·15MHz, squawking 3611 with Modes S and C, he thought. The visibility was 10km below cloud in VMC and the ac was coloured white with HISLs and nav lights switched on. He was recovering to the visual cct RW01 RH from the N at 2000ft and 110kt. He called Tower about 3nm N of Benson and requested a high downwind join (for noise abatement) which was approved. The frequency was busy initially and it took him a short while before he could make the call so it may have been a bit closer. On reaching the visual cct the only ac he saw was a helicopter hovering over the RW on final approach. Another AEF Tutor flight, Tutor(C), then called long final for a straight-in approach which was approved. Very shortly afterwards he called high downwind, abeam the upwind threshold at 2000ft and a little wider than normal, and was told by Tower "one ahead". He asked Tower if that was the straight-in approach traffic on long final and was told affirmative. He commenced a gentle idle power descent on the downwind leg heading 190° at 80kt. At this point no mention had been made by ATC of any other cct traffic and no other calls were heard to indicate that there were any other ac present in the visual cct. He had the Traffic Advisory System (TAS) on and there were no contacts showing apart from the 2 ac he already knew about. As he descended downwind his main attention was therefore in the direction of the aerodrome and towards the approach area to try and make visual contact with Tutor(C) in order to turn final, positioning at a correct distance behind it. Approaching 800ft at 80kt and just before the abeam point with the RW threshold his cadet alerted him to an ac on his (L) side and out to the front (in his blind spot- 11 o'clock slightly low). He immediately manoeuvred his ac to make visual contact and saw Tutor(A) in very close proximity, 75m ahead, slightly to the L and 50ft below. He turned hard L and made an S turn to fit in behind Tutor(A). As he did this ATC asked if it was his ac breaking L, and he responded that he was positioning behind another Tutor he hadn't known was there. This was greeted by silence from ATC followed by the solo student in Tutor(A) calling "late downwind" and the student was told to go-around. He continued downwind normally and landed after Tutor(C). Later on during a conversation, Tutor(C)

pilot told him that he also had no idea that a Tutor flown by a solo student was in the cct downwind when the incident occurred. He assessed the risk as medium.

UKAB Note (1): Tutor(B)'s SSR disappears as the ac enters the ATZ 2nm NNE of Benson before the ac fades from primary whilst in the downwind leg, passing 0·5nm E of the aerodrome.

THE BENSON TOWER CONTROLLER reports that at the time of the incident Tower was bandboxed with Ground owing to a brief lull in traffic. The instructor for the solo student in Tutor(A) was observing his performance from the VCR. The cct rapidly became busy with station-based helicopter departures, fixed-wing arrivals and the Helimed on scramble. Tutor(A) flight elected to go around from an approach and climbed on the deadside. Tutor(B) flight called to join declaring it would be a high and wide downwind join and was informed of the 2 ac in the cct [Tutor(A) and helicopter departing]. A further Tutor flight, Tutor(C), called to join through initials, requesting a straight-in approach which was approved. Tutor(B) flight called wide downwind and was advised of 1 ahead (Tutor(C) on a straight-in approach) as he believed Tutor(B) to be the 1st Tutor downwind. After descending downwind Tutor(B) pilot became visual with another Tutor in close proximity, which was identified as Tutor(A), and conducted an orbit. Tutor(B) pilot was asked if he was in the Tutor which had conducted the orbit so as to establish the new order of the Tutors downwind. Tutor(B) pilot was then told there were now 2 ac ahead; both Tutor(A) and Tutor(B) completed their ccts safely.

HQ 1GP BM SM reports that this Airprox occurred downwind in the visual cct at RAF Benson between 2 Tutors. Tutor(A) was flown by a student established within the cct, with Tutor(B) flown by a QFI recovering from a high, wide downwind position, following an air experience flight.

Given the height at which the Airprox occurred, no radar replay was available; consequently, the investigation has been based upon the reports of those involved and a transcript of the audio-tapes.

All stated heights are based on the RAF Benson QFE of 1027mb published at the time of the incident.

The relatively inexperienced ADC reported that he had been operating in the GRD position for approximately 70min prior to giving a trainee ADC and instructor a break "due to a brief lull in traffic." He then operated in the bandboxed TWR and GRD position for approximately 20min prior to the occurrence. The trainee's instructor had also been scheduled to conduct a standardisation check on the subject ADC later in the week but took the opportunity of the increasing traffic load to conduct the ADC's check. On the DFSOR, the Supervisor had assessed the ADC's workload as medium to low; however, the Supervisor was not present within the VCR during the incident sequence and the controller has subsequently stated that he would assess their workload as having been medium to high. The ADC reported the Wx as being unlimited visibility in nil weather and FEW cloud at 3800ft.

At 1319:06, Tutor(B) pilot called to join the visual cct and was informed that there were 2 ac in the cct – one was Tutor(A) and the other a Rotary Wing ac departing the airfield. Tutor(B) pilot then stated that he was positioning for a "*high wide downwind join*" which was acknowledged by TWR. There is no recognised procedure at RAF Benson for a "high wide downwind join"; the light ac visual cct is at 800ft.

At the time of the Airprox, regulation and guidance for the conduct of visual joins was contained in JSP 552.320.105.4, which has since been carried forward into MAA RA 3020 and associated MAA MATM Chapter 20 Para 11. These documents state that the 'NATO standard visual aerodrome cct and landing patterns '…are to be implemented, except for the authorised single-Service procedures' and that 'clearance from ATC for the aircraft to enter the pattern **should** include items of essential information regarding the circuit direction, runway in use and number and position of all aircraft ahead which have not touched down.' That said, there are no single-Service variations contained within either JSP 552.320.105 or MAA RA 3020 and associated MAA MATM Chapter 20 Para 11. Moreover, the only UK variation to the NATO procedure that is germane to the current investigation is that the 'downwind call is required to be made when abeam the upwind threshold of the RW in use.' No variation is listed for the operation of an oval cct. Whilst the NATO cct pattern at Figure 1 is predicated on a rectangular cct, rather than the oval cct in common use by the UK military, the information relating to downwind join ground tracks and the ATM aspects appear to be able to be carried across to UK mil ATM procedure. However, based upon a quick

straw-poll, current mil ATM practice sees controllers pass position information to ac joining through Initial, rather than all ac conducting a visual join.

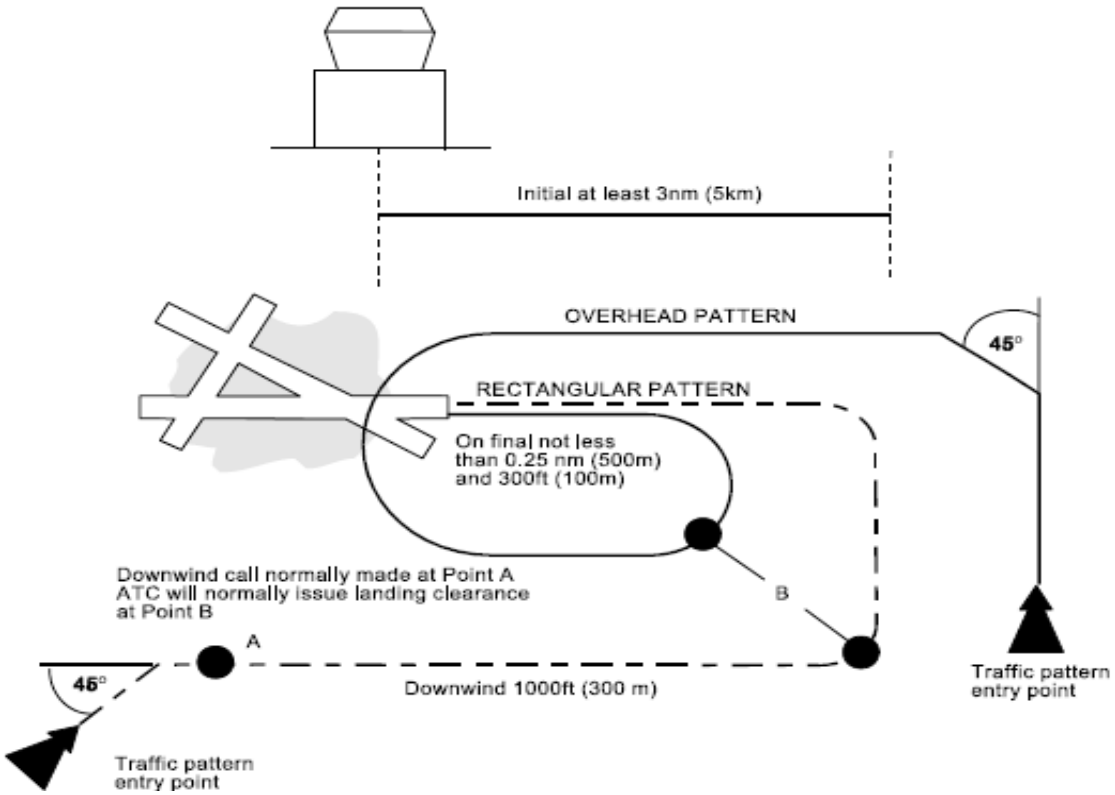


Figure 1: NATO Standard VFR Traffic Landing Pattern – Fixed Wing

At 1319:22 the departing Rotary Wing ac left the frequency. At 1319:29, a third, unrelated Tutor flight, Tutor(C), called to join and at 1320:28 declared his intention to make a straight-in approach to land. Thirty-seven seconds later at 1321:05, Tutor(B) flight reported being, "abeam the upwind threshold at 2000ft and a little wider than normal" and transmitted, "*high downwind full stop*." This was acknowledged by TWR who replied that there was "*one ahead*" of Tutor(B). Tutor(B)'s pilot then requested clarification as to whether the "*one ahead*" was Tutor(C), which was confirmed by TWR. At this point, TWR was speaking to 4-speaking units; 3 Tutors operating in the visual cct and one air ambulance on start for a scramble departure. It was also at around this point that Tutor(B) commenced their gentle idle descent from 2000ft to cct height of 800ft. The ADC later stated that he observed Tutor(B) descending on the downwind leg with what appeared to be a relatively "*high rate of descent for a Tutor*." The pilot of Tutor(B) reported that as he descended downwind, his "main attention was...in the direction of the airfield and towards the approach area to try to make visual contact with" Tutor(C).

Tutor(A) pilot reported that, at the point when he would routinely report downwind, he was unable to make the transmission due to frequency congestion. This is borne out by the transcript with the only breaks in the R/T being between 1320:02 to 1320:28 and 1321:15 to 1321:24. Whilst it has not been possible to determine where Tutor(A) was in the cct between these times, based on Tutor(B) pilot's transmissions and subsequent events, it is reasonable to suggest that Tutor(A) was crosswind between 1320:02 and 1320:28 and downwind between 1321:15 and 1321:24.

The ADC later stated that from the point when Tutor(B) called downwind neither he nor the QFI for the pilot of Tutor(A), nor the controller conducting the standardisation check, nor the TWR assistant were able to sight Tutor(A) as a result of background cloud and the Tutor's colour scheme.

At 1321:37, Tutor(A) pilot reported late downwind with TWR replying that there are 2 ac ahead of them; these being Tutor(B) and Tutor(C). At 1321:58 TWR asked Tutor(B) flight whether they were conducting an orbit, which accorded roughly with the pilot's report of their actions following the CPA. Moreover, the pilot of Tutor(B) reported

that they first became visual with Tutor(A) "just before the abeam point with the runway threshold" as they approached cct height and that Tutor(A) was in their "visual blind spot: eleven o'clock, slightly low."

Tutor(A)'s pilot reported that their SSR transponder was turned off. Tutor(B)'s pilot reported that both their transponder and TAS were turned on and that there were "no contacts showing apart from the 2 that I knew about."

DSATCO RAF Benson has stated that the Tutors' colour scheme makes them difficult to sight and track whilst within the visual cct. Moreover, SATCO RAF Benson has stated that it is impossible to utilise the Hi-Brite VRD to provide information on the position of Tutors within the visual cct because they do not paint satisfactorily on primary radar. Whilst there has been discussion at RAF Benson about mandating that Tutor ac squawk SSR Mode 3A and C whilst within the visual cct, to both aid controllers in sighting the ac and to facilitate the operation of the Tutor's TAS, this has not yet been implemented.

There are 3 distinct aspects to this incident which require assessment: the actions and decision making of the pilot of Tutor(B); the actions of the ADC and regulation regarding the provision of TI whilst in the cct.

At the time that Tutor(B) joined the cct at 1319:06, he was correctly advised that there were 2 ac in the visual cct and, based upon his report and the transcript, was aware of Tutor(C) when he reported downwind. The purpose of the RT transmissions made by all speaking units operating within a visual cct environment is to maintain situational awareness. On the basis that the pilot of Tutor(B) stated that he was not aware of Tutor(A), it appears reasonable to suggest that he had not assimilated the cct state information given to him. This caused Tutor(B) to descend into the cct, without being visual with all known traffic, specifically Tutor(A). Moreover, his decision to join high downwind warrants further attention.

Based upon the report of the pilot of Tutor(B) and the transcript (loss of 1200ft in 53sec between 1321:05 and 1321:58), Tutor(B) averaged an approximate ROD of 1300fpm from abeam the upwind threshold to abeam the RW threshold, which does not seem to accord with the reported "gentle idle descent." This is supported by the statement made by the ADC about the Tutor's ROD. During this descent, the pilot of Tutor(B) focussed his attention towards the airfield, arguably to maintain the correct lateral spacing for their height relative to the airfield, and towards the approach area to facilitate their sequencing behind Tutor(C). Whilst his incorrect mental picture of the cct state will have lulled him into solely focussing his visual scan in these areas, this focus specifically excluded the area beneath the ac, which is contrary to the CFS taught procedure for the visual scan whilst descending. Furthermore, the purpose of a downwind join is to facilitate the expeditious recovery of an ac, whilst simplifying the task of sequencing into the cct. Routinely, an ac joining downwind would be expected to be at cct height by a position abeam the crosswind position, thereby simplifying the pilot's visual acquisition task. In this case by joining 1200ft above cct height, the pilot of Tutor(B) was increasing the difficulty of his task to visually acquire the other cct traffic and reducing the possibility of being able to safely integrate himself into the cct.

The key ATM aspect to this Airprox is the transmission made by TWR at 1321:08 to Tutor(B) flight that there was 1 ac ahead of them, confirmed by TWR at 1321:12 as being Tutor(C). ADCs are trained to utilise eyesight to maintain track of all ac within the visual cct and to reinforce this using a "pin board." In this case, the ADC has stated that whilst he was utilising a visual scan to acquire and track the ac, his ability to do this was compromised by the Wx conditions and the Tutor's colour scheme. "Best-practice" might suggest that the Hi-Brite VRD could have been utilised to assess the position of Tutor(A) at the time that Tutor(B) flight called downwind; however, the ADC was unable to do this as the Tutor does not paint consistently on primary radar. Moreover, it is also reasonable to argue that the ADC should have expected that Tutor(B) flight would sequence itself with the existing visual cct traffic, given that he was aware of the number of ac within the cct.

This Airprox has highlighted that the provision of more specific cct TI to the pilot of Tutor(B), on the positions of all ac operating within the cct, may have facilitated his integration and thus mitigated against this Airprox. However, the details of regulation pertaining to this are not well known nor, seemingly, practised within the mil ATM community. Moreover, the examples given in CAP413 of phraseology to be used for visual joins only include guidance for joins through the O/H and initials, with only the latter example providing cct position information.

In conclusion, the pilot of Tutor(B) flew a join which compromised his ability to sequence his ac with the existing cct pattern, having not assimilated the cct state information passed to him which, as a result, reduced the separation between his ac and that of Tutor(A) significantly. Moreover, the ATM related safety barrier was compromised by the ADC's inability to sight Tutor(A) and to identify it on the Hi-Brite VRD.

RECOMMENDATION

BM SM has requested that MAA review the regulation regarding the provision of TI to ac joining the visual cct.

OUTCOME

RAF Benson has instigated a requirement for Tutor ac operating within the RAF Benson visual cct to squawk on SSR.

HQ AIR (TRG) comments that whilst there is a paucity of regulation of cct procedures within the MRP and ANO, there is much sensible guidance within the Take-off, Circuit, Approach and Landing chapter of the Airmanship section of AP 3456 (Vol 5-2-1-2 pages 6-8). This states:

"To reduce congestion and the risk of collision, aircraft should enter the airfield circuit in a planned and systematic manner. To achieve this, a standard circuit procedure is taught."

Circuit joining procedures detailed in the AP aim to allow ac to join 'without causing any disturbance to other circuit traffic' but they are not totally prescriptive. In this case the standard joining procedures were not followed, but the plan to join "wide" downwind should still have been safe had it been flown sufficiently wide to remain clear of any potential cct traffic. The AP goes on to emphasise the importance of lookout during any join, but it is also made clear that the standard joins are designed to facilitate good lookout, which remains the primary means of avoiding collisions in the visual cct.

The execution of Tutor(B)'s non-standard plan did not provide enough separation to allow an effective lookout to be carried out. Equally, the solo student in Tutor(A) does not appear to have assimilated Tutor(B)'s intentions or his potential as a threat; indeed, he is likely to have been approaching from high and behind. Events conspired to create a false impression for Tutor(B) pilot of the position of the cct traffic, thus removing another potential means of avoiding this incident. The inability of the controllers and supervisors in the tower to see both ac removed another mitigation, as did the lack of a timely downwind call from Tutor(A) flight, and the lack of consistency over the use of IFF and TAS. In the sure knowledge that these safety measures are not infallible, emphasis on lookout at all stages, in order to discharge pilots' responsibilities for avoiding collisions, must be emphasised. The use of standard joining procedures can only aid lookout but Airfield Operators are also free to be more directive about joining procedures in their station flying order books (and AIP entries) if they so wish.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

Tutor(B) crew had requested to join 'high and wide' downwind and was told by ATC of 2 ac in the cct: Tutor(A) and a helicopter departing. Had the pilot of Tutor(B) positioned the ac high and wide this would had allowed the crew to see other ac that were in the visual cct during their descent. However, the radar recording revealed Tutor(B) tracking just 0·5nm E of the aerodrome before fading O/H the normal Tutor cct. The Tutor(B) crew did not assimilate the cct state information as they reported seeing the helicopter but did not mention the other ac, Tutor(A), 'in' the cct. After calling 'downwind', the ADC passed inaccurate TI to Tutor(B) crew advising that there was *"one ahead",* Tutor(C) flight that had, shortly before, declared its intention to join for a straight-in approach. ADC was cognisant of Tutor(A) being in the cct but could not see it when Tutor(B) crew called *"downwind",* so he had moved Tutor(B) up the sequence order. Meanwhile Tutor(A) pilot had been unable to make his call downwind, owing to frequency congestion, and had not assimilated Tutor(B)'s presence or intentions from the RT exchanges. Military Members agreed that when Tutor(B) flight called for join, the ADC should have given it specific TI on the position of cct traffic to help build the pilot's SA. Tutor(B) crew was unaware of Tutor(A)'s position but was responsible for integrating safely into the cct. Members agreed that Tutor(B) crew had not discharged their responsibilities and their non-standard join placed Tutor(B) into conflict with Tutor(A) causing the Airprox.

Turning to risk, Tutor(A) pilot only saw Tutor(B) when late downwind, immediately prior to making his position report, as it was behind his ac in his 4 o'clock. Tutor(B) student saw Tutor(A) and alerted his instructor to its presence, in their 11 o'clock low. Tutor(B) instructor manoeuvred his ac and after visually acquiring Tutor(A), he

turned sharply L to pass behind it before following it in the cct to land. The Board agreed that this sighting and subsequent robust avoiding action taken by Tutor(B) flight had been enough to prevent the ac colliding; however, the 2 Tutors had passed in such close proximity that safety had not been assured.

PART C: ASSESSMENT OF CAUSE AND RISK

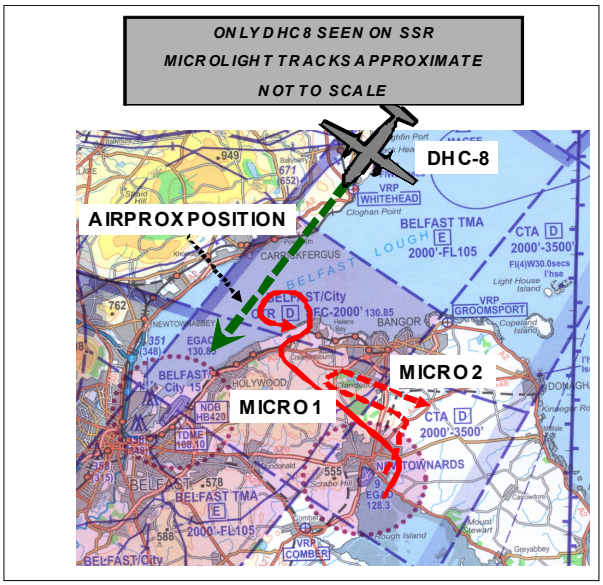
Cause: In the absence of specific TI, Tutor(B) crew conducted a non-standard join and did not integrate safely into the cct pattern.

Degree of Risk: B.

AIRPROX REPORT No 2011053

AIRPROX REPORT NO 2011053

Date/Time:	6 June 2011 1046Z	
Position:	5441N 00549W (Belfast City 5nm final RW22 - elev 15ft)	
Airspace:	Belfast City CTR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	DHC-8	A22 Microlight
Operator:	CAT	Civ Pte
Alt/FL:	1500ft (QNH 1006mb)	800ft (QFE NK)
Weather:	NK CLBC	VMC CLBC
Visibility:	30km	20km
Reported Separation:	0ft V/0.5nm H	0ft V/1.5nm
Recorded Separation:	NR V/0.5nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE DHC-8 PILOT reports that while heading 220° at 160kt, descending through 1500ft alt under IFR and Radar Control, on the final approach to Belfast City Airport, an Airprox occurred against a small red coloured microlight that was believed to have infringed CAS. While establishing on to the ILS RW22 a series of confused RT transmissions were heard between 2 microlights and Belfast Radar; one microlight initially stated he was O/H TRN (Turnberry, Ayrshire, Scotland), and after checking this the radar controller told the first microlight to contact Scottish Information for a service.

The microlight queried this and it became clear very quickly that he had just departed Newtownards [6.5nm ESE Belfast City] and had routed generally N putting it in possible confliction with them. The controller realised this and told the microlight to leave CAS immediately and to turn E. This did not seem to be understood by the microlight pilot and confusion ensued. The crew was looking out for the traffic as his position appeared to be a possible threat. A small red high-winged ac was seen at an estimated range of ½-1nm in their 9 o'clock position flying towards them at the same level. The captain (PF) monitored the ac whilst continuing the approach because avoiding action was seen to be taken by the microlight and it was seen to pass behind them removing any risk of collision.

A decision was made to delay the setting of 'Flap 35' because the microlight would pass close behind them and would be subject to wake turbulence; 'Flap 35' was subsequently selected, the approach remained stable, and a safe landing followed.

THE A22 MICROLIGHT PILOT (Micro 1) reports that he filed a VFR Flight Plan on-line at Newtownards for 2xac (himself and another microlight Micro 2) routeing Newtownards - Fair Head – Turnberry -Rossall Field (Near Lancaster). It was agreed Micro 2 would depart first and would contact Belfast to request transit clearance.

Their ac had SSR and elementary Mode S and strobes fitted.

Once airborne the pilot in Micro 2 requested a transit clearance for the 2 microlights and requested Belfast to activate their flight plan that had been filed with Swanwick. Belfast City ATC requested their ultimate destination and Micro 2 pilot replied, 'Rossall Field, Lancashire'. ATC then requested clarification and they again replied 'Rossall Field, Lancashire then onward to Otherton airfield, Staffordshire'. ATC Belfast City then asked, "why are you requesting clearance through Belfast airspace if you are heading for Staffordshire" and they explained at length that both ac were routeing N to coast-out of Northern Ireland at Fair Head and route via Mull of Kintyre then Turnberry before turning S for initial landing site at Rossall Field.

Belfast ATC then attempted to route the other microlight across Belfast Loch via VRP-Whitehead, the microlight reported that he was unfamiliar with the area and they followed an RT exchange to identify various reporting points [VRPs] on the map.

Belfast City ATC was concerned he had incoming traffic and requested that they expedite their crossing of Belfast Loch but Micro 2 pilot replied that his max speed is 80kt and he was eventually routed via VRP-Whitehead to VRP-Larne.

At no time had ATC requested identification or the location of the second ac in the stream included in the initial transit clearance request (Micro 1). He (the second and the reported ac) was about 1nm behind Micro 2 at take-off and decided to slow down to 60kt and initiate a LH rectangular holding pattern at VRP-Groomsport [the boundary of CAS 9.5nm ENE of the Airport and 5nm SE of the CL for RW22] pending clarification of his transit clearance.

His ac was equipped with a standard GPS and a NATS Aware GPS and was at all times cognisant of his position and was visual with the inbound traffic over 1.5nm away – the visibility being excellent. Belfast City ATC requested the other microlight (Micro 2) to turn E but there was no reply so ATC again requested the [other] ac to turn E and Micro 2 pilot reported that both his GPS and compass indicated that he was already heading E.

It was at that point that he suspected that ATC were looking at him [Micro 1] on their radar but were addressing the other microlight [2] who had already routed across the zone to the N.

He, the reported pilot, then stated on the RT *"Micro 2 C/S…. South East of your zone I suspect it is this aircraft you can see on your screen and not Micro 1 C/S…."*.

ATC Belfast City responded with "Micro 1 C/S…. turn immediately East" which he did, although at the time of instruction he was already turning W in the aforementioned LH rectangular holding pattern.

Belfast City ATC then issued a unique squawk code for the transponder and asked why the reported pilot had not turned immediately E when requested – the reality was that the first 2 requests were given to the wrong ac, after ac verification ATC confusion was confirmed.

He felt that he fully had complied with ATC directions and can only reiterate that at all times he was cognisant of position and visual with the inbound ac but considered it expedient just to apologise to ATC on the RT rather than have a debate on the RT.

It was subsequently explained to ATC that the reported pilot was the second microlight (Micro 1) of the original transit clearance request and that the other ac (Micro 2) was designated for RT with Belfast City, but since no recognition of his ac or verification of his position was requested by ATC, he had not followed the leading Microlight (Micro 2) across the zone and had remained clear to the SE but ATC responded by stating that they would be filing an Airprox.

He then routed E – N – W to rejoin the original lead ac N of VRP-Larne, reporting going en-route when requested.

He assessed the risk as being none.

ATSI reports that the Airprox occurred at 1045:50, 4nm NE of Belfast City Airport and within the Belfast City Control Zone, Class D airspace between a DHC-8-Q400 (DHC-8) inbound IFR and an A22 Foxbat Microlight (Micro 1) that was one of two Microlight ac (Micro 1 & Micro 2) believed to have visited Newtownards Airfield as part of the airfield's 50th anniversary celebration 'Fly in' held between 3rd and 5th June 2011.

The microlight pilots planned to route from Newtownards to Fair Head, situated on the N coast of Northern Ireland, across the Irish Sea via the Mull of Kintyre and Turnberry, then S to Rossall Field, which lies to the S of Morecambe Bay. Belfast City ATSU provided details of the guidance given to pilots by Newtownards Airfield, which stated:

'**North** – route Larne towards Whitehead VRP to cross Belfast Lough to remain East of Groomsport VRP. Transit clearance may be given at 1500ft alt or below due to inbound ILS traffic for RW22 at Belfast City. Ensure RT contact is established with Belfast City Approach 130.850 before reaching Larne.'

'All aircraft are recommended to contact Belfast Approach 130.850, if there are several aircraft in close formation nominate one aircraft to do the RT with all the relevant details.'

Newtownards is situated 6.5nm ESE of Belfast City and a direct track to Fair Head would cross the RW22 final approach at a range of 5.25nm.

CAA ATSI had access to RTF recordings together with controller and pilot written reports. Radar recordings were available from the Belfast City 10cm radar and the NATS (BEL) 23cm radar. None of the radar sources initially showed any primary or SSR return for either microlight during the period of the Airprox. The Belfast City Radar recordings did not show any primary returns of the microlights due to an incorrect configuration of the recording equipment during installation.

As a result of a local investigation by the radar and display manufacturers, the radar recording showing the primary radar returns was retrieved in early October and became available to CAA ATSI. This report has been updated to reflect the radar analysis of the data available.

METAR EGAC 061020Z 25008KT 200V290 9999 FEW024 SCT037 12/05 Q1006=

Belfast City ATSU reported that the duty instructor at Newtownards spoke to one of the microlight pilots prior to their departure, stressing the requirement to contact Belfast City ATC, with two suggested routeing options:

via Groomsport (6.5nm north-northeast of Newtownards) to Whitehead or

via the Belfast City overhead.

At 1037:14, the inbound DHC-8 was transferred to Belfast City Radar and the pilot reported descending to FL100 on heading 205° with information 'Hotel'. The Belfast controller instructed the DHC-8 to descend to an alt of 6000ft on QNH 1006. The DHC-8 was turned onto a heading of 300° and advised to expect vectoring for ILS RW22, number 3 in traffic with no delay; it was then instructed to stop the turn on a heading of 290°.

The Micro 1 pilot's report indicated that, 'It is agreed that Micro 2 departs first and will operate the R/T with Belfast to request transit clearance'.

At 1039:01, Micro 2 called, *"Belfast Micro 2 C/S".* The Belfast controller asked Micro 2 to standby and gave the DHC-8 further descent to 4000ft. Micro 2 pilot was then asked to pass message and advised, *"Micro 2 C/S is a flight of two microlights erm we're coasting out at er Fairhery erm Fair Head request transit through your zone please";* the controller asked Micro 2 to report destination and the pilot replied, *"Destination is Turnberry er sorry we're coasting in at Turnberry our final destination is erm Marn Farm".* The controller asked Micro 2 to standby and transmitted to two other ac establishing on the ILS for RW22.

At 1039:01, the radar recording shows the inbound DHC-8, 22.9nm NE of Belfast City, passing FL083 in the descent and also shows two primary contacts, 2nm apart to the E and SE respectively of Newtownards airfield.

[Note: From the data available, ATSI beleived that Micro 2 was the lead ac and was the more N'ly contact].

At 1040:42 the controller asked Micro 2, *"Micro 2 C/S sorry just confirm you're coasting in at Turnberry"* and the Micro 2 pilot reported, *"Yeah we're coasting in at Turnberry final destination is Rossall Farm sorry and er we have erm a flightplan would you be able to activate that please".* The controller responded, *"Micro 2 C/S I'm wh – can you give me a precise location on your destination not fam familiar with that";* Micro 2 pilot asked the controller to standby.

At 1040:31, the controller instructed the DHC-8, *"DHC-8 C/S descend to altitude two thousand feet when established on the localiser descend on the glidepath";* this was acknowledged by the pilot. The radar recording shows the DHC-8, 19.5nm NE of the airfield, with the two primary contacts, 7.5nm E of the airfield tracking NW and 2nm apart.

At 1040:47, the Micro 2 pilot confirmed the final destination as Rossall Field a private field 15nm NE of Blackpool. The controller replied, *"Micro 2 C/S if your coasting in at Turnberry and heading to Blackpool you shouldn't really*

be speaking to me if you contact er freecall Scottish Information on one one niner decimal eight seven five or you can contact Prestwick Approach one two niner decimal four five"; the pilot replied, *"Thank you I'd just though we'd erm er we'd give you you a call er transitting your zone to Fair point".*

At 1040:59, radar recording shows Micro 2 fade from radar at a position 2nm E of Micro 1 which is observed to continue tracking NW.

At 1042:20 the controller asked Micro 2, *"er just confirm you are at Turnberry going to Blackpool and wish to transit the Belfast City Zone"* and the Micro 2 pilot responded, *"er sorry erm I've erm I'll say again I've departed Newtownards and we are coasting out at erm Fair Head and er and request a transit of your zone."*

At 1042:23, radar recording shows a primary contact (Micro 1) has entered the Belfast City CTR CAS at a position 2nm NNW of Newtownards and 5nm E of Belfast City.

The controller issued a zone transit clearance, *"(Micro 2)C/S cleared to transit not above two thousand feet VFR QNH one zero zero six and is that you about two miles north of er Newtownards".* Micro 2 pilot confirmed the position and the controller requested a readback of the clearance which the pilot gave as, *"not above er two thousand feet one zero zero six".* At 1043:07, the controller asked Micro 2 pilot if he was familiar with Bangor [on the S coastline of Belfast Lough]; the pilot confirmed *"Yes"* and the controller responded, "*Micro 2 C/S route to hold there is inbound traffic for RW two two remain well east of final approach"* and the pilot replied, *"Routeing Bangor er remain well east thank you Micro 2 C/S".*

At 1044:00, Micro 1 pilot called Belfast Radar and the controller replied, *"Last station calling standby".* The controller then transmitted to Micro 2, *"Micro 2 C/S I think I have you just east of the field by about three miles I need you to turn eastbound please your heading straight to the final approach"* and the pilot replied with his callsign. Shortly after the controller again transmitted to Micro 2, *"Micro 2 C/S I need you to turn immediately eastbound."* The Micro 2 pilot responded, *"er to the east Micro 2 C/S"*.

At 1044:10, the radar recording shows a primary contact, 4nm ENE of the airfield tracking WNW (Micro 1).

At 1044:30, the controller advised the DHC-8 pilot, *"and DH8 C/S traffic information are two microlights believed to be just east of final approach at three miles ????turning eastbound not above two thousand feet VFR";* this was acknowledged by the pilot.

At 1044:45, the radar recording shows the DHC-8 , 6.5nm from touchdown passing 2000ft, with Micro 1 in its half past eleven position at a range of 3.7nm crossing from L to R. The DHC-8 was then transferred to TWR.

MATS Part 1, Section 2, Page 1, states that for IFR and VFR flights within Class D controlled airspace:

Aircraft requirements: ATC clearance before entry. Comply with ATC instructions.

Minimum Service by ATC unit: Pass traffic information to IFR flights on VFR flights and give traffic avoidance advice if requested.

The DHC-8 pilot did not report the microlights in sight and did not request avoiding action and the controller transferred the ac to TWR before the conflict was resolved.

At 1044:50, the controller advised, *"Micro 2 C/S I need you to turn eastbound you're showing nor-believed to be showing northbound now"* but the pilot reported a compass and GPS heading of E. Three sec later the radar recording shows Micro 1, 3.3nm NE of the airfield, making a right turn onto N and Micro 2 reappears, 4.8nm ENE of the airfield tracking E, which correlates with the pilot's earlier call indicating a compass and GPS heading of E.

At 1045:16, Micro 1 transmitted, *"Belfast City Micro 1 C/S I think that's us you have ???? northbound".* The controller responded, *"Micro 1 C/S pass your message and er can you leave controlled airspace please eastbound".* The pilot replied, "*We've just left Newtownards and wish to coast down to Fair Head and request transit transit across your airspace please".* The controller transmitted, *"Micro 1 C/S you're believed to be heading towards the final approach can you turn eastbound immediately*". Radar recording shows Micro 1 tracking northeast 2nm S of the DHC-8 .

AIRPROX REPORT No 2011053

At 1045:30, radar recording shows Micro 1 turning left onto a NW track, towards the DHC-8 .

At 1045:50, radar recording shows the two ac passing abeam. The DHC-8 is on a 4nm final indicating an alt of 1300ft, with Micro 1 in the DHC-8's 9 o'clock position at a range of 0.5nm. As the DHC-8 passes abeam, Micro 1 makes a L turn.

The report from the DHC-8 pilot indicated that the Micro 1 seemed to be taking avoiding action, passing behind. The DHC-8 pilot decided to delay the 35° flap setting in order to reduce the wake turbulence.

At 1046:25, the controller transmitted, *"Micro 1 C/S route eastbound immediately QNH one zero zero six"* and the Micro 1 pilot replied, *"Eastbound one zero zero six thank you".* The controller did not specify a direction of turn and radar recording shows Micro 1 turn L onto an E'ly track. (Micro 2 was shown 3nm N of Newtownards continuing to track E.)

In the subsequent transmissions the pilot of Micro 1 confirmed that the two ac had departed Newtownards together and thought that Micro 2 was obtaining the clearance for both ac. When the controller asked why, when Micro 2 was asked to leave the zone Ebound, Micro 1 had continued Nbound, Micro 1 pilot apologised and said that he had become disorientated.

At 1049:59, the Belfast City radar recording shows Micro 1, 8.25nm ENE of Belfast City airport tracking E.

At 1051:39, the NATS (BEL) radar source shows a 7000 squawk appear, on a bearing 082° from Belfast at a range of 9.6nm. This correlates with the track and bearing of the primary return shown on the Belast City radar; Mode S identified the ac callsign as that of Micro 1.

At 1052:08, the NATS (BEL) radar recording shows the SSR code of Micro 1 change to 4250 (a code allocated by Belfast City). The ac is observed to cross the coast and then turn to track N over the Irish Sea. The SSR code did not appear on the Belfast City radar recording.

The initial call from the microlight formation was not in the approved format and caused confusion and misunderstanding; CAP413, Chapter 3, Page 8, states:

'When instructed by the ATS Unit to 'Pass Your Message', the reply should contain the following information, whenever possible in the order specified:

Aircraft Callsign / Type

Departure Point and Destination

Present Position

Level

Additional details / Intention (e.g. Flight Rules, Next route point)

Micro 2 pilot called coasting out at Fair Head requesting transit through the zone. The pilot then confirmed destination as Turnberry and apologised stating that they were coasting in at Turnberry with final destination as Marn Farm.

After the initial misunderstanding, the controller issued a clearance to transit the zone and the pilot of Micro 2 confirmed his position was 2nm N of Newtownards Airfield. CAA ATSI considered that the controller, mistakenly believed that the single primary contact showing at the time the clearance was issued, represented the flight of two microlights operating in formation. The UK AIP page (4 Jun 09) ENR 1-1-4-11, states:

Civilian Formation Flights - ATC Procedures General

ATC will consider formations to be a single unit for separation purposes provided that:

The formation elements are contained within 1nm laterally and longitudinally, and at the same level. Within Class F and G Airspace and subject to ATC approval, these limits may be increased to 3 nm and/or up to 1000ft vertically.

The formation, although operating outside the parameters above, has NSF approval.

The formation leader is responsible for ensuring safe separation between ac comprising the formation.

In making initial contact with the ATC unit, the formation leader shall clearly state the number of ac in the formation.

Where a flight plan is required, the identification of the formation leader and the number of ac in the formation must be shown.

All ATC instructions and clearances will be addressed to the leader.

The contact displayed on radar was in fact Micro 1 and ATSI estimated that Micro 2 was 2nm further to the E (not showing on radar). Micro 1 pilot's written report indicated that the ac was equipped with SSR; however, neither ac displayed an SSR code.

The ATC clearance to transit controlled airspace did not specify a routeing but the controller subsequently instructed Micro 2 to hold at Bangor with information about the ILS traffic. Micro 2 acknowledged this instruction and reported *'routeing Bangor to remain well east'.* The controller had an expectation that both ac would route to hold at Bangor. MATS Part1, Section 3, Chapter 4, Page 1, Paragraph 3.3 states:

'Routeing instructions may be issued which will reduce or eliminate points of conflict with other flights, such as final approach tracks and circuit areas, with a consequent reduction in the workload associated with passing extensive traffic information. VRPs may be established to assist in the definition of frequently utilised routes and the avoidance of instrument approach and departure tracks. Where controllers require VFR ac to hold at a specific point pending further clearance, this is to be explicitly stated to the pilot.'

The Micro 1 pilot's report indicated that the two Microlights were not in close formation, but that Micro 1 pilot had expected Micro 2 to obtain the transit clearance on behalf of both ac. The pilot's report states: 'It was subsequently explained to ATC that Micro 1 was the second microlight ac of the original transit clearance and that Micro 2 was designated for R/T with Belfast City, but with no recognition or verfication of position sought from ATC, Micro 1 did not follow Micro 2 across the zone and had remained in the southeast area'.

The controller passed TI to the DHC-8 pilot, in the belief that the two microlights were 3nm E of the approach and turning onto an E'ly track. At that point the DHC-8 was transferred to the TWR. However the primary contact was not following the controller's instruction to turn E and continued N. CAA ATSI considered that it would have been appropriate for the controller to have retained the DHC-8 on frequency until the conflict was resolved and also in the event that avoiding action was considered necessary or was requested by the DHC-8 pilot.

Micro 1 attempted to contact ATC but the controller was not aware of the significance of the callsign, instructing the ac to standby. It was only when Micro 1 pilot identified himself as the conflicting ac and Micro 2 reappeared on the radar tracking E, that the controller recognised the situation and instructed Micro 1 to turn immediately onto E.

At 1051:39, Micro 1 was identified using Mode S SSR at a position that correlated with the last recorded position of the primary radar return of the aircraft involved in the Airprox (Micro 1). The SSR label appeared on the NATS (BEL) radar after the incident.

The microlight pilots did not follow the guidance specified in the UK AIP, or provided by Newtownards, for formation flights. Micro 2 pilot's initial call indicated a 'flight of two microlights', however, Micro 1 pilot's written report indicated that he had not followed Micro 2 in formation. The two ac were not operating in formation and Micro 1 entered the zone separately, without a clearance, and into confliction with the DHC-8 on the ILS.

The following were considered to be contributory factors:

The microlight pilots did not follow the routeing guidance provided by Newtownards and ATC did not specify a routeing in the transit clearance. However, Micro 2 was asked to hold at Bangor and the controller had an expectation that both ac would comply.

The pilot of Micro 2 did not update ATC that he was no longer in formation with Micro 1.

It is considered that, the controller mistakenly believed that the single primary contact seen on radar 2nm N of Newtownards was Micro 2, and the formation of two microlights. This proved to be incorrect.

It is considered that, the controller's early transfer of the DHC-8 to the TWR frequency, before the conflict had been resolved, precluded any form of avoiding action being given by radar controller or requested by the DHC-8 pilot. (The pilot could have requested such action from the TWR.)

The non-standard format of the RT phraseology used by the microlight pilots, delayed the issue of a clearance and led to a misunderstanding about their current position, i.e. coasting out on the northern coast of Ireland, or coasting in at the Scottish coast, when in fact they had just departed Newtownards.

Recommendations:

CAA ATSI recommends that the Belfast City ATSU review procedures and phraseology for the transit of formation VFR ac, with a view to obtaining the full details of the ac concerned, with specific mention of the routeing and term 'formation' as part of the clearance provided.

CAA ATSI recommends that the ATSU include this scenario in their unusual emergency (TRUCE) training programme, with elements covering, ac not identified, not displayed on radar, lost ac, tactical and avoiding action considerations.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar photographs and recordings, reports from the air traffic controller involved and reports from the appropriate ATC authority.

Members were informed that the terminology Microlight (Micro) 1 and Micro 2 did not reflect their positions in the flight; it was clear that Micro 2 was, in effect, the flight leader as he got airborne first and it was always intended that he should conduct the RT on behalf of both ac. There was apparently no intention that the ac should fly as a close formation as such, rather that Micro 1 would follow Micro 2. That said, Micro 2's description of the aircraft as a "flight of 2" may have lead the controller to believe that the ac were in a much closer trail than was the case and his misunderstanding would have been more difficult to resolve due to the intermittent radar returns from the microlights in the absence of request to squawk. Furthermore, the Microlights did not remain within 1nm of each other (as required by the UK AIP – see Part A), and therefore did not meet the requirements of a formation (this was exacerbated by Micro 1 slowing down to 60kt).

The Board was also informed by the Secretariat that both ac could be described as being red (as per the DHC-8 pilot's report).

Although in some ways a straightforward encounter with little risk attached, the Board found it difficult to analyse with any degree of certainty, due to apparently conflicting and incomplete information. The radar photograph timed at 1045:42 (circulated to Members) showed clearly that one of the two Microlights entered the CTR and flew to point just off the coast, ½nm E of the final approach to RW22, just as the DHC-8 on the ILS was passing; that being the case Members agreed that there was no risk of collision.

It was much less clear which Microlight was involved and whether or not that specific ac had been cleared to enter the CTR.

Although a confirmatory report from Newtownards was not available, the Board accepted that Micro 2 got airborne first and its pilot had intended to inform Belfast of the position of both ac, their intentions and request a clearance to fly through the CTR. It was clear (from the transcript) that the flight had intended to transit the CTR despite the

advisory routeing (outside the CTR) given by the 'fly-in' organisers. Members agreed, however, that despite any other factors such as 'shortest sea transit' it is wise not to fly close to the boundaries of CAS or through the final approach track of busy airfields as this can (as this case demonstrated) present controllers with difficult and challenging scenarios.

When conducting unusual or unfamiliar flights it is essential that pilots inform ATC clearly and unambiguously of their ac identity, position and intentions - 'who are you, where are you and what you want to do' otherwise the controller will not be aware of this essential information, will not therefore be in a position to assist/clear you and might formulate an incorrect picture. In this case, although Micro 2 clearly stated that they were a "flight of two" and requested "transit through your zone please" the other essential information i.e. position and intentions was missing, so the controller did not have the 'big picture' and became (unnecessarily) preoccupied with determining the missing bits of information by a prolonged series of (incomplete) questions and answers in a very busy period. Despite the call of "flight of two" the clearance passed by the controller (at 1042:50 on the transcript) appeared to be for one ac only (Micro 2 CS) and did not specify a routeing. When it became apparent to the Controller that this (open ended) clearance might lead to the (unidentified) Micro 2 conflicting with the inbound traffic, he changed it at 1043:20 to "route to Bangor" which is on the E edge of the CTR, rather than Groomsport VRP which is in a similar position but outside the CTR. This was in effect an amendment to the original clearance and although not given strictly in accordance with MATS Pt 1 Sect 1 Chapter 4 Para 7, its intention was understood and read back by Micro 2 pilot and it appeared to Members that he complied with it fully. In mitigation, the controller's primary responsibility at the time was to sequence the inbound traffic; he discharged this responsibility and Members considered that he had been too busy to give the Microlight flight as much attention as he would have liked. Further, it was suggested that the Controller had tried to make the incomplete information he had fit his mistaken mental air picture.

While Micro 2 held to the S of Bangor, Micro 1 had apparently misunderstood the original clearance as being for the both members of the flight, had either not heard or assimilated the amendment to the clearance, and proceeded to enter the CTR (radar photograph at 1042:23) and flown on the intended track towards the coast and the final approach; however, on seeing the inbound ac he had orbited just to the E of the approach before departing to the E as instructed by ATC.

Although observing the (formation) flight planning had been less than ideal, Members considered that this incident had resulted primarily from poor RT in a busy situation, mainly by Micro (2) pilot. Had he been clear about the composition of the flight, their location and intentions Members thought that the Controller would have been much better placed to either integrate them with his traffic plan or suggest a precise routeing to keep them clear of the inbounds.

It was noted that the Microlights had correctly filed a flight plan but Controller Members thought it unlikely that the controller involved would have seen it and, in the absence of a telephone call to ATC to discuss the Microlights' intentions, he would not have had any pre-warning of them.

Pilot Members agreed that the DHC-8 pilot had received good TI leading to him seeing the Microlight. He had displayed good awareness of the situation and, although prepared to do so, had decided that a go-around was not required as the Microlight, although in an undesirable position, was not in conflict and even if it did not change track, would pass well behind.

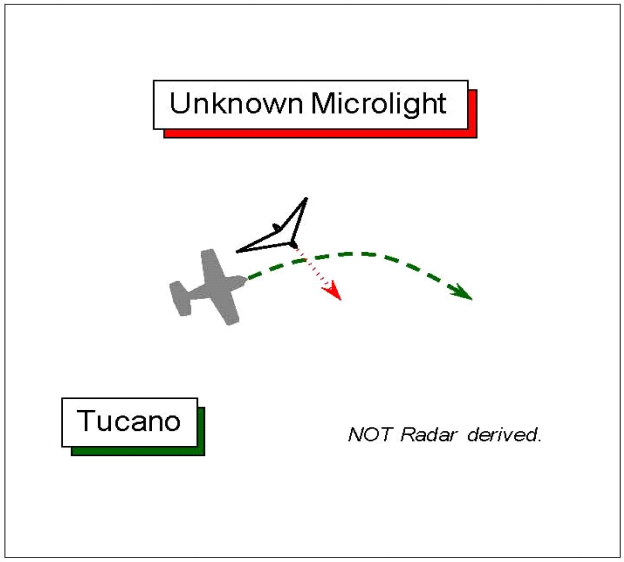
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Microlight (1) pilot did not follow the amended clearance and flew into conflict with the DHC-8 on the final approach.

Degree of Risk: C.

AIRPROX REPORT NO 2011054

Date/Time:	6 Jun 2011 1207Z	
Position:	5406N 00105W (7.5nm E of Linton-on-Ouse)	
Airspace:	Vale of York AIAA (Class: G)	
	Reporting Ac	*Reported Ac*
Type:	Tucano T Mk1	Microlight
Operator:	HQ Air (Trg)	Civ Club
Alt/FL:	2500ft	NR
	RPS (1002mb)	NR
Weather:	VMC CLBC	VMC CLOC
Visibility:	40km	15nm
Reported Separation:		
	200ft V/nil H	Not seen
Recorded Separation:		
	Not recorded	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE SOLO STUDENT TUCANO PILOT's AUTHORISING OFFICER reports his student was flying a solo VFR NAVEX and was in transit to his low-level entry point clear beneath SCT cloud at 3500ft. He was not in receipt of an ATS, having terminated the BS with Linton and was now listening out on the LFS frequency of 278·00MHz. The LFS conspicuity squawk of A7001 was selected with Mode C. TCAS I is fitted, Mode S is not.

Flying level at 2500ft BARNSLEY RPS (1002mb), some 6nm E of Linton-on-Ouse heading 070° at 240kt, whilst conducting his pre-low-level checks he flew into close proximity with up to 6 micro-light (ML) ac. Initial avoiding action against these ac, brought him into further conflict with an additional ac – a white high-wing ML with an 'open structure'. He gained visual contact with this ML at a late stage and it was first seen ½nm away and 50ft above his aeroplane, flying straight and level, crossing from L-R. To avoid the single ML he executed a rapid descent and it passed 200ft directly above his aeroplane with a 'high' Risk of collision.

Before the Airprox occurred – up until about 30secs before the initial avoiding action was taken - he had been under a BS, but no information about these contacts had been passed to him under this service. No TCAS TA's were indicated. No NOTAMs were in force highlighting multiple ac flying in close proximity. The Tucano is coloured black with yellow stripes; the 3 strobes, nav lights and 2 landing lights were all on.

THE LATCC (MIL) RADAR ANALYSIS CELL (RAC) reports that a total of 12 ML sites were contacted in the vicinity of Linton-on-Ouse during tracing action. Each ML site replied promptly, all in a helpful and cooperative manner before the location of the specific ML club was ascertained.

THE MICROLIGHT CLUB reports that 7 flex-wing ML ac departed from Husthwaite ML Site over a 20min period bound for Cromer in VMC. None of the 7 pilots airborne saw the Tucano flown by the solo student pilot or any traffic in the area of the reported Airprox, 6nm E of Linton-on-Ouse.

THE LINTON-ON-OUSE ATC SUPERVISOR (SUP) reports that the Tucano pilot departed Linton-on-Ouse visually under a BS and went 'en-route' once clear of the MATZ. ATC had been aware of a number of primary contacts that had crossed the approach lane to RW21RHC on a SE track. The DEPARTURES (DEPS) controller had not called these contacts to the Tucano pilot as they were not on a 'threatening' heading when he called going enroute.

Subsequently, the Tucano pilot free-called APPROACH to request a TS and stated that a close quarters encounter with a group of ML ac had occurred. The pilot requested to speak with the Duty Aircrew Officer on Stud 10 to report

the incident and then decided to carry on with the sortie and switched to his en-route frequency. The pilot did not indicate at the time that an Airprox would be filed but in a subsequent telephone call later confirmed that he would.

The Linton-on-Ouse ATC Unit Safety Management Officer (USMO) was informed, but the incident had occurred whilst the Tucano was operating autonomously.

SATCO LINTON-ON-OUSE comments that a glider vs Tucano mid-air collision is deemed their No1 Risk at Linton; everyone has been working towards mitigating this risk to as low as reasonably practicable. Every effort is being made through contact with the various gliding and light ac groups in this area. The controller correctly only gave information to the Tucano pilot that was relevant until the time of his departure from the frequency. The controller could not be expected to anticipate any changes of course by both the Tucano pilot and the MLs.

HQ 1GP BM SM reports that this Airprox occurred between a Tucano operating VFR on the low-level common frequency and one of a group of flex-wing MLs operating VFR.

Prior to the Airprox, the Tucano had been in receipt of a BS from Linton DEPS whilst departing to the E, VFR, from Linton's RW21RHC. At 1207:16, the Tucano pilot reported going en-route, which was acknowledged at 1207:19. The SUP states that the Tucano went en-route at the edge of the MATZ, which accords with the radar recording that shows the Tucano exactly 5nm E of Linton-on-Ouse.

Throughout the Airprox sequence, the MLs are not shown on the radar recording. However, the SUP reports that 'ATC were already aware of a number of primary contacts that had crossed the approach lane to RW21RHC on a south-easterly track'. Moreover, the ATSU's investigation found that APP had 'previously called the primary only contacts to another ac who they would affect before they went en-route but due to the heading [of the Tucano] they were not a risk at the time they went en-route. Subsequent to departure from the freq [the Tucano] turned towards the contacts.' DEPS has subsequently stated that he believed that as the Tucano pilot declared his intention to go en-route, he was trying to locate a phone number for Humberside APP in order to handover another flight being provided with a TS. APP has also stated subsequently that after the Tucano went en-route, he questioned DEPS as to whether he had called the primary radar contacts, to which DEPS replied that he believed that they were not a factor.

At 1207:51, the Tucano pilot called APP, which went un-answered. At this point the Tucano is shown 7·5nm E of Linton-on-Ouse and has started a slow turn to the R. At 1208:08 the Tucano student pilot called again about 8.5nm E, reporting that "*they've come across at least half a dozen paragliders on the 0-9-0, range 9 miles, level about….2 thousand feet*." APP replied that they had "*multiple primary contacts there*." At this point, the Tucano has manoeuvred approximately ½nm S of the track that it was following earlier at 1207:51.

The student's authorising officer reports that his student's 'initial avoiding action against visible ac brought him into further conflict with an additional ac. On gaining visual contact with this subsequent ac at a late stage, avoiding action was taken.'

It is this subsequent ac that is the subject of the Airprox report, with the student pilot reporting his first sighting at a range of 0·5nm and 50ft vertical separation. Significantly, none of the ML pilots report seeing the Tucano.

Although not shown on the radar recording, it is likely that the CPA occurred shortly before 1207:51, when the Tucano first called APP. Given the proximity of the CPA to the point where the Tucano switched to the LFS frequency, the fact that DEPS did not pass a warning about the MLs to the Tucano requires closer examination.

The radar replay appears to show that the Tucano maintained its track after leaving DEPS' freq at 1207:16 until 1207:51, the approximate time of the CPA. Further investigation with the ATSU has found that the controllers' perception that the Tucano had 'turned towards the contacts' came about after the initial report was filed. Whilst this turn is not apparent on the radar replay, it may have been apparent on the unit's Watchman SRE display, or it may have been perceived as a result of the representation of the primary only contacts relative to the Tucano. Furthermore, how the primary only contacts were displayed to the controller on the Watchman SRE display and whether they were intermittent or continuous [which is not reflected by the LATCC (Mil) recording] will have had a bearing on DEPS decision making process. Moreover, it is clear from DEPS response to APP about them considering that the primary contacts were not a factor, that DEPS was aware of the primary contacts. It would also be reasonable to suggest that DEPS' attention was distracted while 'heads-in' looking for Humberside's

phone number for what was a higher priority task: provision of a surveillance based ATS to the other ac. Notwithstanding the proximity of the CPA to the point where the Tucano switched en-route, without further evidence it would be irresponsible to create a hindsight-biased argument suggesting that it might have been appropriate for DEPS to pass TI to the Tucano.

Whether in receipt of a BS or having switched en-route, the Tucano pilot's responsibilities to 'see and avoid' other ac whilst operating VFR remained unchanged. Despite the relatively small size and low speed of the MLs, combined with the solo student Tucano pilot's workload as he conducted pre-low level checks, he maintained an effective scan allowing him to visually acquire the MLs and to take appropriate action to remain clear. Furthermore, the student pilot maintained his visual scan, which enabled him to sight the subject ML, albeit late and take further avoiding action.

HQ AIR (TRG) comments that the student pilot took prompt and positive action on sighting the MLs, which can be difficult to see at the best of times. It is not clear that the adoption of a BS would have resulted in TI as the controller did not consider the primary-only contacts to be a factor. The risk of a mid-air collision is a constant hazard in any flying operation, particularly in Class G airspace with ac that are not transponding. RAF Linton rightly consider the risk of collision with a glider, or indeed a ML, to be high and have taken all reasonable measures to reduce the risk. Ultimately, a sound lookout provides the last but also the main line of defence. It is disappointing that no report was generated by the ML pilot involved, who must certainly have been aware of this incident and so is possibly not any of those spoken to by the investigator.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the ATC Unit involved and reports from the appropriate ATC and operating authorities.

It was evident from the SUP's report that Linton-on-Ouse ATC was aware of the presence of a number of contacts displayed on their ASR transiting through the approach to RW21 and to the E of the MATZ. These contacts might well have been the MLs seen by the student Tucano pilot and it was unfortunate that none of the ML pilot's had called to request an ATS or advise of their transit. The Board was most surprised that none of the pilots from the seven MLs saw the Tucano, and the absence of a report from the subject ML pilot had led to an incomplete account of this Airprox. Whilst the ML pilots were flying quite legitimately in Class G airspace, if they were able to communicate on VHF RT, a call to Linton ZONE would have been sound airmanship and might well have prompted a useful warning to the Tucano pilot that would have assisted his SA.

It was not surprising that the small MLs were not shown at all on the available LATCC (Mil) radar recordings and the HQ 1GP report had emphasised that it was not possible to determine what was actually displayed to the DEPS controller at the time as, in general, military terminal ATSUs do not currently have the facility to record their radar data. The HQ 1GP report also suggests that without further evidence it would be irresponsible to create a hindsight-biased argument. However, a pilot Member disagreed with this view and advocated strongly that the Airprox process was based entirely on hindsight and that there were lessons to be learned for the benefit of the aviation community as a whole. Here, it was reported that DEPS had not considered it appropriate to pass a general warning to the Tucano pilot under the BS provided before the pilot switched 'en-route' at the MATZ boundary, but it was only moments later that the pilot encountered the group of MLs. Whereas DEPS might well have been engaged on other tasks, there was a fine balance to be struck over service priorities. It might be that passing a warning to the Tucano pilot could have been more appropriate at that stage and it was evident that APP had felt sufficiently concerned about it to query this with his colleague. Whilst there was no compunction upon the controller to pass TI under a BS, controller Members agreed that if another contact had been plainly displayed to the controller in such a position as to pose a hazard to traffic under service then 'best practice' would be to warn the pilot. This was the MAA's view and it seemed that this Airprox was a good example of where just such a warning would have provided a helpful 'heads-up' to the student pilot.

Even without the benefit of this warning from ATC, the Tucano pilot's lookout scan had later detected the group of MLs, enabling him to steer clear before he encountered the reported ML. However, his authorizing officer's account states that he had seen the subject ML at a late stage ½nm away and 50ft above his aeroplane. Nevertheless, pilot Members noted the Tucano pilot had seen it in sufficient time to assess the situation and enter a rapid descent, passing 200ft clear below it, and thereby resolve the conflict. Therefore, the Board agreed that

this Airprox had resulted from a conflict in Class G airspace resolved by the Tucano pilot. Moreover, the Tucano pilot's robust avoiding action had, in the Board's view, effectively removed any Risk of a collision.

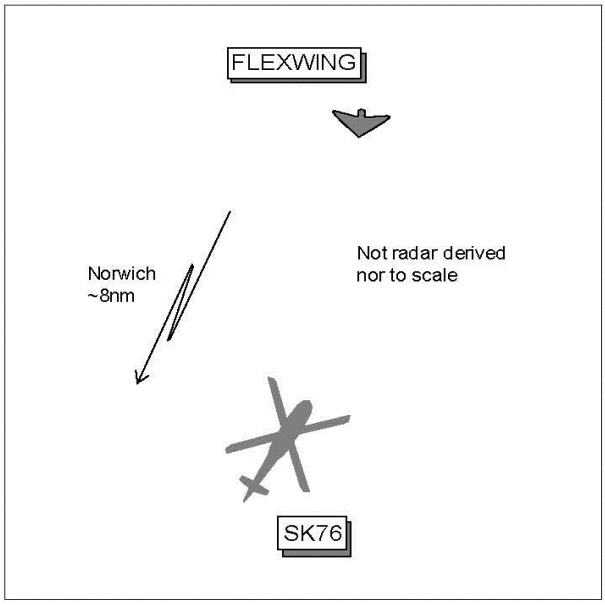
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Conflict in Class G airspace resolved by the Tucano pilot.

Degree of Risk: C.

AIRPROX REPORT NO 2011055

Date/Time:	10 Jun 2011 1453Z	
Position:	5248N 00121E (7·5nm NNE Norwich - elev 117ft)	
Airspace:	LFIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	SK76	Untraced Flexwing M/Light
Operator:	CAT	NK
Alt/FL:	2000ft (RPS 1010mb)	(NK)
Weather:	VMC CLBC	NK
Visibility:	>10km	NK
Reported Separation:	100ft V/200m H	
Recorded Separation:	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE SK76 PILOT reports outbound from Norwich IFR to an offshore platform and in receipt of a TS from Norwich Radar on 119·35MHz, squawking 0245 with Modes S and C; TCAS was not fitted. The visibility was >10km flying 1000ft below cloud in VMC and the helicopter was coloured red, white and blue with HISL, nav and anti-collision lights all switched on. About 3nm W of Bacton heading 036° at 2000ft Yarmouth RPS 1010mb and 140kt they were alerted to a, "contact 12 o'clock 1nm no height information". The traffic was sighted about 1nm ahead at the same level on a converging track from the N. They took avoiding action by executing a hard R turn downward. The traffic, a silver/grey coloured Flexwing M/Light passed about 100ft above and 200m clear to their L before passing about 0·5nm behind without taking any avoiding action and he assessed the risk as high.

THE SK76 COMPANY FLIGHT SAFETY OFFICER comments that, whilst not relevant to this Airprox (M/Light not fitted with a transponder) the Board may wish to be aware that with the completion in May of the EASA STC for the fitment of TCAS II to their company SK92A fleet, work is starting on a similar STC for the SK76 fleet.

RAC MIL reports that despite extensive tracing action the identity of the M/Light remains unknown. Seven Flexwing M/Lights landed at Cromer Airfield between 1354 – 1427Z and no other M/Lights landed after that time.

THE NORWICH RADAR CONTROLLER reports controlling 4 ac providing DS, TS and BS. The SK76 carried out a standard RW27 departure onto an outbound track of 035° and after being transferred to his frequency the flight was identified, placed on a TS and instructed to adjust to altitude 2000ft Yarmouth RPS 1010mb. Having noticed a pop-up intermittent primary only contact close the SK76's intended track TI was passed stating it was in its 12 o'clock range 1nm crossing L to R no height information. The pilot stated that he was looking and later called visual and that the ac was heading SW. He requested the height of the unknown traffic and was told it was close to the helicopter's altitude. No discernable avoiding action by the pilot of the SK76 was noticed on radar and a short time later the pilot stated that he wished to file an Airprox. The other ac was described as a Flexwing M/Light and it was observed for some time after the incident, appearing to disappear from radar O/H Cromer/Northrepps airfield.

ATSI reports that the Airprox occurred at 1453:20, within Class G airspace and 7·5nm to the NNE of Norwich Airport.

The Airprox was reported by the pilot of an SK76C operating IFR, en-route from Norwich Airport to the 'Loggs'-Offshore Platform, in receipt of a TS.

The other ac was reported as a Flexwing M/Light, which was observed by Norwich radar until the ac faded from radar in the vicinity of Northrepps Aerodrome, which is situated 13nm to the N of Norwich Airport.

The Norwich controller was operating as the Approach Radar Controller, with 4 ac on frequency. The workload was considered as medium and all equipment was reported as serviceable.

CAA ATSI had access to RT and NATS radar recordings, together with written reports from the Norwich Radar controller and the SK76 pilot. The Flexwing M/Light was untraced and did not show on the radar recording.

METAR EGSH 101450Z 19009KT 140V240 9999 FEW028 15/05 Q1013 NOSIG=

The SK76 helicopter departed from Norwich at 1448:00. At 1450:32, the SK76 flight contacted Norwich Radar and reported passing 1500ft on departure. The controller replied*, "(SK76 c/s) good afternoon identified Traffic Service climb to altitude two thousand feet on the Yarmouth one zero one zero."* This was acknowledged corrrectly by the SK76 pilot.

At 1453:02, the radar controller advised, *"(SK76 c/s) intermittent contact at twelve o'clock one mile left right slow moving no height."* The radar recording shows the SK76, 7·2nm NNE of Norwich Airport indicating FL021. The M/Light is not shown on the radar recording. The SK76 pilot replied, *"....looking"* and, *"(SK76 c/s) visual one microlight."* The Radar controller then asked, *"Roger thanks is he below you."* The pilot reported, *"er he's just about level (S76 c/s) and heading southwest."*

At 1453:26, radar recording shows the SK76, indicating FL020 and then at 1453:46, shows the SK76 make a R turn of about 5°.

Shortly afterwards the SK76 pilot reported the incident as an Airmiss [Airprox] and described the other aircraft as a Flexwing M/Light.

At 1455:26, the SK76 flight was transferred to Anglia Radar on 125·275MHz.

The SK76 flight was in receipt of a TS. The Radar controller observed pop up traffic, close to the track of the SK76 and passed TI. The Manual of Air Traffic Services (MATS) Part 1, Section 1, Chapter 11, Page 5, paragraph 4.1.1 and 4.5.1, states:

'A Traffic Service is a surveillance based ATS, where in addition to the provisions of a Basic Service, the controller provides specific surveillance derived traffic information to assist the pilot in avoiding other traffic. Controllers may provide headings and/or levels for the purposes of positioning and/or sequencing; however, the controller is not required to achieve deconfliction minima, and the avoidance of other traffic is ultimately the pilot's responsibility.

The controller shall pass traffic information on relevant traffic, and shall update the traffic information if it continues to constitute a definite hazard, or if requested by the pilot. However, high controller workload and RTF loading may reduce the ability of the controller to pass traffic information, and the timeliness of such information.'

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the SK76 pilot, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC authorities.

Members were disappointed that the Flexwing M/Light could not be traced which left them with only the reporting pilot's viewpoint on the incident. Since the Airprox occurred in Class G airspace, there was equal onus on both pilots to maintain separation from other ac through see and avoid. The SK76 crew had supplemented their lookout with a TS from Norwich ATSU and the controller had done well in quickly passing TI when the pop-up contact from the M/Light appeared on radar. This alerted the SK76 crew to the M/Light's presence and enabled them to see the conflicting traffic almost immediately. It is not known if the M/Light pilot saw the helicopter, although the SK76 crew reported that the M/Light was not seen to take any avoiding action as they passed; however, the SK76 crew took prompt and robust avoiding action which quickly resolved the conflict. On the limited information available, the Board elected to classify this incident as a conflict in Class G airspace where the SK76 crew's actions had effectively removed any risk of collision.

AIRPROX REPORT No 2011055

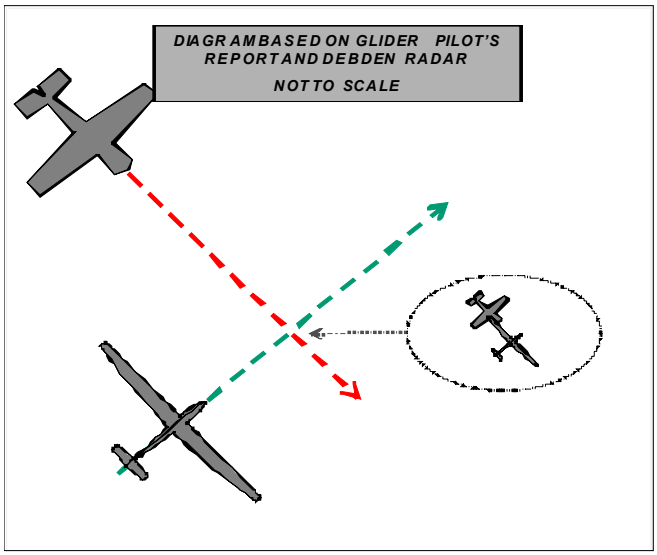
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict with an untraced M/Light in Class G airspace.

Degree of Risk: C.

AIRPROX REPORT NO 2011056

Date/Time:	11 June 2011 1258Z (Saturday)	
Position:	5215N 00057W	(7nm SW Sywell)
Airspace:	London FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Discus Glider	T6 Harvard
Operator:	Civ Club	Civ Trg
Alt/FL:	4300ft	NK
	(QNH 1007mb)	(QNH)
Weather:	VMC CLBC	VMC CLBC
Visibility:	20km	>10km
Reported Separation:		
	20ft V/0m H	Not Seen
Recorded Separation:		
	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE DISCUS 15M GLIDER PILOT reports soaring at 70kt in a white single-seat glider with orange hi-visibility flashes on the wings and fin. He was 7nm SW of Sywell and listening out on a gliding common frequency when he had a close encounter at 4300ft (QNH) with a single-engine GA ac, believed to be low wing or mid-wing configuration, mostly white with some blue and possibly a yellow flash [actually silver with a yellow band]; the registration was not seen. He was not equipped with SSR or TCAS; FLARM was fitted and serviceable but did not indicate any contacts.

While heading 050°, in the cruise between thermals, the other ac appeared from behind and below his L wing tip and passed overhead with no more than 20ft clearance. He was aware only of a very sudden movement in his peripheral vision, a very rapid expansion of the size of the ac and a loud engine noise with Doppler Effect; from first sighting to the ac passing overhead was 1sec or less. He instinctively pushed the stick forward but the other ac had already passed overhead before his glider responded. He was unable to see the direction taken by the ac after the Airprox as he was a little disoriented. After a few minutes consideration he decided to continue with his planned flight which was a cross-country task from Leighton Buzzard/Moreton-in-Marsh/Corby South/Grafham Water/Newport Pagnell/Dunstable.

He assessed the risk as being high and reported the incident to the CFI on landing.

There was a NOTAM in force for aerobatics at Sywell but he was well outside the promulgated area.

THE T6 HARVARD 4 PILOT reports that he submitted a report in response to an Airprox filed against him. He was flying local training flights (one of eight that day) from Sywell, in receipt of a BS from them, in a silver ac with a yellow band but with SSR switched off and no lights fitted; at the time he was in the vicinity of the reported position.

On the day of the incident he saw numerous gliders but none that he considered close enough to generate an Airprox; he suspects, however, that the encounter might have been with one of these. There was one encounter with a white glider, possibly with red markings, which was closer than the rest, however, he had the ac continuously in sight as he crossed in front of it about ½nm away and he did not consider there was a risk of collision.

UKAB Note (1): There are several primary only contacts in the area of the incident; at 1258:44 two primary only contacts, almost certainly the Harvard and the glider, (from radar tracking and Datalogger information) can be seen 0.3nm apart in the reported position; since the glider disappeared from radar as the Harvard continued towards its last seen position the actual CPA cannot be measured. It is assessed that the CPA was most likely on the radar sweep (8 sec) after the glider disappeared from radar.

AIRPROX REPORT No 2011056

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac and radar recordings.

The Board agreed that this was a straightforward but serious incident. The Gliding Member noted that the glider pilot was aware of the increased activity at Sywell and sensibly avoided the immediate area; due to the nature of the flight however, the Harvard was slightly further away from the field and outside the NOTAMed area. Members accepted that due to the number of flights he flew on that day, the Harvard pilot would not have been able to recall precise details of each flight, critically the ac alt at the incident time [the glider was at 4154ft datalogger]. Although the radar picture was open to interpretation, bearing in mind the vivid description, the diagram and the Datalogger information provided by the glider pilot, Members were satisfied that the geometry of the incident was as portrayed in the diagram above. However, with no alt information regarding the Harvard, Members could not verify the glider pilot's estimate of 20ft. Further, again based solely on the glider pilot's report, Members agreed that the vertical separation had been small and his sighting had been too late for his avoidance to have been effective. Although there was no radar evidence to substantiate the theory, Members though that the ac might have been closing on a line of constant bearing or that the Harvard might have been closing from the 8 or 9 o'clock and its head-on aspect would make it hard for the glider pilot to see.

Members also suggested that the glider might have been slightly below the Harvard and therefore obscured to the pilot by its large nose.

Whatever the reason, the ac had come very close to one another, neither pilot had seen the opposing ac in time to take effective avoiding action, despite the glider pilot's last second and instinctive bunt, and the separation had been by good fortune. Since there was no corroborating information, the Board had only the glider pilot's vivid description and estimate of 20ft to inform their decision; although Members agreed that the separation would probably have been slightly larger, they also agreed that there had been an actual risk of collision.

PART C: ASSESSMENT OF CAUSE AND RISK

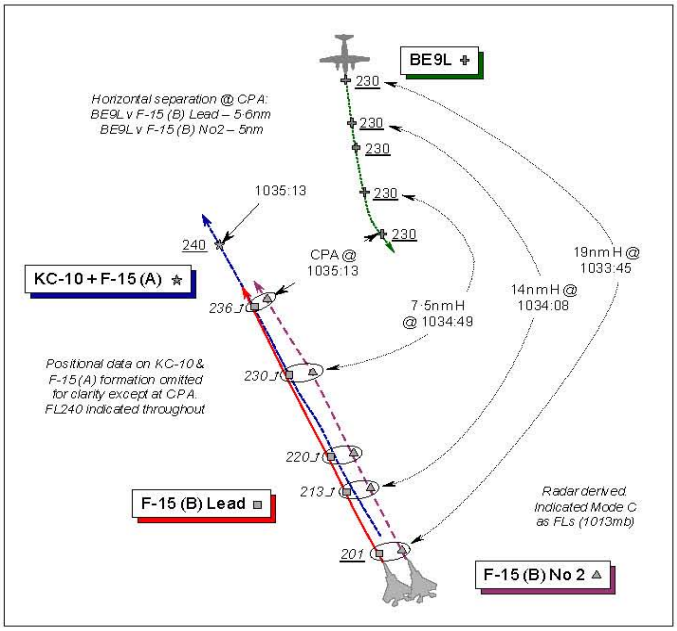
Cause: A non-sighting by the Harvard pilot and effectively a non-sighting by the Discus pilot.

Degree of Risk: A.

AIRPROX REPORT NO 2011057

Date/Time: 4 Jun 2011 1035Z (Saturday)
Position: 5545N 00213W (10nm S of ST ABBS VOR)
Airspace: Scottish FIR (Class: C)

	Reporting Ac	*Reported Ac*
Type:	BE9L	F-15E x2
Operator:	Civ Exec	Foreign Mil
Alt/FL:	FL230	FL210↑
Weather:	VMC CLAC	NR
Visibility:	50km	NR
Reported Separation:	1000ft V/5nm H	NR
Recorded Separation:	BE9L v F-15 (B) Lead: 600ft V/5·6nm H BE9L v F-15 (B) No2: N/K V/5nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE BEECH BE90L (BE9L) PILOT reports he was in transit from Wick to Oxford/Kidlington IFR and in receipt of a RCS from Scottish CONTROL. The assigned squawk was selected; Mode S and TCAS are fitted. The ac is coloured silver and blue; the HISLs were on.

Approaching a position 50nm S of Wick, heading 175° on track for TILNI at 270kt, maintaining a level cruise at FL230, the controller passed TI about a tanker and escort, advising that they were 1000ft below his level and co-ordinated against his ac. About 1min later he became visual with the grey KC-10 tanker and military fast-jets 5nm away; ATC then called 'avoiding action, turn left immediately 50°', with which he complied. The controller advised that 2 military jets had climbed and were levelling at FL232. No TCAS RA was received. Subsequently, he was recleared direct to TILNI. He assessed the Risk as 'low'.

THE LEADER OF F-15E (B) FLIGHT [F-15 (B)] provided a narrative stating he was the lead pilot of a flight of 2 F-15E ac supporting the deployment of a formation of 6 F-15Es (F-15 (A) formation) to Pacific Air Command (PACOM). The KC-10 tanker launched from Mildenhall for the transatlantic flight plan and his F-15 (B) flight launched at the same time from Lakenheath with F-15 (A) formation. They all proceeded N on the notified routeing as they joined. The KC-10, F-15 (A) formation and his F-15 (B) flight were all MARSA [Military Accepts Responsibility for Separation of Aircraft]. His two-ship F-15 (B) flight was 2nm behind the 6-ship F-15 (A) formation as the latter flew up to and joined with the tanker for refuelling operations. The KC-10 crew worked many of the radio communications for the package as they were the lead ac. At no time did F-15 (B) flight ever fly above the levels the formation had been cleared to; the KC-10 being higher than F-15 (A) formation, which was higher than his F-15 (B) flight that was trailing the formation.

Unaware of flying through any altitude/level restrictions provided by ATC, their flight path was cleared visually and with their onboard radar, deconflicting from F-15 (A) formation with whom they were visual. They contacted all ATC agencies in sequence with the KC-10 and F-15 (A) formation, abiding by all ATC instructions as they understood them. He had asked the other flight members and no one recalls hearing any instructions or deconfliction warnings provided by ATC for a level-off at FL210. The only issue that he was aware of that caused discussion with ATC was when the No5 of F-15 (A) formation had to return to Lakenheath because of an ac malfunction. The pilot of No5 turned onto a reverse routeing as he contacted ATC for a separate clearance as a single ship. At this point, ATC issued some instructions regarding other traffic in the area.

AIRPROX REPORT No 2011057

SCOTTISH AREA CENTRE PRESTWICK TAY SECTOR CONTROLLER (TAY SC) reports that the BE9L crew had been warned about military traffic that had been co-ordinated against him that would pass by in 5 min. The pilot had reported visual contact with multiple ac before the incident. He had initiated co-ordination with ScATCC (Mil) as the BE9L was inside CAS but 'off-route' under a RCS. The initial co-ordination agreement was against military traffic at FL240, but then a further request from ScATCC (Mil) was made for co-ordination against F-15 (B) flight. As the agreement was getting complicated he agreed that the BE9L would maintain FL230 and that ScATCC (Mil) could take 1000ft separation on Mode C, above or below the BE9L with F-15 (B) flight, until the subject ac had passed.

A handover of the TAY Sector had commenced just before the incident and it was the relief controller that noticed that F-15 (B) flight had climbed into conflict with the BE9L.

Because of the close proximity of the military formation it was difficult to read the SSR data block level information. The BE9L crew was given a 'standard' avoiding action turn to the L until all the ac had passed.

THE ScATCC (MIL) CONTROLLER reports he was the ATCO-on-watch, working 7 separate units consisting of a tanker and chicks proceeding northbound on a Coronet East task, a formation of 3 F-15s in the Vale of York [F-15 (C) formation], as well several civil ac. The lead Coronet ac was a KC-10 with F-15 (A) formation followed by 2 further F-15 ac – F-15 (B) flight – as a separate element in a 10nm trail attempting to join. Passing Newcastle, the KC-10 and F-15 (A) formation were level at FL240 with the trailing F-15 (B) flight level at FL200. TAY SC was working the BE9L level at FL230 and co-ordination was agreed that he could maintain 1000ft vertical separation with his Coronet formation ac on Mode C, above or below TAY's BE9L. F-15 (B) flight leader then requested a climb to FL240 to rendezvous with the Coronet formation; he was instructed to climb to FL210 initially, to maintain the co-ordination agreement against the civil BE9L. The controller then received complicated multiple requests from several speaking units [elements of F-15 (C) formation], whereupon he observed F-15 (B) flight had climbed through their assigned level of FL210. At this point F-15 (B) flight and the BE9L were separated laterally by about 5·7nm, diverging and 500ft vertically above the BE9L. He immediately informed the duty ATCO i/c of what had occurred.

THE ScATCC (MIL) ATCO I/C reports he was informed by the ATCO-on-watch that F-15 (B) flight had climbed above their assigned level, breaking the co-ordination agreement with the SAC TAY SC. Approaching the SAC Civil Watch Manager who was aware of the incident, they immediately reviewed the radar replay to ensure that minimum separation was not lost during the occurrence. The recording shows that at no point was the minimum prescribed horizontal separation of 5nm eroded. He was aware that the controller was working particularly hard throughout the period, with multiple fast-jet ac and GAT in a quite complex air picture. Earlier, he had refused traffic as the Unit was working to maximum capacity.

UKAB Note (1): AUS issued an ALTRV (altitude reservation) for Coronet East 095/4 (11-05-0556) – a refuelling task - which was transmitted to ScATCC (Mil) on 2 Jun. The message granted Non-Deviating Status (NDS) above FL245 to the KC-10 tanker and F-15 (A) formation from specified co-ordinates within the Scottish UIR from FL240-260 inclusive. MARSA applied within all Coronet East ac. Furthermore it was emphasised that 'ACFT MUST OBTAIN ATC CLEARANCE PRIOR TO ANY ALTITUDE CHANGES…'.

BM SAFETY MANAGEMENT reports that this Airprox occurred 45nm NW of Newcastle between a pair of F15s - F-15 (B) flight - part of a Coronet East Atlantic transit in receipt of a RCS from ScATCC (Mil), with the BE9L en-route to Oxford in receipt of a RCS from ScACC TAY Sector.

The Airprox occurred at the weekend when ScATCC (Mil) operate with a reduced watch of 3 controllers, including 1 who undertakes the Distress and Diversion (D & D North) role. The ScATCC (Mil) controller's workload and task difficulty was assessed as 'high' with 4 speaking units comprising: the Coronet East mixed formation at FL240, comprising a KC-10 and F-15 (A) Formation with F-15 (B) flight in trail at FL200 closing the Coronet; a formation of 3xF15s - F-15 (C) formation - conducting general handling in Class G airspace 17nm SE of Newcastle and an un-related civil ac joining the en-route structure at NEW at FL240. The Coronet formation was NOTAM'd as being in receipt of Non-Deviating Status above FL245; however, neither the ScATCC (Mil) nor LATCC (Mil) controllers were aware of the Coronet formation until approximately 2 hours prior to the incident. The Unit's investigation established that the Unit received the Coronet ALTRV notification message, but could not establish why it had not been highlighted to the personnel on shift on the morning of the incident. At the time of the incident, the ScATCC (Mil) controller had been on console for 35 mins and was controlling all ac being worked by the Unit. Moreover,

the 4 speaking units were being controlled on 3 separate frequencies, although from the transcript none appear to have been cross-coupled. Consequently, throughout the incident sequence, the transcript is confused with numerous simultaneous transmissions. The Unit's guidance on task load - the number of speaking units under an ATS – rather than workload, which is a function of task load, task complexity, time scale for task completion and the individual's psycho physiological state, is that controllers should not work more than 3 speaking units concurrently. There are occasions when controllers can work more or less traffic, dependent upon the situation. For example a fourth ac that was a relatively un-complicated transit, or working less traffic when presented with a more complex situation.

At 1033:00, the unrelated civil ac joining at NEW was transferred to ScACC as GAT. At this point the Coronet formation was 47nm NW of NEW and F-15 (C) formation was 20nm SE of NEW. At 1033:11, F-15 (B) flight lead stated to the ScATCC (Mil) controller his intention to join the Coronet, "*ScATCC (Mil)* [F-15 (B) flight C/S] *on victor, let me just clarify…*[C/S No2] *is 5 miles in trail and will be joining with* [KC10 C/S]. The controller replied *"negative, you are coordinated with civil traffic north of you by 20 miles maintaining flight level 2 hundred (sic)*". However, the BE9L was actually coordinated maintaining FL230. Immediately following this transmission about the coordinated traffic from the ScATCC (Mil) controller, F-15 (B) flight leader requested a climb to FL210: "*ScATCC (Mil)* [F-15 (B) flight C/S] *copy, we are MARSA* [KC10 & F-15 (A) *formation C/Ss] and if able we would like to climb to 2-1-0, this is for a trans Atlantic passing* [sic] *we need to do when refuelling"*. At 1033:45 the controller instructed, "[F-15 (B) flight C/S] *roger, climb FL210"*; this instruction was not acknowledged by F-15 (B) flight leader, although the radar replay shows that the flight entered a relatively slow climb at 1033:52. There are no other transmissions on the RT transcript that might have obscured the flight leader's acknowledgement of this instruction, or that might have precluded the ScATCC (Mil) controller challenging F-15 (B) flight leader over his lack of an acknowledgement.

At the time of the occurrence the regulation within JSP 552 relating to the conduct of formation join-ups, including MARSA was at para 235.165. This regulation has been carried across to MAA RA 3011 and MMATM Chapter 11 Paras 43 to 49. JSP 552 235.165.5a states that when conducting formation join-ups in VMC, the formation leader is responsible for MARSA from the point when the joining ac is cleared to climb visually and join the formation. As the lead pilot of F-15 (B) flight stated that they 'cleared their flight path visually,' the join was completed in VMC. Moreover, based upon the regulation contained within JSP 552 235.165 and the fact that the ac were in Class C airspace, MARSA did not apply between F15 (B) flight and the Coronet as they were both separate elements.

The F-15 (B) flight leader pilot reported that:

'At no time did F-15 (B) flight ever fly above the levels the formation had been cleared to…no [flight Member] recalls hearing any instructions or deconfliction warnings provided by ATC for a level-off at FL210.'

At 1034:04, F-15 (C) formation commenced a lengthy RT exchange with the ScATCC (Mil) controller, stating their intention to split into 2 speaking units; one unit transiting S to the Wash ATA and one remaining in place 20nm SE of NEW. At this point, F-15 (C) formation was 79nm S of the Coronet formation. This prompted the controller to request that F-15 (C) formation change to an en-route frequency due to a, *"lot of…military traffic proceeding north-west bound"*, a clear reference to the Coronet. This conversation between the ScATCC (Mil) controller and F-15 (C) formation finished at 1035:05; during this period, at 1034:08, F-15 (B) flight climbed through FL213. At the point that the 'level-bust' occurs, the BE9L is 14·7nm NNE of F-15 (B) flight level at FL230.

The ScATCC (Mil) ATCO i/c stated that as the ScATCC (Mil) controller became busy, he took up position next to the controller in a PLANNER role. During the incident sequence, the ATCO i/c was monitoring traffic as it approached the ScATCC (Mil) area of responsibility in an effort to manage the Unit's traffic flow and was taking the landline calls into the unit.

At 1035:03, the avoiding action turn issued by TAY SC to the BE9L becomes apparent on the radar replay with 6nm lateral separation shown and F-15 (B) flight climbing through FL234. The CPA occurred 10sec later at 1035:13, [5·6nm lateral separation is evident against the leader with 600ft of vertical separation indicated on Mode C and 5nm lateral separation shown against the No2]. Just afterwards at 1035:24, the ScATCC (Mil) controller asked F-15 (B) flight leader to, *"confirm your altitude"* which suggests that this is the point when the controller realised that the level-bust had taken place.

It is clear that F-15 (B) flight climbed above their assigned level of FL210, thereby breaking the coordination agreement between ScATCC (Mil) and ScACC TAY SC. Although the instruction to climb to FL210 was clear, F-15 (B) flight leader did not acknowledge this instruction. Moreover, it has not been possible to determine whether the flight leader mis-heard the instruction or whether they suffered a cognitive failure, where their desire to join the Coronet formation intruded on their response execution such that they omitted to level-off at FL210.

Routinely, it would be reasonable to expect the ScATCC (Mil) controller to detect the level-bust, which occurred about 45sec prior to TAY SC issuing the avoiding action turn. The ScATCC (Mil) controller received no read back of the climb instruction from F-15 (B) flight leader, but having passed that instruction under a RCS, the controller could reasonably have assumed that the flight leader would follow that instruction. Nevertheless, controllers are required to receive read backs of level instructions and the fact that this was not challenged by the controller can be considered to be a causal factor in this occurrence. Unfortunately, the ScATCC (Mil) controller's attention was diverted by a lengthy RT exchange with F-15 (C) formation some 79nm SE of the Coronet group.

Whilst the geographic dispersion of the traffic and the task load faced by the ScATCC (Mil) controller was within their capacity and the bounds of the Unit's task-load guidance, the workload generated by the disparate tasks and their timing, divided the controller's attention such that he was unable to continuously monitor F-15 (B) flight. Although 'good practice' might suggest that controllers should be alive to the potential for a benign situation to quickly become complex, there is a degree of hindsight bias associated with this view and, moreover, it defies the basic human instinct to attempt to continue to manage a situation. Whilst the ScATCC (Mil) control team on duty were notified of the Coronet later than might be considered ideal, this cannot be considered causal nor contributory to the occurrence, given that the overall taskload was within the team's capacity. Furthermore, the Unit's task load at the time of the occurrence meant that the ScATCC (Mil) ATCO i/c, having not taken an active role in terms of controlling, was unable to directly monitor events on the controller's frequencies, thereby removing an additional ATM-related safety barrier.

It has not been possible to assess whether the understanding of USAF crews of UK formation join-up procedures and the impact of USAF tanker procedures, specifically the boom operator's actions, affected the outcome of this occurrence.

Subsequent to the investigation of this Airprox HQ 1 Gp BM SM requested that OC ScATCC (Mil) review the Unit's task-load orders to ensure that they provide appropriate guidance for ATM personnel. This review has been concluded and OC ScATCC (Mil) is content that the Unit's task-load orders are fit for purpose. The Unit considers the problem lay with the application of those orders by the controlling staff on duty. Consequently, all Unit personnel have been re-briefed with respect to their responsibilities for managing the Unit's traffic loading outside core operating hours.

ATSI reports that the BE9L crew called the TAY Sector at 1011:40. The flight was maintaining FL230, 15nm NW of Aberdeen, and was instructed to route direct to TILNI. At 1023 the ScATCC (Mil) controller called the TAY Sector requesting co-ordination on a formation C/S KC-10 [with F-15 (A) formation] against other GAT. The formation was climbing through FL193, 47nm S of Newcastle. All the ac within the formation were at the same level and within 1nm of each other. The Mode S SFL on one of the formation was reporting FL240.

CAP493 Manual of Air Traffic Service Part 1, Section 1 Chapter 4 paragraph 15 states:

'Formations are to be considered as a single unit for separation/deconfliction purposes provided that the formation remains within the parameters shown [*below*]:

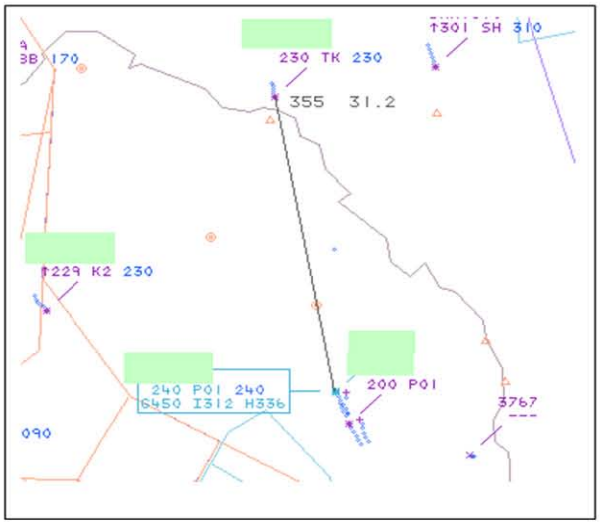
Class C Airspace: 1nm laterally and longitudinally and at the same level; …'

Some 11nm S of this formation was another formation pair - F-15 (B) flight. Within this pair, flying parallel tracks, the westerly ac was transponding and reporting Mode C of FL174, climbing. During the co-ordination at 1023, the ScATCC (Mil) Controller did not mention F-15 (B) flight to the S.

At 1026:20 the TAY controller called Scottish Military for further co-ordination on the first formation - KC-10 and F-15 (A) formation. The TAY controller identified the BE9L to the ScATCC (Mil) controller. The BE9L was 17nm NW of NEXUS and the KC-10 and F-15 (A) formation was 90nm S of NEXUS. The KC-10 and F-15 (A) formation was activating high-level STCA on the TAY controller's situation display. A third formation, 21nm SE of the first

formation, was also activating high-level STCA on the situation display. The formation pair (F-15 (B) flight) was not activating any alerts and one of the pair was not transponding. Therefore this pair displayed normally on the TAY controller's display.

The TAY SC requested, "*Co-ordination against the* [BE9L C/S] *then, not above 2 3 and you're not below 2 4 is that correct?"* The Scottish Military controller read back the co-ordination request and the conversation ended with the TAY SC stating, "*that's co-ordinated*". At 1028:40, TAY SC passed TI to the BE9L pilots, "*traffic information about 4 or 5 minutes you may see … an American fighter and a D C 10 they'll be a thousand feet above you*." The KC-10 and F-15 (A) formation was now overhead Newcastle and 75nm ahead of the BE9L. The formation was now maintaining FL240. The BE9L crew asked if the traffic would be on the aircraft's left-hand side, to which the controller replied, "*no … they're in your 12 o'clock at the moment…its reciprocal*". Scottish (Mil) telephoned the TAY Sector at 1032:29 and requested the TAY SC identify another two F-15s, "[F-15 (B) flight C/S] *southeast of the* [KC-10 and F-15 (A) formation C/S]". F-15 (B) flight had now decreased its distance behind the KC-10 and F-15 (A) formation to 3.4nm. The BE9L was 31nm N of the KC-10 and F-15 (A) formation.



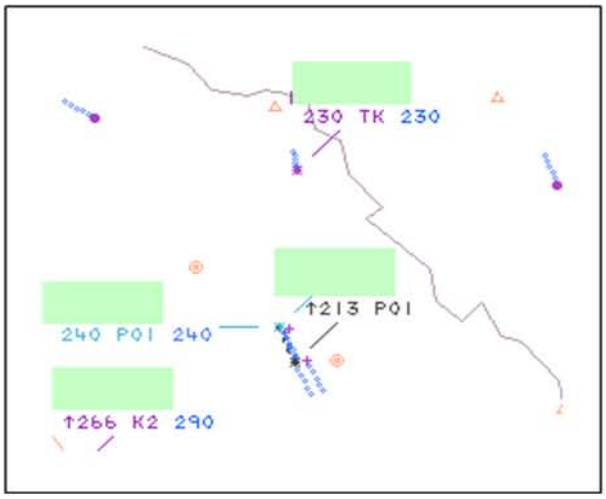
(PC MRT 1032:27)

The TAY controller identified F-15 (B) flight and the ScATCC (Mil) controller stated, "they're not above flight level 200 against your [BE9L C/S]...". The TAY controller replied, "[BE9L C/S] will stay at flight level 2-3-0 you can go 1 thousand feet below or 1 thousand feet above". The conversation was then terminated by the ScATCC (Mil) controller, "Brilliant thank you very much".

MATS Part 1 Section 1 Chapter 10 paragraph 3 states:

'3.1 When requesting co-ordination, a controller shall: …

propose a course of action upon which agreement is requested and obtain a clear decision on that proposal. To ensure clarity and avoid misunderstandings, before terminating the call, parties shall explicitly state the action required of their aircraft to achieve the agreed course of action … A response that does not reaffirm the details of the agreement, such as "Roger", is not acceptable.'

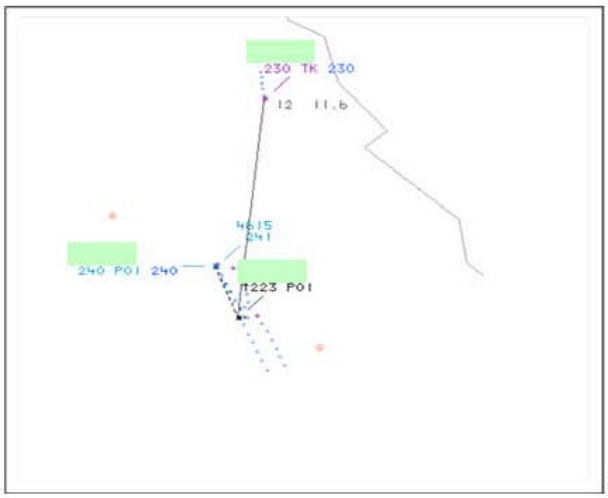


(PC MTRT 1034:10)

At 1033:52 the Mode C of F-15 (B) flight leader indicated that the transponding ac had commenced a climb from FL200 and was now passing FL203; at 1034:08 it was indicating Mode C of FL213, climbing, STCA then activated between F-15 (B) flight and the KC-10 and F-15 (A) formation ahead

At 1034:15 the BE9L reported, "*visual with that group of traffic now*". TAY SC replied, "*That's correct there's some below you and some above you they're all co-ordinated against you and you're just maintaining flight level 2-3-0*". The KC-10 and F-15 (A) formation was maintaining FL240 in the BE9L's 1 o'clock range 11nm on a track to pass down the BE9L's right-hand side. F-15 (B) flight was 2.9nm behind the first formation and was now climbing through FL216.

AIRPROX REPORT No 2011057



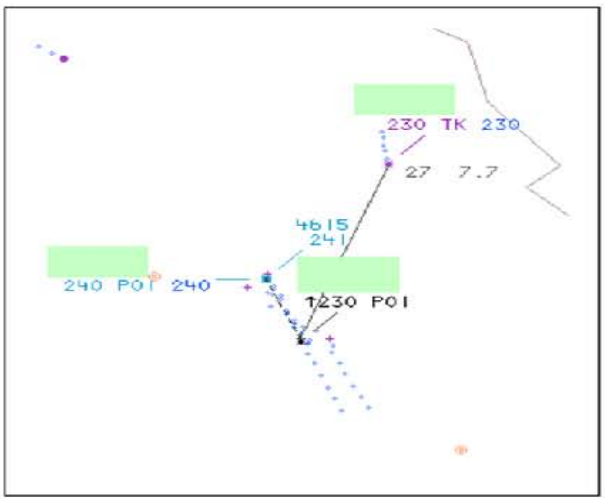
(PC MRT 1034:25)

At 1034:49, F-15 (B) flight leader's Mode C indicated the ac were at the same level as the BE9L, still in the BE9L's 1 o'clock, range 7.7nm. The aircraft were about 45nm N of Newcastle at FL230 in Class C controlled airspace.

At 1034:51 the TAY controller updated the traffic information to the BE9L, to which the BE9L pilot replied, "*okay … we got two visual ????? at the back of the pack that look a bit higher."*

At 1034:25 the Mode C of F-15 (B) flight indicated that they were still climbing and passing through FL223. They were in the BE9L's 1 o'clock range 11.6nm on a track to pass down the BE9L's right-hand side.

At 1034:35, TAY SC instructed the BE9L pilot, "[C/S] *sorry avoiding action turn left immediately 50 degrees";* this was read back by the BE9L pilot. TAY SC informed the BE9L pilot that, "*one of those tracks he's now just climbing through your level*." The second formation's Mode C was now indicating FL225.



(PC MRT 1034:49)

Minimum separation between F-15 (B) flight and the BE9L occurred at 1035:13 with 5nm between the nearest aircraft and 600ft indicated against the leader's Mode C. Subsequently, F-15 (B) flight levelled at FL239 behind the leading formation. At 1035:39, TAY SC informed the BE9L pilot that his ac was now clear of the traffic and instructed the flight to resume its own navigation.

The BE9L was southbound maintaining FL230. The KC-10 and F-15 (A) formation was maintaining FL240 followed by F-15 (B) flight climbing through FL230. Separation was maintained between the BE9L and nearest aircraft of F-15 (B) flight: minimum distance was 5nm and 600ft, where 5nm or 1000ft was required.

The co-ordination undertaken between the TAY SC and ScATCC (Mil) with respect to F-15 (B) flight was not completed with an explicit statement of the action required. TAY SC offered a co-ordination solution of "[BE9L C/S] *will stay at flight level 2-3-0 you can go 1 thousand feet below or 1 thousand feet above*". The TAY SC had no indication therefore of the exact instruction which may have been relayed to the F-15 (B) flight pilots.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilot of the BE9L and the leader of F-15 (B) Flight, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and the appropriate ATC authorities, together with comment from the relevant Command.

There were some significant subsidiary issues within this occurrence. However, it was evident to the Board that the BE9L crew's part in this Airprox was restricted to compliance with TAY SC's avoiding action. These instructions ensured that the stipulated horizontal separation was maintained against F-15 (B) flight as they climbed up toward the KC10 and F-15 (A) 'combine'.

The HQ 3AF Advisor reaffirmed F-15 (B) flight leader's belief that his flight had not been instructed to level-off at FL210. However, he acknowledged that the BM Safety Management report had revealed that the lead pilot was mistaken. This climb was contrary to the co-ordination agreements struck between the ScATCC (Mil) controller

and TAY SC which, if complied with, would have ensured a minimum of 1000ft vertical separation between the KC-10 and F-15 (A) combine above the BE9L, maintaining a level cruise at FL240 and 1000ft on Mode C against F-15 (B) flight. These agreements ensured that the ScATCC (Mil) controller had the necessary tactical flexibility to manoeuvre the ac under his control safely and had resulted in TI being passed to F-15 (B) flight about the BE9L when it was 20nm away. However, the ScATCC (Mil) controller erroneously reported that the BE9L was at FL200 – the same level as F15 (B) flight at that point. Members understood why the leader of F-15 (B) flight would have been keen to climb above traffic reported to be flying at the same level, the BE9L, which he may have perceived as an impediment to his eventual join with the KC-10 and F-15 (A) combine. His request to climb to FL210 seemed to indicate an understandable degree of urgency to climb clear above the BE9L's reported level. He would have perceived that there was then no other traffic to delay his join with the KC10 and F-15 (A) formation cruising at FL240, hence his comment "....*we are MARSA* [with KC10 & F-15 (A) *formation C/Ss] and if able we would like to climb to 2-1-0...".* Whilst noting that the ALTRV message only included reference to the KC10 & F-15 (A) formation, not F-15 (B) flight, the latter were in effect the 'airborne spares' for F-15 (A) formation. In Class C CAS under a RCS and co-ordinated against the BE9L, the Board recognised that MARSA could only ever be stipulated between military ac involved in the Coronet East tanker trail. With F-15 (B) flight below the levels of the stipulated ALTRV, the mandatory instructions of the ScATCC (Mil) controller held sway, so the controller would have seen no reason at that stage not to accede to F-15 (B) leader's request to climb his flight 1000ft to FL210. The controller's immediate reply at 1033:45, "[F-15 (B) flight C/S] *roger, climb FL210"* was clear and unambiguous. However, the RT transcript revealed that there was no response from F-15 (B) flight and the controller did not challenge the absence of a read-back. This was a salutary lesson a pilot Member observed; if pursued at the time this would have forestalled the occurrence. In the event the subsequent climb revealed that the leader believed, incorrectly, that his flight had been permitted to climb to join with the KC10 and F-15 (A) combine at FL240. The Board was briefed that the controller was under significant pressure at this stage and it was evident that he was very busy indeed controlling this complex scenario, with a wide split, necessitating a diverse scan over a large displayed range on his radar. Members noted it was at this point that his attention was critically diverted by the activities of F-15 (C) formation to the SE and did not spot F-15 (B) flight's excursion above their assigned level. Controller Members opined that the use of the three frequencies simultaneously by the one controller was not good practice, albeit indicative of the Unit's limited control capacity at the time, since RT transmissions could easily be missed. This level of military activity was unusual on a Saturday morning and the issue of the controller's workload had already been addressed by the Unit as reported by BM Safety Management. As it was F-15 (B) flight had already climbed through FL210 by the time the ScATCC (Mil) controller realised what had occurred. Nonetheless, F-15 (B) flight's climb through FL213 occurred when the BE9L was 14nm away and if he had spotted it at the time it could have been countered. The Board concluded that that this Airprox had been caused when F-15 (B) flight climbed above its cleared level.

One Member perceived that because stipulated separation had been maintained this event was so benign that it was misleading to consider it as an Airprox; it should not be classified as an Airprox event simply because avoiding action had been issued. However, this was a solitary view; other Members agreed that this was not a risk-bearing Airprox, but contended that normal procedures had not been complied with and therefore it should be categorised accordingly. Controller Members opined that whilst avoiding action is not a normal occurrence in CAS, the BE9L crew had complied promptly with TAY SC's avoiding action L turn ensuring separation of 5nm was maintained. Moreover, the BE9L crew had sighted the military jets. These factors convinced the overwhelming majority of the Members that no Risk of a collision had existed.

PART C: ASSESSMENT OF CAUSE AND RISK

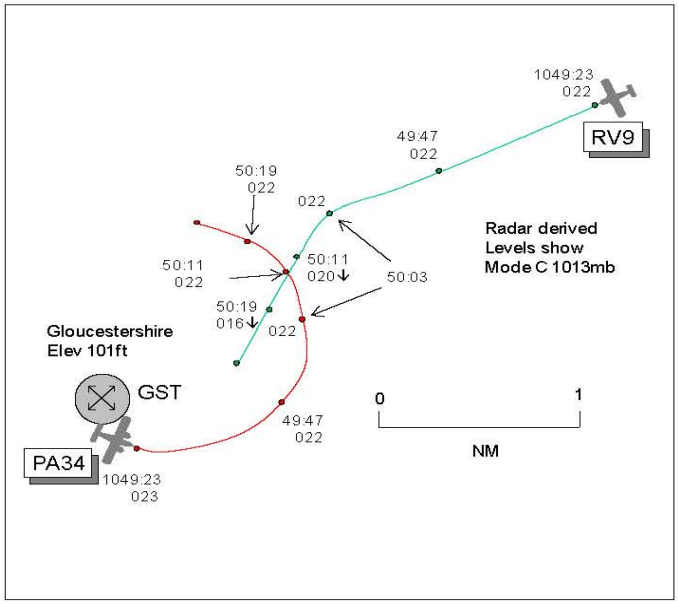
Cause: F-15 (B) flight climbed above its cleared level.

Degree of Risk: C.

AIRPROX REPORT No 2011058

AIRPROX REPORT NO 2011058

Date/Time:	2 Jun 2011 1050Z	
Position:	5154N 00209W (1·25nm NE Gloucestershire - elev 101ft)	
Airspace:	LFIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Vans RV9	PA34
Operator:	Civ Pte	Civ Trg
Alt/FL:	2700ft (QNH 1034mb)	↓2800ft (QNH 1034mb)
Weather:	VMC CLBC	IMC IICL
Visibility:	15nm	10km
Reported Separation:	Nil V/NR H	Not seen
Recorded Separation:	>200ft V/<0·1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE VANS RV9 PILOT reports flying VFR en-route to Perranporth via Gloucestershire and in receipt of BS from Gloster Approach on 128·55MHz, squawking 7000 with Modes S and C. The visibility was 15-20km flying 500ft below cloud in VMC and the ac was coloured red with strobe lights switched on. His planned route was via the O/Hs of Gloucestershire, Colerne, Frome and Newquay and, having previously worked Brize under BS and been told that Little Rissington was active, he had routed well to the N and then towards Gloucestershire. He called Gloucester Approach and informed them that it was his intention to route via the O/H at 2700ft QNH1034mb. When well inside the ATZ, he thought, he turned L onto heading 191° towards Colerne at 130kt and, when abeam, his passenger spotted an ac 0·5nm away in their 11 o'clock heading towards them, appearing to be at the same height. He banked sharply to the L and also descended, recovering at 2200ft before turning back onto track and climbing back to 2700ft. After recovering his composure he informed ATC of the Airprox and was told the other ac was a PA34 carrying out an IFR procedure; he queried the relevance of this information. He subsequently changed to Filton but when abeam Yeovilton he encountered low cloud so elected to return to Enstone routeing via Kemble. He assessed the risk as medium to high.

THE PA34 PILOT reports flying a dual IFR training flight from Oxford for an IR and in receipt of a PS from Gloster Approach on 128·55MHz, squawking 7000 with Modes S and C. The visibility was 10km when clear of cloud but they were IMC occasionally in and out of cloud. They had flown an ILS at Birmingham and were then carrying out a practice diversion to Gloucestershire, intending to fly an NDB hold followed by an approach to go-around and then a visual cct to touch and go before departing. As well as the student flying P1 in the LH seat there was another student in the rear acting as an observer. En–route to Gloucestershire on a S'ly track, they were cruising at FL40 and the ATIS information 'India' gave RW09 LH in use with surface wind 040/07kt, visibility 10km, cloud few 3000, temperatures 20/12 and QNH 1034mb. Gloster Approach cleared them to the GST at FL40 and instructed them to report entering the hold, which they did. The hold entry and at least one hold were performed before he advised the student on the outbound leg of the hold to report ready for the NDB procedure. Approach cleared them for the NDB approach for RW09 and asked them to report beacon outbound. Having acknowledged this, the student set 1034mb on altimeter No1 and cross-checked the same setting on altimeter No2 and this now made their altitude approximately 4600ft. This was then followed by a gentle descent being initiated to 2800ft at 120kt on the inbound turn and inbound leg of the hold. He was unable to say exactly what altitude they were at upon beacon passage but it was not below 2800ft and he believed they were still in the descent towards 2800ft. A call was made of "beacon outbound" and Approach asked them to report base turn complete. Shortly after this while in the outbound turn for the alternate procedure he heard another ac's pilot informing Approach that a twin-engine ac had passed over the top of his ac by about 400-500ft, he thought. He believed Approach replied that he only had a Seneca (meaning them) going beacon outbound for the NDB approach but it was at FL040; the other pilot replied

that he wasn't instrument rated and did not understand what the controller meant by beacon outbound etc. They continued with their approach as published without further incident and completed the detail as planned before returning to Oxford. On the return to Oxford, Approach advised that the other ac's pilot had filed an Airprox, which he acknowledged. At FL040 they were in and out of few/scattered cloud and the same conditions prevailed whilst in the descent to 2800ft. At the platform altitude of 2200ft they were clear of cloud for the remainder of the flight at Gloucestershire. At no time did he or the students see the other ac. Upon being cleared for the NDB 09 approach the controller did not instruct them to remain at FL040 until beacon outbound nor was any reference made to traffic overflying the airfield.

THE GLOUCESTERSHIRE APPROACH CONTROLLER reports the RV9 pilot contacted him at 1047 and passed all his details requesting a BS routeing via the O/H from the E and then SW bound at altitude 2400ft, he thought. The PA34 flight was in the GST hold at FL040 ready for an approach under a PS. The PA34 flight was cleared for the NDB/DME approach to RW09 and the pilot called beacon outbound at 1049 which allowed the flight to descend to 2800ft. At 1050 the RV9 pilot reported O/H and wishing to file an Airprox due to the location and relative position of the PA34; its crew was informed of the RV9 pilot's intentions.

ATSI reports that the Airprox occurred in Class G airspace at 1050:16UTC, 1·25nm to the NE of Gloucestershire Airport at an altitude of 2800ft. This position is outside the Gloucestershire ATZ, which extends to a height of 2000ft above aerodrome level (elevation=101ft) and bounded by a circle 2nm radius centred on the mid-point of RW09/27.

The PA34 was inbound IFR from Oxford on a training flight and was planning to hold at the GST NDB, which is situated on the airfield, followed by a procedural NDB/DME approach to RW09. The NDB(L)/DME Instrument Approach Chart specifies an altitude at the IAF of 2800ft and also specifies that ac will normally hold not lower than 4000ft or the equivalent FL.

The Vans RV9 was operating on a VFR flight from Enstone to Perranporth, routeing via Gloucester, Colerne, Frome and Newquay.

The Gloucestershire controller was providing an Approach PS (Gloster Approach) without the aid of surveillance equipment. The ATSU is equipped with a primary radar system only, (without SSR). The availability of radar is subject to manning and utilised to expedite the procedural environment. The radar would not have displayed traffic in the O/H.

CAA ATSI had access to the RT recording and recorded area surveillance provided by NATS Swanwick, together with written reports from the controller and 2 pilots.

METAR EGBJ 021050Z 02003KT 9999 FEW035 21/11 Q1034=

At 1035:05, the PA34 flight established contact with Gloster Approach maintaining FL040 and requesting a PS. The Approach controller agreed a PS and cleared the PA34 flight to the GST at FL040 with no delay for an NDB/DME approach for RW09, to report taking up the hold. This was acknowledged correctly by the PA34 pilot.

At 1039:21, the PA34 pilot reported taking up the hold at FL040 (converts to an altitude of 4567ft on QNH 1034 with 1mb equal to 27ft). The controller instructed the PA34 pilot to report ready for the approach.

At 1045:16, the PA34 pilot reported, *"(PA34 c/s) ready for the N D B zero nine approach"* and the controller replied, *"(PA34 c/s) cleared N D B D M E approach Runway zero nine Q N H one zero three four report beacon outbound."* The PA34 pilot acknowledged, *"Cleared er N D B er zero nine approach Q N H one zero three four wilco (PA34 c/s).*"

At 1046:32 the radar recording shows the PA34 in the descent passing FL038, 3·6nm WNW of the GST and commencing a L turn towards the beacon. The PA34 pilot's written report indicated that once cleared for the NDB approach and instructed to report beacon outbound, the pilot had selected QNH 1034 and started a slow descent to 2800ft on the inbound turn and inbound leg of the hold.

Later on the controller had indicated an expectation that the PA34 would maintain FL040 until beacon outbound. The controller was asked why the PA34 had not been given a restriction such as 'maintain FL040 until crossing

the beacon outbound'. The controller responded that normally, had there been an outbound, such a restriction would have been given. With no reason to restrict, the controller had cleared the PA34 for the procedure, but had not considered that the pilot may have elected to descend to the published level for the procedure of 2800ft.

At 1045:58, the RV9 pilot established contact with Gloster Approach. The controller had just initiated a non-operational telephone call (regarding a shift the following day) and instructed the flight to standby. The radar recording shows the RV9 at a position, 10·4nm to the NE of the airfield.

At 1046:58, the controller asked the previous station calling to pass message and the RV9 pilot advised, *"er (RV9 c/s) is an R V nine A from Enstone to Perranporth routeing via your overhead and Colerne request a Basic Service er currently three miles to the northeast of your airfield."* The radar recording shows the RV9, 8·4nm to the NE of the airfield.

At 1047:20 the controller ended the telephone conversation and responded to the RV9 flight, *"(RV9 c/s) sorry er I was on the landline could you er say again your point of departure and destination.*" The RV9 pilot replied, *"er Enstone Perranporth (RV9 c/s).*"

At 1047:32, the controller responded, *"(RV9 c/s) Basic Service Gloster Q N H one zero three four,*" which was acknowledged correctly.

The controller indicated that he had not heard the RV9 pilot's full message and was unsure if the RV9 was routeing to Perranporth E of the airfield or via the O/H. At 1047:43, the controller asked, *"(RV9 c/s) are you routeing via my overhead"* and the pilot replied, *"Affirm."* The controller asked the RV9 pilot to report O/H. The radar recording shows the RV9, 6·7nm to the NE of the airfield, with the PA34 2·8nm WSW of the airfield.

The controller's written report indicated that he had considered the RV9 was at 2400ft and the PA34 at FL040. The controller acknowledged that the RV9 had not stated a level, neither had the controller requested the level (the RV9 reported at 2400ft after the incident). The controller was asked if he had considered passing TI to the PA34 (under a PS), on the RV9 operating VFR via the O/H. The controller indicated that he hadn't fully assimilated the position of the RV9 and had considered that the PA34 was shortly to go beacon outbound to the W at FL040.

At 1049:28, the PA34 pilot reported beacon outbound and the controller responded, *"(PA34 c/s) report base turn complete.*" The radar recording shows the PA34 has crossed the GST, on an ESE'ly track, indicating FL023 (converts to an altitude of 2867ft). The RV9 was 3NM NE of the airfield tracking SW towards the O/H indicating FL022 (converts to an altitude of 2767ft).

From 1049:38 until 1050:16, the controller was occupied in a two-way transmission with a PA28 inbound to the airfield.

[UKAB Note (1): At 1050:03 the radar recording shows both ac indicating FL022 (2767ft) with the PA34 turning L through a N'ly heading in the RV9's 10 o'clock range 0·6nm and crossing from L to R. The next sweep 8sec later at 1050:11 shows the PA34 crossing through the RV9's 12 o'clock range 0·1nm, the RV9 now tracking 210° and indicating a descent through FL020 (2567ft QNH). The CPA occurs immediately afterwards as the next sweep at 1050:19 shows the ac now diverging, the PA34 turning through heading 290° with the RV9 0·4nm to its S descending through FL016 (2167ft QNH). It is estimated that separation at the CPA was >200ft vertically and <0·1nm horizontally as the RV9 passes just behind and below the PA34.]

At 1050:25, the RV9 pilot reported, *"er Gloster approach (RV9 c/s) would like to report an a Airprox with a twin."* The RV9 pilot advised, *"er (RV9 c/s) was overhead or just about overhead your field a twin was coming in from the southeast at my height I er reduced to reduced height to avoid.*"

The controller acknowledged, *"(RV9 c/s) roger that's er believed to be a Seneca traffic in the Golf Sierra Tango just called me beacon outbound in the instrument procedure for Runway zero nine."* The RV9 pilot acknowledged with, *"Roger"* and the controller added, *"and er that aircraft was last reported flight level four zero but will be descending with the procedure*." The RV9 pilot replied, *"I'm not er I M C qualified so I'm not quite sure what that means (RV9 c/s)."* The controller requested the level of the RV9 and the pilot responded, *"er currently two thousand four hundred on a bearing of one eight two degrees.*"

Both ac continued without further incident.

The controller was asked what might have prevented the incident. The controller acknowledged that TI should have been passed to the PA34 and a level requested from the RV9 pilot.

As a result of the Airprox the ATSU unit investigation report was made available to Gloster controllers, together with reference to the MATS Part 1 guidance regarding the potential for non-operational conversations to distract controllers from their primary task of providing a safe air traffic service.

The controller initiated a non-operational telephone call just before the RV9 called at a range of 10·4nm from the airfield. This resulted in a distraction and delay in receiving the RV9 pilot's message. The full details and intentions of the RV9 were missed. The controller did not fully assimilate the details and was initially confused about the position of the RV9. The Manual of Air Traffic Services (MATS), Part 1, Appendix E, Page 2, Paragraph 2, states:

'Non-operational and other conversations have the potential to distract a controller from their primary task of providing a safe air traffic service. Examples include telephone conversations with external agencies, such as airline representatives, and discussions between controllers conducted on the telephone, intercom or, in some cases, face to face, following an unplanned traffic situation.

Non-operational conversations must not be permitted to interfere with a controller's operational duties. Procedures at units should ensure that non-urgent telephone calls from external agencies could be accommodated without prejudicing the controller's primary task.'

The RV9 pilot did not report his level and the controller did not recognise the significance of the RV9's routeing and the potential for conflict with the PA34.

Whilst in the holding pattern, the PA34 was cleared for the procedure without any restriction. The pilot did not report leaving FL040, nor did the controller request a leaving report. The phraseology used by the controller was ambiguous and did not convey the controller's intention, which was for the PA34 to maintain FL040 until beacon outbound. However, the pilot having been cleared for the procedure without restriction, descended to the published level for the procedure (2800ft) prior to going beacon outbound. MATS Pt1, Appendix E, Page 2, states:

'Radiotelephony provides the means by which pilots and ground personnel communicate with each other. Used properly, the information and instructions transmitted are of vital importance in assisting in the safe and expeditious operation of aircraft. However, the use of non-standard procedures and phraseology can cause misunderstanding. Incidents and accidents have occurred in which a contributing factor has been the misunderstanding caused by the use of non-standard phraseology. The importance of using correct and precise standard phraseology cannot be over-emphasised.'

The controller was not aware that the RV9 was approaching the O/H at 2800ft and, also not aware that the PA34 was descending to 2800ft to go beacon outbound. This resulted in the 2 ac coming into close proximity at a similar level without the provision of any TI or warning that would have aided the pilot's situational awareness.

The PA34 was IFR and in receipt of a PS. CAP774 UK Flight Information Services, Chapter 4, Page 5, states:

'A Procedural Service is an ATS where, in addition to the provisions of a Basic Service, the controller provides restrictions, instructions, and approach clearances, which if complied with, shall achieve deconfliction minima against other aircraft participating in the Procedural Service. Neither traffic information nor deconfliction advice can be passed with respect to unknown traffic.

The controller shall provide traffic information, if it is considered that a confliction may exist, on aircraft being provided with a Basic Service and those where traffic information has been passed by another ATS unit; however, there is no requirement for deconfliction advice to be passed, and the pilot is wholly responsible for collision avoidance. The controller may, subject to workload, also provide traffic information on other aircraft participating in the Procedural Service, in order to improve the pilot's situational awareness.'

Both flights were operating within Class G airspace. CAP774, Chapter 1, Page1, Paragraph 2, states:

'Within Class F and G airspace, regardless of the service being provided, pilots are ultimately responsible for collision avoidance and terrain clearance, and they should consider service provision to be constrained by the unpredictable nature of this environment. The Class F and G airspace environment is typified by the following:

• It is not mandatory for a pilot to be in receipt of an ATS; this generates an unknown traffic environment;

• Controller/FISO workload cannot be predicted;

• Pilots may make sudden manoeuvres, even when in receipt of an ATS.'

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC authorities.

Although this Airprox occurred in Class G airspace where both crews were responsible for maintaining their own separation from other traffic through see and avoid, it was clear to Members that there were opportunities to break the chain of events leading up to the Airprox. Once APP had cleared the PA34 flight for the procedure, without applying a level restriction, the crew were entitled to descend to the initial approach altitude of 2800ft QNH. Pilot Members thought that good practice would have been for the PA34 pilot to have called when commencing descent and this would most likely have broken the chain at this early stage. However the crew was not asked to report leaving FL40 and the controller incorrectly thought the flight would maintain FL40 until going 'beacon outbound'. The RV9 pilot should have volunteered his cruising altitude when invited by the controller to pass his message. However, it was clear that the controller did not assimilate the RV9 pilot's intentions while distracted by his non-operational telephone call, and did not ask for the flight's cruising level (it could have been cruising at FL40). In the absence of this information and having confirmed that the RV9 pilot intended to route via the O/H, the controller should have identified the potential for a confliction and passed TI to the PA34 pilot in accordance with CAP774: this was another opportunity lost. Controller Members agreed that the passing of generic TI to the RV9 flight about another ac routeing through the O/H would have been 'good controllership'; it would have given the RV9 the pilot SA on the potential confliction and could have broken the chain. An experienced pilot Member stated that although the PA34 flight was IFR training, this incident was a timely reminder of the crew's need to continue exercising a good lookout for unknown traffic. Also, the PA34 crew's SA would have been improved if they had heard and assimilated the RT exchanges between ATC and the RV9 pilot. As it was, the PA34 flight was descending in IMC through cloud to 2800ft, its crew unaware of the approaching RV9 which passed unsighted during their 'belly-up' turn onto the outbound leg. Similarly, the RV9 pilot was unaware of the PA34's presence; the only clue from the RT would have been the PA34 pilot's call of 'beacon outbound' and this required the pilot to have knowledge of the IF procedures in use at the time. In the event, the RV9 pilot turned on track towards Colerne just before the O/H and saw the PA34 0·5nm away; the Board agreed that his prompt and robust avoiding action had resolved this conflict and removed the risk of collision.

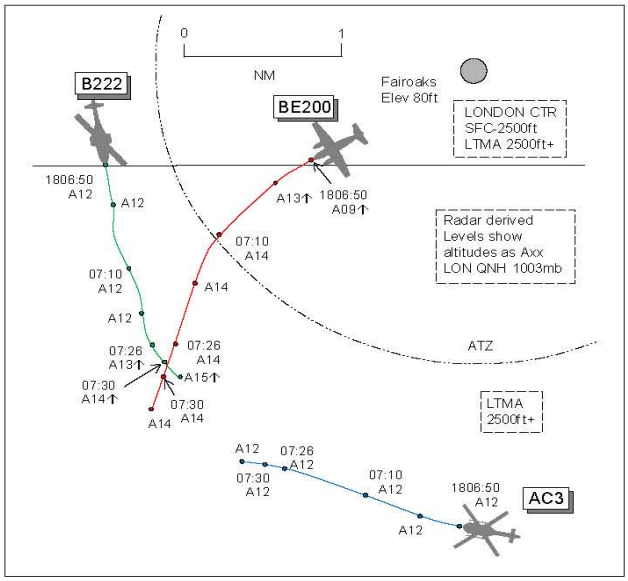
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: In the absence of TI, a conflict in Class G airspace resolved by the RV9 pilot.

Degree of Risk: C.

AIRPROX REPORT NO 2011059

Date/Time:	18 Jun 2011 1807Z (Saturday)	
Position:	5119N 00037W (3nm SW Fairoaks)	
Airspace:	LFIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	B222	BE200
Operator:	Civ Comm	Civ Pte
Alt/FL:	↑2400ft (QNH 1001mb)	1400ft (QNH)
Weather:	VMC CLBC	VMC CLBC
Visibility:	>40km	>10km
Reported Separation:	Nil V/60m H	Nil V/600m H
Recorded Separation:	<100ft V/<0·1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE B222 PILOT reports departing Ascot via the Heathrow CTR 'W End Free-lane' for a private site near Sevenoaks, VFR under a BS from Farnborough E on 123·225MHz, squawking with Mode C. The visibility was >40km flying 2000ft below cloud in VMC and the helicopter was coloured blue with nav and anti-collision lights switched on. The Free-lane exits abeam the W edge of the Fairoaks ATZ at 1200ft amsl. Farnborough gave him TI on a helicopter at about 11 o'clock same level with which he was visual. He requested a climb to 2400ft to which Farnborough had no objection. Heading 170° at 100kt he commenced the climb and also started a L turn towards OCK. When passing through 1700ft, he thought, a faster ac, a white coloured low-wing twin-prop type, passed him at the same level about 60m away but also climbing in a 10° nose up attitude and in an approximately 20° L turn. He saw the other ac too late to take avoiding action but he rolled 'wings level'. He was flying from the RH seat and the other ac was not seen earlier owing to its relative position. He assessed the risk as high.

THE B222 CHIEF PILOT commented that this is a very busy area of airspace on Ascot days with helicopters streaming out of the Heathrow CTR through Fairoaks climb-out and Farnborough approach. He believed it would be prudent for flights departing Fairoaks to call before getting airborne/leaving the ATZ and that the frequency used should be common to the Ascot and Fairoaks departures to ensure awareness by all flights of potential conflictions. Currently Ascot departures on the 'W End Free-lane' use Farnborough E 123·225MHz yet Fairoaks departures tend to use W on 125·25MHz as does most other traffic in the area.

THE BE200 PILOT reports flying solo on departure from Fairoaks VFR and in receipt of a BS from Farnborough on 134·35MHz, squawking 7000 with Modes S and C; TCAS was fitted. The visibility was>10km flying 2000ft below cloud in VMC and the ac was coloured white with anti-collision and strobe lights switched on. Having departed Fairoaks iaw the 'out of hours' procedure after watching 2 helicopters pass N to S through the 'Bagshot Gap' and changing to Farnborough Radar, he was informed of 2 converging helicopters. One was to the S which was easily seen as he was turning L onto heading 170° at 160kt and 1 other to the N which he could not see. At that point a TCAS 'traffic' audio warning was heard on the N contact and he made an effort to look out to his R over the higher wing. It was then he caught sight of a blue/white Bell 222 or 430 type helicopter about 1000m away climbing through his level of 1400ft QNH. He increased his L bank to turn inside the track of the helicopter despite its ROC taking it above his ac. His L turn was already moving his ac's vector away from the contact but it was tightened to increase separation, estimating they passed with 600m separation. He assessed the risk as low.

UKAB Note (1): The BE200 pilot was contacted by the UKAB Secretariat to clarify the reported separation distances, TCAS actions and Ascot procedures. The pilot stated that 600m minimum separation was based on a snapshot at the initial sighting as he had eased his L turn to look for the helicopter and when sighted he had lost sight of it when he tightened the turn to avoid. He did not see the B222 turn towards his ac and did not regain

visual contact with it after his turn. The TCAS TA was generated after he first saw the B222 and tightened his turn and he did not recall any vertical commands on the PFD as he was heads-out flying the tight avoiding turn. He was aware of the Ascot W end Free-Lane' procedures and has watched the 2 previous helicopters exit the Heathrow CTR before departing.

THE FARNBOROUGH LARS W CONTROLLER reports the BE200 flight called him on departure from Fairoaks and looking at the position he noticed a 7000 squawk, fairly fast moving, heading towards a 4777 squawk that was W'bound. He immediately passed TI to the BE200, which was not yet identified, as, "Traffic believed to be you has traffic similar level 1 mile SW." He continued to pass TI and issued a squawk until the BE200 pilot reported visual with the helicopter. He also tried to alert LARS N/E but N/E was intensely busy. There was little or no time to effect any type of avoiding action advice and it was unpractical due to Ascot departing traffic.

THE FARNBOROUGH LARS E CONTROLLER reports working N and E bandboxed when the B222 flight called on frequency. It was just leaving the London CTR via the 'West End Free-lane' routeing from Ascot to Sevenoaks. There were about 3 helicopters leaving and 1 joining the CTR at the time, all just to the SW of Fairoaks. Although they were all on a BS he called generic TI. Just after this LARS W pointed out another 7000 squawk, which was just appearing from the middle of these known contacts, indicating 1400ft, a similar level to the helicopters. As it had already passed, tracking SW, he did not call this traffic. Shortly afterwards, the B222 pilot asked if he had seen this traffic and he replied that he had only just seen it after LARS W had pointed it out. He apologised for the lack of TI but said that it had departed Fairoaks on LARS W frequency.

ATSI reports that the Airprox occurred at 1807:27, within Class G airspace and 6·5nm to the NE of Farnborough Airport and 2·8nm to the SW of Fairoaks Airport during the period of Royal Ascot week. (Saturday)

For the period of Royal Ascot week a NOTAM B0793/11 was issued promulgating the temporary Ascot ATZ, valid:14th to the 18th June 2011. Associated with this special event, a TOI was issued by Swanwick LTC, who have operational responsibility for the London CTR. The TOI contained procedures for the 'Ascot delegated airspace' within the CTR. Participating helicopter operators were provided with a comprehensive briefing on associated operational procedures.

As part of these arrangements, helicopter departures routeing via the designated 'West End Free-lane,' were required to maintain an altitude of 1200ft on a squawk 4776 and contact Farnborough Radar on 123·225MHz (LARS E). The planned movement of the participating helicopters was to the SE and consequently LARS E was designated as the controlling frequency. This would also reduce the traffic loading of the LARS W controller.

The Airprox was reported by the pilot of a Bell 222 (B222) helicopter, on a VFR flight from Ascot to Sevenoaks in Kent. The B222 was squawking 5023 and in receipt of a BS from LARS E.

The second ac, was a Beech 200 (BE200), which had just departed Fairoaks (promulgated as AFIS Mon-Sat 0700-1700, ATZ coincident with AFIS or A/G hrs), in accordance with the Fairoaks 'out of hours' procedures. The BE200 was squawking 7000, on a VFR flight to Dunsfold and had just contacted the LARS W controller. The pilot's written report indicated that the pilot had called Farnborough Approach on frequency 134·35MHz which was combined with Farnborough LARS W (125.25MHz). It is not clear if the BE200 pilot was aware of the Ascot 'Westend Free-lane' route and procedures. No AIC is promulgated for this event.

The Fairoaks Aerodrome Manual, Appendix E, 'out of hours', terms and conditions, note 4 states:

'For traffic information and Lower Airspace Radar Service call Farnborough Radar 125·250MHz as soon as possible, normally available 0800-2000 (local).' (LARS W)

Fanborough controllers were operating in bandboxed mode. One controller was working LARS W and Approach Radar in combined mode. The second controller was working LARS N and LARS E combined. Traffic levels were assessed as medium and there were no reported unserviceabilities.

METAR EGLF 181750Z 26017G29KT 9999 SCT039CB 16/08 Q1003=

Prior to the incident 2 helicopters had departed the Ascot designated 'West End Free-lane' ahead of the B222, working LARS E. In addition an opposite direction helicopter (Ascot inbound) [AC3], was approaching from the SE and also working LARS E.

At 1804:55, the B222 flight established contact with LARS E reporting, *"(B222 c/s) four double seven six off Ascot for Sevenoaks and request Basic."* The LARS E controller allocated a squawk 5023, passed the QNH 1003 and agreed a BS.

At 1806:24 the radar recording, viewed at short range, shows the BE200 just airborne from Fairoaks indicating an altitude of 100ft and displaying a 7000 squawk.

At 1806:45, the BE200 flight established contact with LARS W and reported, *"Farnborough radar good evening again er (BE200 c/s) airborne from Fairoaks to Dunsfold VFR."* The LARS W controller replied, *"(BE200 c/s) roger Basic Service Q N H one zero zero three keep a look out there's a helicopter (B222) just believed to be to the west of you by half a mile at twelve hundred feet possibly turning westbound also helicopter (Ascot inbound)[AC3] a mile south of you twelve hundred feet turning northbound."* There was no response from the pilot of the BE200 and the LARS W controller repeated the warning about traffic in the vicinity [1807:10], *"(BE200 c/s) caution a helicopter rotary indicating one thousand two hundred feet believed to be in front of you less than quarter of a mile."* The BE20 pilot replied, *"er looking and seen."* The LARS W controller responded, *"(BE200 c/s) roger squawk zero four three four when you can Basic Service QNH one zero zero three."* This was acknowledged by the BE200 pilot.

The LARS W controller's written report, indicated that he tried to warn the LARS E controller about the 7000 squawk (believed to be the BE200), but reported that the LARS E controller was 'intensely busy.'

At 1806:50, radar recording shows a number of ac in the vicinity of Fairoaks with a S'bound overflight at FL096 directly overhead the BE200 with labels overlapping and garbling. A short range expanded view of the radar recording shows the B222 passing 2·3nm SW of Fairoaks, indicating an altitude of 1200ft, with the BE200 in the B222 helicopters 10 o'clock position at a range of 1·2nm, indicating 900ft. The Ascot inbound helicopter [AC3] is shown 3·2nm to the S of Fairoaks tracking W, indicating 1200ft and displaying a LARS E squawk 5020.

At 1806:50, the LARS E controller advised the B222 pilot*, "(incomplete c/s) there's traffic (Ascot inbound) er southeast by three miles turning northbound into west end rotary same level has you in sight."* The B222 pilot responded, *"I think that's for (B222 c/s) visual*."

At 1807:10, the LARS E controller gave approval for the B222 helicopter to climb to 2400ft. Radar recording shows the B222 indicating an altitude of 1200ft, converging with the BE200 at a range of 0·6nm. The BE200 is indicating an altitude of 1400ft.

The written report from the LARS E controller indicated that, 'the LARS W controller pointed out the 7000 squawk (BE200) which was just appearing from the middle of the known contacts, indicating 1400ft – a similar level to the helicopters' and 'as it had already passed tracking southwest the controller did not call the traffic'.

[UKAB Note (2): The CPA occurs between 2 sweeps of the recorded radar. At 1807:26 the B222, which is turning L through 160°, is climbing through altitude 1300ft QNH 0·1nm W of the BE200 which is also turning slowly L through heading 200°, level at 1400ft QNH. The next sweep shows the BE200, still at 1400ft, 0·1nm to the S of the B222, having passed just ahead of it, which is climbing through 1400ft QNH. The CPA is estimated to be <100ft V and <0·1nm H.]

At 1808:05, the LARS W controller confirmed the BE200's altitude as 1400ft on QNH 1003 and the ac type as a Beech Kingair.

At 1810:30, the B222 pilot reported that the twin prop looked as though it had come out of Fairoaks and had got a little bit adjacent. The pilot indicated to the LARS E controller that he would call later to discuss the incident.

NATS reported that there had been no previous incidents of this kind associated with the Royal Ascot week. They regarded this as a one-off event that should not reflect on the previous 3 years of developing the event procedures. It was thought that the pilot departing Fairoaks was unaware of the Ascot procedures.

As a result of a recent meeting between the Ascot event stakeholders, a number of measures have been proposed for the 2012 event:

The Ascot organisers will promulgate an AIC.

Farnborough will issue a comprehensive NOTAM.

Flight safety awareness of the event will be publicised.

Fairoaks will provide a pilot briefing, with a requirement that 'out of hours' movements will be required to telephone Farnborough, prior to departure.

It is not clear if the BE200 pilot was aware of the 'West End Free-lane' and associated arrangements for Ascot departures. No AIC was issued and the NOTAM only referred to the Ascot Temporary ATZ. The designated Ascot airspace lies within the London CTR and was applicable to approved helicopter operators. However, the additional activity generated outside the CTR was likely to impact upon GA pilots flying in the adjacent airspace.

Ascot helicopters movements were working LARS E and by default Fairoaks out of hours departures would contact LARS W. It was likely that this situation was not foreseen and had not occurred in the past.

The LARS W controller received a call from the BE200 flight, which probably prompted the controller's early detection of the conflict. However, the LARS E controller was reported as being very busy. This together with complex radar picture and the garbling of the radar labels prevented the detection of the 7000 squawk as the BE200 departed.

The incident occurred 1min after the BE200 became airborne, within Class G airspace. Both flights were in receipt of a BS, with reported good flight visibility (>40km). CAP 774, UK Flight Information Services, states:

'Within Class F and G airspace, regardless of the service being provided, pilots are ultimately responsible for collision avoidance and terrain clearance, and they should consider service provision to be constrained by the unpredictable nature of this environment.'

'A Basic Service is an ATS provided for the purpose of giving advice and information useful for the safe and efficient conduct of flights. This may include weather information, changes of serviceability of facilities, conditions at aerodromes, general airspace activity information, and any other information likely to affect safety. The avoidance of other traffic is solely the pilot's responsibility.'

'Pilots should not expect any form of traffic information from a controller, as there is no such obligation placed on the controller under a Basic Service outside an Aerodrome Traffic Zone (ATZ), and the pilot remains responsible for collision avoidance at all times. However, on initial contact the controller may provide traffic information in general terms to assist with the pilot's situational awareness. This will not normally be updated by the controller unless the situation has changed markedly, or the pilot requests an update. A controller with access to surveillance derived information shall avoid the routine provision of traffic information on specific aircraft, and a pilot who considers that he requires such a regular flow of specific traffic information shall request a Traffic Service. However, if a controller considers that a definite risk of collision exists, a warning may be issued to the pilot.'

The Airprox occurred when the two flights operating VFR in Class G airspace and in receipt of a BS, came into conflict.

Under a BS there is no obligation placed upon the controller to provide TI. However, if a controller considers that a definite risk of collision exists, a warning may be issued to the pilot. The LARS W controller was able to pass a warning to the BE200 flight, but the LARS E controller did not detect the departure from Fairoaks and was unable to pass a warning.

A number of factors were considered to have contributed to the cause of the Airprox:

The workload of LARS E and the garbling of the radar labels delayed the controller becoming aware of the Fairoaks departure. The Airprox occurred within 1min of the BE200 becoming airborne and the BE200 pilot called on a different frequency to the helicopters exiting the Ascot delegated area.

There were no additional arrangements to brief pilots departing from Fairoaks in accordance with 'out of hours' procedures.

There was no AIC or NOTAM promulgating the arrangements for traffic entering and leaving the Ascot designated area, which would have increased the awareness of GA pilots operating in the adjacent area.

CAA ATSI is content that the proposals made for the 2012 event will address the safety issues highlighted by this Airprox.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

The NATS Advisor informed Members that in previous years LARS W had been delegated to work traffic entering/ leaving via the 'W End Free-lane'. The task was moved to LARS E to reduce the traffic loading on the LARS W frequency, which is usually the busiest LARS position at Farnborough. It appears that both the B222 and BE200 crews were going about their business with both flights establishing a BS from Farnborough. SA could have been enhanced had they been on the same frequency but the crews were responsible for maintaining their own separation from other ac through see and avoid. The BE200 pilot had seen the 2 previous 'W End Free-lane' departures but did not see the B222 following behind. LARS E had not noticed the BE200 depart Fairoaks owing to multiple radar tracks and label garbling and was too busy to accept LARS W's warning. From the radar recording it was clear that there was an opportunity for both crews to see each other's ac for some time prior to the Airprox, the BE200 converging from the B222's L and the B222 converging from the BE200's 1 o'clock. Both crews cited cross-cockpit visibility deficiencies owing to their seating positions; while these were factors, they should be mitigated by moving the ac's heading and/or by moving one's head. The B222 had right of way under the RoA regulations but these rules rely on crews sighting a potential confliction beforehand. The B222 pilot saw the BE200 too late to take avoiding action as it passed in front, he estimated by 60m, as he was climbing and turning L; Members agreed that this had effectively been a non-sighting, and a part cause of the Airprox. LARS W had done well in seeing the confliction and issuing a warning to the BE200 flight which enabled the pilot to see the B222 close-by. However, the BE200 pilot then lost sight of the helicopter whilst tightening his avoiding action turn, unaware of or misjudging the helicopter's flightpath and close proximity; Members agreed his avoiding action had been ineffective and was the other part cause. These elements together with the recorded minimum separation were enough to persuade the Board that an actual risk of collision existed during this incident.

Whilst understanding the rationale for spreading the workload at Farnborough between LARS W and E, the Board acknowledged the intended proposals for next year, and the commitment by the NATS Advisor to ensure they are implemented, which will hopefully militate against this situation occurring again.

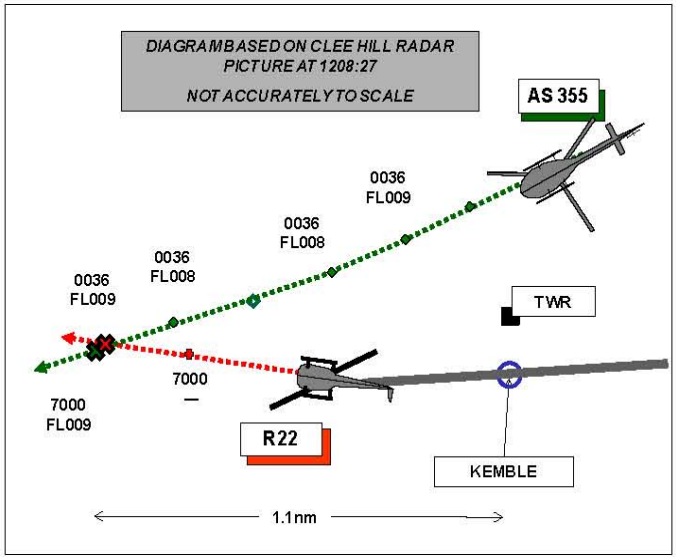
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Effectively a non-sighting by the B222 crew and ineffective avoiding action by the BE200 pilot.

Degree of Risk: A.

AIRPROX REPORT NO 2011060

Date/Time:	23 Jun 2011 1208Z	
Position:	5140N 00206W (1nm W of Kemble - elev 433ft)	
Airspace:	Kemble ATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	AS355	R22
Operator:	Civ Comm	Civ Pte
Alt/FL:	700ft (N/K)	800ft QNH (1014mb)
Weather:	VMC CLBC	VMC CLBC
Visibility:	>10km	999
Reported Separation:	30ft V/0ft H	80ft V/100ft H
Recorded Separation:	0 V/ <0.1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE AS355 PILOT reports that he was flying a pipeline inspection flight in a burgundy coloured helicopter, squawking 0036 (pipeline inspections) with Modes C and S and in receipt of a FIS from Kemble TWR; PCAS was carried but did not indicate any traffic. They were on a pipeline survey and had finished one pipeline at South Cerney and were heading 270° at 120kt, at 700ft on QFE 1001mb, [the QNH was 1016mb] positioning to the start the next inspection. He had called Kemble for transit through the cct 1.5nm to the N and maintained contact with ATC, passing his intention to ATC to transit to the N across the extended centre line of the RW crossing it at 3nm.

He was aware that there was a Robinson R22 leaving the cct and that the other cct traffic was aware of their position.

The first sighting of the conflicting ac was when the observer, seated in the front LHS, saw the conflicting traffic in their 9 o'clock below their ac and passing beneath; he shouted 'climb'. The pilot saw the ac's rotor blades in the chin bubble by his feet on the R of the ac and last saw the conflicting ac at 5 o'clock about 150ft away a split second later. He climbed the ac immediately the traffic was called by the observer. The other ac was approaching from below and behind them, in their blind spot and they would have been in theirs.

He informed Kemble TWR of the Airprox and assessed the risk as being high.

THE R22 PILOT reports flying a private flight from Kemble in a white ac with lights on, at the time in contact with Kemble ATC and squawking 7000 with Mode C. He was cleared for take-off from RW26 (grass) and, while in the climb at about 800ft (QNH) heading 260° at 60kt and 1nm W of the airfield, they were overflown by a dark coloured (possibly black or blue) AS350 or AS355. The ac was not sighted during the taxi or take-off from RW26 (grass). From the radio traffic the airfield appeared to be busy, however, no TI was passed by ATC nor were any calls heard from the other ac approaching or overflying the airfield.

The first sighting of the other ac was when it had already overflown them, as it was flying in a SW'ly direction.

He was not able to take any avoiding action as the other ac had already passed him and he assessed the risk as being high.

Although not required to do so, he opined that it would have been good practice for ATC to pass TI about an ac overflying the airfield at 1000ft. It also would have been good practice by the pilot of the over flying ac to make an 'over head the field call'.

He believes this incident brings into question why the other ac was allowed to overfly the airfield at such a low height which would bring it into possible conflict with other traffic and why the pilot elected to do so.

ATSI reports that the Airprox occurred at 1208:26, within the Kemble ATZ, which consists of a circle, radius 2nm, centred on RW08/26 and extending to 2000ft aal (436ft).

The Airprox was reported by the pilot of an Aerospatiale AS355 helicopter operating on a pipeline patrol and squawking 0036 and the other ac was a Robinson R22 helicopter departing from Kemble for a VFR flight to Blackbushe.

A FISO service is provided at Kemble. The FISO reported traffic levels as moderate with RW26 (hard and grass) in use.

ATSI had access to RTF and radar recordings and reports from both pilots. The FISO initially thought that the Airprox had occurred to the W and outside the Kemble ATZ.

The weather for Lyneham was:

METAR EGDL 231150Z 23010KT 9999 VCSH SCT028 BKN050 12/10 Q1016 BLU NOSIG=

At 1158:35, the R22 helicopter called for engine start for a flight to Blackbushe, departing to the SW and the FISO approved the start, *"(R22)C/S start approved Runway two six lefthand circuit the QNH one zero one six*."

At 1202:04 the R22 reported ready for departure, requesting a departure direct to the SW.

One sec later at 1204:05 the AS355 established two way communication with Kemble and advised*, "afternoon sir (AS355)C/S a twin squirrel two onboard out of Dunkeswell for Halfpenny Green we at er South Cerney a thousand feet on one zero one five er looking route through overhead if we can er westbound";* South Cerney is 4.5nm E of Kemble. (Dunkeswell is 64nm SW of Kemble and Halfpenny Green is 51nm N of Kemble.)

The AS355 pilot was passed the QFE 1001mb and reported at a height of 600ft. The FISO replied*, "(AS355)C/S roger have one aircraft turning downwind one aircraft in the two six lefthand circuit report entering the zone"* and the pilot responded*, "Copy the traffic and wilco (AS355)C/S".*

An ac operating at Babdown Farm, situated 5nm SW of Kemble, was passed TI, *"C/S...one helicopter to transit south to north six hundred feet Kemble QFE".* The FISO could not recall why this had been passed but added that he had not heard the AS355 report at South Cerney, but remembers being aware that the AS355 was routeing through the ATZ on a W'ly track. The FISO indicated that pipeline helicopters frequently operate in the area but the route through the airfield was unusual.

At 1206:27, the R22 pilot was asked to report lined up RW26-grass.

At 1206:48, the AS355 reported*, "(AS355)C/S approaching the ATZ boundary to the er northnortheast and our present track should er take us through the extended centreline about a mile out to the west"* and the FISO replied*, "(AS355)C/S roger that's copied report west abeam"* and the pilot acknowledged.

The FISO reported that the AS355 was not in sight, but he believed it to be about 2nm NNE and would pass NW of the airfield before crossing the extended centreline of RW26. He added that the R22 had requested a direct route to the SW and he thought that the two helicopters would be on diverging tracks.

At 1207:03, the FISO advised the R22, *"Helicopter (R22)C/S take off and depart your discretion surface wind two nine zero degrees eight knots"* and the R22 pilot replied, *"and depart my discretion helicopter (R22)C/S*".

The radar recording shows the AS355 to be 1.3nm NE of the ARP at 1207:10 tracking W and indicating FL008 (converting to 476ft on QFE 1001 with 1mb equal to 27ft); at 1207:53 it is 0.5nm NW of the ARP tracking SW.

AIRPROX REPORT No 2011060

At 1207:20 a Bulldog ac reported lining up RW26-hard and the FISO responded, *"(Bulldog)C/S..the helicopter ahead is departing to the southwest with that in mind take off at your discretion surface wind two nine zero degrees eight knots".*

The Kemble Tower FISO control desk faces S. The FISO reported that he had not sighted the AS355 and was talking to and observing other ac manoeuvring on the airfiled; he thought that it might have passed close to the overhead and been above the roofline. The FISO indicated that he had only visually aquired the AS355 as it approached a position NW abeam the RW08 'numbers'. The R22 was not in sight at that point and he thought that it had departed to the SW.

At 1208:02, the Bulldog was still on the RW and the FISO advised, *"(Bulldog)C/S just caution one erm twin squirrel in the overhead north side to depart to the southwest",* the pilot acknowledged and elected to hold for a second.

At 1208:29, the radar recording shows the AS355, 1.2nm W of the ARP and the AS355 was then indicating FL009 (576ft on QFE 1001mb); the R22 was not showing on radar at that point. [Note: this is the position of the Airprox but the diagram above shows the preceeding radar sweep].

At 1208:41 the radar recording shows the AS355, 1.5nm W of the ARP indicating FL010 (676ft on QFE 1001mb), with the R22 tracking WNW, in the AS355's half past four position at a range of 0.2nm; the two ac have crossed and are then diverging.

At interview the FISO indicated that he had lost sight of the R22 which must have routed WNW rather than directly to the SW.

1209:20 the AS355 pilot called Kemble and asked if the R22 had them in sight; there was no immediate response so the AS355 pilot added*, "er Kemble er (AS355)C/S I think we'll er need to report that as an Airprox er we'll give you a call later on but it was a white R twenty two out of the field";* this was acknowledged by the FISO.

At 1211:05 the AS355 pilot reported clear to the W and changing to the en-route frequency, but asked if the R22 was on frequency. The FISO asked the R22 pilot if the AS355 had been sighted on departure and he replied, *"er when he crossed over top of us we did er (R22)C/S.*"

The FISO recognised that TI should have been passed and would have aided the situational awareness of both pilots. He was asked if he had considered asking the AS355 to route N of the ATZ but he indicated that he was only able to pass TI and suggesting a routeing did not guarantee a pilot's compliance.

It is not clear why another ac was passed TI about the helicopter routeing S to N at 600ft; it is considered that the FISO may initially have misunderstood the route from Dunkeswell to Halfpenny Green.

When the AS355 reported approaching the NNE boundary, the FISO thought the AS355 was about 2nm NNE. He indicated that he was aware of the intended route, W through the ATZ and across the RW26 extended centreline at 1nm so the pilot was asked to report W abeam. The FISO thought that the AS355 would transit NW abeam the airfield and the R22 would depart directly to the SW with diverging tracks.

The R22 pilot had requested a route direct to the SW and this may have caused the FISO to believe that it would lift and immediately take up a SW'ly track.

It is considered that the intended track of the AS355, crossing 1nm W of the airfield, had the potential to bring the two helicopters into close proximity and would have justified the passing of updated TI.

The AS355 pilot was advised about the cct traffic but not the departures. He could have heard the R22's departure calls, but it is not clear why the pilot did not aquire visual contact.

The FISO did not pass TI to either the AS355 or R22 helicopters that would have aided the pilots' SA and assisted them in obtaining an early visual sighting of each other. The Manual of Flight Information Services, CAP410 Part B, Chapter 1, Page 1, Paragraph 2.1, states:

'The FISO has the following specific responsibilities:

issuing information to ac flying in the aerodrome traffic zone to assist the pilots in preventing collisions.'

Both ac were operating within the ATZ and were in receipt of a service from the FISO. CAP774, Chapter 1, Page1, Paragraph 2, states:

'Within Class F and G airspace, regardless of the service being provided, pilots are ultimately responsible for collision avoidance and terrain clearance, and they should consider service provision to be constrained by the unpredictable nature of this environment. The Class F and G airspace environment is typified by the following:

It is not mandatory for a pilot to be in receipt of an ATS; this generates an unknown traffic environment;

Controller/FISO workload cannot be predicted;

Pilots may make sudden manoeuvres, even when in receipt of an ATS.'

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar recordings and a report from the appropriate ATC authority.

The Board considered the parts played by the two pilots and the FISO in turn.

Members agreed that the AS355 pilot should have planned to, and given, the busy aerodrome at Kemble a wider berth; since he was in transit between two pipeline inspections, doing so would not have adversely affected his flight profile. Notwithstanding that the FISO did not provide him with TI regarding the R22 taking off, the AS355 pilot should have been alert to the possibility ac departing the visual circuit area. Further, even if he did not avoid the aerodrome completely, Members considered that flying through the departure lane at about the same height as ac in it, to be ill advised as it can, and in this case did, lead to unnecessarily close encounters. Although the R22 was well below him, Members thought that the AS355 pilot should have manoeuvred his ac to make the RW visible.

The R22 pilot was also not passed TI regarding the AS355 and was not aware of its presence until the ac came in close proximity less than 1min after he took off. Although the pilot was aware that the circuit was busy, he did not (perhaps could not) see the AS355 which approached from his 5 o'clock and well above.

Both pilots however, had made the appropriate RT calls on the same frequency and despite that TI was not passed to either, Members thought that both should have been aware of the presence and location of each other from the (background) RT traffic.

The FISO, Members thought, had not fully appreciated the intended routeing of the AS355 which in any case had been slightly closer to the airfield than he initially stated. Although technically accurate, the AS355's first transmission to the FISO could have given a better description of his intended routeing from his location reported as South Cerney. The FISO, it seemed, had anticipated that it would be far enough away from the airfield and the departure lane not to pose a problem. Further he had apparently anticipated the R44 would turn immediately onto a SW track rather than going straight ahead then slightly right to clear the cct then turn SW (in accordance with the noise abatement departure procedures published in Pooleys Flight Guide). It was clear to Members that, although both pilots were operating in the visual circuit area under the 'see and avoid' principle, had TI been passed to either or both, that might have prompted them to be aware of, and specifically look for, the opposing ac; Members agreed that this had been part of the cause of the incident.

In actuality however, neither pilot saw the opposing ac in time to take any avoidance. Further, although the actual CPA was between sweeps, the radar recording verified that the separation was very small; that being the case, Members agreed unanimously that there had been an actual risk of collision.

AIRPROX REPORT No 2011060

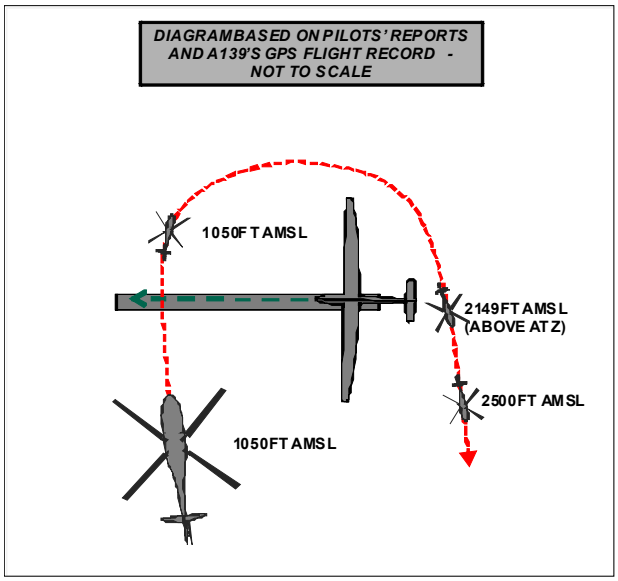
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: In the absence of TI, effectively non-sightings by the pilots of both ac.

Degree of Risk: A.

AIRPROX REPORT NO 2011061

Date/Time:	19 Jun 2011 1355Z (Sunday)	
Position:	5101N 00238W (RNAS Yeovilton - elev 75ft)	
Airspace:	ATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	SZD-50 Glider	AW139
Operator:	Civ Club	NK
Alt/FL:	500ft	NK
	(QFE NK)	NK
Weather:	VMC CLBC	VMC CLBC
Visibility:	>5nm	10km
Reported Separation:		
	500ft V/0.5nm H	NK
Recorded Separation:		
	Est 800ft V/NR H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PUCHACZ GLIDER PILOT reports flying the second of two check flights for the handling pilot in a white glider listening out on the [unmanned] TWR VHF frequency [120.8]. The ac was launched by wire auto-tow from RW27 and they were in the initial climb at about 300ft and 55kt when the instructor aborted the launch to simulate a launch failure/cable break. As the handling pilot lowered the nose of the glider a red and white helicopter was seen in their 11 o'clock position heading slightly towards them, crossing from L to R. The instructor took control and commenced a descent to land straight ahead. The helicopter maintained its height of about 1500ft and turned about 030° left crossing ahead of them before turning R on the N side of airfield over the technical site. Thereafter, the helicopter turned R and flew away from the airfield to the SE.

Glider control on the ground reported that they saw the helicopter enter the circuit area from the SW crossing over the threshold of RW09 before turning R to the N of the airfield and R again and depart to the SE.

He thought that the other ac was an AW139, possibly Coastguard.

He discussed the incident on the ground and the CFI reported it to Commander Flying, assessing the risk to be Medium.

THE AW139 PILOT reports that they were scrambled by ARCC Kinloss and were en–route from Portland to the site of a helicopter crash S of Glastonbury, heading 344° at 157 kt, squawking 0023 with Modes C and S; TCAS was fitted.

They made a blind call on Yeovilton Radar frequency 127.35 transiting the airfield S to N but no response from any other station was heard. No ac were seen in the vicinity although there was TCAS activity to the N of Yeovilton, presumably in the vicinity of the helicopter crash site, caused by other rescue helicopters at the scene.

Prior to arrival at Glastonbury, they were stood down to return to base as other helicopter rescue assets were already at the scene so he reversed course to RTB.

They provided information from their 'Skytrac' system showing altitude track and speed heading towards Glastonbury and return to Portland. At the time of the reported incident, (1355) the A139 was tracking 166° at 3199ft in the climb to FL55 on their return to Portland in good VMC conditions.

If this was an accurate time then the pilot recalls discussing a TCAS return with the crew and asking that they maintain a good lookout; however, there was no relative height information associated with it and with clear skies above and broken cloud below it was not considered a threat.

UKAB Note (1): Yeovilton is promulgated in the UKAIP ENR 2-2-2-5 as an ATZ (Government Aerodrome 2.5nm up to 2075ft amsl) and is active H24. The ANO, RoA 45 (1), (2) and (3) require that:

'If the aerodrome has an air traffic control unit the commander shall obtain the permission of the air traffic control unit to enable the flight to be conducted safely within the zone'.

UKAB Note (2): Yeovilton is promulgated in the UKAIP ENR 5-5-1-7 as a glider launch site (winch ground tow and tug aircraft/motor glider) HJ listed up to 2000ft aal (2075ft).

UKAB Note (3): The recording of their flight data helpfully provided by the A139 crew shows the helicopter turning right to RTB almost over Yeovilton airfield at 1352 and commence a slow climb from 1000ft amsl to FL55. This correlates with the respective pilots' description of events but the incident is not shown on the radar recordings.

HQ NAVY COMMAND at the time of this Airprox the ATC Tower at RNAS Yeovilton was closed and unmanned, although the airfield is often open for operational flying during periods over a weekend. Yeovilton has an active Gliding Club which takes every opportunity to conduct glider flying whilst the airfield is closed and has been doing so for many years. Yeovilton Gliding Club Orders dictate that they must listen out on the ATC Tower frequency in order to deconflict their activity with station flying and that of the Yeovilton Flying Club (civil registered light aircraft) which also operates whilst the airfield is closed. Glider control is not required in local orders to monitor the LARS frequency (127.35) and would anticipate any ac wishing to penetrate the ATZ to call on the Tower frequency.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, radar recordings, and the A139 route data log.

The Gliding Member pointed out that it was very fortunate that the glider instructor had decided that the flight should consist of a simulated cable break drill early in the launch sequence from a low height, requiring a landing straight ahead. Since this was the case, the glider was separated vertically from the A139 by about 800ft which increased as the helicopter climbed immediately after it was stood down from SAROPS, just to the N of Yeovilton. Notwithstanding this however, Yeovilton is a published and well-known glider launching site and flying across the RW below max cable height is, in normal circumstances, very hazardous for both gliders and 'infringers'. That the A139 flew through the ATZ without clearance, at that stage still deploying to the crash site, was considered less significant by Members than flying over the promulgated and active ground launching glider site, which needlessly placed his ac and therefore his important mission at risk.

Members observed that the purpose of an ATZ is to offer some protection to [fixed wing and rotary] ac operating therein; is not meant to be 'barrier' to other ac and there should be some means of allowing safe penetration by transiting ac. Further, glider sites are not offered ATZ status but are notified in the UKAIP as hazards. It was noted Yeovilton was correctly promulgated in the AIP as a Glider Launch Site but, in common with many other military airfields promulgated as active 'H24', there is no means of allowing ac to transit the ATZ when ATC is closed. Several Members considered this unsatisfactory and unnecessarily restrictive particularly for HEMS/SAR/Police etc. Members also considered that this probably warranted a formal safety recommendation but since the situation was so complex the Board charged the Director with discussing the problem with the appropriate military and civil agencies with a view to agreeing a resolution; the Director agreed, and undertook to report back to the Board. Further, a Member familiar with emergency helicopter operations observed that, since it is not annotated on charts, there is no quick and easy means of determining whether an ATZ is H24 or not.

[Post Meeting Note: This information is published in the Military En-Route Supplement - 'the Red Book' which is available to non military aviators.]

Members observed that there is a common misapprehension, even among some professional pilots, that if there is no response to a call to ATC requesting an ATZ penetration, that they can then fly through the ATZ assuming it to be closed; while this is correct for a MATZ it is not the case for the embedded ATZ which must be avoided if no clearance to enter is obtained. In this case despite that it would have added a few track miles to his otherwise

direct flight, Members agreed that the A139 should have avoided the ATZ and by doing so he would also have avoided the glider launch site.

Members observed that had the A139 pilot called on the TWR frequency, which is monitored by glider control, the gliding activity would have been notified to him; however, current procedures for MATZ crossings are that pilots call on the Radar frequency (as printed on VFR charts) and that is what the A139 pilot did.

When considering the degree of risk Members noted that, although potentially serious, in the event there had been more than adequate vertical separation and therefore in their view, no risk of collision.

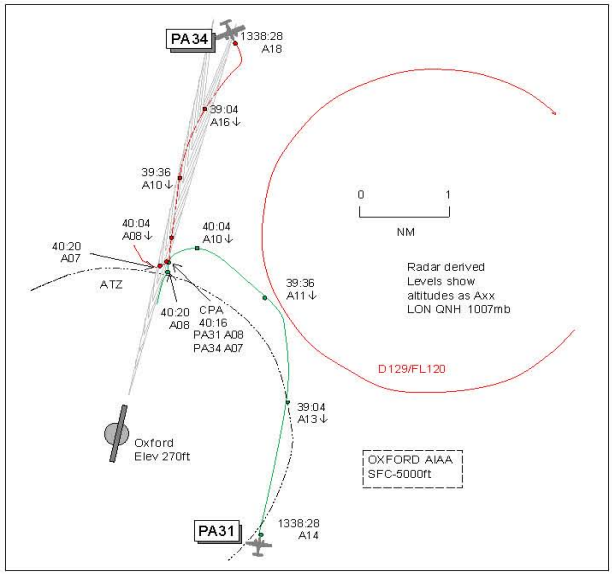
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The A139 pilot entered the ATZ without permission and flew through a notified and active glider site below the promulgated height of the launch cable.

Degree of Risk: C.

AIRPROX REPORT NO 2011062

Date/Time:	22 Jun 2011 1340Z	
Position:	5152N 00118W (2nm FIN APP RW19 Oxford - elev 270ft)	
Airspace:	Oxford AIAA/ATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	PA31	PA34
Operator:	Civ Comm	Civ Trg
Alt/FL:	800ft↓	↓
	QNH 1006mb	QNH 1006mb
Weather:	VMC CLBC	VMC CLBC
Visibility:	>10km	>10km
Reported Separation:		
	50ft V/1-200ft H	100ft V/50m H
Recorded Separation:		
	100ft V/0·1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PA31 PILOT reports inbound to Oxford IFR and in communication with Oxford Tower on 133·425MHz, squawking with Modes S and C. He had previously spoken with, and obtained a service from, Approach in the CPT area and he positioned for a LH downwind join. He was told there was no other cct traffic. He reported downwind, he thought, and was requested to report final for RW19. Once he had turned final descending through 1000ft QNH at 120kt he heard Tower request the position of another ac; at this point he was 2·9nm DME I-OXF. The other ac's pilot replied 2DME and so realising a potential conflict he immediately called, "PA31 c/s also at 2 DME" although at this point he was 2·3DME. He could see no other ac ahead or to the sides so he broke slightly to the L of the extended C/L and then he could see a PA34 below his starboard wing by approximately 50ft and 100-200ft away. He had not heard the PA34 flight call at the IFR reporting point of 4DME. He assessed the risk as high.

THE PA34 PILOT reports flying a dual local training sortie from Oxford VFR and in communication with Oxford Tower 133·425MHz squawking with Modes S and C. Heading 194° at 105kt and 2 DME RW19 Tower called his attention to a PA31 that was on final ahead. The I/F screens were obscuring his view of the ac but on leaning forward he saw the PA31 about 50m ahead and slightly to the L and 100ft above. He immediately turned R and, when clear, climbed away to reposition onto final. He assessed the risk as low.

THE OXFORD ADC reports the PA31 was inbound IFR on a downwind join and when the pilot 'checked in' on frequency he was informed that there was no cct traffic and was instructed to report final No 1. The PA34 was operating VFR whilst conducting an NDB approach to RW19 and after the pilot reported base turn complete with Approach the flight was instructed to contact Tower. The pilot 'checked in' with a very brief c/s call and was instructed to report 4 DME (SOP) and was informed that they were No 2 to a PA31 downwind that was a hospital flight. The PA31 was observed halfway through the base turn and he had still not received a call from the PA34 flight so he picked up the binoculars to check its position whilst eliciting a range check. The PA34 pilot reported at 2 DME as the PA31 pilot also reported 2 DME; at this time the PA34 was seen pulling up sharply to the R and turning away from the PA31; both ac had been in extremely close proximity. Traffic levels were light with 4 speaking units and several ground units making frequent calls on a discrete frequency. Oxford is technologically challenged as they operate without an ATM and rely on 'Mk1 eyeball' and accurate pilot's reports in order to sequence ac. It is becoming increasingly prevalent for students to not make such essential safety calls and the burden of separation is being placed upon the skill and wits of the controller on duty. The 4 DME call is an essential safety call to facilitate the safe integration of cct and approach traffic and if omitted by the student it should be made by the instructor.

ATSI reports that the Airprox occurred at 1340:11, within Class G airspace, 2·3nm to the NNE of Oxford Airport and just outside the Oxford ATZ. The Oxford ATZ extends to a height of 2000ft above aerodrome level and is bounded by a circle 2nm radius centred on the mid-point of RW19.

The PA31 was a hospital CAT B, IFR flight, inbound to Oxford from Jersey. The radar recording shows the PA31 passing Compton (CPT) at an altitude of 1900ft below CAS. It is not clear if the PA31 had cancelled IFR earlier en-route.

The PA34 was a local training flight conducting an NDB approach and operating in accordance with VFR.

Oxford were providing split positions for Aerodrome (Tower) and Approach control, without the aid of surveillance equipment. The Tower controller reported workload as light with no distractions.

CAA ATSI had access to RT and radar recordings, together with written reports from the 2 pilots and 2 controllers.

The weather for Oxford was not available, however the weather for Brize Norton was provided: METAR EGVN 221250Z 24010G20KT 9999 BKN028 SCT220 19/09 Q1006 BLU NOSIG=

The PA34 flight was under VFR at 3500ft, in receipt of a BS and holding at the OX-NDB, prior to commencing an NDB approach for RW19. At 1330:07, the PA34 flight was cleared by Oxford Approach for the NDB approach and asked to report beacon outbound.

At 1332:00, the PA31 flight established contact with Oxford Approach requesting a BS and a visual join. The Approach controller passed the QNH 1006 and the PA31 pilot reported 19nm to the SSE of Oxford requesting a join downwind LH for RW19.

At 1332:25, Approach replied, *"(PA31 c/s) that's understood join er visual downwind left hand then for runway one nine traffic is a P A thirtyfour in the Oscar Xray hold three thousand five hundred feet er he's V F R shortly to go outbound for the N D B one nine and Weston on the Green Danger Area one two nine is active to flight level one two zero report the field in sight*." This was acknowledged by the PA31 pilot.

At 1333:22, the PA34 pilot reported beacon outbound and Approach advised, *"(PA34 c/s) report leaving altitude three thousand five hundred feet traffic is a P A thirty one inbound from the south for a downwind join visual."* There was a short period of transmitter modulation, but no audible response from the PA34 pilot.

At 1334:57, the PA34 pilot reported leaving 3500ft and Approach instructed the pilot to report base turn complete. This was acknowledged by the PA34 pilot.

At 1337:18, the PA31 pilot reported 5nm to run and Approach transferred the flight to the Tower frequency 133·425MHz.

At 1337:34, the PA34 reported base turn complete and Approach transferred the flight to the Tower on frequency 133·425MHz.

Both flights were coordinated with the Tower controller, who later stated, that the PA31 strip had been placed in the active bay and the PA34 strip had been cocked out, indicating that the ac had commenced the NDB and would be transferred by APC once 'base turn complete'.

At 1337:38 the PA31 pilot contacted the Tower and the controller replied, *"(PA31 c/s) no circuit traffic report on final number one for landing runway one niner."* The PA31 pilot acknowledged, *"Wilco runway one niner (PA31 c/s)."* The radar recording shows the PA31, 4·2nm SE of the airfield. Later the controller was asked whether he considered that the distance of the PA34, at base turn complete [chart 6·5nm] was probably equidistant with the range of the PA31. The controller indicated that he didn't have radar, the PA34 was still with Approach and the range of the base turn tended to vary considerably with training ac.

The Tower controller was asked whether he had considered asking the PA31 pilot to report either downwind or on L base. The controller indicated that the PA31 was No 1 and considered that the ac was approaching the

beginning of the downwind leg. The controller added that because of the position of D129 and from previous experience, he expected that the PA31 would make a short cct pattern.

At 1338:28, the PA34 pilot contacted the Tower, the controller responded, *"(PA34 c/s) tower continue approach runway one nine report at four D M E you will be number two to hospital flight traffic that's er downwind."* The PA34 pilot replied, *"(PA34 c/s).*" The radar recording shows the PA31 commencing the downwind leg.

At 1339:36, the radar recording shows the PA31, at the boundary of D129 and turning onto L base, at a position 2·4nm NE of the airfield. The Tower controller indicated that, as he observed the PA31 turning L base, he had a 'sixth sense feeling' and decided to request a range check.

At 1340:00, the Tower controller asked, *"(PA34 c/s) range check please,"* and the PA34 pilot replied, *"we're two D (PA34 c/s)."* The Tower controller responded, *"visual with the chieftain turning in ahead."* At this point the PA31 pilot transmitted, "*er (PA31)c/s we're two D."* The Tower controller responded, "(*PA34 c/s) break off and join overhead for runway one nine."* There was no response from the PA34 pilot.

At 1340:04, radar recording shows the distance between the 2 ac as 0·3nm. The PA34 is on final approach at an altitude of 800ft and the PA31 is on L base indicating an altitude of 1000ft and turning towards final.

At 1340:16, the radar recording shows the distance between the 2 ac as less than 0·1nm with the ac labels overlapping. The PA34 is indicating an altitude of 700ft and the PA31 is indicating an altitude of 800ft.

At 1340:20, the PA34 breaks off the approach by turning R.

Both flights were in receipt of an Aerodrome Control Service. The Manual of Air Traffic Services Part1, Section 2, Chapter1, Page 1, paragraph 2.1, states:

'Aerodrome Control is responsible for issuing information and instructions to aircraft under its control to achieve a safe, orderly and expeditious flow of air traffic and to assist pilots in preventing collisions between:

a) aircraft flying in, and in the vicinity of, the ATZ;

b) aircraft taking-off and landing'

The controller later indicated, that he had subsequently discussed the incident with the PA34 instructor, who advised that they were not aware of the hospital flight and that a student was being examined and had not reported at 4 DME.

The Approach controller had given the PA34 pilot TI regarding the PA31 and it was noted that there was only a transmitter modulation in response. The Tower controller had advised the PA34 pilot that he was "…number two to hospital flight traffic," instructing the pilot to report at 4 DME. It was noted that on this occasion there was only the c/s as acknowledgement.

The controller indicated that in the busy non-radar, training environment, and busy cct at Oxford, controllers are reliant upon accurate position reports from pilots making an instrument approach, in order to effectively integrate the traffic into the cct. It is not clear why the PA34 pilot did not provide a range check at 4 DME.

On first contact with the Tower, the PA31 pilot was advised that there was no cct traffic. The PA31 pilot was passed TI about the PA34 by the Approach controller and was aware of the PA34. It is likely that the PA31 pilot's situational picture was also reliant upon the PA34 making a call at 4 DME. The PA31 pilot's written report indicated that, "I did not hear the PA34 call at the IFR reporting point at 4 DME."

The integration of traffic into the visual cct is the responsibility of the Aerodrome controller. The PA31 hospital flight, with a clear cct was cleared to final. When the PA34 flight called Tower, the PA31 was in the downwind position. The PA34 pilot was instructed to, "continue approach runway one nine report at four D M E you will be number two to hospital flight traffic that's er downwind." The controller was reliant upon the 4 DME check in order to integrate the arrival into the cct pattern. On this occasion, traffic loading was light however, the possibility of a

late or missed call from a pilot, due to heavy RT loading or complex traffic situations, is something that controllers need to safeguard against.

The incident occurred when the PA34 pilot, having been advised about the hospital flight in the circuit, did not report at 4NM DME as instructed by the Tower controller, resulting in the 2 ac coming into close proximity on final approach.

CAA ATSI considered that, in a non-radar environment controllers are reliant upon accurate position reports from pilots. An initial request for the range of the inbound PA34 on first contact with the tower, would have aided the Tower controller's assessment of the situation. Additionally a request for the PA31 to make a standard call downwind or when turning L base may have prompted the controller to re-assess the plan or check the position of the arriving PA34 and would also have served to give the PA34 pilot a situational reminder of the other traffic on frequency.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

Members agreed with the ATSI summary of the incident. In the procedural environment, without radar or ATM, controllers are reliant on accurate pilot reports. The controller had formulated a plan with the CAT B PA31 being made No 1 in the traffic sequence and the PA34 No 2. The PA34 pilot was told to report at 4 DME and position No 2 to the PA31; however, the PA34 pilot did not comply with either of the ATC instructions which Members agreed had caused the Airprox. The 4 DME call was essential to allow the controller to integrate the traffic into cct and Members were surprised that the instructor had not made the call in the absence of the handling pilot, under examination, not carrying out the instruction. That said, it appeared that SA was diminished in the PA34 cockpit as the pilot had continued his approach apparently unaware of the PA31 until it was pointed out by the controller after querying the ac's range approaching 2 DME. Members acknowledged that visibility is diminished when I/F screens are erected but this deficiency should be mitigated by the instructor moving his head frequently during lookout scans. The PA31 pilot was complying with ATC instructions positioning No 1 towards final and, although aware that the PA34 was inbound, he was unaware of its range. Whilst turning through base leg onto final, the pilot's view was degraded as the PA31 was belly-up to the approaching PA34. Both crews only saw each other's ac as the PA31 was establishing on final approach and were made aware of each other's proximity when the ADC queried the PA34 flight's range. On hearing the PA34 pilot's response, the PA31 manoeuvred to the L revealing the PA34 just 50ft below and 100-200ft to the R of his ac whilst the PA34 instructor visually acquired the PA31 just 100ft above and 50m ahead. These factors led Members to unanimously agree that luck had played a large part in the incident, with both flights having missed each other purely by chance. This left the Board in no doubt that there had been an actual risk of collision during this Airprox.

The CAA SRG Advisor informed the Board that the ATC Procedures Working Group had recently discussed the integration of traffic in the vicinity of aerodromes as an agenda item and that current procedures and guidance are under review.

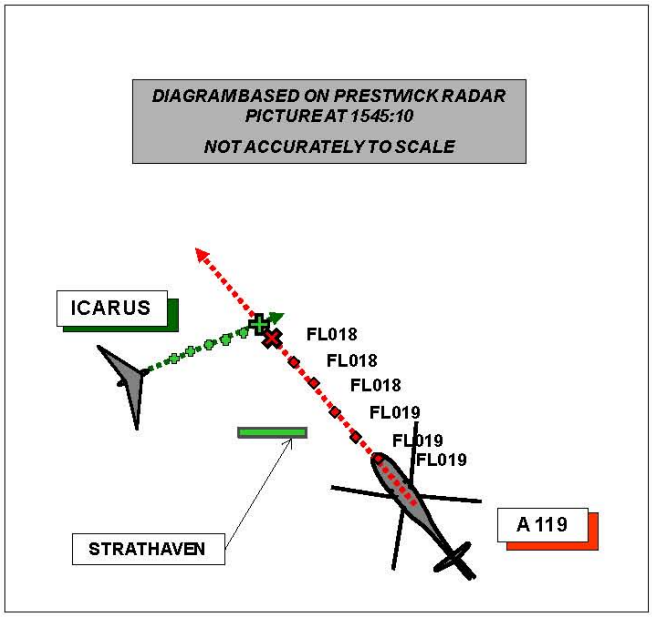
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The PA34 pilot did not comply with ATC instructions.

Degree of Risk: A.

AIRPROX REPORT NO 2011063

Date/Time:	20 Jun 2011 1545Z	
Position:	5541N 00406W (Strathaven RW27 RH cct - elev 847ft)	
Airspace:	Scot FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Ikarus C42	Agusta 119
Operator:	Civ Club	Civ Pte
Alt/FL:	800ft	1968ft
	QFE (NK)	QNH (NK)
Weather:	VMC CAVOK	VMC CAVOK
Visibility:	NR	>10km
Reported Separation:		
	200ft V/0ft H	350ft V/ 2000-3000m H
Recorded Separation:		
	NR V/<0.1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE IKARUS C42 PILOT reports that he was instructing a novice pilot on a VFR flight, returning from Bute to Strathaven VFR in an ac with no lights or SSR fitted; he made a radio call on 135.475 (Safety Common) to alert other traffic that he was 2nm to the W of the field and would be joining downwind RH for RW27. He then called downwind for RW27, heading 090° at 70kt and at 800ft QFE. When in the late downwind position, his student alerted him to a white helicopter (registration reported), 350m away in their 2 o'clock position. He assessed a collision to be imminent and took avoiding action by lowering the nose and reducing the power to idle. He saw the helicopter pass immediately overhead, about 200ft above.

He assessed the risk as being high, reporting the incident on landing.

THE AGUSTA 119 PILOT reports that they were on a VFR flight from a private site in North Norfolk to Glasgow in a black and white ac with Modes C, S and TCAS 2 fitted; he was PiC in the RH seat with a co-pilot in the LH seat and the weather was CAVOK.

About 50nm S of Strathaven they had been working Scottish Information, but when they were 30nm SE of Glasgow Airport heading 314° at 136kt, they were requested to change to Glasgow APR on 119.1. On checking in, the Glasgow controller gave them a squawk and a pressure setting but he cannot recall if they were placed on a TS or BS; however, their instructions were to descend from 3000ft for a VFR Zone entry at VRP East Kilbride, not above 2000ft alt. They commenced a descent to enter the Zone at East Kilbride below 2000ft and they were aware of the Strathaven Microlight Site; however on approaching it, neither he nor his co-pilot saw any activity, they had no published RT frequency to call them and they were still above 2000ft [amsl].

He briefly saw a microlight seeming to appear out of nowhere but with hindsight he thought that it had been either on the downwind leg or it was established on right base in a descent. He estimates that the ac was some 300-350ft below him. They received no warning from ATC of this traffic or any other activity at Strathaven.

He assessed the risk as being medium.

From a later telephone call to the club he understands that they were using RW27 with RH circuits. On further checking he determined that the aerodrome elev is 847ft and their circuit height is 1000ft. He also understands from the club that the ac had no form of transponder, so it would not have been displayed on their TCAS.

He retrieved the flight data from their moving map display and enclosed a copy.

On viewing the route recording he thought that they might just have flown over or near the NE corner of the aerodrome at an alt of 2000ft.

[UKAB Note (1); The route data recorder shows the ac passing 1.6km to the E of the centre of the Airfield (over the W edge of Strathaven town at 1968ft amsl, tracking 314°).

ATSI reports that the Airprox took place in Class G uncontrolled airspace between an Ikarus C42 Microlight (M'light) and an Augusta A119 Koala helicopter (A119).

The M'light was operating in the vicinity of the grass strips at Strathaven after a flight from Bute and was maintaining a watch/broadcasting its intentions on Safetycom, 135.475 MHz (unrecorded). The ac was not in receipt of an ATS. The M'light was not fitted with a transponder.

The A119 had departed from a private site at Binham, Norfolk and was in contact with Glasgow APR on 119.1 MHz in receipt of a BS while inbound VFR. Glasgow ATC was unaware of the Airprox and, having been notified of the incident, filed a unit report with ATSI in retrospect.

ATSI had access to the following in the course of its investigation:

M'light and A119 pilots' reports, recording of frequency 119.1 MHz, recorded area surveillance, CAP493 and the UK AIP.

The METAR for Glasgow was:

EGPF 201550Z 28007KT 240V330 9999 FEW030 SCT040 17/09 Q1009=.

UK AIP ENR 1-1-5-9 (17 Dec 09) states:

'Those Microlight Flying Sites where flying is known to take place are listed at ENR 5.5 and are regarded as aerodromes. Sites are listed primarily as hazards to other airspace users…'

Strathaven is notified as a Microlight site (ENR 5.5) and is annotated on ICAO Aeronautical Charts 1:500,000 and 1:250,000 (AIS, VFR CHARTS). The circuit height (vertical limit, column 2) is not notified in the AIP or on the VFR charts.

A VFR Route Brief (www.ais.org.uk) from EGSH (Norwich) to EGPF (Glasgow), 20 Jun 11 1230-1800Z, VFR FL000 to FL030 does not notify Strathaven activity. NOTAMs published in accordance with ICAO standards are to cover information of a temporary nature/short term duration. This can include information concerning the presence of hazards to air navigation.

(On 12 Feb 2011 another similar Airprox occurred in the vicinity of Strathaven between a M'light and an AS355 (Airprox 2011011)).

The A119 pilot contacted Glasgow APR 1538:00, a BS was agreed and the A119 was instructed to squawk 2601. The ac was tracking in a NWly direction, at an alt of 2600ft, approximately 32nm SE of Glasgow Airport and 16nm SE of Strathaven.

Under a BS controllers may provide information useful for the safe and efficient conduct of flight. This may include general airspace activity information. The avoidance of traffic is solely the responsibility of pilots.

The Glasgow APR controller instructed the A119 to be not above alt 2000ft within the Zone.

Glasgow ATC previously reported to ATSI that the unit's surveillance does not always show local activity at Strathaven, which is 16.4nm SE of EGPF with an elevation of 847ft. Strathaven is 2.3nm outside the SE corner of the Glasgow CTR (Class D CAS, surface to alt 6000ft). The base of CAS airspace directly above Strathaven is 4500ft amsl (the Scottish TMA Class D).

The preferred radar source for Glasgow APR is their Watchman primary and Glasgow SSR (Brownfield); Kincardine and Lowther Hill are also available as required but it is not known which source the Glasgow APR controller was using at the time of the incident.

There is no requirement for Strathaven to inform Glasgow ATC when they are active and it is standard practice at Glasgow not to provide information on Strathaven activity.

The M'light, crewed by an instructor and trainee, was manoeuvring to join the aerodrome cct pattern downwind RH for RW27; the direction of circuits at Strathaven is to the N. The M'light pilot reported being late-downwind at the time of the incident and that the ac was at 800ft agl.

At 1542:09 the recorded area surveillance (Prestwick Multi Radar Tracking) showed the A119, 6.5nm SE of Strathaven, at an alt of 2100ft while an intermittent slow moving primary return can be seen WSW of Strathaven on a course towards the airfield. By 1544:00 the A119 was 2.3nm SE of Strathaven at alt 2000ft and the primary only return had manoeuvred into a crosswind position for RW27. At 1544:43, the A119 passed abeam the Strathaven RW27 final position at an (Mode C) alt of 1900ft while the primary only return was in a position downwind for RW27 and the ac were 1.5nm apart; by 1545:06 the ac were 0.3nm apart, 0.6nm N of Strathaven and the Mode C of the A119 showed 1800ft. The two radar returns then merged as the A119 continued on its NW track at 1800ft and the primary return continued on a track downwind for RW27 at Strathaven.

The A119 pilot called entering the Glasgow CTR at 1546:27 and shortly thereafter was transferred to the Glasgow TWR. There was no Airprox report given on the APR frequency.

The A119 pilot reported being aware of the Strathaven site and noted there being no published frequency. The two man crew of the A119 reported that they saw no activity in the vicinity of the site until, at the last moment, sighting the M'light as it passed approximately 300 – 350ft below them.

The primary contact observed on the Prestwick MRT was such that its characteristics indicated it to be the reporting M'light i.e. the track flown and the position of the A119 relative to the primary contact.

As the A119 approached the Glasgow Zone boundary, and in order to comply with the ATC requirement of 'not above 2000ft in the zone', the A119 descended.

The cct altitude at Strathaven is 1847ft (847ft elevation plus 1000ft height). The A119 flew less than 1nm to the NE of Strathaven at an alt of 1800ft. The M'light pilot reported being at 800ft agl. Therefore the M'light was at an altitude equivalent of 1647ft (847ft elevation plus 800ft height). By this calculation the vertical distance between the ac may have been less than that reported by both pilots.

The Airprox occurred when the A119 flew within the vicinity of Strathaven at about circuit height.

The encounter was pre-disposed by several factors:

The location of Strathaven in relation to the Glasgow CTR means that traffic routing inbound from the SE beneath controlled airspace will likely pass-by the vicinity of Strathaven.

The A119 had descended in order to comply with Glasgow ATC's requirement for flight within the Glasgow CTR.

Whilst Strathaven is notified in the UK AIP as a microlight site (and depicted on standard navigational maps), there is no notification of the circuit height used at the aerodrome.

Both ac were flying in uncontrolled airspace where responsibility for collision avoidance rests with the pilots. Glasgow APR had no information to suggest there was flying activity at Strathaven and was not required to provide such information. Surveillance capabilities at Glasgow are not reliable in discerning activity in the vicinity of Strathaven.

RECOMMENDATION: In light of this and the previous Airprox of 12 Feb 2011 the following recommendation is addressed to the Civil Aviation Authority's Aeronautical Information Management Regulation department (DAP):

The CAA should determine whether or not the entry for the Strathaven Microlight Site in the UK AIP should be amended to include details of the vertical limits of activity at the site.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC authorities.

Members observed that this is the second similar Airprox in the last 12 Months (2011011). Further they noted the specific circumstances and location of Strathaven relative to Glasgow and its surrounding CAS make it vulnerable to overflights both by traffic inbound to Glasgow and VFR traffic transiting through the Class G 'corridor' to the E of the CTR. Also its height of 847ft meant that such traffic is often at, or just below, cct height.

It was observed by a GA Member that the A119 crew were aware of Strathaven but its grass RWs surrounded by other areas of grass make the airfield difficult to break out; he observed that the helicopter flew along the edge of the town minimising any noise nuisance but in doing so came close to the airfield boundary and therefore close to the microlight in the cct.

While agreeing that it is good airmanship to give microlight sites a wide berth, Members understood why the A119 had routed to the W rather than to the E of Strathaven airfield and town which would have added a few track miles to his route. Members also observed that the pilot's selection of ATC agencies and types of service selected had been appropriate to the profile of his flight and no other agency was available that would have given a better level of service.

Members discussed at some length whether or not ATC had played any part in the incident. It was agreed that 2000ft amsl was a reasonable alt for VFR traffic to enter the Glasgow CTR and also that routeing the A119 via VRP East Kilbride was also sensible. Members also noted that the controller had no knowledge of the activity at Strathaven either from a warning or from radar information; that being the case Members agreed unanimously that the Glasgow controller had acted entirely appropriately and could not have prevented the incident.

Notwithstanding the issues above, the incident took place in Class G airspace where the respective pilots had an equal and shared responsibility to see and avoid other ac. The Microlight pilot, perhaps because he had been concentrating on instructing his student on his first cct and landing, had seen the helicopter late after his student pointed it out to him. The sighting however, had not been too late for him to take effective avoiding action by lowering the nose, throttling back and descending sufficiently to remove any risk of the ac colliding if the helicopter maintained its flightpath which it did. Although the helicopter pilot 'caught a glimpse' of the microlight this was altogether too late for him to initiate any avoidance. A combination of these factors, Members agreed, had been the cause of the incident.

In discussing how such incidents could be avoided in the future, Members were unable to determine a practical measure that would work reliably and without significant disadvantages. Controllers thought it impracticable to issue warnings regarding Strathaven as, prior to VFR traffic reporting at a VRP (after passing Strathaven), they would not normally be aware of the ac's precise position, particularly since low level radar coverage is poor in that area. Further, any procedural warning of Strathaven traffic was likely to be inaccurate and out of date; therefore Members agreed that it would not provide meaningful information to the passing pilots. Members also observed that pilots should be aware the cct height at such airfields is normally 800/1000ft agl therefore a warning of the alt of activity on VFR charts was unnecessary and would 'clutter' the chart. It was also observed that different agencies use different criteria for information on VFR charts and databases; one Member familiar with VFR avionics/mapping suggested that the A119 would most likely be using a system on which microlight sites are not displayed.

PART C: ASSESSMENT OF CAUSE AND RISK

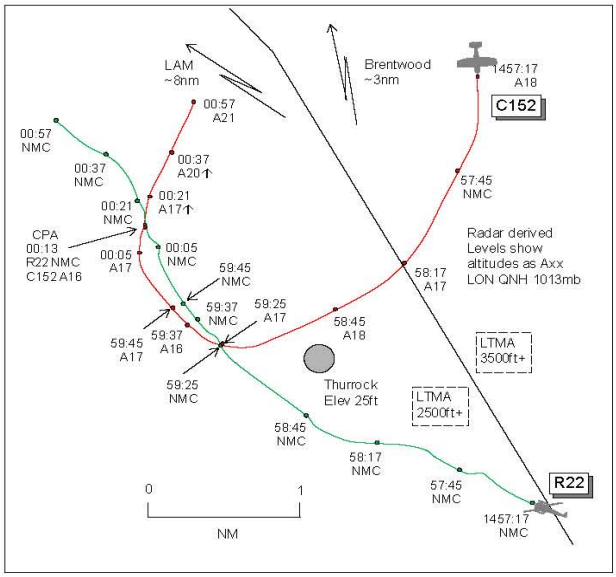
Cause: Effectively a non-sighting by the A119 crew and a late sighting by the Ikarus pilot.

Degree of Risk: C.

AIRPROX REPORT No 2011064

AIRPROX REPORT NO 2011064

Date/Time:	19 Jun 2011 1500Z (Sunday)	
Position:	5133N 00020E (1·5nm NW Thurrock)	
Airspace:	LFIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	R22	C152
Operator:	Civ Pte	Civ Trg
Alt/FL:	1200ft QNH (1013mb)	2000ft QNH
Weather:	VMC CLOC	VMC CLOC
Visibility:	>10km	>10km
Reported Separation:	350ft	Not seen
Recorded Separation:	Radar returns merge	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE R22 PILOT reports en-route to Wycombe Air Park VFR at 80kt and in receipt of a BS from Farnborough LARS N on frequency 132·8MHz, squawking with NMC. The visibility was >10km in VMC and the helicopter was coloured green with strobe lights switched on. The routeing was via DVR towards LAM to remain clear of the London/City CTR. The navigator was a single-engine fixed-wing pilot and together they have made more than 1500hr of flights over 25yr including this trip in both directions a number of times. The GS was slow owing to strong W'ly winds and they were flying at approximately 1200ft on the Chatham RPS as the wind was lighter than at higher altitude. They had just transferred from London Information to Farnborough LARS N and passed Thurrock when a Cessna, travelling roughly in the opposite direction, passed close by on their RHS in level flight with an estimated slant range separation of 500ft. Neither he nor his navigator had seen the Cessna before it appeared close by at about 30° to their direction of travel. Farnborough had not warned them of an ac in the vicinity but there was a changeover of controller just then from a female to male. They did not consider there to be any likelihood of collision and so did not take avoiding action. A few minutes later, the Cessna then appeared from behind on their LHS in level flight at a closer distance of about 350ft slant range and now travelling in the same direction and overtaking them. The navigator could see the person in the Cessna's RH seat was a man, he thought, of medium build with dark hair wearing a pale yellowish /fawn jumper and was looking into the cockpit diagonally towards the instrument panel. There were 2 on board but the person seated in the LH seat of the Cessna could not be seen and he had not specifically looked at the person when the ac first passed on their RHS. When it had passed it suddenly did a 180° turn to the R towards them and passed directly O/H. He took avoiding action by making a descending turn to the R and assessed the risk as high. The Cessna pilot did not seem to be aware of their presence or to be on the Farnborough frequency. They were concerned as they didn't know whether the Cessna was going to appear again and if so from where. No one seemed to be looking out of the window of the Cessna and the Cessna pilot could hardly have failed to see the R22's yellow and white disc made by the helicopter's blades. The Cessna was coloured white with red markings and its registration was clearly seen. It was either a C150 or C152, which they recognised as they had both learned to fly on that type but it was difficult to distinguish between the 2 models. He reported the incident to Farnborough and gave them the registration; Farnborough asked if he wanted to file an Airprox to which he stated he would.

THE C152 PILOT reports that she was informed post flight that the ac she was flying at the time was involved in an Airprox. At the time she was conducting a trial lesson flight from Stapleford during which she normally demonstrated pitch/roll and yaw at 2000ft and 90kt. The visibility was >10km in VMC and the ac was coloured white /red with anti-collision light switched on. The usual routeing was to the E of Brentwood and return following the M25 whilst listening out with Stapleford Radio. She did not see the reporting ac.

THE FARNBOROUGH LARS N CONTROLLER reports the sector was busy and he was using the whole of his SSR block allocation owing to traffic intensity. The R22 pilot called when in the vicinity of the Thames at 1200ft and was readable strength 2 improving to strength 3. At about 1500Z when the helicopter was in the vicinity of Thurrock the pilot reported an ac to be flying at dangerous angles close to his helicopter and reported its registration. Later when he requested if the R22 pilot wished to file an Airprox, the pilot acknowledged with an, "affirm, after landing". The R22 was in transit at 1200ft in an area of poor RT coverage at low altitude and the flight was under a BS.

ATSI reports that the Airprox occurred at 1500:13, within Class G airspace, 1·5nm to the NW of Thurrock Airfield, which does not have an ATZ.

The reporting flight was an R22 that was on a VFR flight from Le Touquet to Wycombe, in receipt of a BS from Farnborough LARS N and squawking 5033. The second ac was a C152 on a local VFR training flight operating from Stapleford and in communication with Stapleford Radio.

The Farnborough controller was operating as LARS N and reported the sector being busy with all available SSR codes allocated due to traffic intensity. The controller reported that the R22 helicopter in transit at 1200ft was operating in an area of poor RT coverage.

The weather for London City Airport was:

METAR EGLC 191450Z 28015KT 9999 SCT040 18/07 Q1013 RERA=

The R22 flight contacted Farnborough LARS N at 1450:20. The controller reported the R22 RT as readability 2. The R22 pilot reported routeing from Le Touquet to Wycombe at 1200ft on QNH 1017 and requested a BS. The controller allocated a squawk of 5033 and passed the London QNH 1013. The radar recording shows the R22, 6·9nm SE of Thurrock Airfield with NMC altitude reporting. Shortly afterwards the controller agreed a BS.

At 1457:17 the radar recording shows the R22 positioned 2nm SE of Thurrock and the C152 tracking S, 2·3nm NNE of Thurrock squawking 7000 and indicating an altitude of 1800ft. Shortly afterwards at 1347:45 the C152 turns onto a SW'ly track. The radar recording shows both ac tracking towards Thurrock on converging headings.

The two ac continue to converge with the C152 maintaining an altitude of 1700ft. At 1459:25, the radar recordings shows both ac are in close proximity with labels overlapping at a position 0·7nm W of Thurrock. Shortly afterwards the tracks cross and the C152 turns onto a track which parallels the R22 at a range of approximately 0·1nm.

At 1500:05 the radar recording shows the C152, indicating an altitude of 1700ft, commenced a R turn and at 1500:13 the Airprox occurs when the ac's tracks cross. The radar recording shows the ac labels merge with the C152 indicating an altitude of 1600ft. The R22 pilot's written report indicated that the R22 was at 1200ft on QNH 1013. The tracks then diverge with the C152 tracking N.

At 1500:56, the R22 pilot reports, *"????? Erm flying dangerously just north of Wh- yeah Thurrock airfield erm and er coming extremely close to me from several different angles we have his registration number."* The controller asked for confirmation of the flight calling and the R22 pilot confirmed that the other ac had come into close proximity adding, *"confirm it came from behind and on top of me."* The pilot confirmed his intention to file an Airprox after landing. The controller advised that Stapleford was busy and transferred the flight to the Stapleford frequency.

The Airprox occurred in Class G airspace. The C152 flight was not in receipt of an ATS. The R22 flight was in receipt of a BS in an area of poor RT coverage at 1200ft. The Farnborough LARS N controller was operating a busy sector with high workload and was not aware of the other traffic. CAP 774, UK Flight Information Services, states:

'Within Class F and G airspace, regardless of the service being provided, pilots are ultimately responsible for collision avoidance and terrain clearance, and they should consider service provision to be constrained by the unpredictable nature of this environment.'

'A Basic Service is an ATS provided for the purpose of giving advice and information useful for the safe and efficient conduct of flights. This may include weather information, changes of serviceability of facilities, conditions

at aerodromes, general airspace activity information, and any other information likely to affect safety. The avoidance of other traffic is solely the pilot's responsibility.'

'Basic Service relies on the pilot avoiding other traffic, unaided by controllers/FISOs. It is essential that a pilot receiving this service remains alert to the fact that, unlike a Traffic Service and a Deconfliction Service, the provider of a Basic Service is not required to monitor the flight.'

'Pilots should not expect any form of traffic information from a controller, as there is no such obligation placed on the controller under a Basic Service outside an Aerodrome Traffic Zone (ATZ), and the pilot remains responsible for collision avoidance at all times. However, on initial contact the controller may provide traffic information in general terms to assist with the pilot's situational awareness. This will not normally be updated by the controller unless the situation has changed markedly, or the pilot requests an update. A controller with access to surveillance derived information shall avoid the routine provision of traffic information on specific aircraft, and a pilot who considers that he requires such a regular flow of specific traffic information shall request a Traffic Service. However, if a controller considers that a definite risk of collision exists, a warning may be issued to the pilot.'

The Airprox occurred when the 2 flights operating under VFR came into close proximity. The R22 flight was in receipt of a BS from Farnborough LARS N. Under a BS there is no obligation placed upon the controller to provide TI. However, if a controller considers that a definite risk of collision exists, a warning may be issued to the pilot. The LARS N controller was operating on a busy sector with a high workload. The controller was not aware of the C152 and there was no requirement for the controller to monitor the R22 flight.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC authorities.

Since the Airprox occurred in Class G airspace, both pilots had equal responsibility to maintain separation from other ac through see and avoid. Although the R22 flight was under a BS from Farnborough, the controller was busy and did not notice the R22 and C152 converging. There was no requirement for LARS N to monitor the R22 on radar, nor to provide TI. Members agreed that there had been ample opportunity for both crews to see each other as they approached, the C152 flight initially having right of way during its first pass of the R22. However, during any encounter the RoA regulations rely on crews sighting a potential confliction beforehand. On this occasion, the R22 pilot saw the C152 late as it converged from the N and then crossed about 500ft above whilst turning through a W'ly heading; the R22 passed unsighted by the C152 pilot. Thereafter, unbeknown to the R22 pilot, the C152 pilot had unwittingly turned onto a parallel course to his L at close quarters, still unsighted. The R22 pilot then saw the C152 again, as its pilot unknowingly slowly overtook the helicopter, and became concerned as the C152 pilot was apparently unaware of their presence before the flight executed a R turn to cross just ahead and about 350ft above. The R22 pilot executed a descending turn to the R as he didn't know what further action the C152 pilot was going to take. The radar recording shows the C152's Mode C indicating unverified altitude 1600ft as the ac returns merge. With the R22 pilot reportedly flying at 1200ft, this would corroborate the estimated separation seen by the R22 pilot. Members agreed that the R22 pilot had taken all the necessary precautions and had acted appropriately. Members believed that the R22 pilot was always in the position to take further action if needed and that any risk of collision had been quickly and effectively removed.

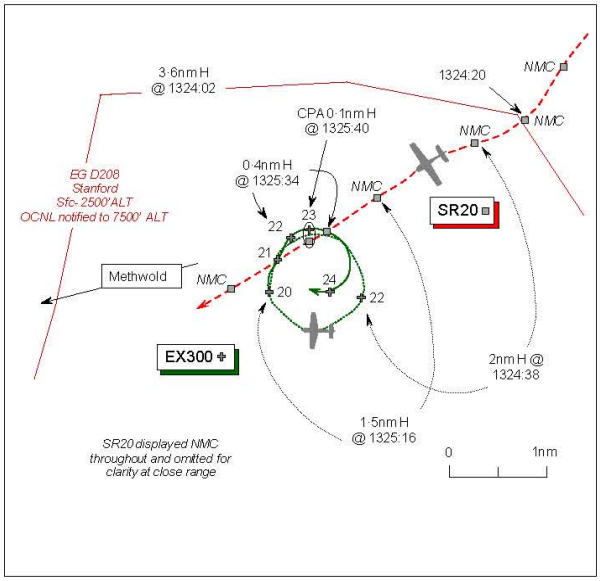
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A non-sighting by the C152 pilot and a late sighting by the R22 pilot.

Degree of Risk: C.

AIRPROX REPORT NO 2011065

Date/Time:	30 Jun 2011 1325Z	
Position:	5232N 00044E (4½nm SW of Watton)	
Airspace:	EGD 208	(Class: -)
	Reporting Ac	*Reported Ac*
Type:	Extra 300 LPS	SR20
Operator:	Civ Comm	Civ Pte
Alt/FL:	2500ft	2200ft
	QNH (1025mb)	QNH
Weather:	VMC CLBC	VMC In Rain
Visibility:	10km	6km
Reported Separation:		
	200ft V/nil H	NR
Recorded Separation:		
	0·1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE EXTRA 300 LPS (EX300) PILOT reports that he was participating in a Close Air Support task within EG D208 (STANTA) which was NOTAM'd from the surface to 17000ft, notifying other airspace users of rotary and fast-jet ac conducting high energy manoeuvres. Their range entry clearance had been issued by the Tactical Operations Cell (TOC), as the Exercise airspace coordination agency, on 136·950MHz. They were not in receipt of an ATS but had retained their assigned Lakenheath squawk prior to entry into D208 to facilitate deconfliction from traffic on recovery to Lakenheath. The exercise procedural deconfliction plan established safe separation between all exercise traffic with no change of altitude block permitted without prior approval from the TOC. Operating VFR in clear air 1000ft clear below cloud and a flight visibility of 10km, he was flying level at 2500ft Lakenheath QNH (1025mb) and had been allocated the block 1500-2500ft QNH to deconflict them from a Sea King operating below an altitude of 500ft and a Hawk operating above 3500ft. There were thunder cells seen 2nm to the N.

With full awareness of all other exercise airspace users he and his camera operator had sufficient confidence to dedicate their attention to the exercise ground activity, to the accepted detriment of lookout. The NOTAM and D208 boundary should have provided sanitised airspace, with TOC deconfliction allocating them ownership of the 1500-2500ft altitude block. Orbiting at 100kt, he thought to the L but actually in a R turn, in a holding pattern during their surveillance task, the other ac, a low-wing single-engine propeller driven aeroplane – the Cirrus SR20 - passed 200ft directly below his ac with a 'high' Risk of collision. No avoiding action was taken as the other ac was not seen until it was directly underneath and clearing away from his flight path. He opined that, as they had not seen the other ac approach and were manoeuvring constantly within their allocated altitude block, the 200ft vertical separation could have been eroded in fractions of a second and resulted in a collision.

The reported position of the Airprox is accurate as they were surveying a ground position at the time. He added that he was operating under a high workload, integrating with other rotary and fast-jet exercise traffic whilst supporting troops on the ground.

He immediately called Lakenheath to report the incident and asked if the other ac was on frequency and to be identified. At that point Lakenheath ATC had neither radio or radar contact with the other ac so he switched back to the range frequency and completed the task. Upon completion of the mission he contacted Lakenheath ATC again 'on checkout' and was informed that the pilot of the other ac – the SR20 - had called Lakenheath and when questioned about the Airprox claimed he had deconflicted with his EX300 using TCAS. He (the EX300 pilot) informed Lakenheath he would be filing an Airprox and requested any radar tapes be retained.

Summarising the occurrence, the other ac – the SR20 - had entered a permanent Danger Area where there is frequently live firing, in the middle of a NOTAM'd exercise, with airspace between surface and 10000ft allocated

to 3 different types of ac. All of those ac were flying unpredictable flight paths with high-energy manoeuvres involving rapid altitude changes through thousands of feet. If the pilot of the other ac thought it safe to enter such airspace (assuming they knew of its existence) then action is needed to prevent the future possibility of a very serious accident.

UKAB Note (1): The UK AIP at ENR 5-1-3-14-1 notifies EG D208 Stanford Danger Area as active for live firing/ bombing/para dropping/demolition and unmanned ac operations, H24, from the sfc to ALT 2500ft and occasional use to ALT 7500ft. Statutory Instruments SI 1970/909 & SI 1975/24 apply. A Danger Area Activity Information Service (DAAIS) is available for D208 from Lakenheath ZONE on 128·90MHz.

UKAB Note (2): AUS originated a NOTAM for this close air support exercise (Pashtun Panther) (H1489/11 which replaced H1301/11) valid from 9 May to 8 Jul 2011 and effective Mon-Fri 0800-2200 UTC. It was specified that fast-jets and helicopters would conduct high-energy manoeuvres within a 5nm radius of 5230N 00044E [2nm S of the Airprox location] (EGD 208), from the surface to FL170. A landline PoC was also specified.

THE CIRRUS SR20 PILOT reports he had departed Old Buckenham VFR, bound for Waterford, Ireland. He included an original CAA VFR 1:500000 chart with his planned route marked, which was a NNW'ly track to overhead Shipdham, thence a WSW'ly track direct Northampton/Sywell, thereby circumnavigating to the N of EG D208 and passing to the S of the Marham MATZ.

A level cruise was established at an altitude of 2200ft at 135kt, whilst in receipt of a BS from London INFORMATION on 124·6MHz. Flying 1000ft clear below cloud with an in-flight visibility of 1600m in rain, he altered course onto a heading of 255° towards Methwold, to avoid Cumulonimbus cloud and heavy rain. The EX300 was not seen.

He opined that after departing Old Buckenham, a better choice might have been to call Marham RADAR on 124·15MHz rather than London INFORMATION. TCAS 1 is fitted with Mode S and a squawk was selected. His ac is white and red; the HISLS were on.

UKAB Note (3): In a subsequent telephone conversation with UKAB staff, the SR20 pilot advised he was not aware of the NOTAM'd close air support exercise or that EG D208 was active.

UKAB Note (4): The Debden Radar recording shows the SR20 crossing the lateral boundary of EG D208 at 1324:20 on a broadly SW'ly course, squawking A1177 (LAC FIS) although NMC is shown throughout. Nevertheless, the pilot reports his transit altitude as 2200ft thereby placing the ac within the regular upper limit of the Danger Area. The EX300 is shown orbiting R within the Danger Area and at 1324:38, is turning through S with the SR20 2nm to the NE. The EX300 continues in the R Turn through N on the next orbit [solid green line on the diagram] indicating 2000ft Mode C (1013mb) with the SR20 at a range of 1.5nm. Climbing slightly to 2200ft Mode C - about 2560ft ALT (1025mb), as the two ac close to a range of 0.4nm, the next sweep shows the CPA of 0.1nm H as the SR20, still indicating NMC and maintaining a steady course, passes marginally to the S of the EX300, the latter indicating 2300ft Mode C – about 2660ft ALT (1025mb).

UKAB Note (5): Subsequent to this Airprox, HQ 3AF helpfully provided a written analysis of the Lakenheath RAPCON ASR recording (it can only be played back in situ and no copies can be made), together with transcripts of the RT communications between Lakenheath RAPCON and both ac after the Airprox had occurred.

Analysis of the recorded Lakenheath RAPCON ASR data by the facility staff reveals that the SR20 was initially observed 2nm W of Old Buckenham A/D climbing through 1000ft ALT Mode C (their Mode C is related to QNH below their TA of 4000ft) on a NW'ly heading, squawking A1177. At 1320, the SR20 was heading to Shipdham, before turning to the SW, apparently to deconflict from a 'precipitation cell'. At the same time the SR20's Mode C readout ceased and was no longer shown, the last Mode C readout indicating 2000ft ALT Mode C. At 1325:40, the primary contacts of the EX300 and the SR20 merge with the former indicating 2600ft ALT and the SR20 with no Mode C. The EX300 was observed in D208 during the entire incident in a right-hand orbit between 2300ft and 2700ft ALT Mode C, squawking A0457. During the remainder of the recording the EX300 continues the orbit in D208 as the SR20 continues enroute to the W then NW.

At 1326:15, some 35 sec after the CPA, the EX300 pilot called RAPCON on 136·5MHz, *"Lakenheath* [EX300 C/S] *we are um still in Delta 2-0-8, we just had a G-A entalope* [sic – more probably *interloper*] *come right through*

the range fairly close aboard with us, just wondering if they're speaking to you." After RAPCON instructed the EX300 pilot to squawk IDENT the pilot advised the unknown ac was, *"…now West of our position approximately 1 mile."* RAPCON replied, "[EX300 C/S] *roger…I'm not talking to the aircraft at all..you're radar contact and I didn't even know you were in STANTA range."* At 1326:47, the EX300 pilot advised, *"…copied, we're maintaining your squawk 0-4-5-7 but we're a single box so we're speaking to range frequency. If that aircraft calls up would you..be kind enough to get a trace or callsign and I'll give you a call on the landline",* to which RAPCON agreed prior to the EX300 pilot switching back to the range frequency.

Some 9min after the CPA, at 1334:30, the SR20 pilot called Lakenheath on 124·9MHz. Subsequent to a radio check request from RAPCON, the SR20 pilot replied, *"not so bad thank you Sir uh trying to dodge the showers".* RAPCON advised the SR20 pilot, *"..just be advised you flew through..STANTA Delta 2-0-8, and there is numerous aircraft in there did you see...PA 31* [actually referring to the EX300] *or something like that almost hit you"*. The SR20 pilot replied *"Yea I had him on TCAS but eh but there was no uh no conflict."* RAPCON added, *"Roger apparently he thought that you got closer he contacted me on my frequency to let me know and I guess he is going to call up".* Subsequently, the SR20 pilot reported, *"Yes sir well now..gonna intercept the track to..Echo Golf Bravo Kilo* [Northampton/Sywell]", whereupon RAPCON asked for the ac's altitude, to which the SR20 pilot replied at 1335:18, *"altitude is..2 thousand feet on 1-0-2-4."*

HQ 3AF comments that it is hard to understand, given the weather conditions and his intended route, why the SR20 pilot chose to contact London INFORMATION rather than speak to either Marham APPROACH or Lakenheath RAPCON, either of which unit could have prevented him from blundering into an active danger area. TCAS may have given him a warning on this occasion but he should aware that live weapons are not equipped with transponders.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings and reports from the appropriate ATSU and Command.

The Board was briefed on the planned route of the SR20 circumnavigating to the N of EG D208. It was evident, however, that after departing Old Buckenham the SR20 pilot had deviated from his planned route to avoid cumulonimbus cloud and heavy rain, culminating in the ac flying through this permanently active Danger Area. A pilot Member opined that this was disappointing when flying a modern ac with reputedly good navigational displays. The analysis by Lakenheath ATC reveals that the SR20 pilot had set course for Shipdham before turning to the SW, apparently to avoid a 'precipitation cell' shown on the Lakenheath RAPCON ASR recording. Having elected to route around this weather by turning westerly via Methwold, this took the SR20 straight through the exercise within D208. Controller Members suggested the SR20 pilot would have been better advised to have called Lakenheath ATC who offers the DAAIS for D208 or possibly Marham ATC. Both ATSUs could potentially have provided radar assistance to the SR20 pilot; in addition to augmenting his visual lookout scan they would in all probability have forewarned him of the status and activity within D208. At a reported transit altitude of 2200ft, the LAC radar recording revealed that the SR20 pilot entered D208, thereby placing his ac in conflict with the EX300 participating in the close air support exercise within the Danger Area and for which a NOTAM had been issued notifying other airspace users that fast-jets and helicopters would conduct high-energy manoeuvres within a 5nm radius of the specified co-ordinates up to FL170. Members noted that the SR20 pilot reports he was unaware of the NOTAM or that D208 was active, which was indicative of inadequate pre-flight planning and awareness of the airspace surrounding his track. Members concluded unanimously that this Airprox had resulted because the SR20 pilot flew through a promulgated and active Danger Area and into conflict with the EX300.

It was reported that the EX300 pilot and his cameraman were focusing on their airborne surveillance task when the Airprox occurred and the SR20 flew about 200ft below their ac. That sighting was the first indication they had of any non-exercise ac within D208. Without Mode C from the SR20 the actual vertical separation that pertained could not be ascertained independently and the importance of ensuring that altitude reporting was always selected when the transponder is on was stressed by controller Members. The EX300's indicated Mode C was 2200-2300ft Mode C at the moment the SR20 under flew, equating to an altitude between 2560-2660ft QNH (1025mb), which suggests the EX300 was about 360ft above the SR20's reported 2200ft ALT. Given the tolerances applicable to Mode C of +/- 200ft, this was in general accord with the EX300 pilot's reported separation. The Lakenheath RAPCON RT transcript reveals that the SR20 pilot was aware of the EX300 from his TCAS I, which should also have given an indication of the EX300's relative vertical separation above his ac, but the SR20 pilot did not acquire

it visually or take any action to avoid it. Furthermore, he would not know it was orbiting and the azimuth indications of TCAS I devices can be deceptive in such scenarios. The EX300 pilot was unable to take any avoiding action as the SR20 was not seen until it was directly underneath, so neither pilot took any action to avert this close quarters encounter, suggesting to some Members that an actual Risk existed. Other Members contended that with no less than 200ft of vertical separation reported by the EX300 pilot and somewhat more than that apparent from his ac's Mode C indication, the vertical separation was sufficient to avert an actual collision. Following a comprehensive debate, the Board concluded that the safety of the ac involved had been compromised.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The SR20 pilot flew through a promulgated and active Danger Area and into conflict with the EX300.

Degree of Risk: B.

AIRPROX REPORT NO 2011070

Date/Time:	26 Jun 2011 1403Z (Sunday)	
Position:	5056N 00018W (8nm N Shoreham)	
Airspace:	Lon FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	C172	Untraced Ac
Operator:	Civ Pte	NK
Alt/FL:	2200ft (NK)	NK
Weather:	VMC NR	NK
Visibility:	30nm	NK
Reported Separation:	20ft V/0ft H	NK
Recorded Separation:	NK	

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE C172 PILOT reports flying a red and white ac with all lights switched on, on a VFR private flight from Guernsey to Rochester. He was squawking with Modes C and S, but TCAS was not fitted. He was initially in contact with Shoreham APP then Farnborough Radar (it was his intention to go back to the Farnborough frequency earlier but Shoreham requested that he stay with them until he was abeam the RW – which he did). He is always cautious in the Shoreham area since it is always busy, so he advised them of his presence and, on being advised of oncoming traffic, decided to give the field more clearance; he advised Shoreham and moved further to the N. It was during this time while he was cruising below 2200ft, heading 085° at 100kt, that he spotted an ac 100yd ahead and 20ft above, coming straight towards him. He instinctively pushed the stick forward and went underneath the ac with only feet to spare. He believed the ac, which apparently did not see him, was also a Cessna. He was shaken for a time and then went back to Farnborough Radar.

UKAB Note (1): On the telephone he described the contact as a shadow.

He acknowledged that his description of the Airprox is brief.

It is now his policy to track even closer to the Gatwick CTA as the area is very congested; this is exacerbated by the direction of the Shoreham RW and the 'tunnelling' of the Gatwick CTA. He has long thought this to be a dangerous area and in his view all ac flying there should have Mode S and be in receipt of a LARS service from Farnborough. He also believes the Mayfield VOR is badly sited for same reason.

He reported the incident initially to the UKAB by telephone several days after the incident assessing the risk as being high.

UKAB Note (2): The reported time of the incident was 1230 UTC. Enquiries revealed that the reporting ac did not depart Guernsey until 1241, and was eventually identified from its elementary Mode S, to the N of Shoreham Airport at 1403.

UKAB Note (3): The recording of the Heathrow 10 and 23cm, the Pease Pottage and the Gatwick 10 cm radars were all viewed; the Gatwick 10 cm provided the best coverage. A further telephone call to the reporting pilot revealed that although he was confused regarding the time of the event, he was certain that the event took place to the N of Shoreham Airport and that something flew directly above him. During the telephone conversation he stated the following: "something definitely cast a shadow over me, and I suppose it could have been a cloud or a bird''. The radar recording only showed one track getting very close to him, but this track passed 1200ft directly below his ac at 1403:33 in a position 7nm NW of Shoreham (the C172 was at 2200ft and the ac below was

squawking 7000 at 1000ft). At 1404:36 the C172 passed about 1nm N of the last seen position of a disappearing primary only contact about 5nm NW of Shoreham. At 1408:33 the C172 passed about 2nm S of the last seen position of another disappearing primary only contact about 6nm NNE of Shoreham. The C172 then tracks 085°, passing 4.6nm N of Shoreham at 1406:51 and at an alt of 2200ft; it continues roughly on that track until 1411 when the recording ends with the ac positioned 11nm NE of Shoreham at alt of 2400ft. No other primary or secondary contacts can be seen within 5nm of the reporting ac. (See also ATSI report below).

ATSI reports that the Airprox was reported by the pilot of a C172 operating VFR, on a flight from Guernsey to Rochester. The pilot's written report indicated that the Airprox occurred 8nm to the N of Shoreham at 1230 UTC. The second aircraft is unknown.

The Shoreham controller was operating a combined Aerodrome and Approach control position, without the aid of surveillance equipment.

CAA ATSI had access to the RTF and radar recording, together with the C172 pilot's written report. Shoreham ATC was not aware of the reported Airprox.

METAR EGKA 261250 15005KT 9999 3000S VCFG FEW002 18/16 Q1021=

METAR EGKA 261320 15005KT 9999 3000S VCFG FEW002 19/16 Q1021=

METAR EGKA 261350 15005KT 9999 VCFG FEW002 19/16 Q1021=

METAR EGKA 261420 13006KT CAVOK 20/17 Q1020=

The C172 called Shoreham APP at 1353:55. [Note: this is at variance with the time indicated in the pilot's written report]. Radar recordings show the C172, squawking 5022 (Farnborough LARS) at a position 20.4NM SW of Shoreham. The C172 pilot reported at 3000ft descending to 2400ft from Guernsey to Rochester via the Shoreham overhead. The Shoreham controller agreed a BS, passing the QNH of 1021 and TI on VFR traffic passing S of Shoreham Westbound at 2400ft; the pilot acknowledged the TI and reported 'turning inland a bit'.

At 1357:08, the C172 pilot reported an intention to pass 10nm N of Shoreham at 2500ft and advised going back to Farnborough on 123.15MHz but the Shoreham controller reported that this Farnborough frequency was incorrect and requested that the C172 pilot report N of Shoreham, which the pilot agreed.

During the period that the C172 was in receipt of a BS from Shoreham, radar recording shows the C172 passing abeam 3 other aircraft, at 1358, 1403 and 1404 (see below). However none of these was considered to have been the Airprox as described in the C172 pilot's written report.

At 1358:21 radar recording shows the C172 tracking NE, at a position 14nm W of Shoreham, indicating FL023 and passing 1nm NW abeam traffic Westbound indicating FL025. The ac maintain their respective levels.

At 1403:33, radar recording shows the C172, positioned 7.1nm NW of Shoreham and indicating an altitude of 2200ft. Also shown is an ac on a reciprocal track squawking 7000 and indicating an alt of 1000ft; both ac maintain their respective levels.

At 1404:36, radar recording shows the C172, 5.5nm NW of Shoreham, tracking NE, indicating an altitude of 2200ft and passing 1.3nm NW of a primary contact, tracking SW.

At 1406:15, the C172 pilot reported N abeam and the Shoreham controller transferred the ac to Farnborough LARS. Radar recording shows the C172 position as 5nm NNW of Shoreham indicating an alt of 2100ft on an E'ly track.

From the information and data available to CAA ATSI, it was not possible to determine the position or time of the reported Airprox and the second aircraft remains untraced.

The Shoreham controller was not aware that an Airprox had occurred.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the C172 pilot, transcripts of the relevant RT frequencies, radar recordings, reports from the air traffic controller involved and reports from the appropriate ATC authorities.

Members noted the incident took place in an area of very good radar coverage and that there were no contacts, either primary only or SSR, in the vicinity of the C172 at the (corrected) time reported. From track following and Mode S data, the Secretariat was satisfied the track they identified was that of the C172 concerned and that the C172 was in the area at the (corrected) time. Members therefore agreed that the object reported was most likely not a light ac or helicopter. Although they could not be certain, they believed that it had not been a glider due to the confines of the airspace in the area but it was possible that it could have been a microlight, paramotor or some other non-painting ac.

Members were surprised that the C172 pilot did not remain with Farnborough LARS or call Gatwick APR as either would have been able to provide radar derived information if they had the capacity.

Although the Board supported the C172 pilot's decision to report the incident, in this case they had scant information to support their decision making process.

Due to the lack of reliable supporting information, Members were unable to assess the degree of risk or offer a cause more definitive than a possible conflict; they accepted that it might have been an actual conflict but were unable to identify or trace the other ac.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A possible encounter in Class G airspace.

Degree of Risk: D.

2011049	31/05/11	Chinook v King Air	Gloucestershire Airport	C	186
2011050	02/06/11	Augusta 109 v Sea King Mk4	Dunsfold A/D	D	190
2011051	02/06/11	Lynx AH Mk7 v Skyranger ML	3½nm S of Benson	C	193
2011052	02/06/11	Tutor v Tutor	0.5nm ESE Benson	B	197
2011053	06/06/11	DHC-8 v A22 Microlight	Belfast City 5nm final RW22	C	203
2011054	06/06/11	Tucano T Mk1 v Microlight	7.5nm E of Linton-on-Ouse	C	211
2011055	10/06/11	SK76 v Untraced Flexwing Microlight	7.5nm NNE Norwich	C	215
2011056	11/06/11	Discus Glider v T6 Harvard	7nm SW Sywell	A	218
2011057	04/06/11	BE9L v F-15E x 2	10nm S of St Abbs VOR	C	220
2011058	02/06/11	Vans RV9 v PA34	1.24nm NE Gloucestershire	C	227
2011059	18/06/11	B222 v BE200	3nm SW Fairoaks	A	232
2011060	23/06/11	AS355 v R22	1nm W of Kemble	A	237
2011061	19/06/11	SZD-50 Glider v AW139	RNAS Yeovilton	C	242
2011062	22/06/11	PA31 v PA34	2nm Fin App RW19	A	245
2011063	20/06/11	Ikarus C42 v Agusta 119	Strathaven RW27 RH cct	C	249
2011064	19/06/11	R22 v C152	1.5nm NW Thurrock	C	253
2011065	30/06/11	Extra 300 LPS v SR20	4½nm SW of Watton	B	256
2011070	26/06/11	C172 v Untraced Ac	8nm N Shoreham	D	260

FOREWORD

This report contains details of the 63 Airprox that were reported as occurring in UK airspace between 1 Jan and 30 Jun 2011 inclusive. The low total is possibly a result of the harsh winter conditions during the first part of the period and possibly reflects reduced activity levels due to the recession. Anecdotal evidence suggests GA traffic levels have reduced in addition to the documented reduction in Commercial Air Transport hours and movements.

Table 1 shows that the percentage of risk-bearing occurrences (risk categories A & B) remains consistent with previous years at around 30%. Starting in January 2011, the new Risk Category "E" has been introduced. Risk Category E is assigned when the analysis of the incident reveals that, contrary to the perception of the reporting pilot or controller at the time, the incident was entirely benign. The aim is to distinguish between genuine Airprox in which there was no risk of collision (Risk Category C) and non-events that meet the criteria for reporting but are sufficiently benign that it would be misleading to consider them Airprox events; ie normal procedures, safety standards and parameters pertained (Risk category E). Examples of the latter could include Sighting Reports and Controller-perceived Conflicts. For coherence and comparison with previous UKAB reports, the figures for Risk Categories C and E should simply be added together.

Risk Category	2006	2007	2008	2009	2010	2011	2006-2010 Average
A	4	3	5	2	5	10	4
B	20	21	21	23	17	10	20
C	54	51	57	33	53	34	50
D	0	0	4	2	4	2	2
E	N/A	N/A	N/A	N/A	N/A	7	N/A
Totals:	78	75	87	60	79	63	76
Risk Bearing %	31%	32%	30%	42%	28%	32%	33%

Table 1.

The UKAB's purpose is to improve Flight Safety by analysing Airprox occurrences. We work in support of all sections of the aviation industry and welcome suggestions for improving our process and outputs. We also have a database that we can trawl in support of requests for information. Please contact us at info@airproxboard.org.uk Similarly, this report is available in hard copy, CD and our website at www.airproxboard.org.uk anyone may use or reproduce our reports or extracts from them provided their purpose is to promote safety.

Ian Dugmore
Director, UKAB

CONTENTS

AIRPROX DEFINITION

An Airprox is a situation in which, in the opinion of a pilot or controller, the distance between aircraft as well as their relative positions and speed was such that the safety of the aircraft involved was or may have been compromised.

UK AIRPROX BOARD (UKAB) COMPOSITION

The UKAB is an independent organisation sponsored jointly by the CAA and the MOD to deal with all Airprox reported within UK airspace. There are eight civilian and six military voting Members on the Board, which is supported by specialist Advisers and chaired by the Director UKAB who reports directly to the Chairman CAA and Director General MAA. Board Members together form a team of experienced and hands-on practitioners in:

- Military and civilian Air Traffic Terminal Control, Area Control and Airfield Control.
- Commercial Air Transport (CAT).
- General Aviation (GA), powered and gliding.
- Military fixed wing and helicopter flying by the RN, Army and RAF.

UKAB's ROLE

The UKAB undertakes the following tasks in promoting improved safety standards in the air:

- Act as the start point for an investigation process into each incident, generally carried out by the Safety Regulation Group (SRG) of the CAA and/or Military HQs.
- Determine what happened plus analyses of the main causal factors.
- Assess the risk levels involved.
- Make Safety Recommendations where appropriate to reduce the risk of incident recurrence.
- Publish and distribute full reports so that lessons identified can be shared.

STATUS OF UKAB REPORTS

The sole objective of the UK Airprox Board is to assess reported Airprox in the interests of enhancing flight safety. It is not the purpose of the Board to apportion blame or liability. To encourage an open and honest reporting environment, names of companies and individuals are not published in UKAB reports.

RISK CATEGORIES

Risk level assessments are made on the basis of what actually took place and not on what might have occurred.

A	**Risk of collision**	An actual risk of collision existed
B	**Safety not assured**	The safety of the aircraft was compromised
C	**No risk of collision**	No risk of collision existed
D	**Risk not determined**	Insufficient information was available to determine

		the risk involved, or inconclusive or conflicting evidence precluded such determination
E	**Non Event**	Met the criteria for reporting but, by analysis, it was determined that the occurrence was so benign that it would be misleading to consider it an Airprox event. Normal procedures, safety standards and parameters pertained.

THE UKAB DATA SET

The UKAB Airprox database comprises a set of records, each of which related to a specific Airprox. As an investigation proceeds, from first report until the conclusion of the Board's deliberations, the UKAB Secretariat completes fields within the appropriate record. Analysis of the set of records is then possible to produce information such as is published in this Report.

THIS REPORT

The Report follows established practice by giving a broad overview on general trends and then examines in more detail some specific results for each of the three principal airspace user groups, Commercial Air Transport (CAT); General Aviation (GA) and Military.

Some events, reported as Airprox and therefore assigned a reference number by the Secretariat, are subsequently withdrawn and are thus not subject to full investigation and assessment by the Board. Only the reporter can withdraw an Airprox.

In this Report, numbers of 'Unknown/unidentified' aircraft are added to 'Untraced' aircraft and weather balloons to produce the category, 'Other'.

Each Airprox can be assigned more than one Cause. Therefore the total number of Causes usually exceeds the number of Airprox occurrences.

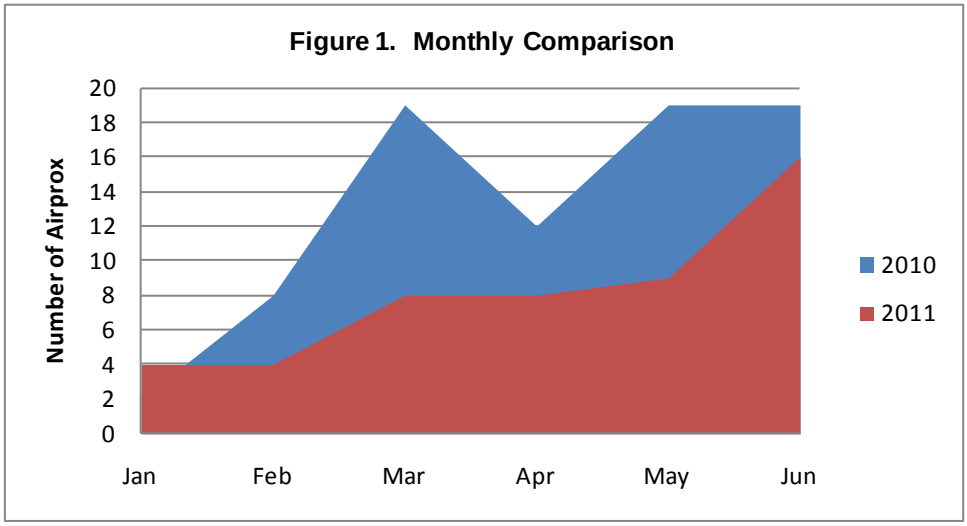
PUBLICATION OF REPORTS

A key UKAB objective is to communicate effectively the lessons identified from Airprox events. Bi-annual 'hardcopy' Reports continue to be the primary means of communication, supported by presentations at flight safety meetings, cd-roms and the Internet. The UKAB Internet website is updated at least every month: for example, details of the most recent set of Reports assessed by the Board are 'uploaded' when finalised.

The UKAB website address is www.airproxboard.org.uk

HALF YEAR COMPARISON 2010 AND 2011

The profile of Airprox occurrences month by month is shown in Figure 1. Both 2010 and 2011 started slowly due to bad winter weather and the sharp decline in Apr 2010 reflects the reduced flying due to volcanic ash.



Tables 2 and 3 allow comparison of Airprox numbers across the first 6 months of 2010 and 2011 differentiated by Civil/Military operators. The major difference is the fall in Civ-Mil Airprox in the Jan-Jun 2011 period, which almost exactly reverses the increase that occurred in this category from 2009 to 2010.

2010	Jan	Feb	Mar	Apr	May	Jun	Totals
Mil~Mil	0	2	5	4	5	2	18
Civ~Mil	0	2	7	6	6	12	33
Civ~Civ	2	3	7	1	8	5	26
Other	0	1	0	1	0	0	2
Totals	2	8	19	12	19	19	79

Table 2.

2011	Jan	Feb	Mar	Apr	May	Jun	Totals
Mil~Mil	1	3	3	3	3	1	14
Civ~Mil	2	1	3	3	4	4	17
Civ~Civ	2	2	3	4	4	11	26
Other	0	1	2	1	1	1	6
Totals	5	7	11	11	12	17	63

Table 3.

The breakdown is shown graphically in Figures 2 and 3 below. The category ‘Other’ is used when one of the aircraft is untraced and it cannot be determined whether it was civil or military. For obvious reasons, this is most common with gliders and light aircraft.

Figure 2.
User Group Mix Jan - Jun 2010

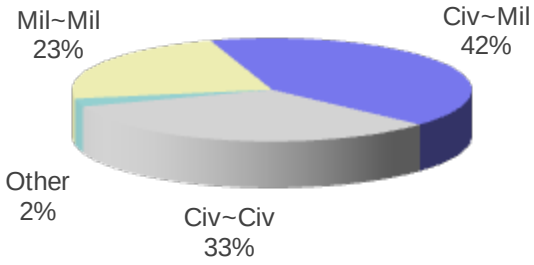
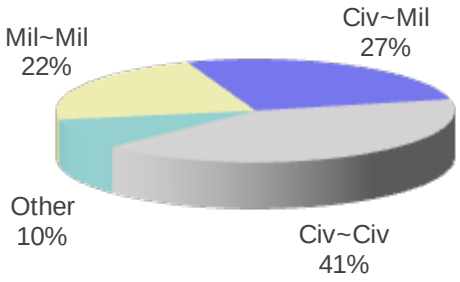


Figure 3.
User Group Mix Jan - Jun 2011



Mix details for Jan-Jun	2010	2011
CAT~CAT	2	2
CAT~GA	4	5
GA~GA	20	19
CAT~Mil	9	1
GA~Mil	24	16
Mil~Mil	18	14
CAT~Unknown	2	0
GA~Unknown	0	2
Mil~Unknown	0	4
Total	79	63

Table 4.

Further examination of the figures in Table 4 shows the reduction in Civil- Military Airprox occurred in both CAT v Mil and GA v Mil events. In percentage terms the reduction in CAT v Mil Airprox was particularly significant.

AIRSPACE

Figure 4 shows the breakdown of Airprox by airspace. The distribution profile is almost identical to that of the previous year.

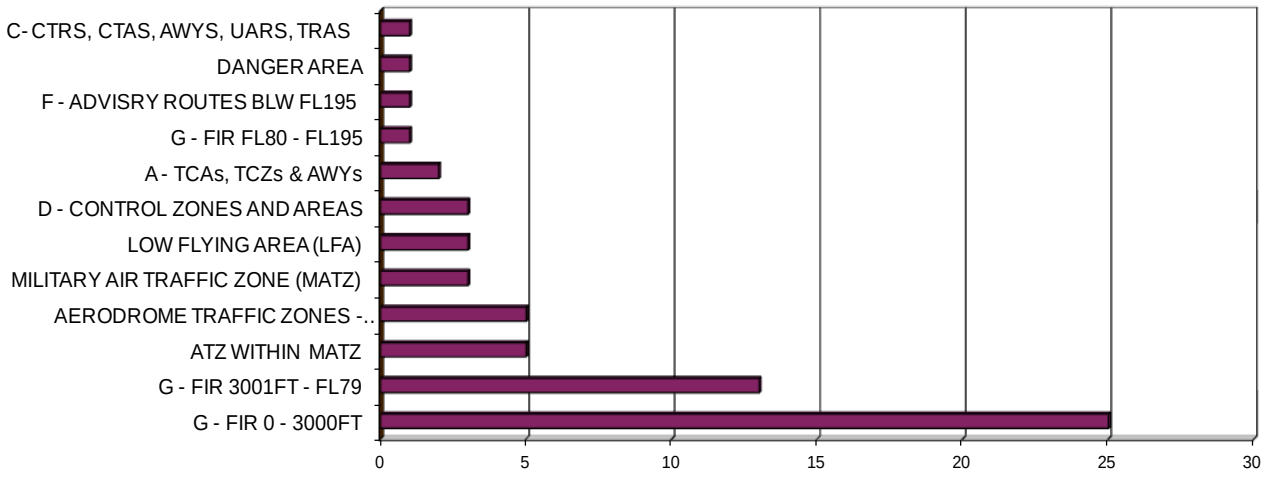


Figure 4. Airprox by Airspace Jan - Jun 2011

COMMERCIAL AIR TRANSPORT

There was a reduction in the number of Airprox involving CAT between 2010 and 2011 and none of them in either year was assessed to be risk-bearing. Tables 5 and 6 and Figures 5 and 6 show the distribution was even throughout the period. For coherence between the years, Risk Categories C and E in 2011 should be added together and compared with Risk Category C in 2010.

2010	Jan	Feb	Mar	Apr	May	Jun	Totals
Risk A	0	0	0	0	0	0	0
Risk B	0	0	0	0	0	0	0
Risk C	1	1	5	2	3	3	15
Risk D	0	1	0	1	0	0	2
Risk E	n/a	n/a	n/a	n/a	n/a	n/a	
Totals	1	2	5	3	3	3	17

Table 5.

2011	Jan	Feb	Mar	Apr	May	Jun	Totals
Risk A	0	0	0	0	0	0	0
Risk B	0	0	0	0	0	0	0
Risk C	1	1	1	1	1	2	7
Risk D	0	0	0	0	0	0	0
Risk E	0	0	1	0	0	0	1
Totals	1	1	2	1	1	2	8

Table 6.

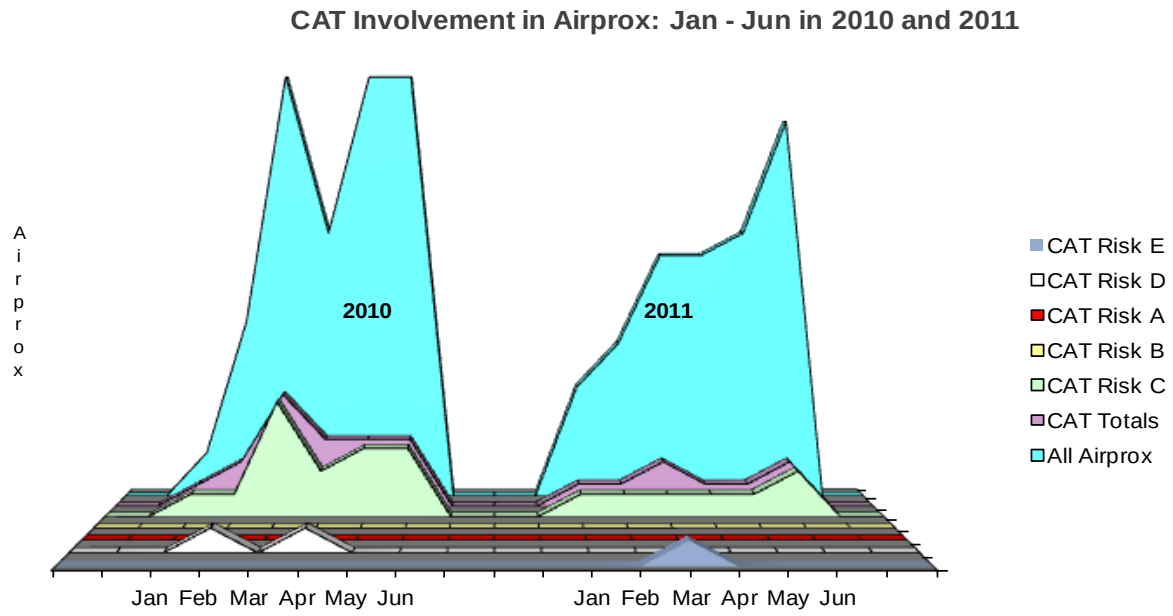


Figure 5.

Figure 6.

Three of the incidents in 2011 occurred in Class D airspace and 2 in Class A CAS. The others were one each in an ATZ, Class G and Class F. The causes were similar to those in previous years with 2 Airprox resulting from airspace infringements. The detail is in Table 7 below.

Ser.	Cause	Totals	Attributed to.
1	PENETRATION OF CAS/ATZ WITHOUT CLEARANCE	2	PILOT
2	DID NOT SEPARATE/POOR JUDGEMENT	2	CONTROLLER
3	CONFLICT BETWEEN FIR AND ADR TRAFFIC	1	OTHER
4	FALSE/MISTAKEN IMPRESSION OF LOSS OF SEPARATION	1	PILOT
5	FIR CONFLICT	1	OTHER
6	FLIGHT CAUSING ATC CONCERN FOR TRAFFIC UNDER SERVICE	1	PILOT
7	INADEQUATE AVOIDING ACTION/LACK OF POSITIVE CONTROL	1	CONTROLLER
8	MISLEADING/AMBIGUOUS TRAFFIC INFORMATION	1	CONTROLLER
9	NOT OBEYING ORDERS/ FOLLOWING ADVICE/ FROM ATC	1	PILOT

Table 7.

GENERAL AVIATION

The number and distribution of GA Airprox during Jan-Jun 2011 was very similar to 2010. Furthermore the number of risk-bearing events was exactly the same in both years, albeit that there was a greater number of Risk Category A events in 2011. The details are in Tables 8 and 9 and Figures 7 and 8.

2010	Jan	Feb	Mar	Apr	May	Jun	Totals
Risk A	0	0	0	0	1	1	2
Risk B	1	2	3	0	3	3	12
Risk C	1	3	7	4	3	11	29
Risk D	0	0	0	0	1	0	1
Risk E	n/a	n/a	n/a	n/a	n/a	n/a	0
Totals	2	5	10	4	8	15	44

Table 8.

2011	Jan	Feb	Mar	Apr	May	Jun	Totals
Risk A	0	0	1	3	0	4	8
Risk B	0	0	1	1	3	1	6
Risk C	3	2	4	0	4	9	22
Risk D	0	0	0	0	0	2	2
Risk E	1	0	0	2	1	0	4
Totals	4	2	6	6	8	16	42

Table 9.

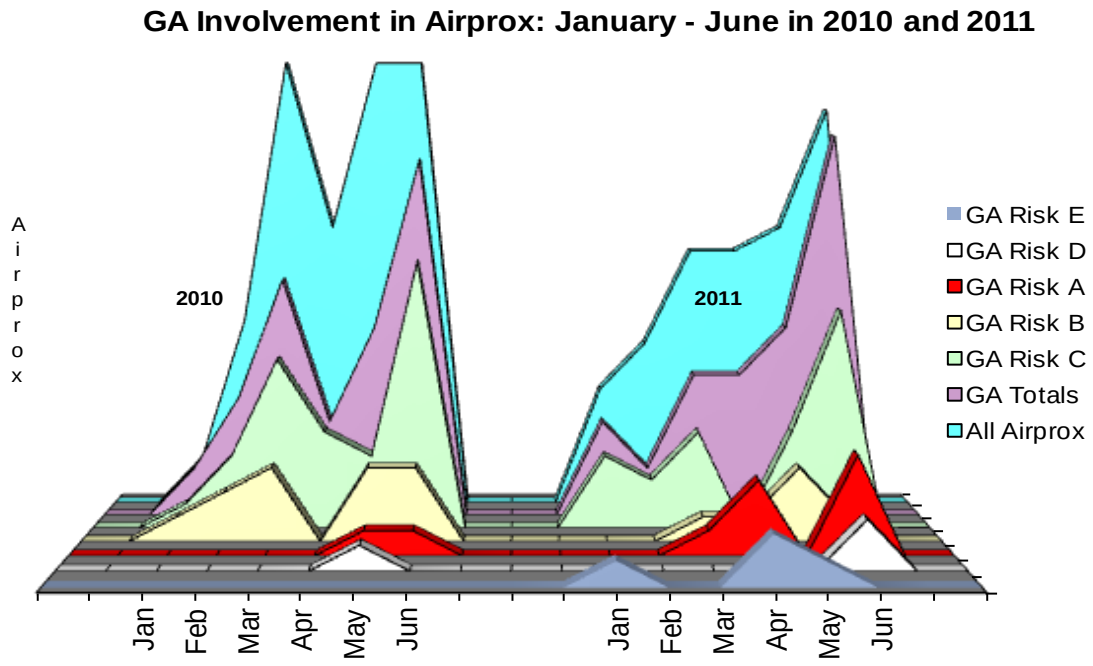


Figure 7.

Figure 8.

The causes of the GA Airprox in 2011 also closely resemble those in 2010. As shown in Table 10, sighting issues predominate and only 'Controller Perceived Conflict' was absent from the equivalent list in 2010.

Ser.	Cause	Totals
1	DID NOT SEE CONFLICTING TRAFFIC	18
2	INADEQUATE AVOIDING ACTION / FLEW TOO CLOSE	8
3	FIR CONFLICT	8
4	LATE SIGHTING OF CONFLICTING TRAFFIC	5
5	FAILURE TO PASS OR LATE PASSING OF TRAFFIC INFO	4
6	PENETRATION OF CAS/ATZ WITHOUT CLEARANCE	3
7	NOT OBEYING ORDERS/ FOLLOWING ADVICE/ FROM ATC	3
8	CONTROLLER PERCEIVED CONFLICTION	2
9	FLYING CLOSE TO/OVER GLIDER, MICROLIGHT OR PARADROP SITE	2

Table 10.

MILITARY AVIATION

Tables 11 and 12 and Figures 9 and 10 show there was a welcome reduction in the number of Airprox involving military aircraft from 51 to 35 comparing periods Jan-Jun 2010 with Jan-Jun 2011. Most of this reduction was in Risk Category C events with the number of Risk category A events remaining constant (3) and the number of Risk Category B events falling slightly from 10 to 8. The introduction of Risk Category E enables us to separate genuine Airprox from those which that are determined to be entirely benign or which it would be misleading to consider as Airprox events. The comparatively high number of Risk Category E events involving military aircraft is partially explained by the routine reporting of TCAS RA events in Class G airspace as Airprox.

2010	Jan	Feb	Mar	Apr	May	Jun	Totals
Risk A	0	0	1	0	1	1	3
Risk B	0	0	2	1	3	4	10
Risk C	0	4	10	8	7	8	37
Risk D	0	0	0	1	0	0	1
Risk E	n/a	n/a	n/a	n/a	n/a	n/a	
Totals	0	4	13	10	11	13	51

Table 11.

2011	Jan	Feb	Mar	Apr	May	Jun	Totals
Risk A	0	1	0	1	1	0	3
Risk B	1	0	1	1	4	1	8
Risk C	1	3	5	3	2	3	17
Risk D	0	0	0	0	0	1	1
Risk E	1	1	1	2	1	0	6
Totals	3	5	7	7	8	5	35

Table 12.

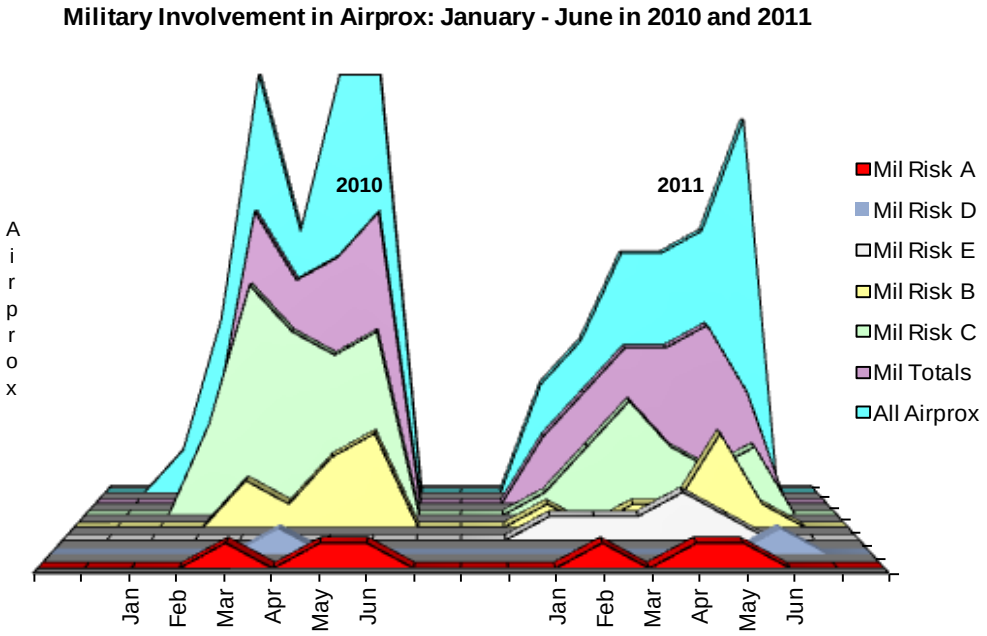


Figure 9.

Figure 10.

In examining the causes of Military Airprox, Table 13, the same 2 sighting issues were at the top of the list in 2010. Underlying a significant proportion of these causes are 2 underlying themes in common with GA. The first is the use of a quiet frequency or the selection of a Basic Service (BS) from ATC when a Traffic Service (TS) would be more appropriate to the flight profile. Frequently this is to minimise the interruption to instructional sorties. In GA we see this pattern widely repeated, including by pilots focused on ground or in-cockpit tasks such as survey flights and instrument training. The second theme is the reluctance of pilots in receipt of a TS to change course in response to specific Traffic Information. Rather, pilots tend to stand–on their course in anticipation of seeing the traffic they have been advised about, thereby allowing easily-resolvable encounters to develop into more serious conflicts.

Ser.	Cause	Totals
1	FAILURE TO SEE CONFLICTING TRAFFIC	11
2	LATE SIGHTING OF CONFLICTING TRAFFIC	9
3	INADEQUATE AVOIDING ACTION / FLEW TOO CLOSE	7
4	FIR CONFLICT	7
5	SIGHTING REPORT	3
6	POOR AIRMANSHIP	3
7	FAILURE TO PASS OR LATE PASSING OF TRAFFIC INFO	2
8	CONTROLLER PERCEIVED CONFLICTION	2
9	CONFLICT IN OTHER TYPE OF AIRSPACE	2

Table 13.

UKAB SAFETY RECOMMENDATIONS

UKAB Safety Recommendations are made when, following its consideration of any given Airprox, the Board believes that action needs to be taken to address a particular safety matter. It is for the organisation(s) concerned to decide how to respond to a UKAB Safety Recommendation. The information that follows provides updates on actions being taken in response to those Safety Recommendations published in the last UKAB Report. Also listed are Safety Recommendations made more recently together with responses where available. Updates will continue to be published until action is complete, indicated by 'CLOSED' in the 'STATUS' sections below.

044/08 16 Apr 08 involving an ATR72 and an EMB195 Risk C

RECOMMENDATION: In the light of this Airprox, the CAA should initiate a review of the currently promulgated London Gatwick SIDs in relation to NPRs to ensure clarity.

ACTION**:** The CAA accepts this Safety Recommendation. A number of textual refinements were agreed with the air traffic service provider and incorporated into the procedure chart. These feature in the current iteration (AD2-EGKK-6-6 dated 17 Nov 11).

STATUS – CLOSED

2009-76 PA28 v ASK21 GLIDER – 5 JUL 2009 – RISK: B

RECOMMENDATIONS

(i) Dunkeswell Aerodrome and the Operator of North Hill Gliding Site should jointly develop a LoA and promulgate agreed procedures that will ensure the safe integration of air traffic at these closely located airfields.

(ii) The CAA should review the disparate operations within the ATZ at Dunkeswell aerodrome and at North Hill Glider Site, to ensure their continued operation is in accord with the requirements of Rule 45 of the Rules of the Air Regulations.

UPDATE : The CAA agreed with recommendation (i) and has provided advice on the content of the Letter of Agreement.

The CAA accepted recommendation (ii), and has reviewed operations within the ATZ at Dunkeswell to ensure compliance with Rule 45.

STATUS – CLOSED

2010145 HAWK T MK1 v LYNX – 16 SEP 2010 – RISK: C

RECOMMENDATION

It is recommended that RAF Valley reviews its procedures for co-ordinating helicopter movements underneath fixed-wing circuit traffic.

ACTION: HQ Air Cmd

STATUS - OPEN

2011006 CHINOOK v APACHE - 24 JAN 2011 – RISK: B

RECOMMENDATION

The MoD is recommended to consider fitting Collision Warning Systems to its helicopters.

ACTION: HQ JHC

UPDATE: Cdr JHC has requested MoD to raise an enhancement option to acquire TCAS for JHC ac.

STATUS - ACCEPTED CLOSED

aal	above aerodrome level
ac	aircraft
ACAS	Airborne Collision Avoidance System
ACC	Area Control Centre
ACN	Airspace Co-ordination Notice
A/D	aerodrome
ADC	Aerodrome Control(ler)
ADR	Advisory Route
AEF	Air Experience Flight
AEW	Airborne Early Warning
AFIS(O)	Aerodrome Flight Information Service (Officer)
agl	above ground level
AIAA	Area of Intense Aerial Activity
AIC	Aeronautical Information Circular
AIP	Aeronautical Information Publication
AIS	Aeronautical Information Services
alt	altitude
amsl	above mean sea level
ANSP	Air Navigation Service Provider
AOB	Angle of Bank
A/P	Autopilot
APP	Approach Control(ler)
ACR	Approach Control Room
APR	Approach Radar Control(ler)
ARP	Aerodrome Reference Point
ASR	Airfield Surveillance Radar
ATC	Air Traffic Control
ATCC	Air Traffic Control Centre
ATCO	Air Traffic Control Officer
ATCRU	Air Traffic Control Radar Unit
ATIS	Automatic Terminal Information Service
ATM	Aerodrome Traffic Monitor
ATS	Air Traffic Service
ATSA	Air Traffic Service Assistant
ATSOCAS	ATSs Outside Controlled Airspace
ATSI	Air Traffic Services Investigations
ATSU	Air Traffic Service Unit
ATZ	Aerodrome Traffic Zone
AWACS	Airborne Warning and Control System
AWR	Air Weapons Range
BGA	British Gliding Association
BHPA	British Hang Gliding and Paragliding Association
BMAA	British Microlight Aircraft Association
BMFA	British Model Flying Association
BS	Basic Service
CC	Colour Code - Aerodrome Weather State
CANP	Civil Air Notification Procedure
CAS	Controlled Airspace
CAT	Commercial Air Transport
CAVOK	Visibility, cloud and present weather better than prescribed values or conditions
cct	Circuit
CFI	Chief Flying Instructor
CLAC	Clear Above Cloud
CLAH	Clear Above Haze
CLBC	Clear Below Cloud
CLBL	Clear Between Layers
CLNC	Clear No Cloud
CLOC	Clear of Cloud
CMATZ	Combined MATZ
CPA	Closest Point of Approach
C/S	Callsign
CTA	Control Area
CTR/CTZ	Control Zone
CWS	Collision Warning System
DA	Decision Altitude
DAP	Directorate of Airspace Policy CAA
DF	Direction Finding (Finder)
DH	Decision Height
DME	Distance Measuring Equipment
DS	Deconfliction Service
E	East
EAT	Expected Approach Time
elev	elevation
ERS	En Route Supplement
est	estimated
FAT	Final Approach Track
FIR	Flight Information Region
FISO	Flight Information Service Officer
FMS	Flight Management System
FO	First Officer
FPL	Filed Flight Plan
fpm	Feet per Minute
FPS	Flight Progress Strip
GAT	General Air Traffic
GCA	Ground Controlled Approach
GH	General Handling
GMC	Ground Movement Controller
GP	Glide Path
GS	Groundspeed
H	horizontal
HISL	High Intensity Strobe Light
HLS	Helicopter Landing Site
HMR	Helicopter Main Route
HPa	Hecto Pascals
HPZ	Helicopter Protected Zone
HQ Air	HQ Air Command
HUD	Head Up Display
IAS	Indicated Air Speed
iaw	In accordance with
ICF	Initial Contact Frequency
IFR	Instrument Flight Rules
ILS	Instrument Landing System
IMC	Instrument Meteorological Conditions
JSP	Joint Services Publication
KHz	Kilohertz
kt	Knots
km	Kilometres
L	Left
LACC	London Area Control Centre (Swanwick)
LARS	Lower Airspace Radar Service
LATCC(Mil)	London Air Traffic Control Centre (Military)
LFA	Low Flying Area
LFC	Low Flying Chart
LH	Left Hand
LJAO	London Joint Area Organisation
LoA	Letter of Agreement
LOC	Localizer
LTMA	London TMA
MATS	Manual of Air Traffic Services
MATZ	Military Aerodrome Traffic Zone
METAR	Aviation routine weather report
MHz	Megahertz
MOD	Ministry of Defence
MRP	Military Regulatory Publication
MSD	Minimum Separation Distance
N	North
NATS	National Air Traffic Services
NDB	Non-Directional Beacon
nm	Nautical Miles
NMC	No Mode C
NK	Not Known
NR	Not Recorded
NVD	Night Vision Devices
NVG	Night Vision Goggles
OACC	Oceanic Area Control Centre
OAT	Operational Air Traffic
O/H	Overhead
OJTI	On-the-Job Training Instructor
OOS	Out of Service
PAR	Precision Approach Radar
PCAS	Portable Collision Avoidance System
PFL	Practice Forced Landing
PF	Pilot Flying
PI	Practice Interception
PIC	Pilot-in-Command
PINS	Pipeline Inspection Notification System
PNF	Pilot Non-flying

PS	Procedural Service
QFE	Atmospheric pressure at aerodrome elevation
QFI	Qualified Flying Instructor
QHI	Qualified Helicopter Instructor
QNH	Altimeter sub-scale setting to obtain elevation when on the ground
R	Right
RA	Resolution Advisory (TCAS)
RAT	Restricted Area (Temporary)
RCO	Range Control Officer
RH	Right Hand
ROC	Rate of Climb
ROD	Rate of Descent
RPAR	Replacement PAR
RPS	Regional Pressure Setting
RT	Radio Telephony
RTB	Return to base
RVSM	Reduced Vertical Separation Minimum
RW	Runway
RVR	Runway Visual Range
S	South
SA	Situational Awareness
SAP	Simulated Attack Profile
SAS	Standard Altimeter Setting
ScATCC(Mil)	Scottish Air Traffic Control Centre (Military)
ScACC	Scottish Area Control Centre (Prestwick)
SFL	Selected Flight Level [Mode S]
SID	Standard Instrument Departure
SMF	Separation Monitoring Function
SOPs	Standard Operating Procedures
SRA	Surveillance Radar Approach
SSR	Secondary Surveillance Radar
STAR	Standard Instrument Arrival Route
STCA	Short Term Conflict Alert
Sup	Supervisor
SVFR	Special VFR
TA	Traffic Advisory (TCAS)
TAS	True Air Speed
TC	Terminal Control
TCAS	Traffic Alert & Collision Avoidance System
TRA	Temporary Restricted Area
TFR	Terrain Following Radar
TI	Traffic Information
TMA	Terminal Control Area
TRUCE	Training in Unusual Circumstances and Emergencies
TS	Traffic Service
TWR	ATC Tower
UAR	Upper Air Route
UHF	Ultra High Frequency
UIR	Upper Flight Information Region
UKDLFS	United Kingdom Day Low Flying System
UKNLFS	United Kingdom Night Low Flying System
unltd	unlimited
USAF(E)	United States Air Force (Europe)
U/S	Unserviceable
UT	Under Training
UTC	Co-ordinated Universal Time
V	Vertical
VCR	Visual Control Room
VDF	Very High Frequency Direction Finder
VFR	Visual Flight Rules
VHF	Very High Frequency
VMC	Visual Meteorological Conditions
VOR	Very High Frequency Omni Range
VRP	Visual Reporting Point
W	West
Wx	Weather

CONTENTS

INTRODUCTION

AIRPROX DEFINITION

An Airprox is a situation in which, in the opinion of a pilot or controller, the distance between aircraft as well as their relative positions and speed was such that the safety of the aircraft involved was or may have been compromised.

UK AIRPROX BOARD (UKAB) COMPOSITION

The UKAB is an independent organisation sponsored jointly by the CAA and the MOD to deal with all Airprox reported within UK airspace. There are eight civilian and six military voting Members on the Board, which is supported by specialist Advisers and chaired by the Director UKAB who reports directly to the Chairman CAA and Chief of the Air Staff, Royal Air Force. Board Members together form a team of experienced and hands-on practitioners in:

- Military and civilian Air Traffic Terminal Control, Area Control and Airfield Control.
- Commercial Air Transport (CAT).
- General Aviation (GA), powered and gliding.
- Military fixed wing and helicopter flying by the RN, Army and RAF.

UKAB's ROLE

The UKAB undertakes the following tasks in promoting improved safety standards in the air:

- Act as the start point for an investigation process into each incident, generally carried out by the Safety Regulation Group (SRG) of the CAA and/or Military HQs.
- Determine what happened plus analyses of the main causal factors.
- Assess the risk levels involved.
- Make Safety Recommendations where appropriate to reduce the risk of incident recurrence.
- Publish and distribute full reports so that lessons identified can be shared.

STATUS OF UKAB REPORTS

The sole objective of the UK Airprox Board is to assess reported Airprox in the interests of enhancing flight safety. It is not the purpose of the Board to apportion blame or liability. To encourage an open and honest reporting environment, names of companies and individuals are not published in UKAB reports.

RISK CATEGORIES

Risk level assessments are made on the basis of what actually took place and not on what might have occurred.

A	**Risk of collision**	An actual risk of collision existed
B	**Safety not assured**	The safety of the aircraft was compromised
C	**No risk of collision**	No risk of collision existed
D	**Risk not determined**	Insufficient information was available to determine the risk involved, or inconclusive or conflicting evidence precluded such determination
E	**Non Event**	Met the criteria for reporting but, by

analysis, it was determined that the occurrence was so benign that it would be misleading to consider it an Airprox event. Normal procedures, safety standards and parameters pertained.

THE UKAB DATA SET

The UKAB Airprox database comprises a set of records, each of which related to a specific Airprox. As an investigation proceeds, from first report until the conclusion of the Board's deliberations, the UKAB Secretariat completes fields within the appropriate record. Analysis of the set of records is then possible to produce information such as is published in this Report.

THIS REPORT

The Report follows established practice by giving a broad overview on general trends and then examines in more detail some specific results for each of the three principal airspace user groups, Commercial Air Transport (CAT); General Aviation (GA) and Military.

Some events, reported as Airprox and therefore assigned a reference number by the Secretariat, are subsequently withdrawn and are thus not subject to full investigation and assessment by the Board. Only the reporter can withdraw an Airprox.

In this Report, numbers of 'Unknown' aircraft are added to 'Untraced' aircraft and weather balloons to produce the category, 'Other'.

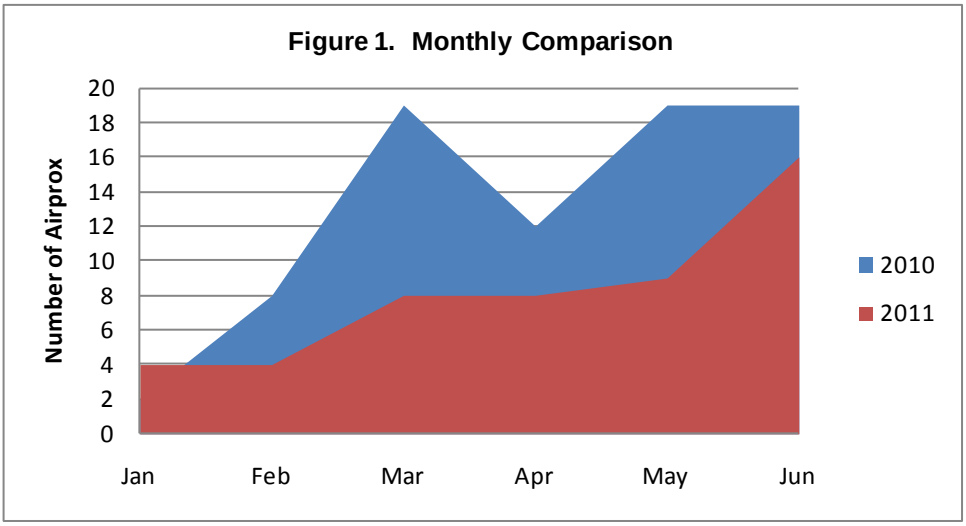
PUBLICATION OF REPORTS

A key UKAB objective is to communicate effectively the lessons identified from Airprox events. Bi-annual 'hardcopy' Reports continue to be the primary means of communication, supported by presentations at flight safety meetings, cd-roms and the Internet. The UKAB Internet website is updated at least every month: for example, details of the most recent set of Reports assessed by the Board are, when finalised, 'uploaded'.

The UKAB website address is www.airproxboard.org.uk

HALF YEAR COMPARISON 2010 AND 2011

The profile of Airprox occurrences month by month is shown in Figure 1. Both 2010 and 2011 started slowly due to bad winter weather and the sharp decline in Apr 2010 reflects the reduced flying due to volcanic ash.



Tables 2 and 3 allow comparison of Airprox numbers across the first 6 months of 2010 and 2011 differentiated by Civil/Military operators. The major difference is the fall in Civ-Mil Airprox in the Jan-Jun 2011 period, which almost exactly reverses the increase that occurred in this category from 2009 to 2010.

2010	Jan	Feb	Mar	Apr	May	Jun	Totals
Mil~Mil	0	2	5	4	5	2	18
Civ~Mil	0	2	7	6	6	12	33
Civ~Civ	2	3	7	1	8	5	26
Other	0	1	0	1	0	0	2
Totals	2	8	19	12	19	19	79

Table 2.

2011	Jan	Feb	Mar	Apr	May	Jun	Totals
Mil~Mil	1	3	3	3	3	1	14
Civ~Mil	2	1	3	3	4	4	17
Civ~Civ	2	2	3	4	4	11	26
Other	0	1	2	1	1	1	6
Totals	5	7	11	11	12	17	63

Table 3.

The breakdown is shown graphically in Figures 2 and 3 below. The category 'Other' is used when one of the aircraft is untraced and it cannot be determined whether it was civil or military. For obvious reasons, this is most common with gliders and light aircraft.

Figure 2.
User Group Mix Jan - Jun 2010

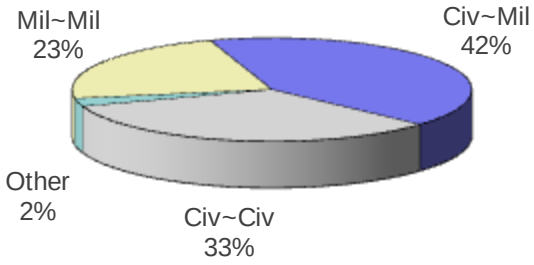
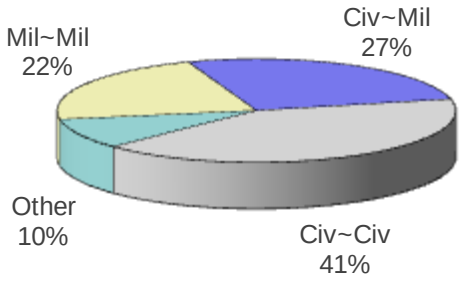


Figure 3.
User Group Mix Jan - Jun 2011



Mix details for Jan-Jun	2010	2011
CAT~CAT	2	2
CAT~GA	4	5
GA~GA	20	19
CAT~Mil	9	1
GA~Mil	24	16
Mil~Mil	18	14
CAT~Unknown	2	0
GA~Unknown	0	2
Mil~Unknown	0	4
Total	79	63

Table 4.

Further examination of the figures in Table 4 shows the reduction in Civil- Military Airprox occurred in both CAT v Mil and GA v Mil events. In percentage terms the reduction in CAT v Mil Airprox was particularly significant.

AIRSPACE

Figure 4 shows the breakdown of Airprox by airspace. The distribution profile is almost identical to that of the previous year.

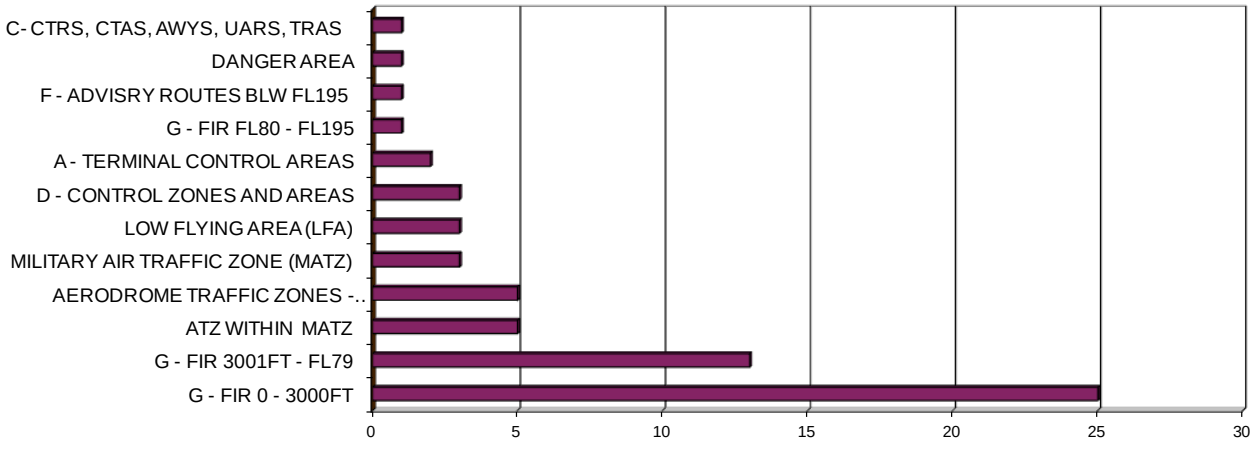


Figure 4. Airprox by Airspace Jan - Jun 2011

COMMERCIAL AIR TRANSPORT

There was a reduction in the number of Airprox involving CAT between 2010 and 2011 and none of them in either year was assessed to be risk-bearing. Tables 5 and 6 and Figures 5 and 6 show the distribution was even throughout the period. For coherence between the years, Risk Categories C and E in 2011 should be added together and compared with Risk Category C in 2010.

2010	Jan	Feb	Mar	Apr	May	Jun	Totals
Risk A	0	0	0	0	0	0	0
Risk B	0	0	0	0	0	0	0
Risk C	1	1	5	2	3	3	15
Risk D	0	1	0	1	0	0	2
Risk E	n/a	n/a	n/a	n/a	n/a	n/a	
Totals	1	2	5	3	3	3	17

Table 5.

2011	Jan	Feb	Mar	Apr	May	Jun	Totals
Risk A	0	0	0	0	0	0	0
Risk B	0	0	0	0	0	0	0
Risk C	1	1	1	1	1	2	7
Risk D	0	0	0	0	0	0	0
Risk E	0	0	1	0	0	0	1
Totals	1	1	2	1	1	2	8

Table 6.

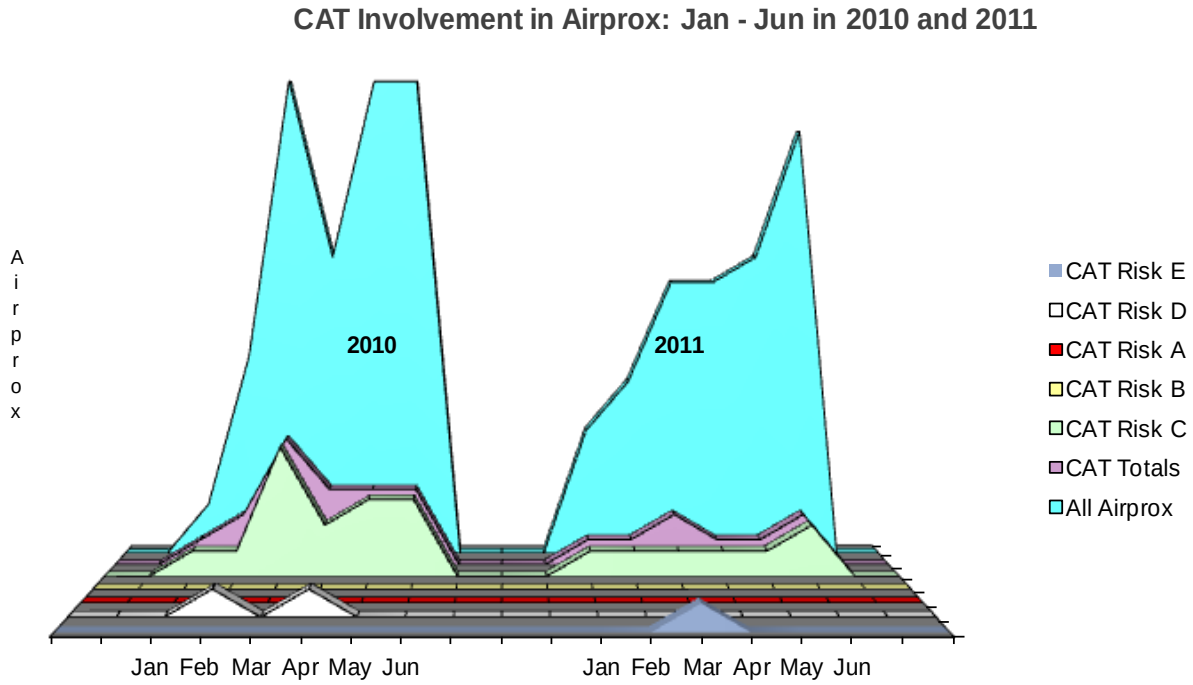


Figure 5.

Figure 6.

Three of the incidents in 2011 occurred in Class D airspace and 2 in Class A CAS. The others were one each in an ATZ, Class G and Class F. The causes were similar to those in previous years with 2 Airprox resulting from airspace infringements. The detail is in Table 7 below.

Ser.	Cause	Totals	Attributed to.
1	PENETRATION OF CAS/ATZ WITHOUT CLEARANCE	2	PILOT
2	DID NOT SEPARATE/POOR JUDGEMENT	2	CONTROLLER
3	CONFLICT BETWEEN FIR AND ADR TRAFFIC	1	OTHER
4	FALSE/MISTAKEN IMPRESSION OF LOSS OF SEPARATION	1	PILOT
5	FIR CONFLICT	1	OTHER
6	FLIGHT CAUSING ATC CONCERN FOR TRAFFIC UNDER SERVICE	1	PILOT
7	INADEQUATE AVOIDING ACTION/LACK OF POSITIVE CONTROL	1	CONTROLLER
8	MISLEADING/AMBIGUOUS TRAFFIC INFORMATION	1	CONTROLLER
9	NOT OBEYING ORDERS/ FOLLOWING ADVICE/ FROM ATC	1	PILOT

Table 7.

GENERAL AVIATION

The number and distribution of GA Airprox during Jan-Jun 2011 was very similar to 2010. Furthermore the number of risk-bearing events was exactly the same in both years, albeit that there was a greater number of Risk Category A events in 2011. The details are in Tables 8 and 9 and Figures 7 and 8.

2010	Jan	Feb	Mar	Apr	May	Jun	Totals
Risk A	0	0	0	0	1	1	2
Risk B	1	2	3	0	3	3	12
Risk C	1	3	7	4	3	11	29
Risk D	0	0	0	0	1	0	1
Risk E	n/a	n/a	n/a	n/a	n/a	n/a	0
Totals	2	5	10	4	8	15	44

Table 8.

2011	Jan	Feb	Mar	Apr	May	Jun	Totals
Risk A	0	0	1	3	0	4	8
Risk B	0	0	1	1	3	1	6
Risk C	3	2	4	0	4	9	22
Risk D	0	0	0	0	0	2	2
Risk E	1	0	0	2	1	0	4
Totals	4	2	6	6	8	16	42

Table 9.

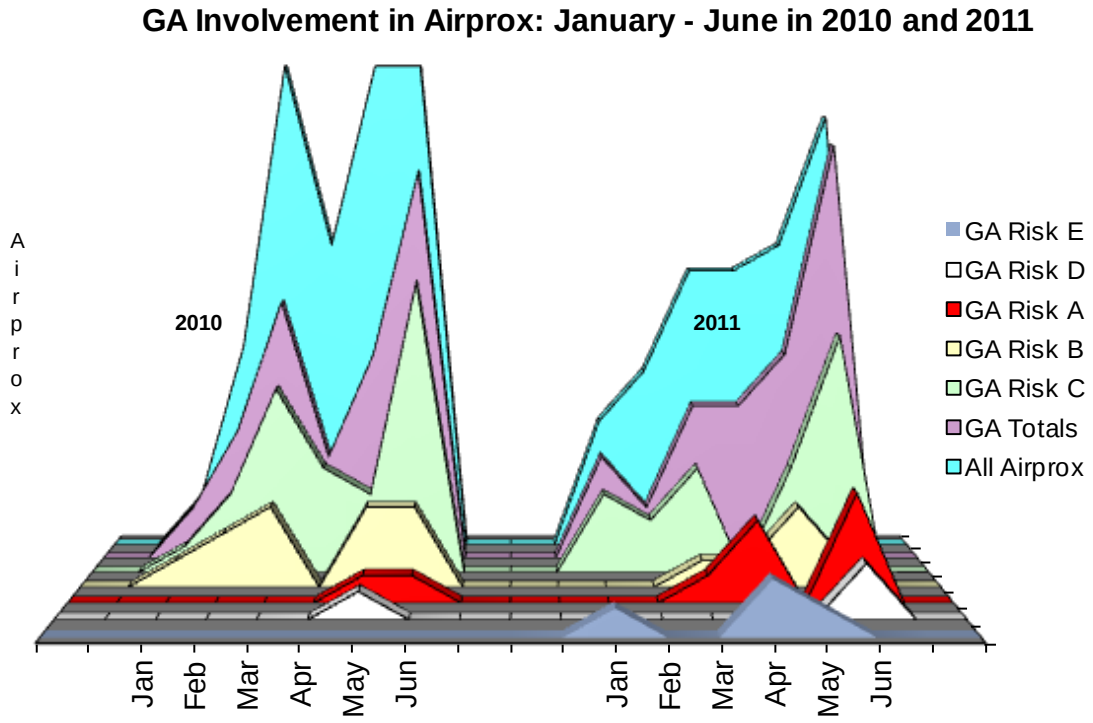


Figure 7.

Figure 8.

The causes of the GA Airprox in 2011 also closely resemble those in 2010. As shown in Table 10, sighting issues predominate and only 'Controller Perceived Conflict' was absent from the equivalent list in 2010.

Ser.	Cause	Totals
1	DID NOT SEE CONFLICTING TRAFFIC	18
2	INADEQUATE AVOIDING ACTION / FLEW TOO CLOSE	8
3	FIR CONFLICT	8
4	LATE SIGHTING OF CONFLICTING TRAFFIC	5
5	FAILURE TO PASS OR LATE PASSING OF TRAFFIC INFO	4
6	PENETRATION OF CAS/ATZ WITHOUT CLEARANCE	3
7	NOT OBEYING ORDERS/ FOLLOWING ADVICE/ FROM ATC	3
8	CONTROLLER PERCEIVED CONFLICTION	2
9	FLYING CLOSE TO/OVER GLIDER, MICROLIGHT OR PARADROP SITE	2

Table 10.

MILITARY AVIATION

Tables 11 and 12 and Figures 9 and 10 show there was a welcome reduction in the number of Airprox involving military aircraft from 51 to 35 comparing periods Jan-Jun 2010 with Jan-Jun 2011. Most of this reduction was in Risk Category C events with the number of Risk category A events remaining constant (3) and the number of Risk Category B events falling slightly from 10 to 8. The introduction of Risk Category E enables us to separate genuine Airprox from those which that are determined to be entirely benign or which it would be misleading to consider as Airprox events. The comparatively high number of Risk Category E events involving the military is partially explained by the routine reporting of TCAS RA events in Class G airspace as Airprox.

2010	Jan	Feb	Mar	Apr	May	Jun	Totals
Risk A	0	0	1	0	1	1	3
Risk B	0	0	2	1	3	4	10
Risk C	0	4	10	8	7	8	37
Risk D	0	0	0	1	0	0	1
Risk E	n/a	n/a	n/a	n/a	n/a	n/a	
Totals	0	4	13	10	11	13	51

Table 11.

2011	Jan	Feb	Mar	Apr	May	Jun	Totals
Risk A	0	1	0	1	1	0	3
Risk B	1	0	1	1	4	1	8
Risk C	1	3	5	3	2	3	17
Risk D	0	0	0	0	0	1	1
Risk E	1	1	1	2	1	0	6
Totals	3	5	7	7	8	5	35

Table 12.

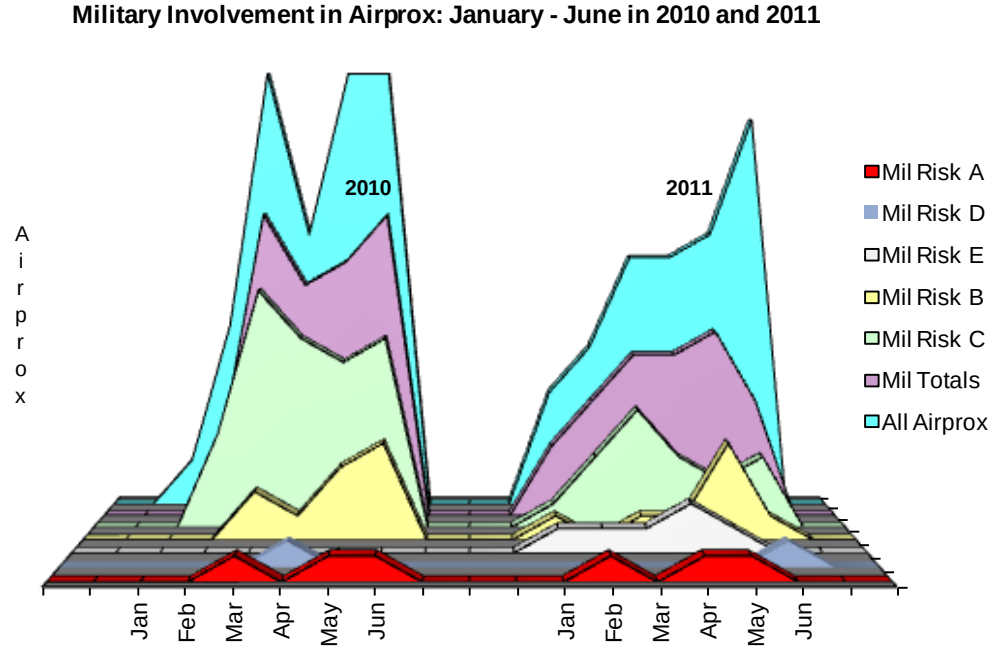


Figure 9.

Figure 10.

In examining the causes of Military Airprox, Table 13, the same 2 sighting issues were at the top of the list in 2010. Underlying a significant proportion of these causes are 2 underlying themes in common with GA. The first is the use of a quiet frequency or the selection of a Basic Service (BS) from ATC when a Traffic Service (TS) would be more appropriate to the flight profile. Frequently this is to minimise the interruption to instructional sorties. In GA we see this pattern widely repeated, including by pilots focused on ground or in-cockpit tasks such as survey flights and instrument training. The second theme is the reluctance of pilots in receipt of a TS to change course in response to specific Traffic Information. Rather, pilots tend to stand–on their course in anticipation of seeing the traffic they have been advised about, thereby allowing an easily-resolvable encounters to develop into more serious conflicts.

Ser.	Cause	Totals
1	FAILURE TO SEE CONFLICTING TRAFFIC	11
2	LATE SIGHTING OF CONFLICTING TRAFFIC	9
3	INADEQUATE AVOIDING ACTION / FLEW TOO CLOSE	7
4	FIR CONFLICT	7
5	SIGHTING REPORT	3
6	POOR AIRMANSHIP	3
7	FAILURE TO PASS OR LATE PASSING OF TRAFFIC INFO	2
8	CONTROLLER PERCEIVED CONFLICTION	2
9	CONFLICT IN OTHER TYPE OF AIRSPACE	2

Table 13.

UKAB SAFETY RECOMMENDATIONS

UKAB Safety Recommendations are made when, following its consideration of any given Airprox, the Board believes that action needs to be taken to address a particular safety matter. It is for the organisation(s) concerned to decide how to respond to a UKAB Safety Recommendation. The information that follows provides updates on actions being taken in response to those Safety Recommendations published in the last UKAB Report. Also listed are Safety Recommendations made more recently together with responses where available. Updates will continue to be published until action is complete, indicated by 'CLOSED' in the 'STATUS' sections below.

044/08 16 Apr 08 involving an ATR72 and an EMB195 Risk C

RECOMMENDATION: In the light of this Airprox, the CAA should initiate a review of the currently promulgated London Gatwick SIDs in relation to NPRs to ensure clarity.

ACTION**:** The CAA accepts this Safety Recommendation. A number of textual refinements were agreed with the air traffic service provider and incorporated into the procedure chart. These feature in the current iteration (AD2-EGKK-6-6 dated 17 Nov 11).

STATUS – CLOSED

2009-76 PA28 v ASK21 GLIDER – 5 JUL 2009 – RISK: B

RECOMMENDATIONS

(i) Dunkeswell Aerodrome and the Operator of North Hill Gliding Site should jointly develop a LoA and promulgate agreed procedures that will ensure the safe integration of air traffic at these closely located airfields.

(ii) The CAA should review the disparate operations within the ATZ at Dunkeswell aerodrome and at North Hill Glider Site, to ensure their continued operation is in accord with the requirements of Rule 45 of the Rules of the Air Regulations.

UPDATE : The CAA agreed with recommendation (i) and has provided advice on the content of the Letter of Agreement.

The CAA accepted recommendation (ii), and has reviewed operations within the ATZ at Dunkeswell to ensure compliance with Rule 45.

STATUS – CLOSED

2010145 HAWK T MK1 v LYNX – 16 SEP 2010 – RISK: C

RECOMMENDATION

It is recommended that RAF Valley reviews its procedures for co-ordinating helicopter movements underneath fixed-wing circuit traffic.

ACTION: HQ Air Cmd

STATUS - OPEN

2011006 CHINOOK v APACHE - 24 JAN 2011 – RISK: B

RECOMMENDATION

The MoD is recommended to consider fitting Collision Warning Systems to its helicopters.

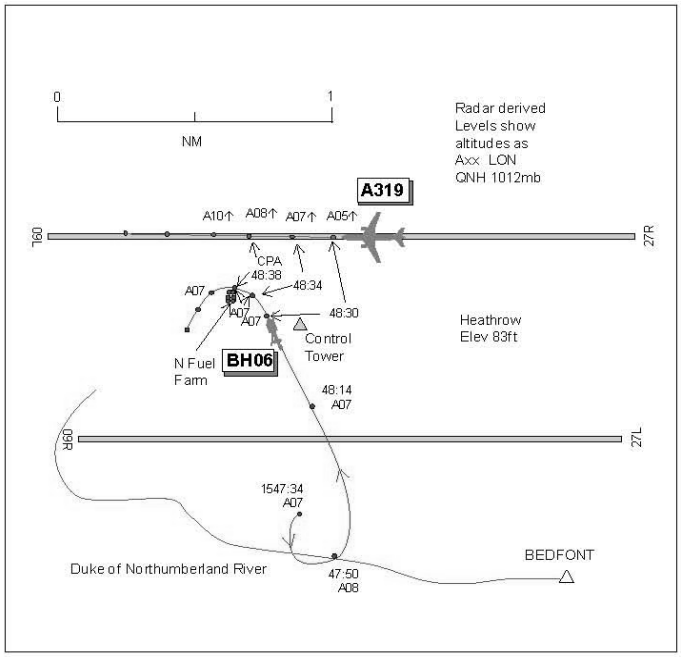
ACTION: HQ JHC

UPDATE: Cdr JHC has requested MoD to raise an enhancement option to acquire TCAS for JHC ac.

STATUS - ACCEPTED CLOSED

AIRPROX REPORT NO 2011001

Date/Time:	4 Jan 2011 1549Z	
Position:	5128N 00028W (O/H Heathrow - elev 83ft)	
Airspace:	ATZ	(Class: A)
	Reporting Ac	*Reported Ac*
Type:	A319	BH06 JetRanger
Operator:	CAT	Civ Comm
Alt/FL:	300ft ↑ (QNH 1012mb)	800ft (QNH)
Weather:	VMC NR	VMC CLOC
Visibility:	NR	>10km
Reported Separation:	300ft V/<300m H	NR
Recorded Separation:	100ft V/0·2nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE A319 PILOT reports outbound from Heathrow RW27R, IFR and in communication with Heathrow Tower, squawking with Modes S and C. Just after rotation, heading 271° at 140kt, Tower advised of a helicopter operating to the S of the aerodrome. As they climbed through 300ft the Capt visually acquired a black helicopter approx 300m to the forward/L of their ac at about 600ft moving towards the extended C/L of RW27R. Both pilots were ready to take avoiding action if required. The helicopter made a very sharp L turn by which time they were approximately 300ft higher than it. Neither a TCAS TA nor RA warning was received at any time and he assessed the risk as medium.

THE BH06 JETRANGER PILOT reports flying a pipeline survey with an observer and in communication with Heathrow Tower, squawking an assigned code with Mode C. The ac was coloured black with nav, tip strobes, pulsing landing lights and HISLs all switched on. He entered the CTR at Oxshott E having requested a H9 routeing to Heathrow with standard operating altitudes. On entering he was asked to report Heathrow in sight, which he did over the QE2 reservoir and he was then told to change to Heathrow Tower. On contact with Tower he was told to proceed and hold at Bedfont. On reaching Bedfont he took up the hold for a few minutes, RW27L was in use for inbound traffic and RW27R for outbound traffic. The controller then asked if he was familiar with the BA cargo hangar and he responded affirmative. ATC instructed him to proceed to the cargo hangar and hold, which he did and after 1 orbit he was told to cross RW27L immediately and proceed to the Fuel Store and hold S of RW27R. On approaching the Fuel Store from the S at 800ft and 80kt he informed ATC that, when convenient, he was ready to re-cross RW27L to follow the pipeline SW from the aerodrome. ATC told him to continue and re-cross RW27L without having to hold. The manoeuvre was flown in one single arc from the cargo hangar to the fuel store and re-crossing RW27L E of the 09 numbers. Whilst approaching the Fuel Store he was visual with a departing ac, the A319, in his 2-3 o'clock on RW27R, which was already well on the climb-out and which he had seen before he crossed RW27L. ATC informed inbound flights that he was crossing RW27L and would be remaining S of RW27R and he was instructed to contact Heathrow Radar whilst continuing on the pipeline inspection. He assessed the risk as none.

THE HEATHROW AIR (N) DEPARTURES CONTROLLER reports the pipeline inspection BH06 was warned in by the Tower Supervisor. He tracked the BH06 on the ATM and then subsequently visually as it operated S of RW27L. The BH06 was operating on the Arrivals frequency 118·5MHz throughout and coordination took place with the Arrivals controller that the helicopter would cross RW27L and remain S of RW27R. The BH06 crossed RW27L at speed around the midpoint so with the A319 flight already cleared for take-off he gave the crew TI,

informing them that the BH06 would be remaining S of RW27R. The BH06 was obscured from view above the VCR roof for a brief moment and when visual once again its position appeared to be very adjacent to RW27R and the departing A319 as it performed a high energy turn to the S. Its relative position to the A319 appeared very close and he asked the A319 crew if they were happy with the position of the helicopter. The A319 crew replied "it was a bit too close for comfort" and that they would be filing a report.

THE HEATHROW AIR (S) ARRIVALS CONTROLLER reports mentoring a trainee when the incident occurred. On handover they had been advised by the off-going controller that a 6nm gap had been arranged in order for a pipeline helicopter to proceed from Bedfont routeing W of the Tower as far as the Fuel Farm then to retrace its route back to Bedfont. They crossed the helicopter as soon as the inbound ac landed and it proceeded N towards the Fuel Farm before they instructed the pilot to remain S of RW27R, which was read back correctly. The trainee had coordinated with the Departures controller who was aware of the helicopter and was passing TI, so departures from RW27R continued. As the helicopter approached the Fuel Farm an A319 rotated off RW27R. As seen from the VCR the helicopter routed N of the Fuel Farm and then did a sharp R turn, she thought, over the taxiways at which point it looked very adjacent to the A319 next to it in the air. The Departures controller was unhappy with the proximity of the helicopter and questioned the A319 crew as to their opinion. The A319 crew replied that "it was a bit close for comfort". The pipeline helicopter retraced its steps and crossed RW27L and was transferred to SVFR.

ATSI reports that the Airprox occurred at 1548:38 within the Heathrow Airport ATZ, Class A airspace, between an Airbus A319 and a Bell 206 JetRanger, BH06, pipeline survey helicopter.

The A319 was departing from Runway 27R, on a flight from London Heathrow to Paris Charles de Gaulle.

The BH06 helicopter was operating a CAT Z, Non Standard Flight (NSF), pipeline survey. A NSF in CAS is considered to be an aerial task that does not follow published routes or notified procedures. The BH06 route required an approach and entry into the Heathrow ATZ from the S in order to overfly the Northern Fuel Farm, situated between Heathrow's RWs 27L and 27R. The route to be flown by the BH06 was shown on a coloured diagram provided by the Helicopter Operator.

The application procedure for a NSF is contained in the UK AIP and the responsibility for the issue of a NSF approval, within the London Control Zone, lies with London Control (LTC) Swanwick Operations. The Heathrow Manual of Air Traffic Services (MATS), Part 2, Section 1-103, Paragraph 17.13, Non Standard Flights, states:

'The procedure to be followed by operators who wish to carry out Non Standard Flights (NSFs) is contained in the UK AIP Page ENR 1-1-4-1.

The responsibility for the issue of Non Standard Flight Approval for flights within the London CTR and London City CTR lies with TC Ops.

The responsibility for the issue of exemptions from the Air Navigation Order 2000 or Rule 5 of the Rules of the Air Regulations lies with Civil Aviation Authority.'

A NSF approval for the pipeline survey was granted, in principle only, on 17 Nov 2010, serial number W008/2011, valid from 01 Jan 11 to 31 Dec 11. Special Instructions associated with the approval required that areas close to Heathrow had to be flown before 0530, or with reduced separation provided by the Air controller (visually) from Heathrow Tower. The helicopter operator was required to obtain tactical approval at least 30min prior to take-off from the TC Senior Watch Assistant (SWA) and the SWA was to contact Heathrow Tower when the NSF was activated. The LTC, MATS, Part 2, Section GEN-124, Paragraph 17.11.1.1, Handling NSF Flights, states:

'A Non-Standard Flight Operator will telephone the SWA [Senior Watch Assistant] to activate a Non-Standard Flight. The SWA is to locate the relevant NSF documentation from the NSF folders or drawers as necessary. The SWA shall confirm all pertinent information with the operator, such as time, callsign, area of operation and requested level.

The SWA shall take the NSF documentation together with the confirmed details to the relevant GS (Group Supervisor) who shall be apprised of the request. The GS should not approve the request without taking into

account the likely impact of the flight on Swanwick operations, sector workload and only following consultation with other units as appropriate. Restrictions should be applied as required.

The SWA shall inform the operator of the status of the approval and inform them of any restrictions that may have been applied by the GS.

If the flight intends to operate within 4NM of Heathrow, Gatwick, Stansted, Luton or London City (excluding helicopter pleasure flights using the H4) the SWA shall inform the relevant Tower SUP of the NSF number. If the Tower SUP is unable to locate the NSF documentation, the SWA shall fax the NSF when requested.

Once this process has been completed, flight progress strips are to be prepared by the SWA and passed to the relevant sectors. If applicable, the SWA shall enter a code-callsign conversion into the CDDS. [Code Callsign Distribution System].

On completion of the NSF task, the NSF documentation shall be returned to the SWA who will re-file it.'

The Heathrow Manual of Air Traffic Services (MATS), Part 2, Section 1-105, Paragraph 17.13.1, Non Standard Flight Notification Forms, States:

'A non Standard Flight Notification proforma is used to give basic information on Aerial work, Parachute Displays, Calibration, etc and will normally have attached to it a sketch diagram and, if received by TC Operations from the operator, copies of appropriate CAA Exemptions/Permissions. Electronic copies of NSFs that affect Heathrow ADC will be held in a folder on the VCR Supervisor's PC.

Non Standard Notification forms include a Serial Number for ease of reference.

The proforma includes dates, times, altitudes and aircraft details.

The NSF proforma is typed and will not be hand amended. A NSF is not to be approved by the operational watch without the proforma produced by TC operations.'

The BH06 Helicopter Operator complied with the notification procedures and obtained tactical approval for the flight. The helicopter entered CAS at Oxshott East and was routed via Helicopter route H9 to hold to the S of Bedfont, which is designated as a helicopter reporting and holding point to the S of Heathrow Airport.

Heathrow were operating on RW27L for arrivals (AIR S arrivals) and RW27R for departures (AIR N departures). Just prior to the reported Airprox there was a handover of the AIR S controller and the VCR Supervisor positions. The AIR N controller remained in position.

CAA ATSI had access to RT and Radar recordings together with pilot and controller and unit written reports. The VCR Controllers were operating in adjacent positions and therefore coordination was not recorded.

METAR EGLL 041520Z 22007KT 9999 FEW017 BKN033 04/01 Q1012 NOSIG=

At 1524:03, the VCR Supervisor received a telephone call from London TC (SVFR) who advised, *"….I've got a pipeline coming your way."* The VCR Supervisor was not aware of the exact requirements and requested the serial number of the flight. At 1527:15, SVFR called the Supervisor with the serial number W008/2011. SVFR agreed to fax the Supervisor a copy of the NSF notification. This comprised two pages, the approval notification and attached map. The Supervisor received a faxed copy of the NSF map, but this was not regarded as a very good copy. The ATSU written report indicated that the Supervisor was familiar with the pipeline to be inspected and judged visibility was good. The Supervisor indicated to TC SVFR that he was happy for the NSF flight to go ahead.

The ATSU report indicated that the Supervisor notified the AIR S controller about the NSF helicopter. An appropriate gap in the arrival traffic was agreed and it was understood that the BH06 helicopter would route to the upwind end of RW27L then over the fuel farm.

At 1534:29, the VCR Supervisor called the Group Supervisor (GS) Airports and agreed a 6nm gap in the arrival sequence to accommodate the crossing of the BH06 across the upwind end of RW27L. The Supervisor was

unable to find the electronic copy of the NSF notification file and again requested confirmation of the NSF serial number. The GS Airports confirmed the number as W008/2011 and the Supervisor then confirmed receipt of the second faxed sheet of the NSF notification.

At 1538:59, SVFR contacted AIR S to pass the inbound details on the BH06, which was S of Heathrow, squawking 7031 and routeing to hold S of Bedfont. AIR S confirmed the requirement for a 6nm gap in the arrival sequence.

At 1540:03 the BH06 pilot called Heathrow Tower (AIR S) and reported passing the Queen Elizabeth Reservoir following helicopter route H9. AIR S instructed the BH06 flight to hold S of Bedfont.

At 1542:24 the BH06 pilot reported approaching Bedfont with landing traffic in sight. AIR S advised the BH06 flight to hold S of Bedfont until there was a reasonable gap and then asked the BH06 pilot to confirm that when completing the intended loop to the fuel farm, it would be a quick there and back. The pilot confirmed this was the case, *"affirm all we need to do is we're literally we would come in and immediately turn south and come straight back across the er two seven left."* Air S replied, *"….If you hold south of Bedfont, I'll give you a call back very shortly."*

The ATSU unit report indicated that:

'a) the off-going AIR S controller could not remember discussing the plan with the AIR N controller.

b) the AIR N controller recalls the off-going Supervisor informing AIR S Arrivals of the impending pipeline flight and that a Black and White copy of the Map was briefly shown to AIR N. The AIR N controller stated that he was informed that the helicopter would be remaining S of RW27R but wasn't told where it would be going. The Air N controller considered that there was no need to suspend departures and considered that any other relevant information that would potentially make this unsafe would have been passed to him.'

As the BH06 approached Bedfont a hand over of the Supervisor position took place. The ATSU written report indicated that the oncoming Supervisor considered that there was no requirement to talk to the AIR controllers as the arrivals gap had, 'already been sorted out.'

At 1545, whilst the BH06 was holding at Bedfont, AIR S handed over to the oncoming controller and trainee. The unit report indicated that as part of the handover brief the oncoming controller was shown the map, which detailed the route and advised that the helicopter would follow the Duke of Northumberland River just like an E'ly crossing. However the oncoming controller understood the intention was to allow the BH06 to "route from Bedfont straight up to the fuel farm and straight back again". The oncoming controller also commented that the black and white copy of the map was poor.

The oncoming AIR S controller planned to cross the BH06 across the mid-point of RW27L and in preparation decided to move the helicopter W of Bedfont ready for the crossing. At 1546:36, AIR S instructed the BH06 flight, *"…remain south of two seven left and hold over the cargo hangar."* This was acknowledged, *"Will hold over the cargo hangar (BH06)c/s".*

At 1545:39, AIR N gave the A319 flight a clearance to line up RW27R.

At 1547:31 the A319 flight was given take off clearance, *"(A319)c/s two seven right clear for take off wind two two zero degrees seven knots."* The A319 pilot replied, *"Clear take off (A319)c/s."*

At 1547:34 the BH06 flight was instructed, *"and (BH06)c/s you can cross two seven left now and hold at the fuel farm remain south of two seven right."* The BH06 pilot replied: "*crossing now and will remain south of two seven right (BH06)c/s thank you."* The ATSU written report indicated that the AIR S controller called to the AIR N controller "heli's crossing now" and AIR N responded with a thumbs up. At this point a new QNH 1011 was broadcast.

The ATSU written report indicated that AIR N observed the helicopter leaving the BA Cargo shed and was surprised at the speed the helicopter carried out the crossing. At 1548:03, because the A319 had already commenced the take off roll, AIR N elected to make a general broadcast, *"all stations helicopter approaching er f-from the south will remain south of two seven left."* (This was a slip and should have been transmitted as 27R.)

The ATSU written report indicated that both AIR S and N considered that the helicopter appeared to be fast as it disappeared O/H the Tower. There was no prior coordination between AIR S and AIR N regarding the management of departures, the passing of TI, the responsibility for applying visual separation or the wake turbulence requirements. The BH06 was next observed in a sharp L turn adjacent to the departing A319.

At 1548:22 the BH06 pilot reported, *"and (BH06)c/s when you're ready we er we're ready to cross back two seven left."* The Tower controller replied: *"and (BH06)c/s that's approved cross two seven left now.*"

At 1548:38 radar recording showed the BH06 at the most N'ly point of the loop in a L turn passing through a W'ly heading, indicating altitude 700ft. The A319 was indicating altitude 800ft and was positioned 0·2nm (370m) N of the helicopter.

At 1549 the BH06 pilot reported clear of the landing RW (27L) and at the same time the Departure controller asked the A319 pilot, *"er did you think that er helicopter was a bit adjacent there,"* and the A319 pilot responded, *"He was a bit close for comfort yeah."* Both the Departures controller and the A319 pilot considered that they might both file a report.

The ATSU written report indicated that after the incident, when asked what could have been done differently, the Supervisor, AIR S and N controllers made the following comments:

Supervisor

Suggested that in future, pipeline or other similar details should call the VCR Supervisor before departing in order for the Supervisor to fully understand what they want to do, so the Supervisor can brief the helicopter pilot on current operations/conditions and subsequently there would be ample time then for the Supervisor to appropriately brief all controllers who would be involved. He stated that this would also allow them to plan their flight better instead of being turned away due to the met conditions not being appropriate.

AIR S

In hindsight departures should have been stopped. The location of fuel farm was now very close to 27R. The controller had seen many pipeline surveys around the airfield but none that came between the runways.

AIR N

Next time departures would be stopped. Had an adequate briefing been given this would have been the obvious course of action but the controller was not aware of all the facts. The controller hadn't seen that particular non-standard pipeline helicopter detail before in which it operated between the runways. The controller also stated that he felt a more in-depth briefing should be required before allowing the activity to take place, as it isn't a routine occurrence.

As a result of the unit incident investigation, Heathrow ATSU made the following recommendations, which have been accepted for implementation by the end of June 2011.

It is recommended that NATS procedures are amended to ensure that the Heathrow Tower Supervisor is involved in the approval process for the flight before the flight gets airborne when the detail involves activity within 4nm of Heathrow.

Benefit: This will ensure that the Supervisor has an opportunity to discuss the impact on the operation before the flight is approved.

Closure Criteria: Terminal Control Operations are made aware of the request to amend procedures to require that the Heathrow Tower Supervisor is to be involved in the approval process for the flight before the flight gets airborne when the detail involves activity within 4nm of Heathrow.

It is recommended that Heathrow Operations work with Terminal Control Operations to revise the assessment process for NSF approvals, including the assessment of the impact on the Heathrow Tower operation.

Benefit: To ensure that a proper assessment of the likely impact on the Heathrow Operation of a Non-Standard Flight is conducted.

Closure Criteria: A robust process for assessing the impact on Heathrow Operations is put in place.

It is recommended that the Heathrow Safety Department raise awareness on the unit of incidents that have occurred at, or close to, the time of handing over of positions.

Benefit: To highlight to controllers that if they are dealing with a complex situation that they should consider whether it is an appropriate time to handover or whether to delay the process.

Closure Criteria: Safety Department will raise awareness on the unit via suitable means.

The Helicopter Operator has, since the incident, advised that there is no longer a future requirement to conduct pipeline survey between the dual runways at Heathrow Airport.

The BH06 pilot complied with the ATC clearances and followed the looped route correctly crossing RW27L and then turning L at the Northern fuel farm situated 370m S of RW27R. Had the A319 departure been delayed or the crew been made more situationally aware of the helicopter operation, with appropriate and timely TI, it is likely that the Airprox would not have occurred.

CAA ATSI considered that the primary causal factor was a breakdown in the NSF approvals process, which did not allow sufficient tactical consultation or planning for the unusual nature of the helicopter survey route and the significant impact this would have on Heathrow operations. It may have been more appropriate for the pilot to have received a personal brief from the Heathrow VCR Supervisor. The NSF application requires 21 days notice. However, prior clearance on the day to activate the NSF is normally requested 1hr before departure. The NSF notification notice did not include any description about the specific requirements or impact that the flight would have on Heathrow operations. The notification provided by SVFR to the Heathrow VCR supervisor, 24min before the Airprox occurred was not considered sufficient to allow the Supervisor to properly assimilate the requirements, formulate an appropriate plan and then brief operational controllers.

The following errors and misunderstanding were considered to be contributory factors:

The missing electronic copy of the Tower NSF notice caused a delay in the operational assessment and appropriate plan and briefing. The faxed black and white copy was considered to be poor.

The handover of the Supervisor and AIR S positions just prior to the incident was unfortunate. With more timely notice and awareness the handover should have been delayed.

There was a lack of awareness amongst the VCR controllers regarding the precise requirement of the BH06 and the impact on Heathrow operations. Neither of the AIR controllers on duty at the time of the Airprox had previously seen a pipeline helicopter operating between the dual RWs at Heathrow; and therefore a lack of familiarisation and awareness of the operation caused a misunderstanding.

There was a lack of awareness regarding the distance of the Northern Fuel Farm from RW27R. There was no discussion about stopping departures from RW27R, the visual separation and wake turbulence requirements, or the passing of TI to departures.

There was some confusion regarding the helicopters routeing. The offgoing AIR S controller considered that the helicopter would route to the upwind end of the RW following the E'ly helicopter route. The oncoming AIR S controller considered that the BH06 would route direct from Bedfont across the RW.

AIR N had not been properly briefed and believed that the BH06 was to remain S of Runway 27R and further considered that there was no requirement to stop departures.

Because the A319 flight had commenced take-off, AIR N considered that the passing of TI would be distracting and therefore elected to pass a general broadcast. However the controller made a slip and stated the helicopter

would remain S of RW27L instead of 27R. This may have resulted in the crew of the A319 being unaware of the helicopters intentions and being suprised when the helicopter was observed just S of RW27R.

The routeing and height of the BH06 resulted in the helicopter dissappearing from the view of both controllers for a short period. This together with the speed of the helicopter and sharp L turn over the Northern fuel farm gave the controllers an impression that the helicopter was adjacent to the A319. Radar recording showed that at the closest point, the helicopter was 370m S of the A319.

CAA ATSI are content with the recommendations made by the Heathrow ATSU.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

Irrespective of the supervisory issues leading up to this incident, it was clear both Air S and Air N had been unsure as to the specific task to hand. Air N had decided, from the information available, that departures from RW27R need not be suspended during the BH06's operation in the Heathrow central area. Air S had cleared the BH06 to cross RW27L and told its pilot to remain S of RW27R, which was acknowledged. At the same time Air N cleared the A319 for take-off. Air S then told Air N of the BH06's crossing which Air N acknowledged but as the A319 had already commenced its take-off roll, Air N elected to make a broadcast instead of specific TI to the A319 flight. However, it was unfortunate that Air N inaccurately stated that the helicopter would be remaining S of RW27L, not RW27R as intended. This had undoubtedly led to the A319 crew's surprise when, shortly after their take off, the BH06 appeared in their forward LH quarter with its intentions unknown. Members agreed that had the A319 crew been made aware of the BH06's intentions, it would have allayed their concerns during a critical phase of their flight. The BH06 pilot had complied fully with the clearances issued and had sighted the A319 both prior to, and during, its departure. Although the BH06 was perceived by the A319 crew to be in confliction, the helicopter was always going to remain S of RW27R during its Fuel Farm inspection. Ironically it was the expeditious clearance issued by Air S that allowed the BH06 pilot to perform this manoeuvre in one continuous L turn and contributed much to the concern of the Air N and S controllers. The Board concluded that following the inaccurate broadcast by Air N, the A319 crew was concerned by the BH06's proximity but that the sightings by both crews and action taken by the BH06 pilot ensured that any risk of collision had been removed.

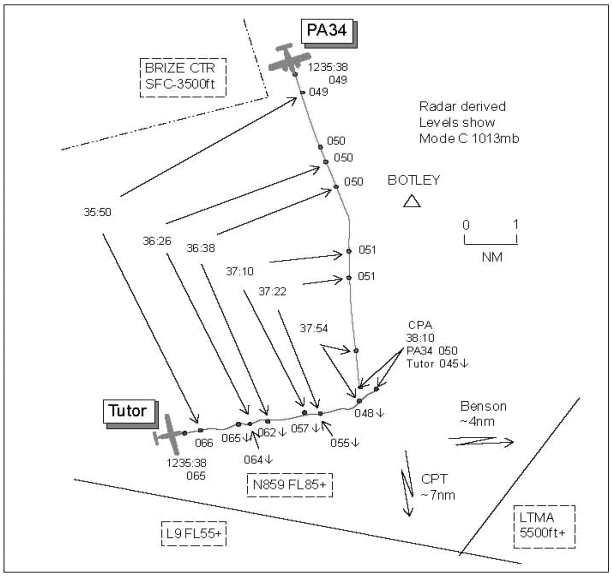
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Following an inaccurate broadcast from Air N, the A319 crew was concerned by the proximity of the BH06.

Degree of Risk: C.

AIRPROX REPORT NO 2011004

Date/Time:	20 Jan 2011 1238Z	
Position:	5138N 00115W (8·5nm N CPT)	
Airspace:	Oxford AIAA	(Class: G)
Reporter:	LTC SW	
	1st Ac	*2nd Ac*
Type:	PA34	Grob TutorTMk1
Operator:	Civ Trg	HQ AIR (TRG)
Alt/FL:	FL50	4500ft↓ (NR)
Weather:	IMC IICL	VMC CLAC
Visibility:	10km	>10km
Reported Separation:		
	Not seen	NR
Recorded Separation:		
	500ft V/0·3nm H	



CONTROLLER REPORTED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE LTC SW CONTROLLER reports that a "remain clear of controlled airspace" instruction had been given to Oxford ATC by the Coordinator for the PA34 requesting to join CAS at CPT and for the flight to call for join on his frequency 134·125MHz. The PA34 was observed on radar by him and the S Coordinator outside CAS approaching CPT before it called on frequency. Other traffic was also seen on a Benson squawk, 3611, outside CAS above FL50 and likely to conflict with the PA34. STCA low-severity (white) activated between the 2 ac and then the PA34 flight called reporting climbing to FL50 and requesting a TS. Identification and verification werecarried out and a BS was provided; STCA high-severity (red) then activated. Following a read back of the service he gave TI to the PA34 flight on the other ac. Once passed, an airways joining clearance was issued. The frequency was fairly busy with other traffic and the PA34 was outside CAS below FL70 (unit terrain clearance level) on a BS. The controller was aware of the perils associated with flying outside CAS but in this situation he believed the safety of both ac had been compromised. He opined that a better and safer service could be provided in the area in conjunction with Brize and Benson. It was noteworthy that in the LTC SI 30/10 'Oxford Arrivals and Departures via Airways' there is no mention of how Brize and Benson coordinate with each other regarding Oxford departures joining at CPT.

THE PA34 PILOT reports flying dual on a local sortie from Oxford, IFR and in receipt of a TS from Brize LARS on 124·275MHz and then a BS from London on 134·125MHz, squawking 6016 with Modes S and C. On a standard CPT departure Brize gave TI twice, he thought, about another ac which at first was below and climbing and then when closer was called at the same level. The visibility was 10km but the cloud was scattered to broken and at FL50 they were between layers in intermittent IMC. Heading 175° at 150kt, despite looking for the other ac, it was not visible and they waited to get a further update from Brize but were then handed over to London. It seemed Brize no longer considered the other ac's proximity to be a factor and they continued en-route. No avoiding action was taken and they had not changed level but turned at Botly towards CPT.

THE TUTOR PILOT reports flying a dual training sortie from Benson and in receipt of a TS from Benson. He was on recovery for a radar to visual approach to Benson in VMC above broken cloud about 7nm NW of Benson when Approach alerted him to traffic on its way to CPT. He first saw the light twin-engine ac below in his 10 o'clock as he continued to descend, tracking perpendicular to it on a heading of 060° at 120kt. He passed through its 12 o'clock at about the same level at what he deemed to be a safe distance. Descending through 4500ft the other ac passed behind and above, well before he entered IMC, and it continued to diverge as he completed his recovery. At no point was there any perceived risk and the other ac never deviated from its track.

AIRPROX REPORT No 2011004

ATSI reports that the Airprox occurred between a PA34 and a Tutor in Class G uncontrolled airspace N of CPT at FL50. The PA34 had departed Oxford on a training flight to Bournemouth and was in contact with LTC SW on 134·125MHz under a BS. LTC SW (OCK, WILLO and SW Deps sectors combined) was being operated by a tactical controller. There were no reported unserviceabilities and the controller was using Pease Pottage radar data on the situation display. ATSI assessed the RT loading on the LTC SW sector as high.

The PA34 departed Oxford having been instructed to remain clear of CAS and call for airways joining clearance on 134·125MHz. A UK Domestic Mode A code of 6016 was issued to the PA34 and displayed throughout its flight.

The LTC Manual of Air Traffic Services (MATS) Part 2 states:

'All departures from Oxford requesting an airways join at CPT are pre-noted to Brize Radar. On occasions, Brize Radar may provide a service to such departures subject to workload.'

Further provision is also made for Oxford ATC to pass details of departures towards CPT to Benson, when such departures will not be worked by Brize Radar.

At 1232:50 the PA34 appeared on the LTC SW controller's situation display 1nm SW of Oxford at FL021. The Tutor was operating at FL064, 6·9nm W of Benson, on Mode A code 3611. The PA34 continued on a S track and climbed to FL050.

At 1236:39 a low-level STCA activated on the LTC SW controller's situation display. The 2 ac were 5·3nm apart on converging tracks, the PA34 maintaining FL50 and the Tutor at FL63. At 1237:08 the PA34 called LTC SW requesting a TS. The SW controller identified the PA34 and a BS was agreed at 1237:18.

Pilots are notified in UK AIP ENR 1-6-1-1 (12 Mar 09) that no DS or TS will be available on any London Control frequency below FL070.

LTC SW issued TI to the PA34 flight at 1237:21, "*…traffic in your twelve o'clock three miles crossing right to left indicating flight level five five unverified*". The PA34 pilot replied, "*Roger*".

Within Class G airspace, regardless of the service being provided, pilots are ultimately responsible for collision avoidance.

CAP493 MATS Part 1, Section 1 Chapter 11 paragraph 3.5.1 states, with respect to traffic information under a BS:

'A controller with access to surveillance derived information shall avoid the routine provision of traffic information … However, if a controller considers that a definite risk of collision exists, a warning may be issued.'

At their operational positions, LTC SW controllers are provided with details of Benson Mode A code allocations and a quick access telephone button to Benson ATC.

High-level STCA activated at 1237:38 and at 1237:54 the Tutor is seen now tracking 060°, having turned L by about 15°, and passing through the 12 o'clock position of the PA34 range 1nm at FL048 descending.

[UKAB Note (1): The Tutor continues on a track of 060° and the CPA occurs at 1238:10, the PA34 maintaining FL50 on a S'ly track with the Tutor now in its 9 o'clock range 0·3nm and diverging indicating FL045, 500ft below. The ac were 8·4nm N of CPT.]

STCA deactivated at 1238:25 as lateral and vertical distance between the 2 ac increased. LTC SW cleared the PA34 flight to enter CAS on track CPT at 1238:41.

The PA34 departed Oxford in accordance with ATS procedures and displayed its UK Domestic Mode A throughout. Therefore, the agency providing a service to the PA34 was unknown to LTC SW. Further, when TI was passed by the LTC SW controller the PA34 pilot gave no indication of whether or not the traffic had been visually acquired. The Brize Radar controller appears to have transferred the PA34 to LTC SW whilst the ac was still in conflict with the Tutor. There was no available evidence to suggest that the Brize Radar controller attempted any co-ordination with LTC SW prior to transfer of the PA34 to LTC SW.

There is no explicit direction to controllers in CAP774 UK Flight Information Services to ensure that an ac outside of CAS in receipt of a service and remaining in confliction with other traffic should not be transferred to the next agency unless, the pilot has reported visual with the traffic and/or coordination has been attempted with the next agency.

The pilot of the PA34 requested a service notified as not available from London Control, i.e. a TS below FL70. The request for a TS may have been made in the knowledge that there was conflicting traffic not acquired by the PA34 pilot.

The SW controller gave a traffic warning on the Tutor, therefore it is highly likely that the SW controller considered that a definite risk of collision existed. This would be reinforced by activation of a high-level STCA alert. The visual manoeuvring of the Tutor relative to the PA34 would also compound the appearance of a collision risk.

The SW controller was unaware of the intentions of the Tutor. Means were available for the SW controller to contact Benson; however, there was only 1min between the initial call of the PA34 flight on the SW frequency and the recorded minimum distance between the ac. The SW controller's ability to coordinate with Benson may have been further limited by the high workload.

ATS procedures and agreements exist for the provision of service to aircraft departing Oxford to join airways, whereby Brize Radar may elect to provide a service to Oxford departures prior to transfer to LTC SW. However, there was no indication to the LTC SW controller that the PA34 was about to call having been in receipt of a service from Brize Radar: i.e. change from a Mode A code allocated to aircraft in receipt of a service from Brize to the UK Domestic Mode A code.

THE BENSON APPROACH CONTROLLER reports having been on the console for 2min when he saw the Tutor 3nm W of Didcot turn onto an E'ly heading. The flight was under a TS in the Vale operating between 4000ft and 7000ft on the Cotswold RPS of 1034mb. At this point he saw what he believed to be a CPT 'joiner' from Oxford to the SE of Abingdon heading S indicating FL50. He called this traffic to the Tutor pilot "(Tutor c/s) traffic North 3 miles heading S 1500ft below believed to be joining airways at CPT", which the pilot acknowledged. The Tutor continued E and he again called the traffic, "(Tutor c/s) previously called traffic North 3 miles tracking S 700ft below" which the pilot again acknowledged. He then answered a call from the ground controller and took a pre-note on a VFR departure. He then called the traffic again, "(Tutor c/s) previously called traffic N 1 mile tracking S same altitude" and the pilot called "visual". The Tutor was seen to descend below the other ac and turn NE for a short while before turning back to the SE. The Tutor pilot then called for an IFR recovery to initials so he was asked to set the Benson QFE 1029 and descend to height 2000ft, at which point the ac was heading SE. When the Tutor was 3nm SW of Benson the pilot reported visual with the airfield and he transferred to Tower on 127·15MHz.

THE BRIZE LARS CONTROLLER reports receiving a call from the relevant civil sector asking whether he had passed TI to an Oxford ac [the PA34], which had recently called on the London frequency, on a Benson SSR code. He had released the PA34 to London about 10nm of CPT and, at the time, he had not seen any ac wearing a Benson code that he believed necessary to call. He was unaware of the time lapse between the PA34 flight leaving his frequency and calling London. He informed the Supervisor about the landline call. The London controller did not inform him of any Airprox.

HQ 1GP BM SM reports that the Airprox occurred between the PA34 working LTC SW in receipt of a BS outside CAS (that had up until 101sec before the incident been in receipt of a TS from Brize LARS) and a Tutor in receipt of a TS from Benson APP.

At 1234:43, the PA34 outbound from Oxford called requesting a TS, was identified and placed under a TS by Brize LARS.

At 1235:39, Benson APP passed TI to the Tutor flight on the PA34 stating, *"(Tutor c/s) traffic north, eight miles, tracking south, one thousand five hundred feet below, believed to be joining airways at Compton*", which was acknowledged by the pilot.

At 1235:48, Brize LARS passed accurate TI to the PA34 on the Tutor stating, *"(PA34 c/s) traffic right one o clock, six miles, crossing right left at one thousand five hundred feet above and I have your airways instruction when you're ready to copy.*" The PA34 pilot replied, *"Roger and er standby (PA34 c/s)"*. Almost immediately afterwards

the PA34 pilot transmits, *"Pass your message (PA34 c/s)"* and Brize replies, *"(PA34 c/s) London Control instructs PA34 c/s to remain outside controlled airspace squawk six zero one six and onwards frequency one three four decimal one two five"*. Brize LARS then, at 1236:25, told the PA34 pilot that his read back was correct and then instructed the PA34 flight to continue with London Control in accordance with their clearance, which is acknowledged immediately. At this point, the Tutor is approximately 5·3nm SW of the PA34, the Tutor indicating FL064 tracking E, having just commenced a descent at 1236:27. LARS stated in their report that at the point when they transferred the PA34 to TC SW, they, "*did not see any aircraft wearing a Benson SSR code that I believed necessary to call*." This point is underlined by LARS' conversation with TC SW immediately after the incident when they stated that they "*didn't see anything relevant to call to him*."

At 1236:39, STCA activated white between the 2 ac followed by activation of STCA red at 1237:38. At this latter point, 2nm lateral separation exists, with the Tutor indicating FL051.

At 1237:11, Benson APP accurately updated the TI to the Tutor, which is descending through FL056, stating, *"(Tutor c/s) previously called traffic north, three miles, tracking south seven hundred feet below.*" A further accurate update was provided at 1237:46 with the Tutor approximately 1·5nm S of the PA34 indicating FL050. The Tutor pilot responded that they were visual with the PA34.

The CPA occurs at 1238:10 as the PA34 passes behind and above the Tutor, with 0·3nm lateral and 500ft vertical separation witnessed on the radar replay.

Benson APP provided a good level of service to the Tutor, enabling the pilot to become visual with the PA34 in time for the pilot to assimilate the situation and take action if necessary.

Given that Brize LARS provided TI to the PA34 on the Tutor at 1235:48, their later statement that they did not see anything at the point of transfer of control appears unusual. Unfortunately, given the passage of time since the occurrence it has proved impossible to explain this definitively; however, 2 possibilities exist. The first is that having passed TI to the PA34 flight on the Tutor, LARS considered that they had fulfilled their obligations within the terms of a TS and that they could therefore release the PA34 to TC SW. The second possibility is closely linked to the first, in that once LARS had provided TI to the PA34 on the Tutor their cognitive process may have discounted the Tutor such that they no longer perceived its presence when scanning the PA34's path to CPT. Given LARS' statement, this lends support to the latter hypothesis; however, there is no additional supporting HF evidence or assessment of taskload and/or workload provided by LARS that would lend weight such a hypothesis. What is clear is that LARS did not perceive there to be a confliction for the PA34 before CPT, despite the Tutor's presence only 5·3nm SW.

Notwithstanding the above, Brize LARS provided TI to the PA34 flight on the Tutor, which was updated by TC SW when approximately 2nms lateral separation existed, approximately 33sec before the CPA. Given that the PA34 pilot reported flying in intermittent IMC and was unable to visually acquire the Tutor, this again raises the question of the appropriateness of the type of service selected by the aircrew appropriate to the met conditions.

The Airprox was resolved by the Tutor pilot, aided by accurate and timely TI from Benson APP. It is reasonable to argue that the PA34 had sufficient timely information to take some form of action to avoid the situation but continued to fly their flight planned route, arguably taking confidence from the lack of updated TI from Brize LARS. It is possible to hypothesise as to why Brize LARS felt there to be no confliction for the PA34 and hence transferred control to TC SW; however, there is insufficient evidence to determine this conclusively.

HQ AIR (TRG) comments that the Tutor pilot had right of way and received a good level of service in order to get visual. The apparent small turn towards the PA34 occurred after becoming visual, was probably a result of manoeuvring to descend and remain visual, and did not significantly reduce the CPA. Agreeing with Air BM, both pilots possibly had the opportunity to manoeuvre earlier to avoid a confliction, one by expediting a descent, the other by turning briefly to avoid laterally. Whilst the rules of the air may indicate who is responsible for avoiding who, they always assume both parties are visual. Ultimately, even with right of way crews should always be prepared to act if it becomes apparent that the other ac is not taking sufficient effective action. The comment about level of service selected is also appropriate; crews should be prepared to request a DS if conditions are not sufficient to enable traffic to be detected and avoided visually.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC authorities.

As 3 ATSUs were involved, there were 3 controllers with different viewpoints on the incident. Brize LARS had provided the IFR PA34 flight with a TS, as requested by its pilot, and passed TI on the Tutor when it was just over 5nm away. The airways clearance to remain outside CAS was then passed and the flight was transferred to London. At this time, the Tutor was 1500ft above the PA31 and just about to commence a descent. Members agreed that LARS had acted appropriately and had released the PA34 to London in good time for its pilot to obtain his joining clearance. Benson APP had passed timely and accurate TI on the PA34 3 times, the Tutor pilot reporting visual after the third call. For his part, LTC SW was understandably concerned as he was awaiting the PA34 flight to call on frequency when the STCA activated a low-severity alert. The PA34 pilot called requesting a TS and was provided with a BS, owing to the restriction imposed that LTC will not provide a TS nor DS below FL70. Controller Members sympathised with the LTC SW, faced with an unknown ac on a 90° closure angle which was apparently descending into confliction and without knowing its intentions. He elected to give a traffic warning to the PA34 flight. His 'mindset' was then further reinforced when STCA high-severity activated. However he was unaware that the VFR Tutor pilot had seen the PA34 and had elected to cross ahead, descending through its level, whilst maintaining visual separation against it; the PA34 pilot did not see the Tutor. Members agreed with the HQ Air Trg comments with respect to the suitability of the PA34 pilot accepting a TS from Brize whilst flying intermittently IMC and wondered whether a DS would have been a better service to be under until he had entered CAS. This was always subject to the ATSU being able to agree to the service provision and Members were acutely aware of the difficulties faced by controllers when endeavouring to provide a DS to an ac routeing to join CAS at a specific point with manoeuvring traffic ahead. A controller Member familiar with LTC operations informed the Board that an initial joining clearance would not be given until the flight called on frequency owing to the uncertainty of the departure time from Oxford and its time en-route. The airspace at CPT is complicated by Luton outbound flights climbing to FL70, the lowest available level, so invariably flights seeking to join are told to remain outside CAS until the controller is sure of traffic situation. With all parties discharging their responsibilities correctly, albeit in an isolated and uncoordinated manner, the Board believed that LTC SW had, from the information presented, perceived a conflict between the IFR PA34 and VFR Tutor but there had been no erosion of normal safety standards or parameters.

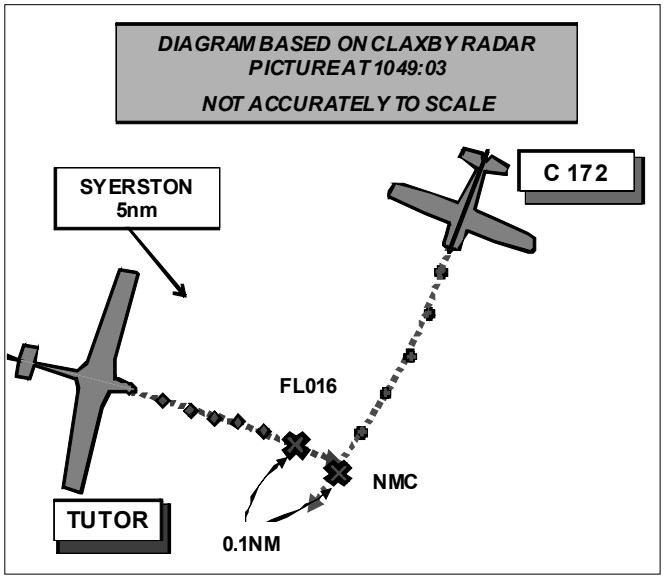
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A controller perceived conflict.

Degree of Risk: E.

AIRPROX REPORT NO 2011005

Date/Time:	28 Jan 2011 1049Z	
Position:	5310N 00100W (5nm NW Syerston)	
Airspace:	Lon FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Grob Tutor T Mk1	C172
Operator:	HQ AIR (Trg)	Civ Pte
Alt/FL:	1500ft (RPS 1022mb)	2000ft (QNH)
Weather:	VMC CLBC	VMC CAVOK
Visibility:	10km	>10km
Reported Separation:	150ft V/250ft H	200ft V/20m H
Recorded Separation:	NR V (est 350ft) /0.1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE TUTOR PILOT reports flying an instructional sortie in a white ac with all lights switched on, initially in receipt of a BS from Waddington ZONE, with the student as handling pilot. They were 5nm NW of Syerston, heading 100° in the climb out from a PFL and passing 1300ft when he (the instructor) cancelled the BS and changed freq to Cranwell APP. Passing 1700ft and before gaining contact with Cranwell, the student pilot pushed forward abruptly and reported an ac above, he gained visual contact with the ac, 400ft away, by moving his head forward and right to clear the area obscured by the canopy arch then took control, noting the height as being 1650ft. The conflicting ac was a white high-wing Cessna with a blue registration mark and was in straight and level flight heading about 195° and he assessed the vertical separation to be 150ft.

He reported the Airprox to Cranwell APP and confirmed with them by telephone after landing, assessing the risk to be high.

THE CESSNA 172 PILOT reports flying blue and white ac on a private, VFR cross country flight, at the time in receipt of a BS from Waddington [ZONE on VHF] while heading of 210° at 105kt. On their return to Nottingham from a turn point near Gainsborough, in a level cruise at 2000ft (QNH), they were informed by Waddington of traffic in their 2 o'clock at a 1000ft and he quickly made visual contact with the ac. He identified the ac as a Grob Tutor which he knew would not be on a VHF frequency and so they would not be able to hear transmissions to or from him, but he noted that the Tutor was much higher than Waddington stated at around 1800ft. Being fully visual and aware of the ac's flight path he didn't feel that there was any need to change his heading or height and considered that there was no collision risk at any time; he assessed the risk as being low.

HQ 1GP BM SM commented that both ac were initially working Waddington ZONE; however the Tutor reports switching freq to Cranwell APP shortly before the incident.

The tape transcript from Waddington ZONE indicates that the controller had a steady flow of traffic with 4/5 speaking units and in the absence of a report to the contrary, it is assumed that he was comfortable with the level of traffic.

The Cessna pilot called ZONE at 1016:24 and requested a BS; the controller assigned a squawk and applied BS. At 1018:01 the Tutor pilot also called ZONE requesting a BS; again a squawk was issued and a BS applied. ZONE passed unrelated TI to both ac well before the incident indicating that when workload permitted, regardless of the service being provided, he was passing TI to BS ac in a busy portion of airspace. The controller continued to pass information to other ac, including TI and airfield information, until at 1048:05, when the Tutor reported complete and was instructed to squawk 7000. At 1048:28 the tape transcript shows that TI was passed to the C172 pilot on

an ac at 12 o'clock half a mile crossing right to left indicating 1600ft. At that point on the radar recording shows the Tutor in the C172's 2 o'clock, indicating 1300 ft climbing; when the Tutor was passing 1600ft it was still in the C172's 2 o'clock. When the Tutor was about half a mile from the C172 in its 12-1 o'clock the C172 turns right towards it.

It is thought that there is a small discrepancy between the radar recording timings and the tape transcript clock. Taking this into account, although is not required under the provision of a BS, the TI was accurate enough to achieve the controllers intent, which was to warn the pilot and provide sufficient information to enable him to resolve the confliction; in the event it enabled the C172 pilot to gain visual contact with the Tutor.

It is clear from the controller's action prior to and during the incident that he was discharging his duties as mandated in busy of airspace and was routinely passing TI to ac operating under a BS, under the duty of care principle. The turn by the C172, which was not prompted by the controller, reduced the horizontal distance between the ac. At that point the Tutor had changed squawk to 7000 and in the process of changing frequency to Cranwell APP.

Although the constant calling of TI to BS ac can cause confusion, there remains a duty of care to which controller must apply their judgement (the regulation is far from clear in this respect).

UKAB Note (1): The recording of the Claxby radar shows the incident. In the lead up to the CPA the Tutor changes squawk to 7000 at 1048:32 in the climb through FL014 to level briefly at FL016 at 1048:54 while tracking 100° towards the C172. The C172 is squawking 3603 but does not display any Mode C data as it tracks initially 195° before turning right onto 210°. It passes from left to right, on a line of constant bearing, 0.2nm (185m) ahead of and above, the Tutor which is still at FL016. Assuming that the C172 was at 2000ft amsl, as the pilot reported, the vertical separation would have been 350ft.

HQ AIR (TRG) comments that the student saw the Cessna later than ideal but took positive action to avoid it in height. The limitations of fixed cockpit structures on the lookout scan are well understood and require positive head movements to clear the whole horizon; however, this is known about and taught. This incident serves as a timely reminder of the problem. It is disappointing that the Cessna, visual from such a long distance, did not take any action to alter course other than to turn further into confliction. Had the Tutor not manoeuvred at a late stage, the vertical separation would have been considerably less. In effect, the Tutor, with the right of way, was forced to take avoiding action as the Cessna, despite being content that there was no collision risk, crossed sufficiently close in front of the Tutor to cause concern. The resultant CPA was around 500ft.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar recordings, reports from the air traffic controller involved and reports from the appropriate ATC and operating authorities.

The Board noted that both ac were operating legitimately under VFR in Class G airspace under the 'see and avoid' principle and both were in receipt of BS where ATC is not obligated to provide TI. In the event however, Waddington Zone, having the capacity to do so, did provide TI to the C172 and this drew the pilot's attention to the Tutor as it climbed up from its PFL. Members observed that, although under no obligation to do so, it would have assisted the C172 pilot's visual acquisition of the Tutor if the controller had added that it was climbing. It was not clear to Members whether the C172 pilot had, as implied in his report, seen the Tutor before the TI was passed or whether his acquisition was a result of the TI; in any case the pilot considered there to be no risk of collision. The Tutor student and subsequently the instructor were, on the other hand, concerned by the proximity of the C172 as it flew almost directly above them. Members also noted that under the Rules of the Air the Tutor had right of way and, although adequate vertical separation may have existed, a turn by the C172 pilot would have indicated to the Tutor pilots that the former had seen them and was relatively unconcerned.

PART C: ASSESSMENT OF CAUSE AND RISK

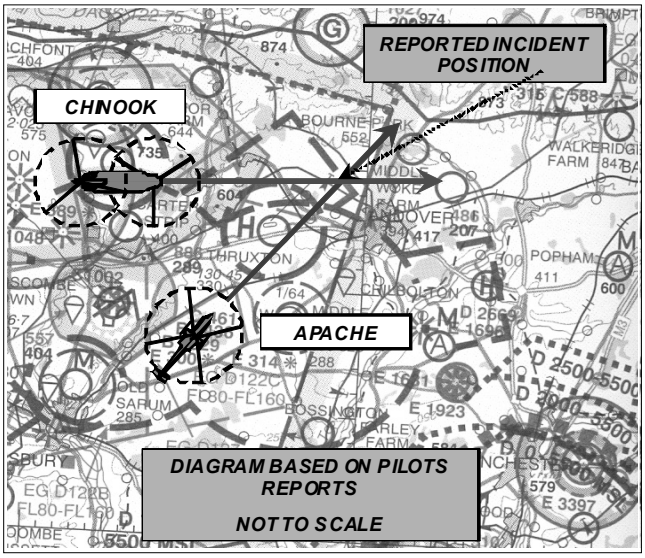
Cause: The C172 flew close enough to cause the Tutor pilots concern.

Risk: C.

AIRPROX REPORT No 2011006

AIRPROX REPORT NO 2011006

Date/Time:	24 Jan 2011 2047Z	
Position:	5115N 00132W	(2nm NW Andover)
Airspace:	UKNLFS	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Chinook	Apache
Operator:	HQ JHC	HQ JHC
Alt/FL:	800ft	NR
	(RPS 1024mb)	(NK)
Weather:	VMC NR	NK NR
Visibility:	10km	NR
Reported Separation:		
	100ft V/0ft H	NR
Recorded Separation:		
	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE CHINOOK PILOT reports that they were Reversionary Night Flying (RNF) [not on NVGs], transiting in the Night Rotary Region 1 from Lugershall to Odiham at 800ft on the Cotswold RPS [1024mb], routeing to the A34 before climbing for a radar pickup for an approach at Odiham. They had all lights switched on and were heading 090° at 130kt approaching Andover and had reselected the radios and IFF [squawking 3646] from SPTA in preparation for the climb and approach to Odiham. The NHP called *"break"* and at the same time he saw an Apache helicopter crossing from right to left in level flight about 50ft below and 100ft in front of them. He cyclically climbed the ac to avoid the Apache which disappeared under their nose. The No1 crewman picked up the Apache as it cleared to their 9 o'clock and saw it continue away without manoeuvring. RT calls were made to try and establish comms with the Apache on Middle Wallop Approach, low level common and Guard UHF but there was no response.

Comms were then established with Odiham, a radar service was requested and a recovery to Odiham was flown without further incident.

Immediately prior to the incident the HP was RNF with the No2 crewman in the front right hand door, the NHP in the left hand seat, and the No1 crewman all on NVG. None of these crew-members saw the Apache until the NHP called *"break"* and the HP manoeuvred. Both ac involved had full visible lighting switched on and it was the red nav light that he first saw before seeing the full silhouette of the Apache.

He thought that the Apache had been obscured by the cockpit window strut and the ac lights had merged with the background lighting from Andover.

He reported the incident to Odiham on first RT contact and assessed the risk as being very high.

THE CHINOOK SQN CDR commented that this incident was a very high risk Airprox. The Apache lights were not discernable against the urban lights of Andover, they had no relative motion because of the potential risk of collision, and they were obscured by the cockpit window strut. All of these frictions, which make picking up a potential mid-air risk difficult, have been highlighted in many previous Airprox incidents and will continue to do so in the future. Understanding of these factors and the importance of head movement to achieve effective lookout are key facts to continue to educate our aircrew about; this ASIMS should be used as an illustration of the risk.

Separately, in light of this Airprox, the existing radio procedures and deconfliction measures for this busy piece of low level airspace should be carefully reviewed by the key regional stakeholders, RAF Benson, RAF Odiham and AAC Middle Wallop.

Finally, technology enhancements to help avoid mid-air collisions, such as ACAS, should be considered for fitment to military helicopters.

THE APACHE PILOT reports that he was Captain/Instructor of an Apache NVS training sortie from Middle Wallop routeing clockwise around Andover at 700ft on the 1028mb Portland RPS into an operational training phase near Barton Stacey Trg Area and recovering to Middle Wallop after 2hrs. The sortie was uneventful and flown as briefed. On return the pilot was informed that he had been involved in an Airprox with a Chinook to the NW of Andover at 2047hrs. At the time he was heading 042° at 100kt.

On reviewing the cockpit FLIR tape on a large screen, a heat source could be seen to the SE of their position at a similar height and at the time and location of the reported occurrence confirming that they were the ac involved in the Airprox reported by the Chinook pilot.

UKAB Note (1): The Chinook first appears on the recording of the Clee Hill Radar at 2048 (after the incident), squawking 3646 at FL006, and tracking about 100° towards Odiham. The Apache does not show at any time.

HQ JHC comments that that this is a known choke point where ac departing or arriving at SPTA will transit Easterly or Westerly at 90^{o} to Middle Wallop traffic departing to the North, so both pilots should have been conducting a particularly meticulous lookout. Further information would have been available to the Chinook crew from Middle Wallop APR about potential conflicting traffic had they called. While all lighting SOPs were being followed, and it is assumed that both ac had planned to deconflict using the CADS system, the use of a common frequency at the time of the incident may have added another layer to the mitigation measures in place to reduce the risk of a collision in Night Rotary Region 1 (NRR1).

The NHP saw the conflicting ac across the cockpit on NVG which, as the Chinook Sqn Cdr highlighted demonstrated the importance of head movement to achieve effective lookout.

As a consequence of this and 2 other recent Airprox near Middle Wallop at night, all JHC stakeholders in NRR1 were brought together to establish a way forward and better risk mitigation processes. The CADS trial period came to an end at the beginning of Apr and increased the need for more procedural deconfliction. As a result, soft boundaries have been established between the 3 JHC main operating bases (using the A34 and M4) with the SW area being used primarily for 7 Regt AAC (training) affording students a better degree of protection. All users of the SW area now monitor MW App and use an ATS from the appropriate ATC on request when in the other areas (noting the effect of terrain at low level). Each user unit exchanges night flying routes and sortie data 3 hours prior to entry, including C130s using Keevil/SPTA. These measures have already been seen to improve the situational awareness of users.

It is anticipated that CADS will be available again within 3 months, which will once again enhance the ability of all users to plan to deconflict. In addition, JHC is pursuing actively the expansion of the RW LFAs areas, perhaps to join LFA 9, subdividing LFA1 and actively pursuing the fitment of a CWS in all JHC RW ac.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, radar recordings and reports from the helicopter operating authority.

The Board was reminded that this is the 3rd recent Airprox to have taken place at night in the Andover area involving military helicopters [201096 and 2010097 last July].

This was a serious incident that again highlighted the difficulty of operating under ‘see and avoid’ at night in a busy area with significant cultural lighting on the ground. The Board understood the operational imperatives for military aircrew to train effectively both with and without NVS and welcomed the HQ JHC initiatives to mitigate the risk. The Board was informed by the HQ JHC Member that this is a very busy choke point with SPTA, Boscombe Down and occasionally Thruxton traffic, both by day and by night, and crews should be very vigilant, particularly at night. She was surprised that the Chinook pilot did not request TI from Middle Wallop APP who would have been aware of the departing Apache (even if it had left their frequency). Radar coverage in the Andover area from Middle Wallop is good and ac returning to from the SPTA to Odiham regularly call them.

Nevertheless, the two ac involved in this incident were, in however difficult circumstances, operating under the 'see and avoid' principle; in this case, unlike the two previous incidents, the Apache crew did not see the opposing ac, but the Chinook crew (acting together) saw the Apache just early enough to initiate effective (in the Board's view) avoidance thus increasing the small vertical separation extant. This action, Members agreed, just removed any actual collision risk although safety had clearly been eroded below normally accepted levels.

There is little scope for significant expansion of the LFS and therefore measures to use the existing airspace more effectively and safely would be of great benefit. Having identified that CWS in many circumstances can assist crews significantly in identifying potential collisions, the Board agreed unanimously to recommend that the MoD should investigate with some haste the fitment of such equipment. In the mean time, Members agreed with HQ JHC that some limited physical deconfliction is needed. While crews can be busy operating their ac, RT air-air and ground-air information exchange can increase their SA significantly and this initiative was welcomed by Members.

PART C: ASSESSMENT OF CAUSE AND RISK

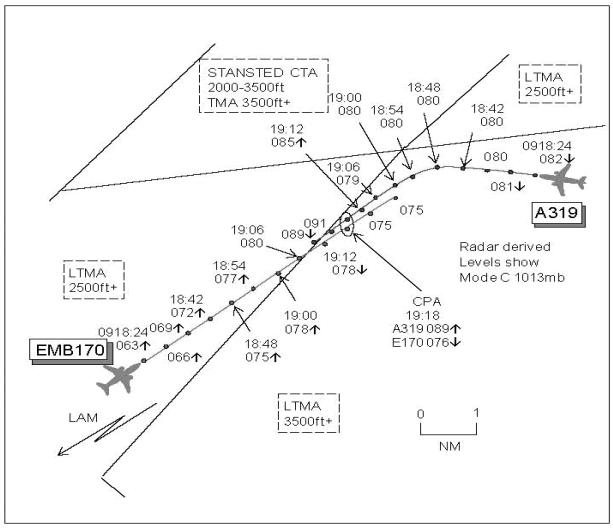
Cause: A non-sighting by the Apache crew and a late sighting by the Chinook crew.

Degree of Risk: B.

Recommendation: The MoD is recommended to consider fitting CWS to its helicopters.

AIRPROX REPORT NO 2011007

Date/Time:	1 Feb 2011 0919Z	
Position:	5144N 00021E (9·5nm NE LAM)	
Airspace:	LTMA	(Class: A)
	Reporting Ac	*Reporting Ac*
Type:	EMB170	A319
Operator:	CAT	CAT
Alt/FL:	FL70↑	FL80
Weather:	VMC CLAC	IMC CLBL
Visibility:	NR	NR
Reported Separation:		
	100ft V/1nm H	150ft V/2nm H
Recorded Separation:		
	100ft V/1·9nm H or 1300ft V/0·2nm H	



BOTH PILOTS FILED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE EMB170 PILOT reports outbound from London/City, IFR and in communication with London on 118·825MHz, squawking with Modes S and C. About 10nm NE of LAM, heading 050° at 250kt climbing through FL70 for FL90, both crew noticed a descending ac on TCAS range 10nm on a reciprocal heading. The traffic quickly became 'proximate' and was visually acquired as they were 2000ft above cloud in VMC. They then received instructions from ATC with avoiding action to 'level-off' and within a few seconds received a TCAS RA to climb. The PF actioned the RA and the PNF informed ATC "EMB170 c/s TCAS RA". PNF had the ac visual at 12 o'clock same level and watched it pitch up rapidly and climb. The PNF commanded PF to descend and within a second TCAS commanded a reversal rapid RA descent. The other ac passed 100ft higher and slightly to their L, about 1nm away. He assessed the risk as high. TCAS was very useful in that they acquired the traffic visually before an RA

was issued. ATC issued avoiding action at the same time as the TCAS RA so TCAS was followed. The crew was surprised by the reversal command from the TCAS.

THE A319 PILOT reports inbound to Heathrow IFR and in communication with London, squawking with Modes S and C. About 10nm NE of LAM while turning L from heading 300° towards LAM at 220kt and level at FL80, a TCAS TA was received owing to climbing traffic. The frequency was very busy so they were unable to notify ATC. Initially TCAS commanded a 'descent' RA so AP and PD were disengaged and the ac was started in a descent. ATC told the climbing flight to stop climb and, as a result, TCAS then changed to a 'climb' RA, demanding +5500fpm. At the time they were 1000ft above cloud between layers in IMC. The RA procedures were followed until they levelled at FL90 clear of the traffic, the other ac passing 150ft lower and 2nm laterally. ATC were informed and they descended back to their original level. He assessed the risk as high.

THE LTC NE RADAR CONTROLLER reports working as the NE/LAM controller in a relatively light but complex traffic situation with a Coordinator in position. The A319 was on a heading to pass N of LAM in order to provide lateral separation from a CAT B flight operating to the E of LAM at FL100. Thames Radar transferred the EMB170 flight to him on a heading against an inbound flight to them through LAM. He climbed the EMB170 to FL90 underneath the CAT B ac without reference to the A319 and routed the A319 direct to LAM when it was clear of the CAT B. At the same time he had a Northolt to London/City positioning flight which was cruising at altitude 4000ft whilst Luton Tower telephoned the Coordinator requesting a release on a CLN departure. In order to facilitate this release he discussed with the Coordinator a plan involving the Coordinator calling Heathrow INT N to shortcut the flight to LAM through the Heathrow RMA. Concurrently an Elstree outbound flight called on frequency outside CAS and he issued a squawk and identified the ac as per SOPs. He spotted his mistake when the EMB170 was passing FL72 and when he attempted to pass avoiding action no reply was received. He again attempted to pass avoiding action and was met with a garbled response, possibly from both subject flights, indicating a TCAS RA. The flights quickly passed and reported back under his control.

ATSI reports that the Airprox in Class A CAS between an A319 and an Embraer E170 (EMB170) was reported by both pilots, NE of LAM at FL080.

The A319 was inbound London Heathrow from Prague and was in contact with LTC NE under a RCS. The EMB170 had departed London City Airport on a flight to Stockholm Arlanda and was in contact with LTC NE under a RCS.

LTC NE (LAM, LOREL and NE Deps sectors combined) was being operated by a single tactical controller supported by the LTC N Coordinator. There were no reported unserviceabilities and the controller was using Debden surveillance data on the situation display. The NE controller was on the first morning duty of a six day cycle. The controller had been detached from watch for the previous 2 cycles on operationally related projects so his last operational duty had been 2 weeks previous. The NE controller described the traffic levels as light with a high level of complexity.

ATSI had access to the following in the course of its investigation: LTC NE controller's report, A319 and EMB170 pilot reports, transcription of the LTC NE frequency (118·825MHz), recording of LTC Group Supervisor N's deskside, recorded area surveillance, ANSP unit report, TCAS Performance Assessment (NATS), Aircraft Operator's timeline of events [QAR download] and interview with the LTC NE controller.

The NE controller reported briefing as normal at the start of duty (0700 UTC). The controller's first session of the day was a busy 30min session commencing at 0730 on LTC NW, which the controller and his colleagues felt had gone well. The Controller reported that it was not unusual for the NE sectors to be band-boxed after the 'first-wave' of morning traffic. The controller took over from a trainee at 0900 and recalled being informed that a Category B flight was coming in to the sector to be worked at FL100. The controller was using the NE Deps situation display with the adjacent (LOREL) screen filtered to show LAM inbounds and the smaller Essex planning screen above. On taking over, the controller described the traffic situation as 'normal' and 'quiet'.

At 0910:57 the A319 flight called LTC NE passing FL217 in the descent to FL150, having been transferred from LTC E 50nm E of LAM. The ac was following the LAM3A arrival for Heathrow. The LTC NE controller acknowledged the call. The previous ac into the LAM hold was in the process of being vectored off the stack by Heathrow INT N and there were no other ac inbound to LAM.

The controller described the A319 flight's first call as 'a bit early' but 'nothing unusual'. At the time, the controller was climbing a Luton DVR departure above its Standing Agreement level, which would have been MSL to LTC S, to LAC S15 levels. He did not remember whether he or the Coordinator initiated the coordination sequence for this ac. Other traffic at this time were 2 Heathrow BPK departures, 2 London City N'bound departures and a London City inbound via LAM. Due to the prevailing traffic the controller's focus of attention was in and around BPK. A non-standard positioning flight to London City (via BPK) had also just become airborne from Northolt.

At 0911 Elstree aerodrome called the LTC Group Supervisor N, requesting a clearance for a BE36 departure. The Elstree representative informed the GS that the flight would be '*ready in a few minutes*'. The GS issued squawk 3411 with instructions to remain outside CAS, on track BPK and contact 118·825MHz.

LTC MATS Part 2 (GEN-144) states that Elstree will contact FDS NE to confirm that an appropriate flight plan is held. The allocated SSR code will be passed and the flight activated using the ETD provided. The MATS Part 2 also states (NTH-34) that for Elstree departures requesting clearance to enter CAS, Elstree will contact LTC Luton Approach who will coordinate an airways joining clearance with TMA N (the traffic having free-called Luton Approach and been placed under an appropriate service, NTH-29).

At 0912:32 the NE controller instructed the A319 flight to descend FL80 to be level 5nm before LAM. This was read-back correctly. The controller noted that the decision to give a level restriction to the A319 was predicated on the expectation that the Cat B flight would remain W of LAM at FL100. The controller reported previous dialogue with LTC Heathrow INT regarding ensuring adequate separation was assured by TMA for LAM inbounds against Cat B traffic. The controller recalled looking at the strips to descend the A319 and did not recall assimilating the actual position of the Cat B flight. The controller reported that Cat B flights operating in the vicinity of, but mainly W of LAM, were not an uncommon daily experience (described as 75% of the time).

The A319 fps was moved underneath the Cat B fps in the fps bay (see table below). The high-level Luton DVR departure was to be turned and transferred, a Stansted DVR departure had become airborne and he had resolved a confliction between a London City departure and London City arrival.

LTC Heathrow INT called NE to say that the Cat B flight was 'on-task': its location now being SE of LAM. Upon assimilating this, at 0913:59, the controller instructed the A319 flight to turn R 15°. The A319 was 33nm E of LAM and the pilot read-back the instruction stating that the new heading would be 280°. The controller stated that the heading would take it N of the standard inbound route and enable the A319's descent through the level of the Cat B flight. The controller noted that if the LAM sector had been operated independently then coordination would have been required with LTC NE Deps. In the present configuration this was not necessary. (Throughout the period of events the A319 was the only ac associated with the LAM sector; all other traffic was associated with NE Deps or LOREL). Heathrow INT N was controlling the Cat B flight. The NE controller stated that this was not unusual for these flights, particularly as they generally stayed W of LAM. The controller recalled that the Cat B fps stated '10 SE LAM' as the tasking area. For Cat B flights E of LAM, NE may elect to work the flight. The controller recalled there being only one Cat B fps, which was in the LAM fps bay. He could not recall there being, and was fairly certain there was not, a strip in the BPK bay.

Thames Radar requested approval to place a London City CLN departure (the EMB170) on a heading to vector against an inbound to London City via LAM; this was approved. The NE controller stated that the normal SID track of these departures would take the ac S of LAM before turning NE'ly. The SID climbs to altitude 4000ft. The controller stated that his default way of working London City CLN departures was to 'look at LAM, climb to MSL' and stated that it was a technique he taught his trainees. The EMB170 strip was located under the BPK designator.

The controller reported nothing untoward about the strip display*:

LOREL	BPK	LAM	
	EGGW DVR dep ↑170		
	EGLC outbound	A319 ↓80	SND
	EGLC inbound	Cat B 100	
	EMB170 4A (EGLC-ESSA) 050°		

* diagram for illustrative purposes and not wholly representative of all fpss.

At 0917:05 the EMB170 flight called LTC NE passing altitude 3300ft climbing to 4000ft on a heading of 050°. The EMB170 was tracking towards LAM, approximately 1nm SW of the VOR. At this time the NE controller was dealing with Luton ATC's second attempt to request release for a CLN departure and in discussion with the N Coordinator regarding accommodation of Luton's request. The NE controller instructed the EMB170 flight to continue on its present heading and climb FL90 (which the controller stated was against the Cat B flight at FL100). The controller reported a 'fastest finger first' situation for Northolt and Luton departures via BPK, given the route convergence and altitude constraints in the area. The controller reported that the Northolt departure to London City had been released and then Luton subsequently called for a release but were instructed, "Negative, will call you back". Once the Northolt departure was airborne the controller reported that it was not unusual to receive a follow-up call from Luton Tower, as they could see the departure from Northolt airborne on their ATM. After the second call from Luton the controller recalled entering into a discussion with the N Coordinator about how to accommodate the Luton departure 'for expediency of the traffic'.

At 0917:40 the BE36 flight departure from Elstree called LTC NE, c/s only. The BE36 was squawking 7000, rather than the pre-assigned code '3411'. 7000 codes were filtered out from the NE controller's display. The NE controller asked the BE36 flight to confirm its altitude believing that the ac may be beneath the surveillance coverage on the sector. The BE36 pilot replied, "…*just climbing up to two thousand three hundred two thousand four hundred er towards BPK*…" The NE controller instructed the BE36 flight to select Mode A 3411 with ident. This instruction was read-back initially by the Northolt-London City positioning flight, closely followed by the BE36 pilot's reply.

The controller believed the MATS Part 2 procedures for Elstree departures were for the aerodrome to call FPS S and, via the Coordinator, be passed a release time, squawk and any other information (such as remain clear). A tick would be placed against the squawk by the ATSA. There was no such tick on the NE controller's fps. The controller recalled that usually Elstree departures would be seen as code-c/s converted data blocks before the flight called on frequency. When the BE36 pilot called, the controller's initial thoughts were 'who?' and he started to look for a strip. The Coordinator was also looking on the situation display and pointed out a filtered-out position display symbol in the vicinity of Elstree. When the controller issued the 3411 squawk to the BE36 flight he recalled momentarily being confused as he believed he heard a foreign accent take the call (which was the Northolt – London City flight).

Immediately after hearing the BE36 pilot's reply the controller, at 0918:22, stated, "*Thank you. Break. [A319 c/s] resume own navigation direct to LAM*". The controller recalled that saying 'thank you' was an indication to himself that his doubt about the errant read back had been cleared. At this time the A319 and EMB170 were 8nm apart: the A319 on heading 280° passing FL082 for FL080 with the EMB170 8nm SW of the A319 climbing through FL063 for FL090. The EMB170 was between the A319's present position and LAM. When questioned about this point in the sequence of events the controller believed a certain amount of tunnelling had taken place i.e. only the Cat B flight and A319 figured in his visual scan – not the EMB170. The EMB170 was not in a 'normal position'.

After instructing the A319 flight to resume own navigation to LAM the controller's attention then turned back to the BE36 stating, *"(BE36 c/s) you're identified two miles er southwest of Brookmans Park it's a Basic Service only outside controlled airspace*". The BE36 pilot responded at 0918:37 by asking if the controller wished the ac to route towards LAM before CLN.

STCA between the EMB170 and A319 activated at 0918:42 as the NE controller responded to the BE36 pilot's question.

Immediately prior to recognising the conflict the controller's intention was to issue a joining clearance to the BE36 flight. The controller could only recall seeing 'the situation' e.g. the confliction, he could not recall if STCA had alerted him to the fact or not. He immediately realised his error and instructed the EMB170 flight, *"(EMB170 c/s) avoiding action stop climb immediately*" (0918:49). The controller recalled his immediate thought was to stop the EMB170. He believed he said 'stop climb' because the ac was still climbing. His next immediate thought was 'that's vertical avoidance – do something laterally'.

The NE controller then gave lateral avoiding action to the EMB170 flight at 0918:52, *"(EMB170 c/s) avoiding action turn right heading one eight zero degrees"*. The EMB170 pilot responded, *"TCAS R A"*.

The NE controller was aware of the MATS Part 1 requirements for non-intervention in TCAS encounters. He knew not to give avoiding action to the A319 and recalled accepting that the situation was now 'hands-off'. There then followed an unidentified transmitter switch non-modulation as the STCA changed to a high-level alert.

The EMB170 received a Traffic Alert (TA) at 0918:39 and, gaining a visual sighting of the A319, slowed its ROC. The crew reported that the NE controller's instruction to 'stop climb' (0918:49) had no bearing on the crew's actions as at 0918:51 the EMB170 received an RA 'Climb' ['Maintain v/s – crossing']. Additionally, the NE controller's lateral avoiding action at 0918:52 was not heard in the cockpit due to cockpit noise. Post incident the crew of the EMB170 described how they had initially observed their closure with the A319 and took the precaution to reduce their ac's ROC. They recalled that the controller's "stop climb" instruction came as the first TCAS RA was received – the latter being followed as per company SOP. The crew also clarified that the EMB170 TCAS generated 'RA reversal' came <u>after</u> the Pilot-Non-Flying had observed the A319's change in pitch attitude.

The A319 crew recalled that, prior to the encounter, they had been aware of the EMB170's clearance to FL90 and therefore remained vigilant. The A319 received a TA at 0918:39 as the ac commenced its L turn and this was upgraded to a RA 'Monitor v/s' at 0918:52 before 1sec later at 0918:53 it changed to an RA 'Descend' ['Descend, crossing descend']. The A319 crew reported that all RA commands were followed as per company SOP.

The TCAS software used on both ac, when calculating the geometry required to avoid confliction, factors in a 5sec delay in pilot response to a commanded RA and reduces the anticipated response time in an RA-reversal to 2·5sec.

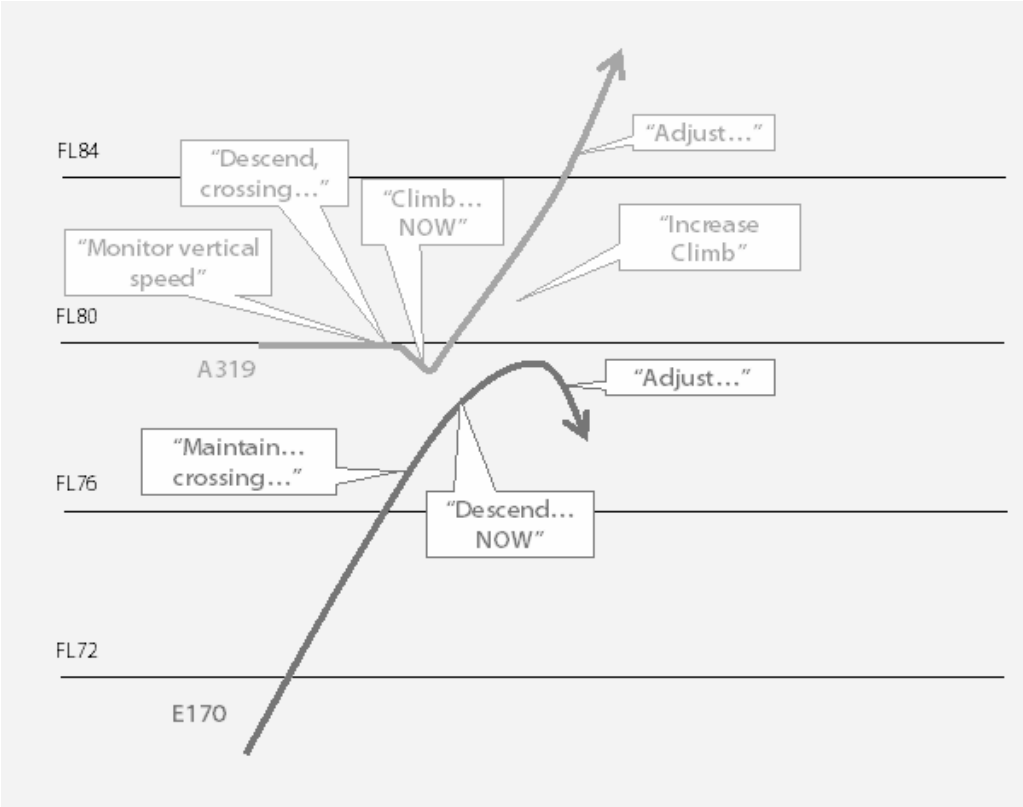
At 0918:57, the EMB170 received an RA reversal, being instructed to descend ['Descend now'] and 1sec later at 0918:58 the A319 also received an RA reversal to climb ['Climb, climb now']. The A319's TCAS also then instructed an 'Increase climb, increase climb' at 0919:02.

At 0918:59 the Northeast controller asked the A319 flight, *"(A319 c/s) have you got TCAS?*" There was another unidentified transmitter switch non-modulation, and 6sec later the NE controller transmitted, *"(A319 c/s) London*", which was answered by the A319 crew, *"…TCAS RA"*. The NE controller requested that the A319 crew report when clear of conflict.

Surveillance analysis at 0918:39 shows the EMB170 climbing through FL069 when it received a Traffic Alert; the A319, level at FL080, receives its TA at the same time. The EMB170 continued its climb to FL075, at which point at 0918:51 the first RA ("Climb") was received. The ac were laterally separated by 4·7nm and the A319's L turn was not observed to be taking effect yet. Seven seconds later as the EMB170 reached FL077 [0918:58] the RAs were reversed: the distance between the ac now being 3·7nm. Separation was lost at 0919:00 with only 2·8nm and 200ft between the ac. The A319 was then recorded as descending for a short period [between 0919:00 and 0919:06 from FL080 to FL079: separation 100ft/1·9nm] before climbing 600ft in 6sec [0919:12 separation 700ft/1nm] and eventually passing FL089, when vertical separation was restored at 0919:18. At this time, the CPA, the ac passed abeam each other by 0·2nm, 1300ft apart.

At 0919:26 the EMB170 flight reported clear of conflict and at 0919:30 the A319 flight reported, *"clear of conflict returning to Flight Level 80*".

At 0919:38 the EMB170 flight was instructed to resume its own navigation to CLN and at 0920:01 the A319 flight was transferred to Heathrow Director.



Graphic above courtesy of Eurocontrol from an ACAS II Bulletin.

The NE controller was relieved at 0920:31.

There were no external factors affecting the controller's performance prior to the incident.

Operationally, the controller's traffic mix was complex including:

Non-standard Northolt to London City positioning flight

Request from Luton for a departure release

Category B flight operating in an area not usual for the task

Facilitation of climb for traffic exiting to LAC S15

EMB170, London City CLN departure, off-SID route to facilitate a London City inbound

Elstree departure: airborne without the allocated Mode A code and calling LTC Northeast direct

All other standard TMA traffic.

The A319 was the only ac into the LAM hold and was transferred to the NE sector 50nm prior to the hold. The controller's interaction with the aircraft on its route to LAM was minimal: one descent instruction and one heading instruction.

The EMB170 was off-route and not where the controller would normally expect it to be. The controller, usually having a habit of climbing these departures to MSL only, chose to climb the EMB170 to FL090, underneath the Cat B flight at FL100.

All displays were functioning correctly and the fps outfall was normal for the sector.

The BE36 was an unpre-empted addition to the controller's traffic. As the ac was not displaying the allocated Mode A code it was not immediately apparent to the controller. ATSI were unable to determine why the BE36 was not displaying the 3411 squawk passed to the Elstree representative. ATSI could not determine if there was evidence of the BE36 flight having called LTC Luton Approach prior to its call to NE.

As the controller finished dealing with the BE36 he chose to instruct the A319 flight to resume its own navigation to LAM as it was now beneath the Cat B flight. The controller's next intended action was to join the BE36 into CAS.

In instructing the A319 flight to resume its own navigation the controller did not to ensure separation with the EMB170. The controller did not detect, from the situation display, the presence of the EMB170 between the A319 and LAM. Hence the controller's description of 'tunnelling' of information, resulting in him not integrating all the information available to him i.e. the presence of the EMB170 display symbol.

The controller had forgotten the presence of the EMB170, having previously climbed it underneath the Cat B flight and through the level of the A319. This omission was likely caused by an overload in working memory at the time – his capacity and plans having been changed whilst dealing with the BE36.

As the event occurred, the controller attempted to issue avoiding action; however once the EMB170 stated that it was acting in accordance with a TCAS RA, the controller allowed the ac to act upon their TCAS instructions without further interruption.

The rapid evolution of the encounter prompted several TCAS resolution commands in each ac. All of which were followed in accordance with procedure by both crews.

The Airprox occurred on the LTC NE sector, 10nm NE of LAM at FL080 when the NE controller turned an A319 into confliction with an EMB170. The A319 flight was at FL080 and had been instructed to resume its own navigation to LAM. The EMB170 was climbing to FL090 on a heading of 050°. The minimum distance between the ac at 0919:12 was 1·0nm/700ft (approximately 6116ft ac-to-ac distance). The event was recovered by TCAS.

Analysis of the incident determined that the controller, having experienced a tunnelling of the information displayed to him, did not integrate the position of the EMB170 into his decision to turn the A319 towards LAM.

The controller, being competent in accordance with unit procedures, experienced a complex workload comprising of non-standard flights, non-standard ac routings, a request to join CAS from an unanticipated Elstree departure and operational pressures to release ac from Luton.

The issues concerning the Elstree departure have been addressed by LTC and Elstree: namely, unit personnel have been reminded of the correct procedures for departures and the AIP has been updated to advise pilots that they are to call LTC Luton Approach on departure.

Recommendations:

There are no CAA ATSI recommendations as a result of this incident.

ATSI note that a comprehensive investigation by the ANSP, in conjunction with the Aircraft Operator, has produced a set of actions and recommendations including:

Alignment of procedures for Elstree, TC North, Luton Approach and the General Aviation community.

Lesson learning and training scenario activities; including unit safety day events and dissemination throughout the unit in accordance with their Safety Management System.

Incorporation of aspects of this event into pilot/controller interface meetings.

Presentation of this event, the subsequent findings and outcomes to the EUROCAE Working Group responsible for TCAS.

The incident has also been recommended for the purposes of lesson learning and TCAS training by the ac operator.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

Members commended the comprehensive ATSI report which had covered all aspects of the Airprox thoroughly. The controller had acknowledged not taking the A319 into account when he cleared the EMB170 flight to climb to FL90, beneath the Cat B flight at FL100, and this placed the 2 subject flights into conflict and had caused the Airprox. He had not detected the potential for confliction from the fpss or radar display and the situation was compounded when he released the A319 flight to resume its own navigation towards LAM. Pilot Members agreed that both crews had shown excellent SA and airmanship during the encounter, particularly when faced with a TCAS reversal. The CAT Members and the FOI Advisor agreed that it is known to be difficult to create realistic simulator training for RA reversals occurring against a single ac; the usual scenario used involved 2 separate ac. The EMB170 crew had noticed the A319 on TCAS and realised that their flightpaths were in confliction. They had received a TA, visually acquired the A319 early and reduced their ROC. A pilot Member informed the Board that the crew's actions were the natural reaction when faced with traffic converging from above but that the TCAS TA was only the first part of the ACAS algorithm, effectively a 'heads up' to get ready to react if an RA follows. In this case the ACAS system calculated that a 'crossing climb', through the A319's level was the best resolution for the EMB170 and generated an RA to that effect; the EMB170 crew had only just started to reduce their ROC at the time. The crew followed the TCAS guidance, cognisant of the controllers 'stop climb' instruction, and informed him of the RA after an avoiding action turn had been issued. The A319 had received coordinated TCAS guidance, a momentary 'monitor v/s' before a 'descend' RA was generated. However these RAs were reversed 6sec later, the EMB170 crew seeing the A319 'pitch-up' just before receipt of their 'descend' RA. The Board considered whether it had been the EMB170's reduced ROC immediately prior to the first climb RA that resulted in the subsequent reversal. While it was possible that the reduced ROC may have had an effect, the Board noted that the ROC did not reduce below 500ft/min and the A319's left turn towards LAM also contributed to the changing geometry. As it was, both crews reacted promptly to the new RAs, the A319 crew achieving a 600ft increase in level in 6sec whilst the EMB170 crew stopped their climb and achieved a 200ft descent. Shortly thereafter, the ac passed with 1300ft of vertical separation, displaced by 0·2nm. These prompt and robust actions taken by the crews were enough to allow the Board to conclude that any risk of collision had been quickly and effectively removed.

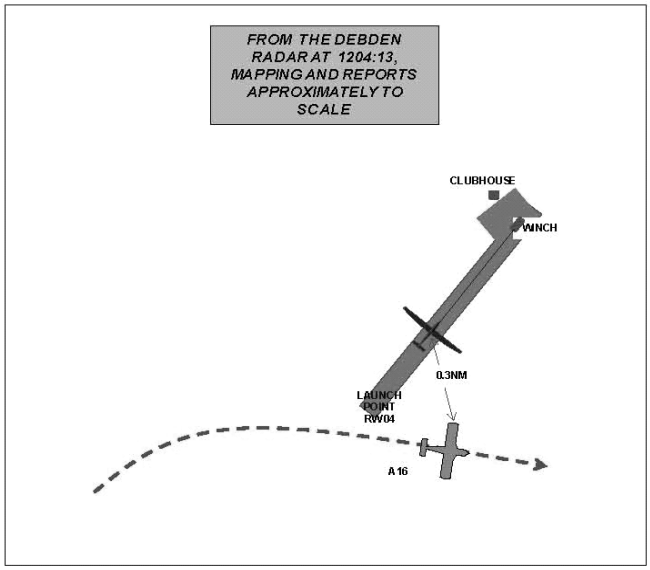
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The LTC NE controller did not take the A319 into account when he climbed the EMB170 into conflict with it.

Degree of Risk: C.

AIRPROX REPORT NO 2011008

Date/Time:	29 Jan 2011 1204Z (Saturday)	
Position:	5211N 00007W (Gransden Lodge - elev 254ft)	
Airspace:	Lon FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	ASK21 Glider	PA28RT
Operator:	Civ Trg	Civ Pte
Alt/FL:	800ft (QFE)	1600ft (QNH)
Weather:	VMC CLBC	VMC CLBC
Visibility:	>15km	>7km
Reported Separation:	0ft V/250m H	500ft V/500m H
Recorded Separation:	Est 550ft V/0.3nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE SCHLEICHER ASK21 PILOT (K21) (the Deputy CFI) reports flying as HP on a training flight heading 040° at 70kt on a winch launch and in communication with Gransden Lodge Radio; FLARM was fitted and serviceable. He was informed after the flight by the Duty Instructor that he had been involved in Airprox but he did not see the other ac as it passed behind his glider; the other ac's engine was not heard due to increased noise during the winch launch. Although he did not see the ac, from other information he assessed the risk as being Medium.

THE WINCH DRIVER reported that he was conducting a winch-launch of a K21 glider on RW04 at Gransden Lodge. While the glider was in the main part of the climb passing about 800ft, he caught sight of a single-engine 'T' tail light ac crossing the RW in a SE'ly direction. From his line of view the ac appeared to be relatively close to the height of the glider, but it had passed over the glider before he had an opportunity to discontinue the launch. He continued with the launch but was sufficiently concerned to raise the issue with the launch marshal and discuss the incident; the launch marshal confirmed that he had also seen the light ac but thought that that its flightpath was taking it behind the launching glider.

THE ONCOMING DUTY INSTRUCTOR reported that he was about to start duty and at 1204 was watching a winch launch in progress on RW04, when a light single-engined ac overflew the RW, passing behind the launching glider from his point of view. It was below cloudbase, which he estimated to be about 1500ft, and was on SE'ly track. He called the winch driver and launch marshal on the ground radio and all agreed that the separation had been uncomfortably close. He guessed that the ac might have been talking to Cambridge TWR so he telephoned them within 15min, but they could not help identify it.

THE PA28T PILOT reports flying a white ac with a multi-coloured stripe on a VFR private flight, with a passenger, inbound to Cambridge. He was heading 095° at 130kt and 1600ft (QNH) in receipt of a BS from Cambridge APP, squawking with Modes C and S (elementary) but TCAS was not fitted.

The incident occurred on a cruise leg from DTY to a point SW of Cambridge where he had planned to pass to the S of Gransden. The conditions were generally overcast at about 1800ft with the reported visibility being 7000m and sub-zero temperatures and they were flying below the cloudbase. In a few local areas along that leg, the lower cloudbase forced them to descend briefly to about 1400ft in places; although he had an IMC rating he did not climb through the cloud due to the risk of icing.

He was aware of the gliding sites in the vicinity and was concentrating on lookout but in spite of this, the first sighting of the reporting (low-wing) white glider was in 10 o'clock position at about 500m range but below their

level. The glider was in sight for about 5sec before passing out of sight below their port wing and it appeared to be flying straight and level after it was sighted.

He assessed that the glider would pass below and behind them and, since there was no further or developing risk, he assessed the risk of collision as being low.

ATSI reports that the Airprox occurred at 1204:06, in Class G airspace in the close vicinity of Gransden Lodge Gliding Site, situated 10nm SW of Cambridge Airport.

The PA28, was operating on a VFR flight from Bristol to Cambridge Airport and was in receipt of a BS from Cambridge APR. The glider was being winch launched from RW04 at Gransden Lodge Gliding site.

Cambridge APP was providing an Approach Procedural Control Service, without the aid of surveillance radar.

Gransden Lodge is shown on the Aeronautical Information Charts and is notified in the UK AIP as a Glider Launching Site, active from sunrise to sunset, with a vertical limit of 3000ft agl (altitude 3250ft). Cambridge MATS Part 2, Section 1, Page 29, paragraph 10.4 Gliding sites, states:

'Gliding takes place at Gransden Lodge 10nm SW of Cambridge. Gransden shall be considered always active although details are usually faxed to ATC when gliding events are scheduled.'

The ATSU indicated that Gransden Lodge normally notify Cambridge regarding any unusual activity or event. No additional gliding activity information was promulgated by AIS NOTAM.

The Cambridge METAR was:

EGSC 291150Z 02007KT 7000 OVC016 01/M03 Q1023=

At 1201:00, the PA28 called Cambridge APP reporting inbound from Bristol VFR, estimating at 1209, requesting joining instructions and information about parachuting in the area. APP advised the PA28, that the only known parachuting was at Chatteris, N of Cambridge, asked the pilot to report at a range of 5nm from Cambridge, and passed the QNH of 1023 and the RW as 05; this was acknowledged correctly. No information was passed regarding possible gliding activity at Gransden Lodge.

At 1201:00, the radar recording showed the PA28, 6.2nm to the SW of Gransden Lodge, squawking 7000, with Mode C showing an alt of 1700ft. Also shown was a possible glider contact, manoeuvring in the PA28's half past ten position at a range of 1.7nm.

At 1202:05, APP asked the PA28 pilot to confirm that a BS was required, together with a request for the aircraft alt; the pilot requested a TS and reported at an alt of 1600ft. APP agreed to provide either a BS or PS because the radar was not available so a BS was agreed at 1202:20. (It was noted that the UK AIP page AD-2EGSC-1-5 (16 Dec 10) promulgates the Radar hours of operation as (winter) 0900 – 1800 and then by arrangement). The ATSU has indicated that radar services are provided to planned traffic on a tactical basis within the promulgated hours.

At 1204:02, the radar recording showed the PA28 tracking E, close to the S boundary of Gransden Lodge airfield. At 1204:13, the recording showed a primary contact appear 0.1nm NE of Gransden Lodge, consistent with a departure from RW04; at that point the PA28 was 0.4nm to the SE of Gransden Lodge with the 2 ac 0.3nm apart and diverging.

At 1207:00, the PA28 pilot reported 5nm from Cambridge airport and requested a straight in approach for RW05, which was approved and the ac was transferred to TWR.

The PA28 was in receipt of a BS from Cambridge APP; the Manual of Air Traffic Services, Part 1, Section 1, Chapter 11, Page 4, paragraph 3.1.1, states:

'A Basic Service is an ATS provided for the purpose of giving advice and information useful for the safe and efficient conduct of flights. This may include weather information, changes of serviceability of facilities, conditions

at aerodromes, general airspace activity information, and any other information likely to affect safety. The avoidance of other traffic is solely the pilot's responsibility.'

CAA ATSI recommends that Cambridge ATSU review the Cambridge UK AIP entry, regarding the promulgated arrangements for the provision of radar services.

UKAB Note (1): The London QNH (and Cambridge) was 1023mb and the PA28 was indicating level at A016 at the CPA; that being the case it was at about 1350ft agl. If the glider was at 800ft, as reported, the vertical separation would have been 550ft. From the viewpoints of both the winch driver and the Duty Instructor (both about 1nm to the N of the PA28) this would have appeared substantially less.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, radar recordings, reports from the winch driver and the Duty Instructor.

It was explained that, although this incident was not strictly in accordance with normal reporting procedures in that the glider pilot did not witness it, since there was sufficient other reliable information, somewhat unusually including a good radar recording, and apparently lessons to be identified, it was decided to allow the incident to be investigated as an Airprox. In these circumstances it was reiterated that the key is 'sufficient reliable information' and gliding clubs should submit as much as possible allowing the UKAB Secretariat to view it and select the most relevant for consideration by the Board.

The Board was informed that Gransden Lodge is a busy glider site in a congested area and, being predominantly grass, is difficult to acquire visually; further it is very close to Little Gransden, Bourne and numerous other light ac strips, further restricting routeing options.

It was also pointed out that gliding supervisory staff have restricted options and little time to react when spotting an unknown ac approaching their site at a relatively low height and while in the initial stages of a winch launch sequence; further, just after getting airborne gliders climb very quickly and, as evident in this incident, their pilots have a restricted field of view allowing them to react only to ac ahead of them and above the nose. Winch drivers too have a restricted field of view (albeit in the opposite direction) but have to concentrate largely on the launching glider to achieve a safe launch and maintain speed control.

Based mainly on the radar recording, it seemed to Members that the PA28 pilot, although reportedly aware of local airfields, attempted unwisely to 'thread the needle' between Little Gransden and Gransden Lodge, bringing him into close proximity to both. In this case, the lowered cloudbase had restricted both the maximum glider launch height and, due to potential icing, the height that the PA28 could fly, resulting in the latter being at about the maximum winch launch height as he passed very close to the Southern boundary of the airfield; that, Members agreed unanimously, was too close for comfort. Although the precise geometry of the incident differed when viewed from different points and regrettably there was no report from the Launch Marshal who was by a significant margin closest to the PA28's track, it was accepted by Members that the PA28 had tracked along, or just outside, the airfield boundary at about 1600ft amsl as the glider was at about 800ft agl (1050ft amsl) resulting in about 550ft vertical and 0.3nm (500m) horizontal separation (as reported by the PA28 pilot and confirmed by the radar recording). Although Members agreed that the track selected by the PA28 pilot had been unwise, it was unanimously accepted that there had been no risk of collision as the PA28 pilot had seen the glider throughout.

The Board noted the ATSI comment regarding the provision of radar services by Cambridge, but did not consider it to have played a significant part in the incident.

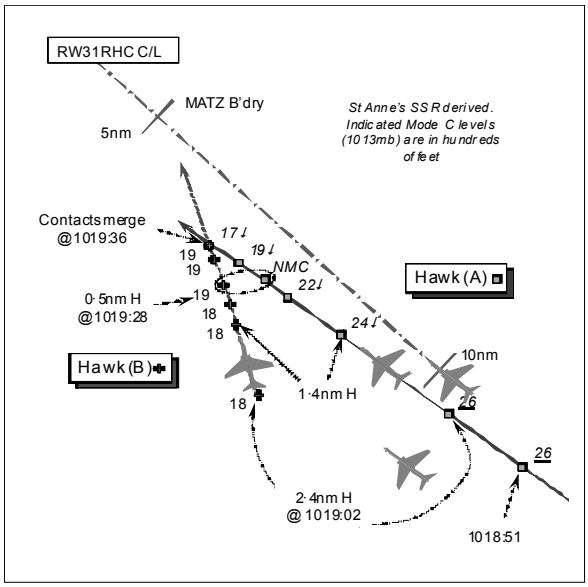
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The PA28 flew close enough to a notified and active Glider Launch Site to cause concern.

Degree of Risk: C.

AIRPROX REPORT NO 2011009

Date/Time:	1 Feb 2011 1019Z	
Position:	5310N 00424W (6½nm SE of Valley - elev 36ft)	
Airspace:	London FIR	(Class: G)
	Reporting Ac	*Reporting Ac*
Type:	Hawk T Mk1 x3	Hawk T Mk1
Operator:	HQ Air (Trg)	HQ Air (Trg)
Alt/FL:	2000ft ↓	2000ft
	QFE (1021mb)	QFE (1020mb)
Weather:	VMC CLBC	VMC CLBC
Visibility:	20km	>10km
Reported Separation:		
	Nil V/<100ftH	200ft V/nil H
Recorded Separation:		
	200ft V/SSR contacts merged	



BOTH PILOTS FILED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE HAWK T MK1 FORMATION LEAD PILOT [HAWK (A)], a qualified QFI but here a student on the TAC Weapons course, reports that he was leading a formation of 3 Hawk ac in 'arrow' formation, inbound from the Valley Aerial Tactics Area (VATA) E, VFR, for a visual recovery to RW31RHC at Valley. APP was providing a TS on Stud 5 as they descended to 3500ft QFE (1020mb) and a squawk of A3730 was selected with Mode C; neither Mode S nor TCAS are fitted.

APP informed them of traffic Downwind for a short pattern PAR – the subject singleton Hawk (B) - which he acquired visually while he was more than 10nm from the airfield positioning for Initials. The formation was descended to 2000ft QFE reducing vertical separation to 500ft, but because of a thin layer of Stratus at 1700ft [see UKAB Note 1: later reported to be at 2500ft], he lost visual contact with this ac. APP continued to pass TI on the singleton Hawk (B): traffic at 11 o'clock - 5nm 2000ft below, followed by traffic at 11 o'clock – 3nm 500ft below. On discovering a 'VMC gap', he descended the formation through it and switched to TOWER on Stud 2. About 6nm SE of Valley heading 320° at 350kt, passing, he thought, 1500ft in the descent, he saw the singleton Hawk (B) [that was flying level at 2000ft QFE (1020mb) – broadly 1800ft (1013mb)] pass to port of his ac through the LH side of the formation at a range of less than 100ft between the No 2 and No 3 with a 'high' Risk of collision. No avoiding action was taken as by the time he, as the formation leader, was 'tally' with Hawk (B) it had passed up and through the formation and was no longer a factor. The formation continued through Initials [at 3nm] for an uneventful Break to land.

The ac are coloured Black and the upper and lower red strobes and nav lights were on.

[UKAB Note (1): During the investigation it became apparent that there were 2 versions of the report from the lead pilot of Hawk (A), which differed in two areas of detail. The second report specified, correctly, that the Airprox occurred as the formation descended through 2000ft QFE, not the 1500ft QFE reported originally. Moreover the phrase the formation was 'descended to 2000ft QFE reducing vertical separation to 500ft' was excised from the report. A subsequent conversation with the pilot of Hawk (B) has confirmed that his original report was amended by the SFSO to account for Hawk (A) pilot's factual error of the height at which the Airprox occurred. However, this amended report did not accurately reflect the lead pilot's SA, as he believed at the time that Hawk (B) was still level at 1500ft QFE for a short pattern PAR cct as he had been told in the first transmission of TI from APP. This was the basis of the lead pilot of Hawk (A)'s perception of the other ac's height throughout the encounter as being 1500ft QFE, despite the three further transmissions of TI which referred to the vertical separation of Hawk (B) beneath Hawk (A). Furthermore, he had levelled his formation with the intention of affording some vertical

separation above Hawk (B). The pilot also added that none of the other formation pilots were visual with Hawk (B) before the Airprox occurred.]

THE HAWK T MK1 PILOT [HAWK (B)], a QFI, reports that he was conducting an instructional sortie whilst in receipt of a TS from Valley DIR and then TALKDOWN on Stud 7. The assigned squawk of A3740 was selected with Mode C.

Whilst flying level at 2000ft QFE (1020mb) at 200kt on feed-in to RW31 for a PAR, a traffic call was given by TALKDOWN alerting him to joining traffic in his 4 o'clock crossing from his R to L. He informed his student that he would conduct the lookout and briefly scanned the area for the traffic. No traffic was seen and he then prioritised the capture of the glideslope, which was imminent. A few moments later, before the glideslope was reached, he spotted 2 Hawks in arrow formation in his 4 o'clock – 400ft away just before they passed 200ft directly underneath his ac from his 4 o'clock to 10 o'clock position, at relatively high-speed. As the ac extended into the 10 o'clock he saw a 3rd Hawk swept L on the arrow pair, which had probably passed behind his ac. No avoiding action was taken as the other ac were seen too late.

He added frankly that he had assumed a degree of safety by virtue of being on an instrument approach, hence only a cursory lookout scan was made when the traffic was called. Workload was also a factor as his student was flying with a simulated emergency which gave rise to an increased workload as they approached the glideslope.

The ac is coloured Black and the white strobes were on.

THE VALLEY APPROACH (APP) CONTROLLER reports that the formation leader of Hawk (A) called for a visual recovery, was identified, passed the aerodrome details and given own navigation to the aerodrome. Upon identification of Hawk (A) an ac in the Valley radar training cct – Hawk (B) - was called to the lead pilot of Hawk (A) as it was deemed to be relevant traffic for his recovery. TI was passed on Hawk (B) again and updated for a third time as it was deemed relevant. The formation leader of Hawk (A) called visual at a range of 3nm and 500ft above Hawk (B) and changed to the TOWER frequency. Information was passed to TALKDOWN that Hawk (A) was visual with Hawk (B).

This type of recovery is a very common occurrence at Valley and it was performed in a standard manner. He did not see anything untoward at the time, but it later transpired that Hawk (A) had lost contact with Hawk (B) and flown exceptionally close to it.

THE VALLEY TALKDOWN CONTROLLER reports that he received control of Hawk (B) approaching 7nm from touchdown, well L of centreline correcting nicely on a heading of 340° at 2000ft QFE, the pilot having elected to delay checks. The ac was originally vectored by DIRECTOR for a short pattern cct but had been climbed to 2000ft due to a wide feed for RW31RHC. Hawk (B) was identified and the QFE read-back checked, he then called traffic as 'right 4 o'clock 2 miles crossing R to L'. This traffic had been indicated to him by the APP controller as Hawk (A), a formation joining the visual cct that was visual with his Hawk (B). He continued with a normal PAR until approx 4nm when he questioned whether the crew had completed their checks, but no reply was received. At 3½nm he carried out a gear check, but again received no reply so he elected to break off the approach for safety reasons as no gear indication had been given. He asked the pilot of Hawk (B) if he was visual with the aerodrome, to which he indicated he was, so he then instructed the pilot to join the visual cct Deadside and to continue with TOWER.

HQ 1GP BM SM reports that this Airprox occurred between a 3-ship formation of Hawks – Hawk (A) - conducting a visual recovery at Valley in receipt of a TS from Valley APP, and a singleton Hawk – Hawk (B) - on a PAR also in receipt of a TS from Valley TALKDOWN.

Given the range of the Hawks from the St Anne's Radar used for the LATCC (Mil) radar recording, Hawk (B) does not appear on the recording until 1019:02, which has complicated the task of correlating the radar replay and tape transcript. Moreover, comparison of the radar recording and RT tape transcript has identified a difference of 25sec between them. An initial engineering analysis at Valley could find no fault in their system, yet the events portrayed within the evidence available could only be explained through the presence of a 25-sec time-lag. The investigation was therefore pursued on the basis of the presence of a 25-sec time difference and all times were amended by adding 25sec to the original transcript timing.

[UKAB Note (2): Both ac are displayed during the encounter as SSR contacts with no supporting primary.]

At 1015:48 Hawk (A) flight free-called APP for a visual recovery. The formation leader was issued a squawk of A3730 at 1015:54; the formation was identified, placed under a TS that was reduced as Valley ATC was operating SSR-only and instructed to continue, "…*own navigation taking your own terrain clearance descent approved*."

Following a previous Airprox some years ago between IFR traffic and an ac on a visual recovery in receipt of a FIS, the Unit mandated that visual recoveries receive a RIS and with the introduction of CAP774 – UK FISs - a TS. The procedure outlined in the Flying Order Book is that aircrew will be given TI to assist them in becoming visual with all relevant IFR traffic and differs from a radar to visual approach.

[UKAB Note (3): Sequencing is not affected by ATC between instrument and visual recoveries.]

At 1017:15, over 2min before the CPA, APP passed TI to the lead pilot of Hawk (A) about Hawk (B) downwind stating, "…*traffic left 11 o'clock 8 miles correction 13 miles, opposite direction, indicating 1500 feet, Hawk in short pattern circuit*."

In his original report, the lead pilot of Hawk (A) states that following receipt of the initial TI and having lost sight of Hawk (B) due to a thin stratus layer, they "*descended to 2000ft reducing separation to 500ft*." This sentence does not feature in the second version of the report but provides evidence for the pilot's perceived mental 'air picture' at the time of the Airprox.

TI was given on 3 further occasions; first at 1018:14, *".. previously called traffic left 11 o'clock 5 miles opposite direction 3 tho-correction 4 thousand feet below*", just as DIR instructed Hawk (B) at 1018:15 to, *"…climb to height 2 thousand feet"* from 1500ft to avoid Caernarfon ATZ [elev-14ft]. Second, in response to a query of *"request range"* from Hawk (A), at 1018:22 APP advised, *"left 11 o'clock 5 miles crossing left to right 2 thousand feet below".* The third and final update was given at 1018:47, *"..previously called traffic left 10 o'cl. correction 11 o'clock 3 miles crossing right-left* [sic] *500 feet below*." Hawk (A) was not told specifically that Hawk (B) has been climbed to 2000ft QFE by DIR.

At the time the final update was given, Hawk (B) is not visible on the LATCC (Mil) radar recording, but at 1018:51 Hawk (A) is about 11·5nm SE of Valley indicating level at 2600ft Mode C [about 2810ft QFE (1020mb) just L of the centre-line to RW31]. The lead pilot of Hawk (A) replied at 1018:54, *"visual"* – the response perceived to be that he was visual with Hawk (B). Some 22sec later at 1019:16, Hawk (A) declared, "[C/S] *visual to TOWER"* and switched to TOWER. However, the lead Hawk pilot also states in his written report that at some point in the incident sequence he lost sight of Hawk (B) due to a 'thin stratus layer at 1700ft, subsequently amended to 2500ft.'

TALKDOWN passed TI to Hawk (B) about the 3-ship formation at 1019:19 as, "..*traffic right 4 o'clock 2 miles crossing right left instrument traffic visual with the visual joiners above*", which was acknowledged with Hawk (B)'s C/S. Although the latter part of the TI is not clear, it has been confirmed that TALKDOWN was passing TI on Hawk (A). At 1019:02, when Hawk (B) first appears on the radar replay, 2·4nm horizontal separation exists.

[UKAB Note (4): Following the read-back check of the QFE by TALKDOWN, the new QFE value of 1021mb (issued to Hawk (A) by APP at 1016:16) was not issued to the crew of Hawk (B).]

The lead pilot of Hawk (A) called TOWER to join and was instructed at 1019:28, "*Valley TOWER,* [Hawk (A) C/S] *join runway 3-1 right hand QFE 1-0-2-1 circuit clear instrument traffic 6 miles*." At 1019:33, Hawk (A) reported that they were *"visual",* which is believed to refer to the instrument traffic. After this point, all RT calls between TOWER and Hawk (A) are completely normal for a visual recovery and there is no indication that an AIRPROX has occurred.

At 1019:09, Hawk (A) commenced a further slow descent, with Hawk (B) about 1.8nm W, on a converging heading, indicating 700ft below. Up until 1019:28, the ROD of Hawk (A) appears steady, losing 100ft per sweep of the radar (15RPM); however, at this point the Mode C of Hawk (A) 'drops out' for one sweep and then re-appears at 1019:32, indicating the same level as Hawk (B) with 0·4nm horizontal separation. The CPA occurs on the radar replay at 1019:36 with no discernible horizontal separation and 200ft of vertical separation as Hawk (A) descends through 1700ft Mode C and below Hawk (B), indicating 1900ft Mode. The pilot of Hawk (B) had the best sight of the Airprox

and reports acquiring Hawk (A) visually with 200ft separation as the formation passed directly underneath his ac from 'the 4 o'clock to the 10 o'clock position at relatively high speed.'

The basis of the Valley visual approach procedure is that it is incumbent upon the traffic joining visually to 'see and avoid' IFR traffic, facilitated by the provision of TI from ATC. Once the visual joining traffic has declared that they are visual with the IFR traffic, there is no further ATC involvement until the integration of visual cct traffic with the IFR traffic. TALKDOWN was informed that the visual joining traffic was visual with their IFR Hawk (B) and provided TI accordingly. Moreover, given the relative positions of the ac and the assumption inherent in the 'see and avoid' principle of the visual recovery, earlier provision of TI to Hawk (B) would have been nugatory.

From an ATM perspective, although the TI passed by APP to Hawk (A) at 1018:47 incorrectly described the direction of Hawk (B) as crossing *"..right to left..",* it seems that Hawk (A) pilot stated that he was visual with Hawk (B). In HQ 1Gp BM SM's view this error in the TI was neither a causal nor contributory factor. All of the controllers involved reasonably expected Hawk (A) flight to 'see and avoid' Hawk (B). However, it also appears reasonable that, based upon Hawk (A) pilot's original report and his stated intent to descend to 2000ft QFE, thereby reducing separation against Hawk (B) to 500ft, that Hawk (A) pilot's mental air picture was still based on Hawk (B)'s height of 1500ft and that he had been unable to assimilate the later TI from APP. Therefore, the lack of an explicit statement from APP to the lead pilot of Hawk (A) that Hawk (B) had been climbed to 2000ft, could be considered contributory. However, there is an element of 'hindsight bias' in this view and it would also have been reasonable for APP to expect that the lead pilot of Hawk (A) would assimilate the height separation information passed about Hawk (B).

Following discussion with SATCO Valley and examination of the evidence, it appears that Hawk (A) leader lost sight of Hawk (B) at some point between 1018:54 and 1019:36, due to a thin stratus layer in the area. In this instance, the lead pilot of Hawk (A) was cognisant of the presence of Hawk (B), yet had been unable to use the TI passed by APP to update his mental 'air picture' and, having lost sight of Hawk (B), descended through that ac's height into confliction.

HQ AIR (TRG) was unable to provide Command comment on this Airprox before Service staffing action had been completed.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

Members agreed that the pilot of Hawk (B) had little influence on the outcome of this Airprox, which had already occurred when he sighted elements of the formation passing 200ft beneath his ac. Pilot Members understood Hawk (B) QFI's view that he 'had assumed a degree of safety by virtue of being on an instrument approach', which was not unreasonable when the other ac were overtaking from astern. However, this relies on pilots executing a visual approach acquiring instrument traffic in good time and affording appropriate separation. Whilst the pilot of Hawk (B) reported that he briefly scanned in the direction of the reported traffic, pilot Members stressed the importance of maintaining a good lookout in Class G airspace and particularly in an instructional environment where pilots should always be prepared to react to the unexpected.

During the formation's visual recovery, APP initially provided TI at a range of 13nm advising the pilot of Hawk (A) that Hawk (B) was executing a Short Pattern Circuit at 1500ft QFE, the regular height for the procedure. This enabled the formation leader to sight Hawk (B) some distance away, but it was clear to the Board that he had subsequently lost sight of it and not assimilated the good flow of TI provided by APP. The way that the three subsequent transmissions of TI had been given had evidently not registered with the pilot of Hawk (A), who descended his formation through a small gap in the thin stratus layer and through Hawk (B)'s height not recognising that it was no longer level at 1500ft QFE. Pilot Members agreed that the omission of any specific mention that Hawk (B) had been climbed to 2000ft QFE was critical to the pilot of Hawk (B)'s appreciation of the air situation, albeit that he was aware that it was in the vicinity because he requested its range. The TI given was, however, all passed in a conventional manner by referring to the vertical separation remaining as the formation descended, controller Members pointed out. However, pilot Members were not content that it 'painted the picture' simply enough and perceived that the formation leader was somewhat 'maxed out' because he patently had not

understood what he had been told; although there are good reasons for passing altitudes within TI as the number of feet above or below the TI recipient, there is potential for lag and inaccuracy if either or both of the aircraft have high rates of climb or descent. Moments before the formation leader called visual, the final TI update given, *"..left….11 o'clock 3 miles crossing right-left* [sic] *500 feet below*", should have been called as 'left-right'; a pilot Member suggested this might have misled the formation leader into thinking that Hawk (B) was now displaced L of the formation, moving L and thus no longer a confliction, whereas it was actually still a factor in confliction and still drawing R. This was an error, but the TI still told the formation leader that Hawk (B) was close below in the vertical plane, but it was unfortunate that it had not been made plain that Hawk (B) had been climbed up to 2000ft QFE from the outset. The Board did not suggest that APP was in any way culpable; the controller provided a good flow of TI until the pilot of Hawk (A) called *"visual",* when the controller quite reasonably expected the pilot of Hawk (A) to lead his formation clear of Hawk (B). An experienced controller Member thought it was unclear whether the pilot was actually visual with Hawk (B) or the A/D when he called, *"visual"*. It was plain that the lead pilot of Hawk (A) was visual with the A/D later when he switched to TOWER; however, a fast-jet pilot Member perceived that the formation leader's priorities were on descending his formation down towards 'Initials' at that point rather than remaining clear of Hawk (B). The subsequent call in reply to TOWER's joining clearance transmitted at 1019:28, reflected that he had reacquired Hawk (B) by 1019:33, just as the contacts are merging on the radar recording.

The formation leader has subsequently advised that none of the other pilots in the formation were visual with Hawk (B) when the Airprox occurred, which calls into question the lookout regime within the formation. Fast-jet pilot Members perceived a lookout responsibility on the part of the other formation pilots when flying in 'arrow'. Furthermore, since the formation leader was a student, albeit that he had served one tour as a fast-jet instructor, there are supervisory aspects to this Airprox. The Board agreed that the other two crews should have heard APP's TI and might have had the SA to question why the lead pilot was descending the formation through a gap in the cloud toward an ac they had been told about below them. If this was the case then there was an opportunity for the instructors in the formation to step-in and avert this Airprox. As it was, despite seeing Hawk (B) at range, the pilot of Hawk (A) lost sight of it before he descended his three-ac formation through the level of the singleton, bracketing the other ac as they flew past at higher speed, the leader not actually reacquiring Hawk (B) until he saw it passing to port less than 100ft away between his number 2 and 3, he reports. Weighing all these various factors for relevance, the Members agreed that the Cause of this Airprox was that the pilot of Hawk (A) lost visual contact with Hawk (B) and descended his formation into conflict with it.

ATC were under no obligation to provide separation between this visual recovery and the PAR traffic. Having called visual with Hawk (B), the formation leader was entirely responsible for avoiding it with his formation. However, in the Board's view what separation that did exist was minimal and was purely fortuitous. The separation reported by both flights was closely aligned to that reflected by the radar recording which illustrates that the contacts merge with 200ft separation indicated on Mode C, after Hawk (A) had descended below Hawk (B). Given also that Hawk (B) had merged within the bounds of the formation, the Board could only conclude that an actual Risk of collision had existed in the circumstances conscientiously reported here.

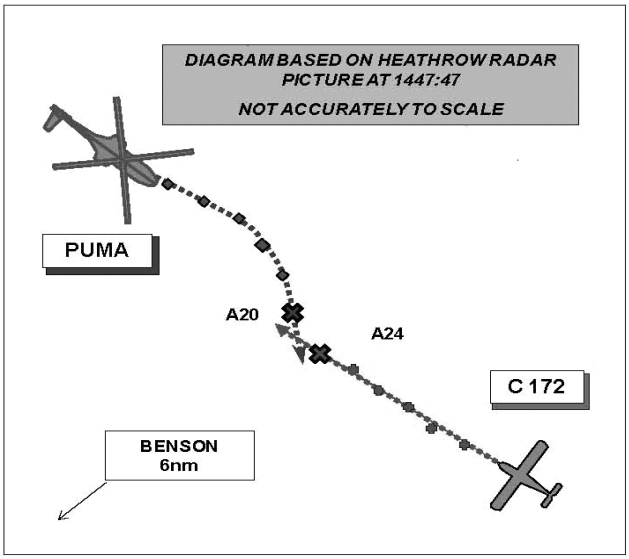
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The pilot of Hawk (A) lost visual contact with Hawk (B) and descended his formation into conflict with it.

Degree of Risk: A.

AIRPROX REPORT NO 2011010

Date/Time:	8 Feb 2011 1048Z	
Position:	5140N 00056W (6nm NE RAF Benson)	
Airspace:	Lon FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Puma	C172
Operator:	HQ JHC	Civ Trg
Alt/FL:	2000ft (RPS 1013mb)	2400ft (1023mb)
Weather:	VMC CAVOK	VMC CAVOK
Visibility:	10km	40km
Reported Separation:	100-200ft V/NR H	400ft V/0.5nm H
Recorded Separation:	400ft V/0 H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PUMA PILOT reports flying a camouflage green helicopter with no TCAS fitted but with strobes and nav lights switched on, on a GH sortie, in receipt of a BS from Benson APP, squawking as directed with Modes C and S. While he (the LHS QHI) was positioning the ac for a PFL near Stokenchurch, in straight and level flight at 2000ft on the RPS, heading 170° (he reported out of sun) at 120kt, the RHS pilot called 'break left' for a light ac that was a possible confliction. The ac was a white, high-wing, single-engine Cessna type, 100-200ft above them, also in a straight and level flight and was crossing them from the 11 o'clock to the 4 o'clock position. He started the break but quickly acquired the light ac visually and determined that there was no direct confliction and so he remained straight and level and allowed the light ac to pass overhead.

He saw no evasive action by the other ac which continued its track away from them. An airborne Airprox report was not filed, but RAF Benson ATC was informed immediately on landing, assessing the risk as being medium.

THE C172 PILOT reports flying a white ac with all lights switched on, on a local training flight from Wycombe Air Park. They were in receipt of a BS from Benson ZONE for a MATZ crossing and squawking as directed with Mode C. While in a level cruise near Stokenchurch, heading 305° at 110kt he first saw a Puma helicopter 5nm away which closed and passed below them. They were also advised of the traffic by Benson ZONE and no potential for collision existed at any time. Both fixed wing pilots had the helicopter in sight at all times until it passed underneath them, maintaining its track. No concern was raised at any time by either of them and he assessed the risk as none.

THE BENSON APP CONTROLLER reported that the Puma crew called ATC via landline to report an Airprox which happened whilst they were on the APP frequency under a BS. They were operating about 2nm W of Stokenchurch mast and the ac faded in and out of radar cover due to it carrying out PFLs.

At the time of the incident she was initiating the handover of an ac 15nm S of Benson to Odiham. When the handover was complete she noticed that the Puma was back on radar and that there was an ac in its vicinity. The unknown contact had already passed the Puma and was tracking away from it; therefore she decided it was not significant so she did not pass TI.

HQ 1GP BM SM reports that the Airprox occurred between a Puma in receipt of a BS from Benson APP, flying a training sortie in the vicinity of Chalgrove and a C172 in receipt of a BS from Benson ZONE.

At the time, APP was working mixed BS/TS traffic and although work load was not mentioned in the Controller's report, examination of the RT transcript suggests that it was low.

Both ac were operating under a BS in Class G airspace and although the controller reports that she was conducting a handover at the time of the incident, the radar replay shows that this was later. The RT transcript shows that APP last spoke to the Puma at 1037:37 when the pilot reported that he had completed his GH and was climbing to 1000ft. APP was called by a Merlin at 1047:11 on climb-out for a radar service and APP's focus would have been on that ac. At that point the ac involved in the Airprox were about 3nm apart. It is difficult to ascertain the last time that APP would have focused her attention on the Puma; however, there were no landline or transmissions recorded between 1042:50 and 1047:11.

At 1047:35 the Puma commenced a right turn putting it on a conflicting flightpath with the C172. At that point, the C172 was 0.7nm SE of the Puma and was indicating 300ft below it.

Given that APP was expecting the climb-out ac as a pre-noted departure, it is reasonable to assume that she would have been scanning the climb-out lane for a period of about 30sec before the ac came on frequency; at the time the C172 would have been over 4nm from the Puma. Moreover, it would be unlikely that the controller consciously watched the Puma and C172 converge without passing TI; therefore, it is assessed that the controller was not scanning in the area of the conflict due to perceived higher priority activity and was therefore unable to assess the possible confliction. Furthermore, comparison of the RT transcript with the radar recording showed that at the point where the confliction becomes apparent, APP was engaged in the identification of and passing of TI to the Merlin.

The C172 pilot was visual with the Puma in reasonable time and considered no avoidance was required.

When operating under a BS, the controller is a last safety net and not the primary means by which safe separation is assured. Regardless of experience and work load, controllers should always seek to provide TI that enables pilots to carry out conflict resolution; however, if the controller is busy or scanning away from the point of confliction they cannot be responsible for any lack of TI.

UKAB Note (1): The recording of the Heathrow radar shows the incident. The Puma squawking 3620 with Mode C approaches the CPA tracking about 170° at an alt of 2000ft as the C172 tracks about 330° towards it from its 1 o'clock at an alt of 2400ft. The C172 passes 400ft above the Puma at 1047:47.

HQ JHC comments that the high workload in the Puma cockpit resulted in the late sighting of possible conflicting traffic. Whilst a timely call from Benson APP would have altered the Puma crew to the conflicting traffic and thus avoided this incident, it is recognised that a BS will only provide TI when the controller is able, therefore crews must always remain vigilant. HQ JHC is also actively pursuing a CAS system, which would have given the Puma crew vital SA. This Airprox will be used to remind Puma crews of the necessity to maintain a good lookout in high workload environments and of the importance of reporting their intention to file an Airprox whilst airborne.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar photographs/video recordings, reports from the air traffic controller involved and reports from the appropriate ATC and operating authorities.

The Board noted that both ac were operating legitimately in Class G airspace and in receipt of an ATS appropriate to the type of flight. The Puma crew were engaged in high workload GH activity and they did not see the C172 approach from their 12 o'clock high as they turned right to position the ac for a PFL. However, the C172 pilot saw the Puma throughout, was warned of its presence by Benson ZONE and considered there to be no collision risk. A GA Member observed that notwithstanding any vertical separation it is generally good practice to turn to avoid overflying a conflicting ac; this allows better visibility and indicates to the other ac that it has been seen (and avoided).

The Board agreed that although the Puma crew saw the C172 late, they reacted appropriately; the C172 pilot saw the Puma throughout, ensuring that there was no risk of a collision.

AIRPROX REPORT No 2011011

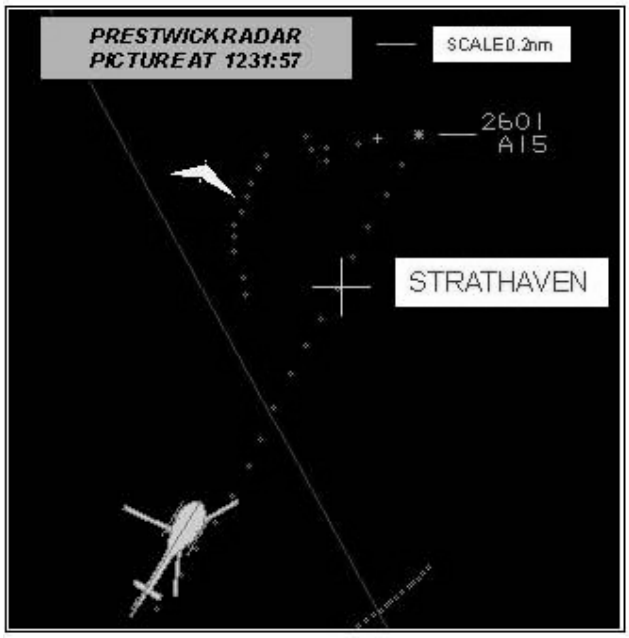
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A late sighting by the Puma crew.

Degree of Risk: C.

AIRPROX REPORT NO 2011011

Date/Time:	12 Feb 2011 1232Z (Saturday)	
Position:	5541N 00406W (Strathaven - elev 847ft)	
Airspace:	Scot FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Pegasus Quantum AS355 Microlight	
Operator:	Civ Trg	Civ Comm
Alt/FL:	1000ft (QFE)	1800ft (QNH NR)
Weather:	VMC CLBC	VMC
Visibility:	30nm	10km
Reported Separation:	200ft V/150m H	NR
Recorded Separation:	Est 200ft (See ATSI report) V /0.2nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PEGASUS QUANTUM MICROLIGHT PILOT reports flying an instructional flight from Strathaven unlicensed airfield in a flexwing microlight, listening out on Safety Common. They were heading 090° at 50kt and 1000ft agl in the mid downwind position for RW27 (RH cct) and carrying out downwind checks, when a maroon helicopter appeared in his 3 o'clock about 200ft lower so he kept helicopter visual and continued to extend the downwind leg. The helicopter passed ahead through his 12 o'clock from R to L, about 200ft below. He assessed the risk as being medium and reported the incident to Glasgow ATC after landing and also to the helicopter airfield.

THE OPERATOR commented that ac, particularly helicopters, fly through the cct at least once a month. The airfield is 847ft amsl, just outside the Glasgow CTR, and they feel they are vulnerable to ac following Glasgow's standard instruction to remain clear of CAS not above 2000ft on the Glasgow QNH. Their circuit is at 1000ft agl which equates to 1847ft on the Glasgow QNH.

They are a busy microlight school with 3 instructors training on two three-axis and two weight-shift microlights. Not being licensed, they have no ATZ and so their chart symbol is just a small circle. This may become a problem at other airfields since light ac training is now permitted from unlicensed strips.

He spoke to the helicopter pilot who told him he that he would notify all company pilots of the location through his chief pilot.

THE AS355 TWIN SQUIRREL PILOT reports flying a burgundy coloured helicopter with all lights on, squawking as directed with Mode C in receipt of a BS from Glasgow APR while inbound to Cumbernauld under VFR. He was informed by TWR on landing that he had been involved in an Airprox but did not see any other ac in the position notified. At the time he had been heading 020° at 100kt and flying at an alt of about 1800ft.

THE Glasgow APR Controller provided a report but all aspects are covered in the ATSI report below.

ATSI reports that an Airprox in Class G airspace between a Pegasus Quantum Microlight (M'light) and an AS355 was reported by the M'light pilot in the vicinity of Strathaven at a height of 1000ft agl.

The M'light was operating in the vicinity of the grass strips at Strathaven from where it had departed, was maintaining a listening watch on 'Safetycom', but was not in receipt of an ATS. The AS355 had departed from a private site near Penrith and was in receipt of a BS from Glasgow APR while operating under VFR inbound to Cumbernauld 16nm ENE of Glasgow Airport. Glasgow ATC was unaware of the Airprox at the time and filed a unit report with ATSI in retrospect, when they were notified of the incident. ATSI had access to the pilots' reports, the RT and radar recordings.

The Glasgow METAR was:

EGPF 121220Z 08004KT 9000 FEW007 BKN014 OVC019 06/05 Q1007=

The UK AIP ENR 1-1-5-9 states:

'Those Microlight Flying Sites where flying is known to take place are listed at ENR 5.5 and are regarded as aerodromes. Sites are listed primarily as hazards to other airspace users…'; Strathaven is notified as a Microlight site (ENR 5.5) and is annotated on CAA VFR Charts both 1:500,000 and 1:250,000. The circuit height is not promulgated in the AIP or on the VFR charts.

The AIS VFR Route Brief from Carlisle to Cumbernauld, (12 Feb 11 1030-1430Z, VFR FL000 to FL050) did not notify Strathaven activity. NOTAMs are published in accordance with ICAO standards, are intended to cover information of a temporary nature/short term duration and can include information concerning the presence of hazards to air navigation.

At 1228:50 Glasgow APP established contact with the AS355 and instructed it to squawk 2601. At 1229:30 the ac was identified and a BS was agreed, "*c/s you are identified about one seven miles south south east of Glasgow it's a Basic Service report if you wish to climb above altitude two thousand feet V F R the Q N H one zero zero seven*"; the pilot read this back correctly. At the time the ac was tracking in a NE'ly direction, at an alt of 1600ft VFR, about 5nm SW of Strathaven.

Under a BS controllers will provide information useful for the safe and efficient conduct of flight. This may include general airspace activity information but the avoidance of traffic is solely the responsibility of pilots. Glasgow ATC reported that the unit's radar does not always show activity at Strathaven, which is 16.4nm to their SE and has an elevation of 847ft. Strathaven is 2.3nm outside the SE corner of the Glasgow CTR (Class D airspace, surface to altitude 6000ft). The preferred radar source for Glasgow APR is their Watchman primary and Glasgow SSR but Kincardine and Lowther Hill are also available when required; it is not known which source the controller was using at the time of the incident.

There is no requirement for Strathaven to inform Glasgow ATC when they are active and it is standard practice that Glasgow does not provide information on Strathaven activity.

The base of CAS above Strathaven is 4500ft amsl (Scottish TMA Class D), while just N, and for the remainder of the route to Cumbernauld, the base is 2500ft (Glasgow CTA Class E).

The M'light reported operating in the cct at Strathaven which has two unlicensed grass strips: 05/23 and 09/27; the direction of cct is to the north. The M'light pilot reported being mid-downwind RW27 at the time of the incident and that the circuit height at Strathaven is 1000ft agl.

At 1230:16 the radar recording (Prestwick Multi Radar Tracking) shows a primary only contact appear 0.9nm SW of Strathaven and the AS355 2.1nm SW of it. By 1231:16 the primary contact had passed W abeam Strathaven by about 0.4nm and the AS355 was 1nm S of it at 1300ft alt. The AS355 passed overhead Strathaven at an alt of 1500ft at 1231:37 and the primary contact had turned onto an E'ly track approximately 0.7nm N of Strathaven. At 1231:57, the AS355, on a NE'ly track, passed through the primary contact's 12 o'clock at a range of 0.2nm, from right to left, at an alt of 1500ft. The M'light pilot reported that the AS355 passed 200ft below him but the AS355

pilot was unaware of the presence of the M'Light. The primary contact observed on the Prestwick MRT was such that its characteristics indicated it to be the reporting M'light i.e. the track flown and the position of the AS355 relative to the primary contact. Since the cct alt at Strathaven is 1847ft alt and the AS355 flew overhead at an alt of 1500ft (recorded) this substantiates the M'Light pilot's report that the AS355 flew about 200ft below.

Both ac were flying in uncontrolled airspace where responsibility for collision avoidance lies with the pilots. Glasgow APR had no information to suggest there was any activity at Strathaven, was not required to provide such information and the radar equipment at Glasgow is not reliable in detecting activity in that area.

The Glasgow weather was reported as overcast at 1900ft, which might have prevented the AS355 from climbing to a higher alt; in addition it was about to route underneath the Glasgow CTA, just N of Strathaven. Further, Glasgow APR had also requested that the AS355 report an alt of above 2000ft was required.

The location of Strathaven is such that any VFR traffic routeing to Cumbernauld, outside CAS from S of the Glasgow CTR, will pass close to the site. The AS355 flew over the Microlight site, which is notified in the UK AIP and annotated on CAA VFR charts; however, it is not known by what means the AS355 pilot was navigating. Pre-flight briefing information would not have notified the pilot of any activity at Strathaven.

The AIRPROX occurred when the AS355 flew overhead Strathaven, below the cct height.

The encounter happened due to several factors:

The Cloud-base precluded the AS355 (VFR) from climbing higher.

The location of Strathaven in relation to the Glasgow CTR and Glasgow CTA means that traffic routeing around and beneath controlled airspace respectively will likely pass close to Strathaven.

Whilst Strathaven is notified in the UK AIP as a microlight site (and depicted on standard navigational maps), there is no notification of the circuit height used at the aerodrome.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequency, radar recordings, reports from the air traffic controllers involved and reports from the appropriate ATC authorities.

Members were briefed in detail on the location of Strathaven and the specifics of the site and surrounding controlled airspace; it was also noted that it is a grass airfield that is difficult to acquire visually. A controller Member familiar with the area also informed Members that despite the new Kincardine radar and the excellent coverage on the Prestwick composite recording shown above, due to the terrain and an extensive local windfarm, radar coverage at Glasgow can be poor in the locality. He also informed the Board that although there is a LoA between Strathaven and Glasgow ATC regarding gliding activity, as far as he is aware no such equivalent is in place regarding microlight operations; in any case since Strathaven is published in the AIP he thought that an ATC warning to VFR traffic that the airfield is active was probably not warranted.

The Board agreed that the helicopter pilot had probably not been aware of the existence of Strathaven, as it was most unlikely that a professional pilot would have overflown it deliberately. Members observed that there are differing standards of commercially available paper and electronic VFR charts; it is not known whether Strathaven is marked on any charts other than those produced by the NATS on behalf of the CAA on which it is clearly marked. The DAP Advisor informed the Board that they are soon transferring to an electronic AIP which should ensure commonality among chart producers.

Notwithstanding the aspects above, it was clear that the AS355 pilot had overflown Strathaven and flown through the downwind leg of the cct at cct height, albeit both unbeknown to him. The Board noted that the pilot had undertaken to disseminate information regarding Strathaven activity to his company thus reducing the likelihood of a recurrence.

Although the helicopter pilot did not see the microlight, its pilot saw the former throughout and this Members agreed had prevented any risk of a collision.

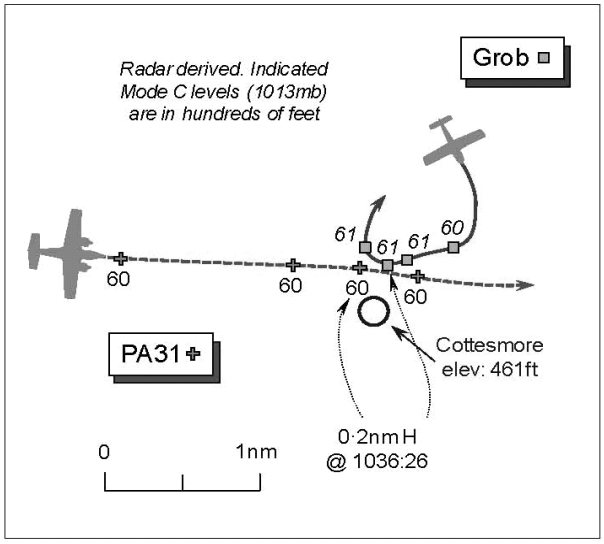
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The AS355 pilot flew through a notified and active Microlight Site and into conflict with the Pegasus Quantum, which he did not see.

Degree of Risk: C.

AIRPROX REPORT NO 2011012

Date/Time:	14 Feb 2011 1035Z	
Position:	5244N 00039W (Overhead Cottesmore A/D - elev 461ft)	
Airspace:	London FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Grob TutorTMk1	PA31
Operator:	HQ Air (Trg)	Civ Comm
Alt/FL:	5500ft	5500ft
	RPS (991mb)	(NK)
Weather:	VMC CLOC	VMC CLOC
Visibility:	30km	>10km
Reported Separation:		
	300ft V/100m H	800-1000ftV/¼-½nm H
Recorded Separation:		
	100ft V	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE GROB TUTOR T Mk1 PILOT, a QFI, reports he was conducting a QFI Training sortie from Cranwell with the trainee QFI as the PF. Operating VFR, they were not under an ATS but listening out on the quiet frequency - #19 – squawking the Cranwell conspicuity code of A2641 with Mode C; elementary Mode S is fitted but TCAS is not.

Directly above Cottesmore, just to the SW of the main runway, during a climb to 6000ft RPS (991mb) at 80kt for a spinning exercise, a R turn from 240° was initiated. After about 30-40° of the R turn, passing 270°, exceeding 5500ft [the recorded radar data suggests the Grob was at 6000ft (1013mb) – about 5340-5440ft RPS (991mb)] the QFI saw a low-wing twin engine ac low in their 12:30 position, head-on, at an estimated range of ½nm about 300ft below initiating a R turn. He immediately took control from the trainee and broke R to avoid a collision as the other ac also broke to the R in avoidance. The twin passed about 100m to port and 300ft below his Tutor with a 'medium' Risk of collision. Following a recovery to straight and level flight and after confirming the other ac posed no further threat, he reported an Airprox to Wittering APPROACH on the RT.

THE PA31 PILOT reports he was in receipt of a TS from Cottesmore LARS (ZONE) whilst flying a dual transit to Norwich under VFR some 2000ft+ clear below cloud at 166kt. The assigned squawk was selected with Modes C and S on; TCAS is not fitted.

Heading 120° approaching Cottesmore, they had been advised of a Grob Tutor on their L, more than 5nm away and below them but climbing. Whilst looking for the traffic they maintained their course and their altitude of 5500ft RPS; TI was updated by the controller about the ac on their L, still at a similar altitude and so they continued looking. They first saw the other ac – a white low-wing Grob Tutor - about 1-2nm away in their 10-11 o'clock slightly above them to their L and it appeared to be flying straight and level. Maintaining their course, as they had 'right of way' being on the R of the Grob, they watched it and deemed its crew was not taking action to route behind their ac or climbing to maintain a greater margin of safety. As the ac commander, he elected to take avoiding action by descending and turning R. The Grob passed more than 800ft above and slightly behind them by about ¼-½nm.

He assessed the Risk of collision to be 'very low', but was very surprised to learn it was a military ac over the old Cottesmore MATZ, not talking to Cottesmore LARS nor receiving a radar service of any kind. Moreover, he was concerned that in accordance with the Rules of the Air, having maintained his course and altitude to allow the Grob pilot to manoeuvre around his PA31, the Grob pilot then took no avoidance to remain clear.

His ac is coloured white and grey and the HISLs were on.

He would recommend all ac operating within range of a LARS unit to operate at least one radio on that frequency. Also, even in VFR conditions, it would be preferable to have a radar service to provide a higher degree of safety and give pilots and controllers better information.

THE COTTESMORE LARS CONTROLLER (ZONE) reports that the weather was good - CAVOK - and traffic had been light, mainly Tutors from Wyton and several transits under a BS. The PA31 pilot free-called after he had departed East Midlands for a transit to Norwich. The pilot called ZONE about 12nm W of Cottesmore, heading E at 5000ft (999mb). After identification, the flight was placed under a TS, with a reduced service due to poor radar performance. The pilot then asked to climb to an altitude of 5500ft BARNSLEY RPS (991mb) routeing direct to Norwich. Whilst outside the old MATZ boundaries, TI was called to the PA31 pilot about a Tutor ac displaying an 'agreed airspace' squawk, that was in the radar overhead and which appeared to be carrying out GH at a similar level. As the PA31 approached the radar overhead a further reduction to the service was issued in accordance with SOPs. The controller gave the PA31 pilot an update as the ac closed to a range of about 3nm and he monitored their profile. Additionally, he briefed the PA31 pilot that the Tutor might possibly be performing aerobatics in this area, which he knew from his own local knowledge is often the case. Both ac were now close in the radar overhead and he was unable to give further updates. However, at this stage the PA31 pilot requested an update which he was unable to provide as the Tutor was now displayed only as an SSR contact and the position would have been inaccurate. The PA31 pilot acknowledged that transmission and may have taken avoiding action on the Tutor. Later, the Tutor pilot called the unit on another frequency and declared the Airprox; the PA31 pilot was informed about the Airprox report on RT when he was about 12nm E of Cottesmore, before the ac was handed over to Marham LARS.

UKAB Note (1): Cottesmore aerodrome is open, and hence the MATZ instituted, on very limited occasions when advised by NOTAM or Supplement.

HQ 1GP BM SM reports that this Airprox occurred in the Cottesmore overhead, between a Tutor operating VFR and the PA31 routeing to Norwich, in receipt of a TS from Cottesmore ZONE.

At 1034:30 the PA31 was identified at 5000ft and placed under a TS that was reduced due to poor radar performance. This was immediately followed by ZONE providing accurate TI to the PA31 about the Tutor, which was acknowledged and a climb to 5500ft requested. At 1035:06, ZONE updated the TI on the Tutor to the PA31 pilot stating, "*traffic 12 o'clock, 3 miles* (radar replay shows 4.5nm lateral separation)*, crossing left to right, southbound, indicating 4 hundred feet below*" adding, "*that traffic Tutor possible aerobatics*." Neither of these transmissions were acknowledged by the PA31; however, the pilot states in his report that they were updated about the ac on their left. At 1035:23, ZONE updated the TI on the Tutor again to the PA31 crew stating that the Tutor was displayed *"…secondary only now 12 o'clock 3 miles manoeuvring."* This was followed shortly after by ZONE stating a further reduction in the TS from, "*ahead as you approach* (the) *radar overhead*."

The PA31 pilot's written report states that they 'saw the (Tutor) at approx 1-2nm…we maintained course and heading as we had right of way being on the right of them, watching the other aircraft I deemed it not to be taking avoiding action…so took avoiding action to descend and turn right.' At 1036:20, the PA31 pilot began to request a further update to the TI, but then reported visual with the Tutor. At this point the Tutor was E of the PA31, with both ac indicating 6000ft Mode C and 0.7nm lateral separation evident. The CPA occurred shortly after 1036:26, as the Tutor QFI executed a R turn to pass to port of the PA31, the Tutor indicating 6100ft and the PA31 6000ft.

[UKAB Note (2): The ac passed port-to-port, in between sweeps, with vertical separation of 100ft Mode C evident before and after the 'merge', the Grob Tutor passing above the PA31.]

The ZONE controller mentioned in his report the lack of primary surveillance radar (PSR) data due to the location of the ac in the Cottesmore overhead and the possibility that the position report derived from SSR would have

been inaccurate. Although the update rate of the SSR is lower than that of the PSR, it is unlikely to have been an issue in this occurrence, especially given the relatively low altitude.

ZONE provided accurate and timely TI that enabled the PA31 pilot to visually acquire the Tutor in what the PA31 pilot considered enough time to monitor and assess the situation prior to taking avoiding action.

HQ AIR (TRG) comments that the Tutor pilot was operating in Class G airspace without an ATS. The sortie being flown involved intensive in-cockpit communication, in which case orders permit operation on a common quiet frequency. The crews of both ac were able to detect and avoid each other but estimates of the margin by which this was achieved vary. The Tutor pilot's assessment of height difference accords closely with the Mode C readouts, allowing for some inherent errors. The PA31 pilot's height assessment, coupled with his report that the Tutor passed behind him, suggests that he may have lost sight of the Tutor in the latter stages and may not have seen his avoiding action.

The Rules of the Air in such a scenario, where one pilot may not be visual with the other, are of limited use. Indeed, if the pilot with right of way does not see any avoidance action being taken by the other ac, or at least a wing waggle to acknowledge their presence, it would still be prudent to take action, as the PA31 pilot did in this case. Furthermore, the situation was close to being a 'head-on' in which case both pilots are obliged to avoid, to the right if possible, as both did in this case. Pilots operating under a TS should also be prepared to take pre-emptive avoiding action on identified conflicting traffic before an Airprox situation develops.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, a transcript of the relevant RT frequency, radar video recordings, a report from the air traffic controller involved and reports from the appropriate ATC and operating authorities.

It was apparent that the PA31 crew had wisely obtained a TS from ZONE to supplement their lookout, but it was not apparent why they were flying at an altitude of 5500ft RPS when it might have been preferable to transit, VFR, at the recommended quadrantal flight level. The Board recognised that the Controller had provided the PA31 crew with accurate TI, which was updated to reflect that the Grob was drawing R into their 12 o'clock. The controller also used his experience to advise that the Tutor could be manoeuvring hard and without warning – *"…possible aerobatics"*. This flow of information ensured that the PA31 crew obtained visual contact on the Grob Tutor about 1-2nm away in their 10-11 o'clock and slightly above them the PA31 pilot reports. The Board commended the controller for his good service and sound judgement that had contributed significantly to the PA31 crew's SA. A controller Member familiar with Cottesmore advised that their SSR is sourced from Cranwell and whilst the Airprox did occur close to the Cottesmore ASR 'overhead', at these altitudes the SSR should have been displayed fully to the controller, whereas primary data from their ASR would be more limited at the centre of his display and a good reason for not operating in their overhead.

When the PA31 crew first saw the Grob, the PA31 pilot had stressed that it seemed to him that the relative geometry required the pilot of the other ac to give way in accordance with the Rules of the Air. Subsequently, however, it was apparent from the radar recording that the Grob Tutor had turned onto a more nearly head-on aspect as the two ac closed on one another. Members noted the PA31 crew 'stood-on' in anticipation of the Grob crew turning away or climbing to remain clear of his ac, but when it became apparent that they were not doing so, the PA31 pilot elected to turn R and descend away from the Grob. Plainly 'the Rules' can only work if pilots have spotted the other ac in good time to react appropriately and at that stage the PA31 was unseen by the Grob crew. The radar recording reflected a slight turn away to starboard by the PA31, but the ac's Mode C did not indicate the reported descent. Pilot Members opined that, while it is a matter of judgement at the time, it would have been better if the PA31 crew had made a more positive alteration at an earlier stage, thereby allowing a greater margin and preventing the two ac from flying into close quarters. The Board was briefed that a supplementary telephone discussion between the PA31 P-I-C and UKAB Staff had elicited that it was the co-pilot that was watching the Grob. However, this might have been difficult 'cross-cockpit' from the RH seat and he might have lost sight of the Grob at a critical moment as the recorded radar data shows it was certainly not 800ft above them when they passed port-to-port and just 100ft above.

Without the benefit of any ATS to assist their lookout, the Grob crew was not aware of the PA31 until it was spotted by the QFI during their R turn through W, prior to spinning. Some Members perceived that this was a late sighting

by the Grob crew as the PA31 should have been visible to them beforehand, inside the turn, when they turned R WSW'ly. However, in a further discussion between the Grob Tutor pilot and UKAB Staff it was revealed that the PA31, which is coloured white and grey but had the strobes 'on', had been very difficult to spot against the cloudscape. As it was the Grob QFI took control and broke R at the same time as he saw the PA31 also turning to the R. Both pilots followed 'the Rules' in this respect, and the Board concluded that the Grob crew might have seen the PA31 as early as they could in the conditions that pertained, leading the Members to agree unanimously that this Airprox had been the result of a conflict in Class G airspace resolved by the pilots of both ac.

Controller Members suggested that if it did not inhibit the execution of the instructional sortie, it would have been beneficial if the Tutor crew had called Cottesmore ZONE whilst operating in their aerodrome overhead. Furthermore, in advance of the forthcoming TAS embodiment to the Grob Tutor fleet, a TS could have given them early warning of the approach the PA31. Nevertheless, both pilots saw each other's ac in time and the action taken was effective. Whilst the subsequent separation was certainly less than ideal, the crew of the faster twin had sighted the Tutor and could have taken more robust action in the vertical plane if need be to manoeuvre further away from the slower Tutor. Therefore, in the Board's view, both pilots' actions had averted any Risk of a collision.

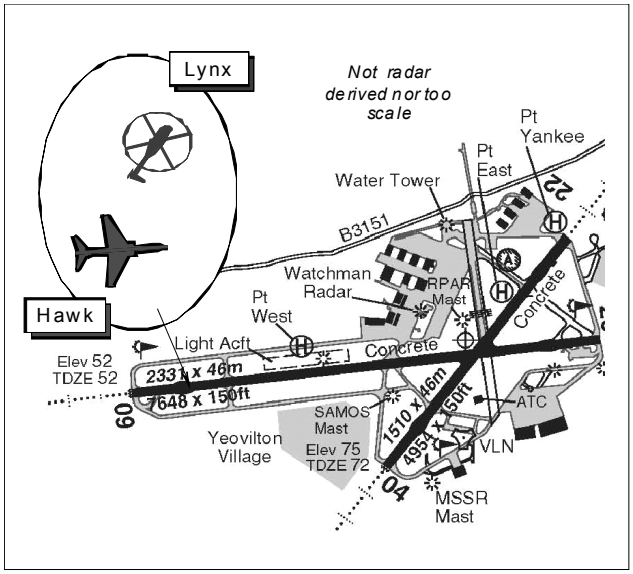
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict in Class G airspace resolved by the pilots of both aircraft.

Degree of Risk: C.

AIRPROX REPORT NO 2011013

Date/Time:	9 Feb 2011 1113Z	
Position:	5101N 00238W (Yeovilton RW09 - elev 75ft)	
Airspace:	MATZ/ATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Lynx Mk8	Hawk T Mk1
Operator:	HQ Navy	HQ Navy
Alt/FL:	10ft	100ft↓
	QFE (1003mb)	QFE (1003mb)
Weather:	VMC NR	VMC CLOC
Visibility:	10km	15km
Reported Separation:		
	>50m	Nil V/30m H
Recorded Separation:		
	Not recorded	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE AGUSTA WESTLAND LYNX Mk8 HELICOPTER PILOT reports he was returning to Yeovilton from Culdrose and had completed a PAR to RW09 at Yeovilton in VMC. At DH he was transferred from TALKDOWN to the TOWER frequency, the clearance to land was reiterated with the instruction to continue along RW09 to exit at RW04 for Yankee dispersal. After reading back these instructions, TOWER then requested him to vacate RW09, to the L across the grass, because of a Hawk turning Final to Land. He repeated back TOWER's instructions and turned L at 15kt hovertaxying towards the northern parallel taxiway at a height of 10ft QFE (1003mb), about 200m beyond the threshold of RW09. During the L turn his observer, occupying the LH Seat, informed him the Hawk was directly over the RW09 threshold. He expeditiously vacated the runway as the Hawk landed and passed >50m astern from L – R with a 'medium' Risk of a collision. He reported the Airprox to the Duty Air Traffic Control Officer (DATCO) by telephone after landing.

His helicopter has a grey colour-scheme; the landing lamp (directed forward) and the red anti-collision light situated on the tail were switched on.

THE BAe HAWK T Mk1 PILOT reports he was the Captain and PF at the completion of a local training sortie from Yeovilton.

Whilst flying in the visual cct to RW09 he became aware of a Lynx helicopter flying a PAR to the runway in use. As he flew downwind he saw the Lynx from a range of 3nm approaching the runway threshold. His 'Final gear down' call resulted in a 'continue' from TOWER. Whilst descending wings level at about 150ft QFE, the Lynx crew called 'vacated' on the RT and he was given clearance to land by TOWER whilst he was still above 100ft QFE. The Lynx helicopter was well clear of the runway to the Northside 'on the deck' and he landed normally heading 090° at 120kt. At no point was there a Risk of collision. He estimated the minimum horizontal separation as 30m as he passed astern of the helicopter.

His ac has a black colour-scheme; the 2 HISLs and the nose light were on. The assigned squawk was selected with Mode C; neither TCAS nor Mode S are fitted.

THE REAR SEAT HAWK PASSENGER (a Harrier QWI) reports he saw the Lynx on short finals to RW09 as the Hawk Captain flew downwind. The Hawk Captain configured the ac for landing and commenced the finals turn for RW09. As the Hawk Captain rolled out on the RW heading, the Lynx was vacating the runway. With a height of 100ft indicated on the Hawk's altimeter the Lynx had vacated the runway and Yeovil ATC issued the Hawk Captain clearance to Land. Their Hawk touched down and decelerated as the Lynx remained hovering clear of RW09, over the grass to the N of the RW. The Lynx was clearly visible throughout their final approach and landing; at no time was there a Risk of collision.

THE HAWK PILOT'S UNIT commented that having debriefed the Hawk Captain at length they were content that no risk of collision existed & there was no breach of local orders. However there was a perception from the Lynx crew that this could have been the case and they were, therefore, right to highlight their concerns.

THE YEOVILTON ATC LOCAL EXAMINING OFFICER (LEO) reports that the Weather State Colour Code (CC) was WHITE and the Forecast CC WHITE [Vis >5km; Cloud SCT > 1500ft QFE].

On this occasion there was a trainee in the ADC position (TOWER) and also a trainee on DIRECTOR, so 2 controllers were afforded higher levels of traffic and more challenging controlling. There were 2 Hawk ac in the visual cct to RW09 and the Lynx was conducting a PAR to the duty runway – RW09. The subject Hawk pilot called Downwind and was advised using standard ATC liaison and RT phraseology that the Lynx on PAR was ahead for the runway. At 1111:49, the Lynx crew called TOWER from TALKDOWN and were told to vacate L along RW04/22 for Y dispersal, which by 1112:04 had been read-back. At 1112:07 the Hawk pilot called Final, whereupon the Lynx crew was asked at 1112:09 by TOWER if they could vacate the runway onto the grass for the Hawk behind. The Lynx crew agreed, read-back the instruction by 1112:16; the Hawk pilot was told to Continue. At 1112:36, Hawk pilot was given a clearance for the runway and immediately after the read-back by the Hawk pilot, the Lynx crew was instructed to continue with GROUND.

The trainee TOWER controller and his instructor report that they both visually confirmed that the Lynx was clear of the landing area, prior to issuing the clearance to the Hawk pilot. The Lynx crew did not report runway vacated on the RT; however, immediately after the Hawk pilot was given his clearance to land, the Lynx was transferred to GROUND for his air taxy to dispersal.

Clearances to use landing areas are not given by controllers until after a visual check of the landing area has been conducted, regardless of whether an ac has called runway vacated or not, as this call is only ever used as a back up to a visual observation by the controller from the VCR. The DATCO also had full SA and was also content that the Lynx had vacated the landing area.

JSP550 at R307.125.6 states that:

'..aircraft shall move clear of the landing area as soon as it is safe to do so.'

Yeovilton Aviation Orders (YAvOs) at 0213.6 states that a FW pilot will initiate his own 'go around' by 100ft if he is not in receipt of a clearance from ATC. Thus we can deduce that when the clearance was issued by TOWER at 1103:53, the Hawk should have been higher than 100ft. Additionally, JSP 552 at 310.160 requires that the Runway Caravan Controller fire a red verey cartridge (refusing an ac permission to land) if he believes that there is a definite risk of collision or if the path of the oncoming ac is obstructed. No red verey cartridge was fired, therefore the caravan controller also deemed there to be no risk of collision or obstruction on the runway.

Although given a positive clearance by ATC, one must assume that the Hawk pilot would not have chosen to continue his approach if the Lynx was still on the runway and a Risk of collision existed.

The Lynx pilot's ASIMS report states that his helicopter was taxying. An aircraft taxying from the runway is defined by ICAO as:

'upon exiting the landing runway and terminates upon arrival at the gate, ramp, apron, or parking area, when the aircraft ceases to move under its own power.'

By this definition, if the Lynx was indeed taxying as stated, then he had exited the landing runway and consequently the landing area was fit for use by the Hawk.

There was no breech of YAvOs and no breech of ATC procedures. The Hawk had been given a positive clearance to use the landing RW surface, which it seems the Lynx captain had not heard. The Hawk pilot was visual with the Lynx at all times, as he was No2 to the Lynx landing ahead. Additionally the Lynx crew was told on their landing clearance that there were 2 Hawks in the cct, so would have been aware that they were entering a busy traffic environment.

THE DEPUTY SENIOR AIR TRAFFIC CONTROL OFFICER YEOVILTON comments that he was a witness to the event in the VCR and therefore tasked another Local Examining Officer to investigate the Airprox. He fully supported the actions of the ATC personnel on watch at the time, who acted in accordance with YAvOs and the relevant regulations.

HQ NAVY COMMAND comments that the thorough investigation indicates that in this instance there was no Risk of collision and that no breach of regulations occurred. The Lynx captain reported that the Hawk was directly over the threshold whilst the Lynx was still occupying the runway; however, it would appear that the Hawk was in line with the runway, on a 'continue' from ATC and still above 100ft awaiting the runway to be vacated by the Lynx. ATC issued the Hawk with a clearance to land after they had visually assessed the runway to be clear. All parties were fully aware of the other aircraft's position and intentions in the minutes preceding the reported incident, with the Hawk pilot positioning his ac to take account of the Lynx ahead. The perception of the Lynx Captain was that they had been the subject of a Flight Safety occurrence, and are therefore fully supported in their decision to submit a report.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, a recording of the relevant RT frequency and reports from the appropriate ATC Unit and operating authority.

The Board agreed that if the Lynx Captain was at all concerned at the proximity of another ac in flight then he was not only duty bound to initiate an Airprox report, but was wise to do so. From the Lynx crew's perspective, they had complied promptly with TOWER's request to vacate RW09RHC onto the grass in order to expedite matters, but were concerned that they were still in close proximity to the runway when the Hawk, which they thought too close, was given a clearance to land. The Board noted that the estimate of the minimum horizontal separation given by the Lynx crew at 50m was more than the Hawk pilot's reported 30m. However, the Lynx crew would have lost sight of the Hawk as it passed from the observer's field of view to port, behind the tail and into the pilot's view to starboard as it landed. Conversely, the Hawk pilot had the helicopter in full view throughout. Moreover, the ATC Unit report from the LEO assured the Board that TOWER, who had full view of the runway surface, had checked that the Lynx was clear of RW09RHC before the Hawk pilot was given his clearance to Land. It was evident that the Hawk pilot was also content that the Lynx was clear of the runway when he received this landing clearance for the HQ Air pilot Member was in no doubt that the Hawk pilot would have executed a 'go-around' and not attempted to land if the helicopter had not been a safe distance from the runway surface he was about to land on. The Board

also noted that the runway caravan controller appeared to have been content that the runway was clear because he did not intervene to send the Hawk around. However, the Board's discussion then centred on the parameters for a helicopter to be sufficiently clear of the runway to allow the jet to land with complete safety. The Board was briefed that civilian practice requires that an ac must have passed the holding/marshalling point for the RW in use for an ac to be considered to have vacated the RW. However, a helicopter's ability to hovertaxi across an aerodrome unconstrained by fixed taxiways made this point somewhat open to interpretation. There was no equivalent military regulation that applied in this instance, a point noted by the MAA Advisor, which required aerodrome controllers to use their judgement to exercise safe control over traffic within the manoeuvring area. This aerodrome is a well established mixed traffic environment with ATC well versed in accommodating fixed and rotary wing traffic. It was plain to the Members that both the Lynx crew and the Hawk pilot were complying with the instructions issued by TOWER, who were endeavouring to exercise expeditious but safe and orderly control over aerodrome traffic. Whilst it was not feasible to determine independently the geometry or the minimum separation that applied here, it seemed that the Lynx crew's report was based on their reasonably held belief that the Hawk was closer on final than it might have actually been. But it seemed to the Members that the Lynx crew's perspective, looking virtually straight-up the approach, had probably given a misleading perception of the Hawk's distance from touchdown when the clearance was issued. The Board was content that ATC had established that the Lynx was clear of RW09RHC when the Hawk pilot's landing clearance was issued. Therefore, the Members were unanimous in their agreement that this Airprox had resulted because of a perceived conflict by the Lynx crew. Moreover, the Board also concluded that established procedures had been followed, normal safety standards had been applied and had not been compromised in any way.

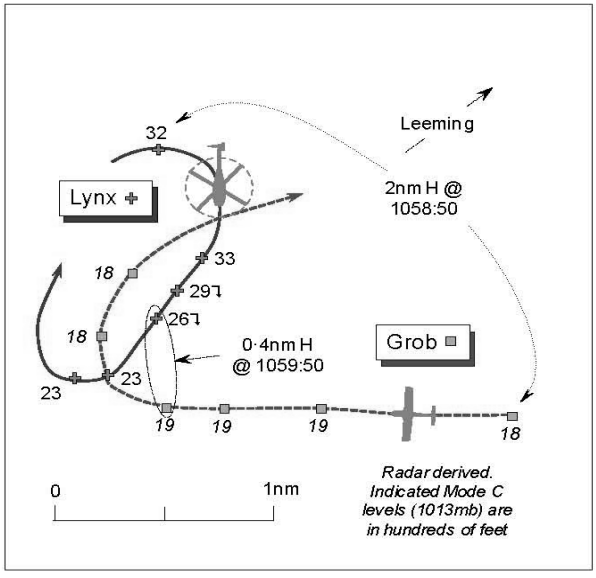
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A perceived conflict by the Lynx crew.

Degree of Risk: E.

AIRPROX REPORT NO 2011014

Date/Time:	24 Feb 2011 1100Z	
Position:	5413N 00143W (8nm SW by W of Leeming - elev 132ft)	
Airspace:	Vale of York AIAA	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Lynx AH Mk7	Grob Tutor TMk1
Operator:	HQ JHC	HQ Air (Trg)
Alt/FL:	2200ft	2000ft
	RPS (1014mb)	RPS (1013mb)
Weather:	VMC Sleet	VMC CLBL
Visibility:	20km	10km
Reported Separation:		
	500ft V/Nil H	400-500ft V/100m
Recorded Separation:		
	~500ft V	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE WESTLAND LYNX AH Mk 7 PILOT, a maintenance test pilot, reports he was the ac commander and PNF occupying the LH seat whilst conducting a dual airtest; the ac's crew consisted of just the 2 pilots. The workload in the cockpit was fairly high during the airtest as the PNF monitors instruments/limitations, whilst the PF concentrates on accurate speeds, NR control and rates of application of power. The airtest, involving a series of autorotations, was carried out in VMC whilst in receipt of a BS from Leeming ZONE on 127·750MHz about 2nm

SW of Masham, which is situated 1nm SW of the Leeming MATZ boundary. A squawk of A0401 was selected with Mode C; enhanced Mode S is fitted but TCAS is not.

The same area had been used for the preceding 10min of the air test and, after carrying out the HASEL checks, the Lynx crew entered autorotation from 3000ft RPS (1014mb), heading SW at 80kt, intending to commence recovery from the autorotation at an altitude of 2000ft. Whilst looking out passing about 2200ft, he spotted a small white fixed-wing ac on the port side about 200m and 500ft below their helicopter that flew directly beneath them with less than 500ft clearance. Upon sighting the other ac – the Grob Tutor flying straight and level - the PF was instructed to overshoot from the autorotation and a climb was initiated to avoid the Tutor, which passed directly beneath his Lynx and then appeared on the starboard side, maintaining its heading he thought. Minimum vertical separation was less than 500ft and the Risk assessed as 'high'; an Airprox was reported to Leeming ZONE on the RT.

His helicopter has a grey and green camouflage scheme but the HISLs were on and the navlights on 'bright'.

THE GROB TUTOR T Mk1 PILOT reports that he was flying an Air Experience Flight (AEF) sortie, VFR, under a TS from Leeming APPROACH (APP) when traffic was reported to him whilst performing aerobatics. About 2min later, after completing the aerobatic manoeuvres, a visual recovery to Leeming was initiated with a gentle descent at 130kt, turning R onto a NE'ly heading in VMC, some 2000ft above cloud in between layers. About 1nm S of Masham, passing 030° in the R turn, descending through 4000ft RPS (1013mb) he thought, a camouflaged Lynx helicopter was seen heading W about 200m ahead and above his aeroplane crossing from R – L in level flight. He passed about 400-500ft under the Lynx and about 100m slightly in front of it. No avoiding action was considered necessary and he assessed the Risk as 'low'.

A squawk of A4322 was selected with Modes C and S on. His aeroplane has a white colour-scheme and the HISL was on.

THE LEEMING ZONE CONTROLLER (ZONE) reports he was mentor to a trainee controller and they 'plugged-in' at about 1030 for a very quiet session, operating SSR only, because the Watchman ASR was unserviceable. The Aerodrome Availability/Weather State Colour Code was BLU.

Shortly after commencing the session, they received 2 pre-notes from Dishforth; one relating to a VFR transit to Carlisle and the subject Lynx departing for an airtest; both flights were issued the standard squawk of A0401 for a BS. The subject Lynx climbed out for the airtest, was placed under a BS and issued the BARNSLEY RPS (1014mb), whereupon the crew informed them they would operating up to 3000ft. The next call was when the Lynx pilot reported an Airprox, stating that a white ac had passed underneath them, possibly a Tutor. At the time no relevant contacts were showing on radar, although subsequently a squawk assigned to Leeming APP was observed about 2nm E and 2000ft below the Lynx tracking towards the aerodrome. The Lynx crew was informed about this ac, now well to the E and 2000ft below the helicopter, and advised that ATC was operating SSR only. The Lynx crew estimated that the reported ac had passed well within 500ft whilst they were at 3000ft RPS (1014 mb).

The Lynx crew then broadcast they were carrying out a series of autorotations and asked to be advised of any ac which came within 2-3nm of them. ZONE asked the Lynx crew if they wished to upgrade their ATS from the extant BS, but they declined, "as it would get a bit cluttered up on that". The Lynx crew retained their BS on 127·750MHz before initiating a VFR recovery back to Dishforth.

The Supervisor was advised of the Airprox and they were relieved from the ZONE position shortly afterwards. A phone call to the Lynx pilot at Dishforth ascertained he was happy with the ATS provided, was not apportioning blame, but would refer to his QHTI with a view to submitting an Airprox report. He estimated the minimum vertical separation was 500ft.

THE LEEMING APPROACH CONTROLLER (APP) reports that the Grob Tutor departed VFR to the SW, was identified and placed under a reduced TS as Leeming was operating with SSR only. Shortly afterwards TI was provided on traffic 5nm S tracking NW 1000ft below believed to be the Lynx. This TI was updated as the Tutor flew closer to the helicopter - at 3nm SW tracking SW manoeuvring 2000ft below and climbing - with another update on the Lynx when it was NW 2nm indicating 3300ft (1013mb).

THE LEEMING ATC SUPERVISOR (SUP) reports the unit was operating under a light workload with 2 flights on frequency. The only controllers providing an ATS were operating in the APP and ZONE positions, which were both manned by controllers under training screened by members of the Unit Standards Team. Although the Lynx pilot stated over the RT that he wished to file an Airprox, after landing he spoke with the pilot on the telephone who admitted that he did not inform ZONE that he would be conducting autorotation manoeuvres. It was explained that this information would have been of value to the ZONE controller when he was placed under a BS. Moreover, although operating SSR only, if the Lynx pilot had requested a TS, ZONE may have been able to pass TI on the Tutor before it became a potential hazard. He advised the Lynx pilot that he had also spoken to the Tutor pilot who admitted that he had been passed TI about the Lynx, with which he was visual and took his own separation by flying underneath. The Lynx pilot then advised that he would speak to his Duty Instructor. It was late afternoon when the Lynx pilot rang to inform him that he would be filing an Airprox.

HQ 1GP BM SM reports that this Airprox occurred 8nm SW of Leeming between a Tutor on an AEF sortie conducting aerobatics in receipt of a TS from Leeming APP, and a Lynx on an air-test from Dishforth operating VFR in receipt of a BS from Leeming ZONE.

Leeming were operating SSR only at the time of the occurrence, with both APP and ZONE manned by trainees and under a light workload.

The Lynx pilot reports that as part of the airtest there was a high cockpit workload with the PNF 'heads-in' monitoring instruments and limitations, while the PF was concentrating on maintaining accurate speeds, NR control and rates of power application. Moreover, the Lynx unit RQHI reports that these factors in addition to the restricted view from the Lynx cockpit, contributed to the Lynx crew's difficulty in visually acquiring the Tutor.

At 1048:01, the Lynx was identified by ZONE and placed under a BS, which was acknowledged *"…Basic Service 1-0-1-4 and we'll be operating up to 3 thousand feet on that"*. The Tutor was identified by APP shortly afterward and placed under a TS, reduced as Leeming were operating SSR only.

At 1048:48, [10min before the Airprox occurred] APP passed TI on the Lynx to the Tutor pilot stating, "*traffic south, 5 miles, tracking north-west, 1000ft below, believed to be a Lynx*." This was updated at 1051:36 as, "*traffic south-west, 3 miles, tracking south-west, 2000ft below climbing*." This was updated again at 1058:57 stating, "*traffic north-west, 2 miles, indicating 3300ft one-zero-one-three*." The radar replay indicates 1.6nm lateral separation, with the Lynx in a R turn indicating 3300ft Mode C (1013mb) and the Tutor tracking W'ly indicating 1800ft Mode C (1013mb).

At 1059:18 the Lynx rolled out of the right-turn to track south-west, at which point 0.9nm lateral separation exists. At 1059:33 the Lynx has commenced a 2000ft/min descent, with 0.6nm lateral separation extant. At 1059:48 the Tutor appears to have made a relatively rapid manoeuvre to the NW, reducing the lateral separation between it and the Lynx to 0.2nm, with the Lynx now descending through 2400ft.

The ZONE controller states in their report that "at the time (of the Airprox) no relevant contacts were showing on radar, although subsequently a Leeming APP squawk was seen approximately 2 miles east of the Lynx", which was after the CPA. This is substantiated by ZONE's comments at 1100:08 in reply to the Lynx's Airprox report stating, "*we did lose SSR on that aircraft, it's just popped up now* (on the radar replay the Tutor is 0.6nm NE of the Lynx)." However, given that APP was able to update TI to the Tutor at 1058:57, when 1.6nm separation existed, it is clear that the SSR label was visible at this point.

The Tutor pilot reports that their first sighting of the Lynx occurs at the point where around 200m lateral separation existed with the helicopter above, with the Lynx pilot reporting the same first sighting distance. Given that the Tutor pilot assessed minimum separation as 100m and 4-500ft, it is likely that the pilots became visual with each other immediately prior to the CPA.

[UKAB Note (2): The Grob Tutor passed beneath the Lynx, in between sweeps, moments after 1059:50, with 700ft separation evident on Mode C before the 'merge' and 500ft afterwards as the Grob turns away to the NE.]

In terms of ATSOCAS provision to the Tutor, APP provided timely and accurate TI to the Tutor that should have enabled the pilot to visually acquire the Lynx and to take appropriate action. In this case, the Tutor pilot seems to

have spotted the Lynx relatively late, at approximately the same point as the Lynx PNF spotted the Tutor and commanded the overshoot.

At the last confirmed point that the Tutor's SSR label was visible to ZONE and APP, given the relative altitudes of the aircraft, there was nothing to suggest to ZONE that a definite risk of collision existed between the Lynx and Tutor. Therefore, in keeping with the terms of a BS there was no requirement for them to pass a warning to the Lynx pilot on the Tutor.

Throughout the incident sequence the Tutor appears to have maintained its altitude, albeit that for a short period it indicates 1900ft. However, the Lynx began a descent which brought it into confliction with the Tutor at the point when only 0.6nm lateral separation existed. It is likely, given the Lynx pilot's statement over cockpit workload and the RQHI's report on reduced visibility from the cockpit, that these factors precluded the Lynx crew from visually acquiring the Tutor prior to commencing their descent.

In this instance, the ATM related safety barriers worked appropriately in that the pilot in receipt of the TS received timely and accurate TI to allow them to visually acquire the conflicting ac. However, the Tutor pilot was unable to sight the Lynx until relatively late. That said, the Tutor pilot felt that no avoiding action was required having spotted the Lynx, which was at or about the point when the Lynx PNF sighted the Tutor.

THE WESTLAND LYNX Mk 7 PILOT'S UNIT comments that the restricted view from the Lynx cockpit coupled with the requirement for the LHS ac commander to have his 'eyes-in' in order to record the details of the airtest, coupled with the difficulty in visually identifying another aircraft when looking down from above resulted in this Airprox. Action has been taken at local level requiring a rear-seat crew to be carried on all airtests in order to assist with lookout.

HQ JHC comments that the avoiding action taken by the Lynx crew was effective but it is clear that this potential conflict could have been prevented if each pilot had spotted the other ac earlier. It would appear that the Tutor pilot would have been forced to take action if the Lynx crew had not spotted him first, however the Tutor had in fact seen the Lynx and decided that there was no conflict. In hindsight, the most sensible course of action would have been for the Lynx pilot to upgrade the air traffic service, knowing that he was particularly busy in the cockpit, despite the potential for a more cluttered frequency – he could subsequently decide to downgrade the service if necessary. The action of the Lynx pilot's unit requiring an extra rear-crewmember to be carried on all airtests to assist with lookout is commended. It is also recommended that the unit pilots are reminded that requesting an upgrade in traffic service is usually a sensible precaution during periods of high cockpit workload.

HQ AIR (TRG) comments that the Tutor was operating under a TS in compliance with 22 (Trg) Gp Orders. It is unfortunate that the pilot chose to operate quite so close to the Lynx's reported position but it is not known what his airspace or weather considerations were. In mitigation, the TI received would have indicated that the Lynx was tracking N or NE and he may have reasonably assumed that his WSW track would keep him clear. As it was, in the minute preceding the CPA, there was no TI as the Lynx turned into confliction. HQ Air agrees that the sighting probably occurred just before CPA, probably as the Tutor pilot commenced a turn to the right, with the Lynx approaching from above just forward of the wing. The ongoing fleet embodiment of a Traffic Alerting System to the Tutor should reduce the likelihood of a recurrence.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

The HQ AAC pilot Member briefed the Board that a Lynx airtest is a very intensive sortie, especially during autorotation manoeuvres, demanding the fullest concentration of the pilots who must be very careful indeed not to overspeed the rotor. Consequently, the Lynx pilots' attention here would have been closely focussed within the cockpit during the 'auto', in line with the reporting pilot's account, with a potentially adverse impact on lookout. It was plain that the Lynx pilots had not spotted the Grob Tutor as they turned about at the northern extremity of their racetrack, and were unaware of its presence below them, just over 0·6nm away when they initiated the descent the radar recording revealed. Furthermore, the Lynx crew had not mentioned to the controller that they would be conducting autorotation manoeuvres on the RT, merely *"..operating up to 3000 feet…".* The AAC pilot Member

suggested that a call to ATC on the landline beforehand to brief the Supervisor and explain in more detail the sortie content might have been advantageous. Moreover, he concurred with the Command's view that a TS would have been beneficial to supplement the Lynx crew's lookout and assist them with their responsibilities to 'see and avoid' other traffic. Under the BS they had requested there was no compunction on ZONE to track the helicopter or provide any form of TI unless they had asked for an upgrade to their ATS. Controller members agreed that a TS would have given the Lynx crew much better SA; if the additional RT transmissions associated with a TS were a distraction, the Lynx crew could have opted for this service for the limited duration of their auto rotation manoeuvres. It was disappointing that the crew had not given ZONE more insight into what they were doing. As it was, the Lynx P-I-C eventually spotted the Grob below him during the 'auto', in time to ensure that robust avoiding action could be initiated by the PF and vertical separation maintained as their tracks crossed.

Conversely, the Grob pilot had obtained a TS from APP and had been given TI three times about the Lynx, the last transmission advising that was it 2nm away to the NW and over 1000ft above him. Whilst APP would not have known the Lynx was about to descend, this TI was ultimately misleading. It lacked the important detail of the helicopter's course; moreover, the Lynx subsequently turned R about into confliction. Understandably, the Grob pilot might not have been at all concerned by another ac flying 1000ft clear above, but the TI gave no indication whatsoever of the helicopter's projected flightpath and did not 'paint the whole picture'. Members were adamant that updated TI was warranted when the Lynx headed toward the Tutor and the geometry of the situation changed so significantly. Whilst the radar recording did not replicate exactly what was displayed to the Leeming controllers at the time, it seemed that both ac were in solid radar coverage and had both been displayed to APP only 1min before the CPA when the last transmission of TI was given. Indeed, if either ac had faded from coverage that should have been of concern to APP and might have presaged a warning. A civilian controller Member was also concerned that the two controllers, operating in close proximity from the same ACR and both with trainees, were not liaising more closely about their traffic. The two positions were working only one flight each when the Airprox occurred and the Member perceived that a more proactive stance by the controllers involved might have averted this Airprox.

The Grob Tutor pilot was evidently not concerned when he saw the Lynx crossing ahead, as by that time the Lynx crew had already levelled off clear above him. No avoiding action was therefore warranted on his part. The Board concluded, therefore, that this Airprox had resulted from a conflict in the Vale of York AIAA, resolved by the Lynx crew. While debating the inherent Risk one Member opined that the dynamic nature of the encounter, coupled with the late sighting, followed by the robust avoiding action taken by the Lynx crew as they overshot from the autorotation had compromised the safety of these two ac. However, the overwhelming view of the Members was that the Lynx crew's prompt action on sighting the Tutor had ensured that over 500ft of vertical separation was preserved after they had established level flight, which the Board concluded had effectively removed the Risk of a collision.

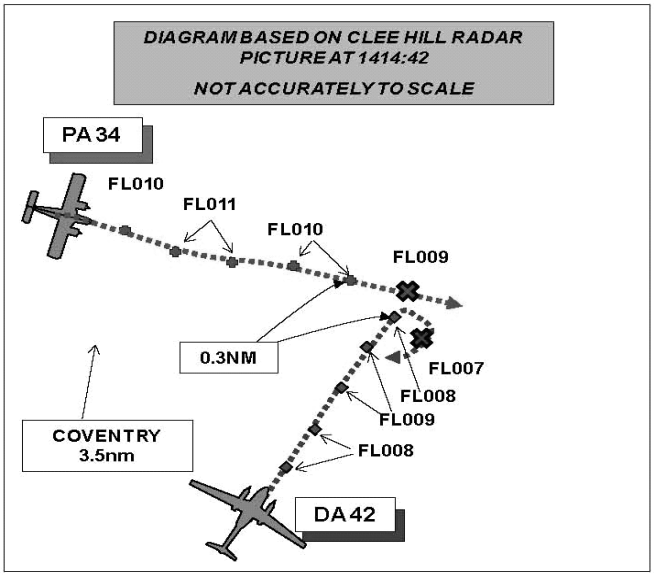
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Conflict in the Vale of York AIAA resolved by the Lynx crew.

Degree of Risk: C

AIRPROX REPORT NO 2011016

Date/Time:	7 Mar 2011 1415Z	
Position:	5219N 00128W (3·5nm S Coventry - elev 267ft)	
Airspace:	LFIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	DA42	PA34
Operator:	Civ Trg	Civ Trg
Alt/FL:	1320ft (QNH 1028mb)	NR
Weather:	VMC CLOC	NR
Visibility:	>10km	NR
Reported Separation:	NR	NR
Recorded Separation:	200ft V/0·3nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE DA42 PILOT reports conducting a CPL skills test from Coventry and in communication with Coventry APP using an 'Exam' callsign, squawking with Modes S and C. The visibility was good and the ac was coloured white with nav, landing, taxi and strobe lights all switched on. The candidate was the handling pilot and they were joining the cct from the Wellesbourne direction having been given a downwind join for RW23. Other traffic [the subject PA34] on frequency was conducting a standard missed approach and was informed of their position and reported that they had his ac in sight.

About 10 sec later when they were 2.5nm S of the airfield, heading 050° at 130kt and 1320ft QNH, he visually acquired the PA34 1nm away and it initially appeared that it would pass clear of them and slightly above. However, it then started to descend slightly and it appeared to be either on a collision course or about to pass very close. As the candidate [HP] was not taking any avoiding action he took control and executed a steep RH turn and they passed behind the PA34 after a 360° turn. He could not judge how close they passed as their wing and engine completely obscured the PA34. Due to his avoidance, he assessed the risk as low to medium. He noted that on initial sighting of the PA34 he anticipated the commander would comply with Rule 9(3) [the ac which has the other on the right shall give way] which he estimated required a 10° R turn by the PA34 to avoid a conflict.

THE PA34 PILOT declined to submit a report.

UKAB Note (1): The circuit direction for RW23 at Coventry is left.

ATSI reports that this Airprox occurred at 1414:32, in Class G airspace, 3.6nm to the S of Coventry Airport, just outside the Coventry ATZ which comprises a circle of radius 2.5nm, centred on RW 05/23 and extending to a level of 2000ft aal (Aerodrome elevation 267ft). Coventry is situated below the Birmingham CTA, Class D airspace, base altitude 1500ft.

The PA34 was an IFR training flight inbound to Coventry from Oxford and was in receipt of a TS from Coventry Radar. After the completion of a radar vectored ILS approach to RW23, the PA34 pilot conducted a standard MAP published as:

'Climb to 1500. Straight ahead to 765 or I-CT DME 1 outbound whichever is later, NO DME; straight ahead to 1265, then turn left to track 179° to intercept VOR DTY R304 towards DTY VOR. When within DTY DME 14 (HON DME9 or more) turn left to NDB(L) CT and continue climb to 2000 or as directed.'

The DA42 was returning to Coventry Airport from the SSW after a local VFR (CPL skills test) exam flight in the vicinity of Wellesbourne Mountford, situated 12nm SSW of Coventry.

The Coventry primary radar data source is the local S511, with an SSR feed from NATS, Clee Hill radar. The Radar controller was providing an Approach Radar Control service with a 30nm range displayed on the radar.

CAA ATSI had access to RTF and radar recordings, together with reports from the controller and DA42 pilot; no report was available from the PA34 pilot.

The METAR was:

EGBE 071350Z 09004KT 050V140 CAVOK 09/M00 Q1029=

At 1218 the DA42 departed VFR from Coventry towards Wellesbourne, in receipt of a BS, in order to complete a CPL skills test. The ac flight progress strip indicated that the ac transferred to Wellesbourne Info at 1220

At 1400:46, the PA34, called Coventry Radar, squawking 4376, in receipt of information 'Uniform' and heading 350°; at the request of the pilot, a TS was agreed, with vectors for the ILS RW23 and QNH 1029. Following an ILS the PA34 pilot requested a standard MAP towards DTY and then a return to Oxford.

The PA34 was given descent to an alt of 2000ft and, at 1406:02, the Coventry Radar controller passed the missed approach instructions, "(PA34)c/s on the go around it'll be a standard missed approach procedure until one four D M E from Daventry initially not above altitude one thousand five hundred feet". The PA34 pilot's initial readback needed to be clarified by the controller and a correct readback was obtained. The PA34 was vectored onto the ILS and at 1407:38, the pilot reported localiser established. The PA34 pilot was given further descent on the glide path and asked to report at 4nm DME. At 1409:53, as the PA34 reached 3.9nm from touchdown, the controller instructed the PA34 to continue the approach and, at 1410:22 he passed go around instructions, "(PA34)c/s cleared for a low approach report going around off runway two three one three zero at three knots".

At 1410:48, the DA42 estabished contact with Coventry and requested rejoin, "(DA42)c/s just ???? from Wellesbourne er to er Coventry for rejoining"; the radar recording showed the DA42, 10nm SSW of Coventry squawking 7000. Radar responded, "Roger (DA42)c/s route to the field VFR QNH one zero two nine"; this was correctly acknowledged and the controller allocated a squawk of 0260 which was correctly acknowledged. At 1411:38, the DA42 transponder code changed to 0260 while the ac was 9nm SSW of the airfield.

Although not considered to be a factor in the Airprox, it is noted that the DA42 pilot did not request, nor did the controller specify, a level of service. On being informed of this the controller was suprised, as he always attempts to specify a level of service. The ac's flight progress strip indicated that a BS was being provided and the controller considered that the outbound agreement 2hr previously might have been a factor.

At 1412:08, the PA34 reported going around.

At 1412:22 Radar passed joining instructions to the DA42, "(DA42)c/s position downwind lefthand runway two three the Q N H one zero two nine" , this was acknowledged correctly and at 1412:42 Radar passed TI, "Roger information for you a P A thirty four just going around off Runway two three standard missed approach"; the DA42 pilot responded, "Roger looking".

The controller was asked whether he considered that the VFR pilot would have been familiar with the standard MAP and, although he acknowleged that better information could have been passed, he considered that the exam instructor would have been familiar with the standard missed approach.

At 1412:55, Radar passed TI to the PA34, "(PA34)c/s traffic er just called me inbound to the field from the southwest it's a D A forty two VFR er level unknown" and this was acknowledged by the pilot; the radar recording indicated that the DA42 was at FL009 with the PA34 was passing FL008 on the climb out.

At 1413:07, Radar advised the PA34, "...that contact is believed to be in your left eleven o'clock at a range of three miles" and this was acknowledged by the pilot. At 1413:12, the radar recording showed the PA34 commencing a left turn off the RW centreline; the distance between the ac was 4.6nm.

At 1413:32, Radar updated the PA34 on the position of the DA42, "(PA34)c/s that traffic converging from your er righthand side now right one o'clock a mile and a half about to join downwind indicating one thousand three hundred feet unverified". The PA34 pilot responded, "Roger we're visual (PA34)c/s". The radar recording showed the range between the ac was 3.7nm.

At 1413:45, the DA42 was advised, "(DA42)c/s the PA thirty four just gone around on your lefthand side is visual with you". The DA42 pilot replied, "Roger that er (DA42)c/s". The radar recording showed the distance between the ac was 2.7nm, with the PA34 in a left turn indicating FL011 (converts to altitude 1500ft on QNH 1029, with 1mb equal to 27ft) and the DA42 indicating FL009 (1300ft). The DA42 pilot's report indicated that the PA34 was sighted at about this time, (i.e. 10sec after the PA34 pilot's sighting report); the report gives the first sighting distance as 1nm. At 1414:03, the DA42 was transferred to the TWR frequency and the radar recording showed the ac converging at a distance of 1.7nm with a vertical separation of 200ft.

The DA42 pilot's report indicated that the pilot initially considered that the PA34 would pass clear, but stated that it started to descend. At 1414:24, Mode C showed the minimum vertical separation between the two ac decrease to 100ft as the PA34 Mode C changed from FL011 to FL010, with the DA42 indicating FL009. The next radar return showed the vertical separation as 200ft.

At 1414:32, the radar recording showed the two ac in close proximity, with the PA34 crossing the DA42 from left to right and 200ft above. At 1414:41 the radar recording shows the DA42, 0.3nm S of the PA34, commencing a right hand orbit, with the respective ac Mode C readouts indicating a vertical distance between the ac of 200ft. The DA42 completed the orbit and then set course at 1415:05 and the first call to the TWR was made at 1415:12.

The controller was asked if he considered giving the PA34 a heading, as a method of traffic management under a TS; he indicated that had the pilot requested a DS, he would have applied a more positive method of control; however, in formulating a plan in CAVOK weather and the (training) PA34's request for missed approach, he was content that he passed appropriate TI and this TI resulted in the PA34 pilot aquiring visual contact with the DA42.

The controller was also asked whether he thought that it might have been appropriate to retain control of the DA42 until after the two ac had passed, he indicated however, that the DA42 was under a BS, appropriate TI had been passed and there was a need to transfer it to TWR for integration into the circuit.

In good weather conditions, the PA34 had requested a missed approach procedure as part of a training exercise; it was in receipt of a TS and the controller passed TI regarding the DA42, which resulted in the PA34 pilot aquiring the DA42 visually.

MATS, Part 1, Section 1, Chapter 11, states:

'A Traffic Service is a surveillance based ATS, where in addition to the provisions of a Basic Service, the controller provides specific surveillance derived traffic information to assist the pilot in avoiding other traffic. Controllers may provide headings and/or levels for the purposes of positioning and/or sequencing; however, the controller is not required to achieve deconfliction minima, and the avoidance of other traffic is ultimately the pilot's responsibility.

The controller shall pass traffic information on relevant traffic, and shall update the traffic information if it continues to constitute a definite hazard, or if requested by the pilot. However, high controller workload and RTF loading may reduce the ability of the controller to pass traffic information, and the timeliness of such information.'

The DA42, in receipt of a BS, was passed TI regarding the PA34 prior to its transfer to the TWR frequency. MATS Part 1, Section 1, Chapter 11, Page 4, Paragraph 3.1.1, states:

'A Basic Service is an ATS provided for the purpose of giving advice and information useful for the safe and efficient conduct of flights. This may include weather information, changes of serviceability of facilities, conditions at aerodromes, general airspace activity information, and any other information likely to affect safety. The avoidance of other traffic is solely the pilot's responsibility.'

and Part 1, Section 3, Chapter 1, Page 5, states:

'8.1 Approach Control shall retain all arriving VFR flights under its jurisdiction until appropriate traffic information on IFR flights and other VFR flights has been issued and co-ordination effected with Aerodrome Control.

8.3 Approach Control must ensure that VFR flights are transferred in sufficient time for Aerodrome Control to pass additional information in respect of local traffic.'

The Coventry Radar controller passed TI to both ac and the PA34 reported seeing the DA42.

The written report from the DA42 pilot, indicated that after seeing the PA34, the pilot initially considered the PA34 would pass clear, but became concerned when the PA34 started to descend slightly. From the radar recording and the PA34 pilot's report, the data available would indicate that the PA34 appeared to descend momentarily, just prior to the Airprox occurrence.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the DA42 pilot, transcripts of the relevant RT frequencies, radar recordings, reports from the air traffic controller involved and reports from the appropriate ATC authorities.

The Board considered the PA34 pilot unprofessional in declining to submit a report, thereby limiting the investigation.

The Board was briefed on the complexities of the airspace and MAP for RW23 at Coventry. Members were also briefed by the CAA Flight Ops Advisor that, although an Examiner is Captain of the ac and ultimately responsible for its safety, he has very little other operating responsibility and it is assumed the candidate is fully responsible for all tasks concerning the operation of the ac.

Although engaged on differing activities, with both pilots in receipt of an ATS while in the vicinity of Coventry, this was essentially an encounter in Class G airspace where the ROA and the 'see and avoid' principle applied. Further, since the PA34 had the DA42 on its right throughout, notwithstanding that it was under IFR and the DA42 was VFR, the former should have given way. Consideration of why the PA34 crew elected to 'stand on' having seen the DA42 was limited to conjecture due to the absence of a report from the pilot. A Member suggested that since the PA34 was an IFR training flight, the HP (student) had probably been flying under an IF hood. The transcript however, confirmed that the crew called visual with the DA42 suggesting that it must have been the instructor/safety pilot who was visual with it and it was his responsibility to initiate visual avoidance, despite that they were flying an IFR MAP. Bearing in mind airspace constraints such avoidance would have had to be lateral and behind the DA42. He went on to say (considering the DA42) it is always a fine line deciding whether or not your ac has been seen when exercising one's right/obligation to 'stand on'; in his view it is better to give way earlier rather than later.

Controller Members agreed that the APR Controller had more than fulfilled his obligations to both ac under an Approach service. In any case, probably as a result of the information he passed, both pilots had called visual with each other's ac. Without any knowledge of the other ac in the cct/pattern Members could not agree whether the DA42 could have been held by APR until after the two ac had crossed, thereby allowing the controller to separate them.

Members observed that this incident could easily have been avoided had the PA34 pilot made a small track alteration soon after he first reported that he was visual with the DA42.

Notwithstanding the factors above, when the DA42 Examiner considered that a collision risk was imminent, he took effective action by orbiting the ac to negate that risk without compromise to the safety of either ac.

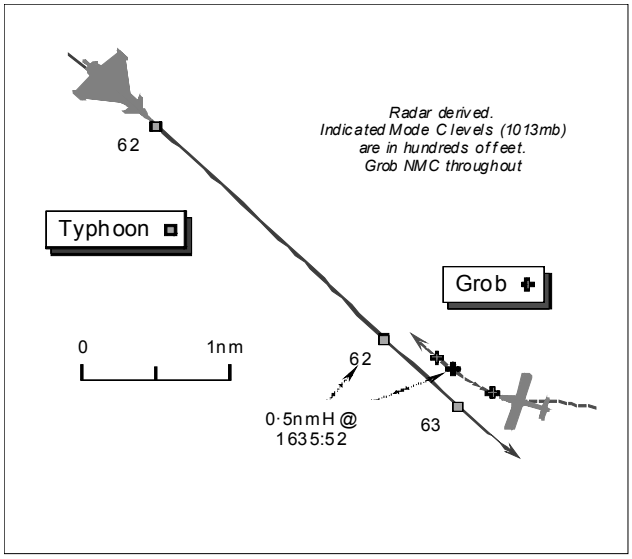
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The PA34 flew close enough to cause the DA42 crew concern.

Degree of Risk: C.

AIRPROX REPORT NO 2011017

Date/Time:	8 Mar 2011 1636Z	
Position:	5246N 00013E (15nm NW of Marham)	
Airspace:	London FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Typhoon	Grob Tutor TMk1
Operator:	HQ Air (Ops)	HQ Air (Trg)
Alt/FL:	6000ft	5000ft
	RPS (1007mb)	RPS (1007mb)
Weather:	VMC CLAH	VMC CLAH
Visibility:	5km	20km
Reported Separation:		
	500-1000ftV/200m	500ft V/1000yd H
Recorded Separation:		
	0·2nm H [~370m]	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE EUROFIGHTER TYPHOON PILOT reports that he had departed on a VFR training flight from Coningsby to Marham for a Practice Diversion (PD) and was receiving a TS from Coningsby APP. The assigned squawk of A1771 was selected with Mode C; neither TCAS nor Mode S is fitted.

After levelling at 6000ft BARNSLEY RPS (1007mb) some 500ft above haze in VMC, steady heading 140° at 400kt, a contact was called at 12 o'clock - 10nm. Unable to gain radar contact on the reported traffic he requested an update from ATC who responded the other ac was '12 o'clock - 3nm, no height information'. Believing it would be safer to check his sensor and look out rather than turning belly-up to an ac closing at high speed from ahead, he split his scan initially from the radar display to outside the cockpit, then focused just outside in an attempt to gain 'tally' and avoid a possible collision. He was unable to detect the reported traffic until out of his peripheral vision he saw a white flash passing his ac to port. He estimated that the other ac – a low-wing single piston-engine propeller-driven light ac coloured white with a blue stripe down the fuselage - passed about 200m away down his port side and some 500-1000ft below him with a 'medium' Risk of collision.

The Sun was low but 30-40° W of the reported ac's 'angle of arrival'. More significant was that he was flying just above the haze layer and he believes the light aircraft was in it. On seeing the other ac – the Grob Tutor - he waggled his wings although the Grob had now passed abeam but received no response. Advising APP that he might wish to report an Airprox, he asked for his position to be noted - 5247N 00012E - and continued with his sortie without further incident.

THE GROB TUTOR TMK1 PILOT reports that he was flying a dual training sortie in VMC and listening out on the Sector E frequency of 279·725MHz; he was not in receipt of an ATS. A squawk of A2641 was selected with Mode C; elementary Mode S is fitted, TCAS is not.

While in transit in a NW'ly direction between 5000 and 5500ft BARNSLEY RPS, heading 300° in the vicinity of Holbeach, he saw a Typhoon ac in his 1 – 1:30 position at a range of about 2nm, some 500ft above his transit altitude. He had time to make a conscious decision that no avoiding action was necessary. The Typhoon was crossing from R – L flying straight and level and passed through his 12 o'clock at range of about 1000yd and 500 feet above his aeroplane, the pilot rocking its wings to show that he had seen him. He assessed the Risk as 'low'.

Weather conditions were such that visibility was excellent above a haze layer which extended from the surface to 3500ft. His aeroplane as a white/blue colour-scheme and the HISLs and landing lamp were on.

THE CONINGSBY APPROACH CONTROLLER (APP) reports that with no inbound traffic and one transit on VHF, APP was band-boxed with DEPs and LARS. He received a prenote from GND for a Typhoon flying from Coningsby to Marham for a PD at 6000ft; the Typhoon was released and the VHF traffic handed over. Following the Typhoon pilot's initial call the ac was identified and the flight placed under a TS, 'reduced' due to radar clutter and the pilot requested to report level at 6000ft BARNSLEY RPS (1007mb). As the Typhoon closed to within 30nm of Marham he commenced the handover, observing an A2641 squawk in the Typhoon's 12 o'clock at 10nm, opposite direction, indicating 1000ft below so he called the traffic. The Marham controller confirmed he heard the TI and they completed the handover. The other traffic was then only 4nm away from the Typhoon and he informed the SUP that he would keep the Typhoon on his frequency until it was clear of the other ac. The Typhoon pilot then called for an update of the traffic and so he reported it at 12 o'clock - 3nm - opposite direction - no height information, as the other ac's squawk was no longer displayed on either the Scampton or Cranwell SSR feeds. As the Typhoon passed the other ac he was asked by the Typhoon pilot to update the position again; he informed him that he was now clear of the traffic and the pilot requested him to note the position and time as he may be filing an Airprox.

THE CONINGSBY ATC SUPERVISOR (SUP) witnessed the event and provided a report which corroborated that of APP, confirming that the traffic intensity was low and that the Unit was fully serviceable. As the Typhoon pilot was not visual with the conflictor, APP elected to keep the Typhoon on frequency until it was clear of the confliction. The Typhoon pilot called the possible Airprox as he overflew the contact.

He added that the A2641 squawk is the ATC Cranwell conspicuity code for Cranwell and Barkston Heath traffic entering, exiting or operating below the Cranwell Agreed Airspace. This in conjunction with the pilot's description of the aircraft led him to believe the reported ac was a Grob Tutor operating out of either Cranwell or Barkston Heath.

HQ 1GP BM SM reports that this Airprox occurred between a Tutor operating VFR transiting NW'ly between 5-5500ft in the vicinity of Holbeach and a Typhoon transiting to Marham for a PD in receipt of a TS from Coningsby APP.

The Typhoon pilot reports 5000m visibility flying 500ft above a layer of haze, whilst the Tutor pilot reports excellent visibility above a layer of haze which extended from the surface to 3500ft. Moreover, the Typhoon pilot reports that 'the sun was low and at an angle of 30-40 degrees right of the contact aircraft's angle of arrival. This reduced visibility.'

As APP handed the Typhoon over to Marham they noticed the Tutor and at 1634:32 passed accurate TI stating, "*Traffic 12 o'clock, 10 miles manoeuvring, indicating 2 thousand f…err correction 1 thousand feet below.*" At this point the Tutor was approximately 12.1nm SE of the Typhoon indicating 4800ft, with the Typhoon indicating 6300ft Mode C. The Typhoon pilot stated that he attempted to acquire the Tutor visually and by using radar to no avail, prompting him to request an update of TI.

At 1634:51, the SSR return for the Tutor disappears from the radar replay, which accords with the statement made by APP that the SSR label 'was no longer displaying on either the Scampton or Cranwell SSR feeds.' Coningsby ATC has access to both these SSR sources and sets up alternate consoles within the ACR to display each SSR feed.

At 1635:07 the handover between Coningsby was complete and at 1635:29, the Typhoon requested an update of the TI which APP passed as, "*traffic is now at 12 o'clock, 3 miles, opposite direction, no height information* [the radar replay shows 4.1nm separation]." The Typhoon pilot states in his report that after this update he 'believed it would be safer to check my sensor and look out rather than turning belly-up to an aircraft closing at high speed in a zone broadly considered to be 12 o'clock.'

The Tutor pilot reports seeing the Typhoon 'in approximately the 1 to 1.30 position at a range of approximately 2 miles, some 500ft above'. He had time to make a conscious decision that no avoiding action was necessary.' The Typhoon pilot reports that his first sighting of the Tutor was in his peripheral vision as the ac passed 200m laterally down the port side, between 500-1000 feet below his ac.

[UKAB Note (1): The CPA occurs as the two ac pass port to port, on broadly reciprocal tracks, with a track displacement in between sweeps of about 0·2nm just after 1635:52.]

In this instance, the ATM related safety barriers worked appropriately in that the pilot in receipt of the TS received timely and accurate TI to allow him to visually acquire the conflicting ac or to take appropriate action if he was unable to do so. In this case, having received TI the Typhoon pilot decided to maintain his track in order to try to visually acquire the Tutor; however, his scan was affected by the weather conditions, the relative position of the Tutor and, arguably, the size and colour scheme of the Tutor. The Tutor pilot with the haze below them had the 'easier' scanning task which enabled the crew to visually acquire the Typhoon and to decide that no avoiding action was required.

HQ AIR (OPS) comments that aircraft operating VFR in Class G will occasionally become proximate. The Typhoon pilot could have adjusted his heading early to maximise separation rather than relying on the expectation that he would definitely get visual.

HQ AIR (TRG) comments that the Tutor pilot reports sighting the Typhoon is good time and being content that he had been sighted and avoided by the Typhoon pilot. However, it appears that the sighting was too late to have effected avoiding action had it been necessary. By contrast, the Tutor would have retained some ability to carry out any such avoiding action. Whilst reporting that no avoiding action was necessary, it appears from the radar trace that from the reported sighting at 2nm, a turn to the right was initiated that prevented a direct overflight by the Typhoon, reducing the risk further.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controller involved and reports from the appropriate ATC and operating authorities.

The Typhoon pilot had received prompt and accurate TI from Coningsby APP under the TS, which had ultimately enabled him to sight the Grob Tutor, albeit a fleeting glimpse as it passed 200m away some 500-1000ft below his ac he reported. The Board agreed that the controller had provided a good level of TI here and had conscientiously elected to retain the flight on his frequency during the period that these two ac were at close quarters, which was wise. As it was, the Typhoon pilot was unable to detect the Tutor on radar and was thus entirely reliant on TI from APP and visual sighting to avoid the other ac. Given the difficulties inherent in visually acquiring small light ac, Members agreed that positive action at an earlier stage would have been preferable. The HQ Air fast jet pilot Member reiterated the Command's view that it might have been wiser if the Typhoon pilot had just jinked 10-15° to the R to ensure that he passed clear rather than relying on visual sighting alone and other pilot Members concurred.

Although the Typhoon pilot reports that at 6000ft RPS he was flying just above a layer of haze, it is often difficult to determine the limits of a haze layer and it would seem he was further above it than he might have thought. The Grob pilot, flying at a maximum of 5500ft RPS, reported he was flying in VMC with 20km visibility; he had sighted the larger Typhoon from a range of 2nm and was not concerned as he was 500ft below it and did not consider that any avoiding action was warranted whilst he watched it cross about 1000yd (0·5nm) ahead. This was supported by the radar recording, although it seemed that the Grob had indeed turned to the R as the ac closed, which did affect the overall geometry of the encounter. It was unfortunate that the Grob's SSR was lost just before the encounter and it was not clear why this was so because it had been clearly displayed just moments beforehand when the TI was issued at 10nm. In the absence of the Grob's Mode C data it was not possible to verify the vertical separation independently. Nevertheless, both pilots reported it to be not less than 500ft, which was considered to be a safe margin. The Board concluded, therefore, that this Airprox had been the result of a sighting of the Grob Tutor by the Typhoon pilot, but with 500ft vertical separation clear below there was no Risk of a collision.

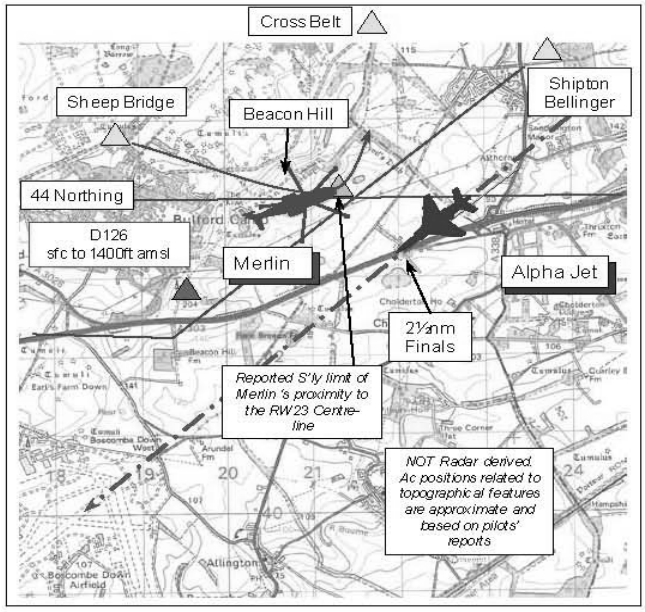
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Sighting Report.

Degree of Risk: C.

AIRPROX REPORT NO 2011018

Date/Time:	9 Mar 2011 1256Z	
Position:	5111N 00141W (2½nm NE of Boscombe Down A/D- elev 407ft)	
Airspace:	Boscombe MATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Alpha Jet	Merlin
Operator:	MoD FTR	HQ JHC
Alt/FL:	800ft	300ft
	QFE (1002mb)	agl
Weather:	VMC NR	VMC CLBC
Visibility:	10km	8km
Reported Separation:		
	200ft V/800ft H	400ft V/700m H
Recorded Separation:		
	Not recorded	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE DASSAULT-DORNIER ALPHA JET PILOT reports he was the ac commander occupying the rear seat of the ac whilst conducting an instrument flying training sortie with a student test pilot in the front seat. During the period of the Airprox, the student was the PF on a simulated single-engine SRA to RW23 at Boscombe Down using standby instruments and he was monitoring his student's instrument flying during the approach with occasional visual lookout searches.

From about 3nm from touchdown his student levelled the ac at 800ft QFE (1002mb) just above the MDH [770ft], whilst continuing in level flight towards the missed approach point [MAPt at 2nm from touchdown]. TALKDOWN was providing a TS during the approach and at about 2½nm from touchdown, whilst heading 238° at 140kt, they received an alert from the TALKDOWN controller of Salisbury Plain Range traffic in the Range [D126] to their R. He searched in that direction but saw nothing; about 5sec later he searched again and then saw a Merlin helicopter at a range of about 800ft in what appeared to be a hard L turn, climbing slightly, just aft of their right wing. Simultaneously there was a call from TALKDOWN that there was range traffic that had passed Beacon Hill and was closing towards them; Beacon Hill is a significant feature 1nm N of the centreline and just inside the range area. By the time he saw the Merlin the actual risk of collision had passed as the helicopter was aft of their 3-9 o'clock line and its pilot appeared to be taking evasive action. He estimated that the Merlin passed 800ft horizontally down their starboard side and 200ft vertically below them. Because of their poor manoeuvrability in the approach configuration, the late alert, the late visual sighting and the proximity of the other ac, he assessed the Risk of collision as 'high'.

THE AGUSTA WESTLAND MERLIN HC3 PILOT reports that he was flying a VFR training sortie returning to Benson and in RT contact with Salisbury OPS [an A/G Stn] on 122·75MHz. The white upper and lower strobes, together with the two landing lights were all on. A squawk of A7002 [Danger Areas General] was selected with Mode C. TCAS is not fitted.

His routeing from D123 to Andover was via Sheep Bridge, Cross Belt and Shipton Bellinger at 300ft agl flying at 90kt and after passing Sheep Bridge he routed though D126 around the edge of Bulford Range (BDA), which was active. While in a port turn for Cross Belt [NW of Shipton Bellinger] the crew saw an Alpha Jet, on approach to Boscombe Down, 400ft vertically above his ac and assessed by the crew to be 'offset' 700m laterally. The most S'ly position of his turn was at OS Grid SU 2130 4400, his flight path remaining to the N of the electricity transmission line running ENE-WSW. At Cross Belt they called Boscombe ZONE for further clearance, when the crew was informed that they had exited previously D126, which was noted, however, it was not believed to be correct.

AIRPROX REPORT No 2011018

THE BOSCOMBE DOWN TALKDOWN CONTROLLER (TALKDOWN) reports that whilst controlling an Alpha Jet on an SRA to RW23 at Boscombe Down an ac contact – the Merlin – appeared, initially within the confines of D126. This was as the Alpha Jet was approaching, he thought, the 3½nm point on the SRA with more than 1.5nm lateral separation. The Merlin within D126 was called to the Alpha Jet, and as SSR Mode C information was available the indicated level was also passed; at that point the helicopter was indicating between 200-300ft below the Alpha Jet. As the SRA continued the Merlin flew closer to the southern edge of D126 and briefly indicated outside the range. As the Alpha Jet approached Beacon Hill 1-1.5 miles from the runway [centre-line] the Merlin helicopter was shown on the radar display within 0.5nm laterally and 200ft vertically. At that point the TOWER controller came through on the radar clearance line with an additional warning about the Merlin infringing the approach path, which was immediately passed to the Alpha Jet.

HQ 1GP BM SM reports that this Airprox occurred between an Alpha-Jet on a simulated single-engine SRA, in receipt of a TS from Boscombe Down TALKDOWN, and the Merlin HC3 routeing VFR through EGD126. The Airprox is not shown on recorded radar, consequently, the investigation has relied upon the reports raised by the aircrew, TALKDOWN and the RT tape transcript.

The point stated by the Merlin crew as their most southerly position during the turn at SU 2130 4400, lies about 0·6nm NW of the centre-line for Boscombe's RW23 [at 2½nm Finals]. The south-eastern edge of EGD126 parallels the RW23 centre-line within 5nm of Boscombe aerodrome and lies approximately ½nm N of the RW23 centre-line.

Analysis of the TALKDOWN RT transcript shows that the Alpha Jet remained L of the RW23 centre-line until approximately the 3½nm point and thereafter remained on the centre-line. However, an SRA is a non-precision approach and the ac could have been displaced from the exact RW centre-line, potentially placing it closer to [or further away from] the Merlin.

The TALKDOWN controller states that the Merlin appeared within the confines of D126 as the Alpha Jet was approaching the 3½nm point on the SRA with more than 1.5nm lateral separation. It is more likely the Merlin was around 2nm NE of RW23 threshold. TALKDOWN states that they provided TI to the Alpha Jet approaching the 3½nm point; however, this is not the case and TALKDOWN is referring to the TI that they provided later at 1256:22, "*Traffic right 1 o'clock half mile crossing right left indicating below on the range".* It is reasonable to suggest, given the timing of the 3nm range check given by TALKDOWN [at 1256:06, *"3 miles 9 hundred feet approaching minimum descent height"*, followed by the *"at minimum descent height"* call at 1256:18 and the 2nm call at 1256:36] that the passing this TI occurred at about the 2½nm point, which accords with the Alpha Jet pilot's report.

This inability to accurately recall timelines whilst accurately recalling events is a typical HF issue and is not a concern. However, TALKDOWN goes on to state that 'as the SRA continued the ac within D126 moved closer to the southern edge and indicated briefly outside.'

The DE SPTA Standing Orders for Training Part 4 Management of Salisbury Plain Airspace state that the low level routes within EGD126 pass well to the N of Bulford Camp and are to be followed.

The Alpha Jet pilot states that having received the TI he initially saw nothing but 5 seconds later he 'searched again and saw a Merlin ac in what appeared to be a climbing hard left turn just behind the right wing'. This would have been co-incident with the warning from TWR, re-broadcast by TALKDOWN at 1256:32, '*caution rotary in the undershoot short final, just short of Beacon Hill'*. Whilst it is impossible to determine the exact location of the CPA, given that the position accords with the TI passed by TALKDOWN and the report of the Alpha Jet on the timing of the TI, it is reasonable to suggest that the CPA was at about 2½nm Final to RW23.

Notwithstanding that the Merlin appears to have been off the low-flying route and that the Alpha Jet crew sighted the Merlin late, the timeliness of the TI passed to the Alpha Jet by TALKDOWN requires examination. Given the terrain in that location and the low altitude of the Merlin, there will be a degree of clutter on the SRA display and the Merlin will not have painted until relatively late. Yet it is clear from the detail in TALKDOWN's narrative that they spotted the confliction in a timely manner with around 1.5nm lateral separation. The fact that the provision of TI did not occur until around 29sec later at 1256:22, suggests that TALKDOWN deliberately delayed passing TI until the Merlin posed a definite threat as it approached the boundary of EGD126 and appeared likely to exit the range. Further investigation with Boscombe Down has shown that when utilising the PAR, TI will always be passed in accordance with JSP552; however, the coverage of the PAR within 5nm is restricted and traffic operating in the

southern segment of EGD126 rarely paints on the PAR display. The wider field of view afforded by the SRA display will have enabled TALKDOWN to observe the Merlin earlier. Furthermore, rotary ac are routinely seen operating within the southern section of D126 and it is arguably this knowledge that caused the delay between TALKDOWN identifying the Merlin and passing TI to the Alpha Jet crew, in an attempt to avoid passing nugatory TI.

SATCO Boscombe Down is reviewing local procedures pertaining to the provision of TI to ac executing instrument approaches.

UKAB Note (1): The Mil AIP at AD 2 - EGDM - 1 - 18 – Radar Procedures – includes a note for RW23 that:

'Due to underlying low-level hel routes and obstacle clearance, immediate descent from FAF to MDA [MDH] prohibited. Notional 3° GS mandatory.'

HQ JHC comments that if the Merlin's most southerly position was the stated Grid, and his flight path remained to the north of the electricity transmission line running ENE-WSW, this would not have brought it into conflict with the RW23 extended centreline until reaching a point to the E of Shipton Bellinger (where the electricity lines crosses the extended centreline). It may be the case that as a 'large' helicopter (in comparison to perhaps a Lynx), the Merlin appeared to be closer to the Alpha Jet than it actually was (800ft assessed by the Alpha Jet pilot vs 700m by the Merlin crew). The Grid position given has been assessed by HQ 1 GP BM SM as 0.6nm from the extended centreline at $2^1/_2$nm, which is slightly less than the 'offset' 700m reported by the Merlin pilot. The Alpha Jet pilot did not see the Merlin until it was aft of their 3-9 o'clock line, therefore it is puzzling that the assessed risk of collision was 'high'. However, the late visual sighting caused the Alpha Jet pilot to be concerned about the proximity of the other ac. Having spoken to the reporting Merlin pilot, he is clear that he was on an approved route which did take him close to the extended RW23 centreline, but at no time did he get closer than the Grid as stated on the report. The route from Sheep Bridge to Cross Belt skirts around the impact area for the Bulford Range (BDA) and routes aircraft close to the electricity transmission wires running ENE-WSW. If it is assessed that the Merlin was too close to the extended centreline of RW23, the route (around the Bulford impact area between Sheep Bridge and Cross Belt) should be changed and/or the aircraft should be required to be on a Boscombe Down frequency for coordination purposes. This Airprox may have been prevented by the earlier passing of TI to the Alpha Jet, despite the expectation that the Merlin would not encroach the extended RW23 centreline.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, a transcript of the relevant TALKDOWN RT frequency, a report from the air traffic controller involved and reports from the appropriate ATC and operating authorities.

It was evident from the Merlin pilot's account that he had strayed S of the established SPTA Low Level Route, whilst skirting BDA between Sheep Bridge and Cross Belt and had been in the turn to regain the route just inside the range boundary at Grid SU 2130 4400 when the Airprox occurred. The Board was briefed that the co-ordinates for the Low Level Route turning points are specified in SPTA Orders. Aircraft are required to follow, and remain within 300m of, the road around BDA joining the co-ordinates. These routes had been agreed between SPTA and Boscombe Down and were designed to allow VFR rotary-wing transits in/out of SPTA, whilst causing least disruption to aerodrome traffic and keeping helicopters away from the FAT to RW23. The HQ AAC Member, who was well-versed in air operations on SPTA, opined that the Merlin crew seem to have overshot the route somewhat, but added that it is not easy to distinguish on SPTA maps the exact track to be followed. The HQ 1Gp Advisor was of the view that the helicopter might have been further S than the Merlin pilot had reported, given the location specified in the TI passed to the Alpha Jet crew by TALKDOWN. TOWER was also clearly concerned at the appearance of the Merlin above the ridge line of Beacon Hill, hence the warning to TALKDOWN, who controller Members perceived would have issued a warning as soon as the Merlin was at the limits of D126 marked on the radar video map. The Merlin pilot reports remaining N of the electricity transmission line and that he was flying at the correct transit height of 300ft agl, some 400ft below the Alpha Jet when it was spotted on Final, which was in general accord with the Alpha Jet pilot's reported height just above the MDH. Without recorded radar data illustrating the encounter it was not feasible to be definitive about the actual geometry that obtained here and it was possible to fly outside the Danger Area boundary and still remain N of the power lines further toward Shipton Bellinger. However, the Merlin pilot's given position was consistent with the Alpha Jet pilot's account when he spotted the helicopter in the turn, just drawing aft of the starboard wing as they passed through 2½nm from touchdown 'on centre-line'. Members concurred that the Merlin as a large helicopter might have appeared closer

than it was, but the significant difference between the Alpha Jet pilot's estimate of separation at 800ft/243m and that of the Merlin pilot at 700m could not be resolved independently without radar data. However, the helicopter pilot's manoeuvre was to regain the route towards Cross Belt and not the evasive action that the Alpha Jet pilot perceived at the time. It seemed that this was an unintentional excursion from the route by the Merlin crew that had been spotted by ATC at the critical moment and the overall procedure seemed to be generally sound. Following an extensive debate the Board agreed unanimously that this Airprox had resulted because the Merlin crew flew close enough to cause the Alpha Jet crew concern.

Turning to the inherent Risk, the Alpha Jet crew had received a warning of the presence of the Merlin and had spotted it as it was turning away to the L, behind the starboard wing, away from their ac and probably at about the closest point. It was evident that the Merlin pilot intended to remain N of the electricity transmission line, at low-level, until he crossed beneath the FAT/notional 3°glidepath in the vicinity of Shipton Bellinger. This, coupled with the sighting of the Alpha Jet by the Merlin crew convinced the Board that no Risk of a collision had existed in the circumstances reported here.

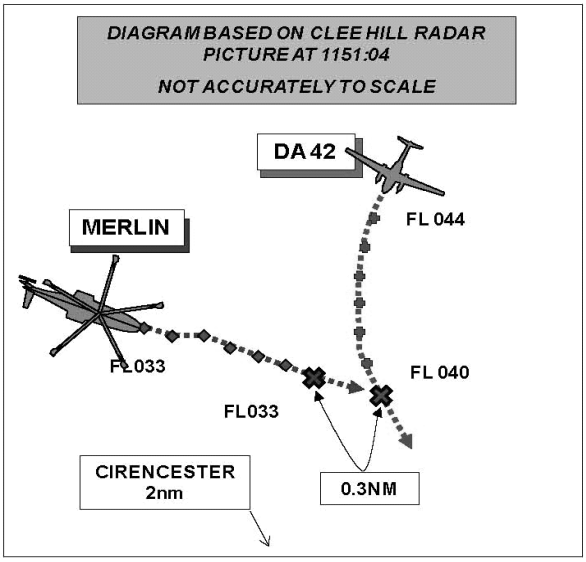
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Merlin crew flew close enough to cause the Alpha Jet crew concern.

Degree of Risk: C.

AIRPROX REPORT NO 2011019

Date/Time:	15 Mar 2011 1151Z	
Position:	5146N 00156W (2nm N Cirencester)	
Airspace:	Lon FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Merlin	DA42
Operator:	HQ JHC	Civ Comm
Alt/FL:	3000ft (QFE 1003mb)	4000ft (1013mb)
Weather:	VMC CLAC	VMC
Visibility:	10km	NR
Reported Separation:	300ft V/500m H	NR
Recorded Separation:	700ft V/0.3nm (540m) H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE MERLIN PILOT reports flying a green helicopter with all lights switched on, squawking with Mode C, but TCAS was not fitted. They were heading 110° at 120kt above cloud, in receipt of a TS from Brize Norton APP and were being given radar vectors for an ILS approach, when an ac was seen manoeuvring to the S in the vicinity of Kemble aerodrome. Shortly after, while in a high workload situation preparing for the approach, a white twin-engine, high-tail ac, believed to be a DA42, was then seen high in their 11 o'clock passing from left to right in front of them; the DA42 was assessed to be about 300ft above and separated 500m laterally and they considered it to be a late spot by the LHS pilot. They received no information from Brize APP about the ac until they pointed it out to the controller.

He assessed the risk to be high and reported the incident to Brize APP on the frequency in use.

THE DA42 PILOT reports that he was made aware of the Airprox by Brize Radar after he had returned to Lyneham. He was told that a Merlin at 3000ft reported having an Airprox with him but he informed Brize that in that area he was never lower than 4000ft [FL40] so it must have been another ac.

At the time he was cruising at 120kt in good weather, heading 145° squawking with Modes C & S, changing between ATC units. At no point did he receive a traffic warning from the ac Traffic Warning System [TCAS 1] nor did see any traffic. He was asked to call NATS, which he did and he was told that the highest the Merlin reached was 3300ft and the lowest he went was 3900ft.

HQ 1GP SM BM reports that this Airprox occurred between a Merlin HC3 inbound to Brize Norton for an ILS and in receipt of a TS from Brize APP and a DA42 operating VFR to the W of the Brize CTR.

The Merlin was identified and placed under a TS, reduced as Brize were operating SSR only. The Brize Norton SSR update rate is 8RPM, which equates to one sweep every 7.5sec.

At 1149:23, the DA42 was approximately 5.6nm E of the Merlin, descending through 6000ft in a LH turn, with the Merlin maintaining 3300ft (SSR Mode C), which it does throughout the period. At some point after 1149:26, APP commenced a handover of the control position to another controller. The handover was not recorded on the deskside recording, nor has it been possible to determine what information the incoming controller received. The first APP controller was a trainee being screened by an experienced controller, whilst the second controller was fully validated in the position.

JSP 552 110.115.1 states, '*when handing-over a control position to another controller the off-going controller is to brief his relief on the state of all surveillance and instrument aids; serviceability state of communication equipment; the traffic situation and any other relevant information*'.

At 1149:55 the DA42 rolled out of the left turn tracking W and then re-commenced the left turn at 1150:04, bringing it into confliction with the Merlin.

At 1150:55 it is clear that the handover of control position was complete since the voice recording showed a different voice as APP was liaising with TWR. It has not been possible to determine for how long this controller had assumed responsibility for the control position. At that point, the DA42 was 0.5nm E of the Merlin [at 3300ft] indicating 4100ft. The CPA occurred 1151:04 as the DA42 passed through the Merlin's 12 o'clock at 0.3nm and indicating 700ft above.

At no stage did APP pass TI to the Merlin on the DA42. The Supervisor stated that APP's workload was Med to Low and the Unit's workload High to Med; that said, in the lead-up to the incident, the trainee APP controller was involved in liaison with several agencies and would have been monitoring DIR's busy radar training cct in order to sequence their own traffic.

Notwithstanding the 'see and avoid' responsibilities of both pilots when operating in Class G airspace, while in receipt of a TS the Merlin should have been passed TI on the DA42. Even with the slower update rate of the SSR compared with the primary radar, the DA42 was in confliction for 51sec prior to the CPA descending to 4000ft and was 'there to be seen' by APP. From the subsequent actions of the second APP controller it is clear that he accepted the control position with the Merlin in confliction and the lack of action by both APP controllers suggests that the situation was not questioned.

Although this was primarily a sighting issue, the lack of TI from APP to the Merlin crew, caused by poor handover procedures between the APP controllers, was probably a contributory factor.

SATCO Brize Norton has reviewed the console position handover procedures at the Unit; he is content that this was an isolated incident and that controllers routinely operate in accordance with JSP 552 110.115.1.

HQ JHC comments that it is recognised that TI should have been passed to the Merlin pilot, but it remains the pilot's responsibility to 'see and avoid' whilst in receipt of a TS. In this case, the pilot considered it a 'late spot' and did not take avoiding action but assessed the risk of collision to be high.

While probably not a contributory factor in this case, it is noted that the reporting pilot stated that he was receiving a TS, whilst HQ 1GP BM SM stated that he was being provided a reduced TS due to Brize operating SSR only. It is assumed that both parties understood what service was being provided. However, when a pilot accepts a 'reduced TS, SSR only', it is assumed that he understands the implication that he will only receive TI on aircraft fitted with a serviceable transponder that is switched on. To reiterate this important difference, JHC HQ will publish a reminder to aircrew, highlighting what the term 'SSR only' actually means.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

As noted above, the HQ JHC Member informed the Board that there was a perception in the HQ that some pilots do not fully understand the significance of 'SSR Only' when applied to a TS and accordingly they had commenced an education programme; she suggested that this lack of understanding might not be confined to helicopter pilots.

Members noted that the Merlin had right of way, but it was suggested that since it was well below the DA42, its pilot (as inferred in his report) may not have considered there to be any conflict; in any case he was not aware of the incident and received no TCAS warnings. This incident was another case where the 'see and avoid' principle had not worked as the pilot with the onus to avoid did not see the opposing ac.

Members were unanimous in their opinion that, had TI been passed to the Merlin crew about the DA42, the crew would not have considered the incident to be an Airprox, even allowing for the DA42 being between frequencies and not receiving any warning about the former. That being the case, due to the significant separation extant, Members agreed that there had been no risk of collision. Members also agreed that, since the Merlin crew were operating under a TS, they should have been warned about the DA42.

The Board noted the HQ 1 GP BM SM report and the explanation for the TI not being passed by Brize ATC during the handover of the APP position and accepted that this had been a 'one off' occurrence caused by a misunderstanding, albeit one that should have been evident had the handover procedures stipulated in JSP552 been fully complied with.

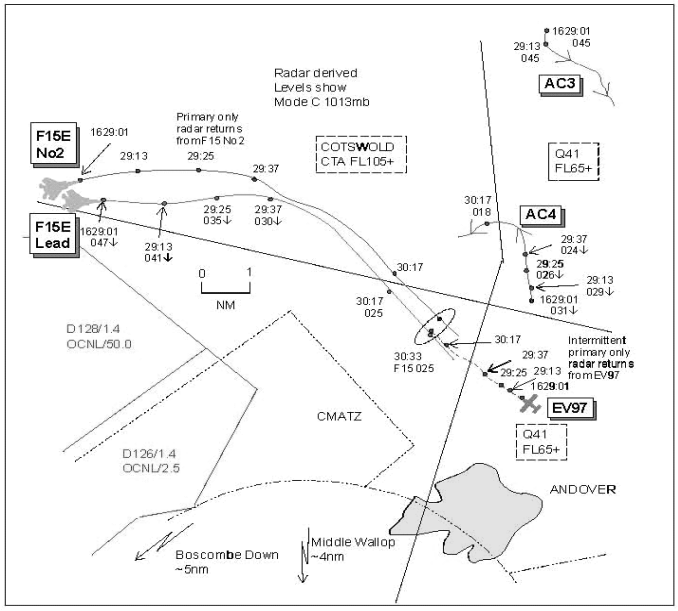
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: In the absence of TI, the Merlin crew was concerned by the proximity of the DA42.

Degree of Risk: C.

AIRPROX REPORT NO 2011020

Date/Time:	14 Mar 2011 1630Z	
Position:	5117N 00130W (4nm N Andover)	
Airspace:	London FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Evektor EV97 Eurostar	F15Ex2
Operator:	Civ Pte	Foreign Mil
Alt/FL:	2000ft (QNH 1016mb)	NR (QNH)
Weather:	VMC HZBC	VMC HAZE
Visibility:	10km	8km
Reported Separation:	50ft V/25m H	50-100ft V /300m H
Recorded Separation:	0·1nm/0·3nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE EVEKTOR EV97 EUROSTAR PILOT reports enroute from Goodwood to Clench Common VFR and listening out on Safety Common frequency 135·475MHz; no transponder was fitted. The visibility was 10km flying 1000ft below cloud in VMC and the ac was coloured silver/blue; no lighting was fitted. Heading 310° at 85kt and 2000ft QNH 1016mb he was surprised to see 2 small jet fighters 1nm ahead on a reciprocal course heading towards him before they passed either side of and above his ac, estimating 50ft vertical separation and 25m horizontal. At the time he felt that maintaining his heading was the best course of action. He did not feel he was in danger at the time but once the ac had passed he felt very shocked indeed. He assessed the risk as medium.

THE F15E LEAD PILOT reports, 5 weeks post incident, enroute to Boscombe Down for a Practice Diversion and under a TS from Boscombe LARS on 256·5MHz, squawking an assigned code with Mode C. The visibility was 8km in haze in VMC and the ac were coloured dark grey with anti-collision, nav and strobe lights switched on. They were flying clockwise around the SPTA in level flight when ATC gave them a traffic call on a light ac flying in the opposite direction closing within 5nm. Heading 170° at 300kt he initiated full radar track (~6nm) and IR pod track (~4nm) on the traffic and gained visual contact no later than 2nm away. His wingman, previously on the E flank manoeuvred W on to his opposite side so as to avoid the traffic, a low wing single engine ac coloured white, which passed 300m down their LHS about 50-100ft above. He did not perceive a conflict at the time, acknowledging the traffic and informing Boscombe that the formation was visual with the traffic. Limited manoeuvring room was available owing to their close proximity of the EGD124/125/126 complex and he had elected to maintain the Boscombe assigned altitude. He did not report any danger and no further comments were made to/from Boscombe ATC regarding the matter and he assessed the risk as medium.

THE BOSCOMBE DOWN LARS CONTROLLER reports he was working a pair of F15s from the Swindon Corridor, N of SPTA and then through the MATZ NE to SW. They descended to overfly Boscombe Down before he handed them over to Yeovilton. No mention of an Airprox was made.

HQ 1GP BM SM reports that the Airprox occurred between an EV97 Eurostar operating VFR and a pair of F15E Strike Eagles on a NAVEX towards Boscombe Down and Yeovilton, in receipt of an ATS from Boscombe Zone. Whilst the F15 pilot stated in Part 1 of his Airprox report that he was in receipt of a DS, in the narrative he stated that he was in receipt of a TS which is borne out by the tape transcript.

[UKAB Note (1): The F15 flight contacted Boscombe ZONE at 1625:29 approximately 7nm SSW of Lyneham tracking 220°, squawking Boscombe code 2651 and levelling at FL100. ZONE confirmed the flight was identified

under a TS and then requested their intentions. It was established that the flight wanted to turn onto 090° to remain N of SPTA and then route clockwise around SPTA to pass O/H Boscombe Down towards Yeovilton. One minute later the F15 flight requested descent to the lowest level available and was cleared to FL50 initially before, at 1627:59, being cleared 2000ft QFE 999mb.]

At 1629:11 ZONE passed TI to the F15 flight on un-related traffic, AC3, to the ENE, *"(F15 c/s) traffic left eleven o'clock, six miles, crossing left right, indicating FL45"* (radar replay shows approximately 9nm lateral separation). ZONE then issued the F15 flight with a R turn onto 110° before at 1629:26, ZONE passed further TI on other un-related traffic, AC4, *"(F15 c/s) traffic east 3 miles, tracking north, indicating 2500ft"* (radar replay shows approximately 5nm lateral separation). Both of these pieces of TI are acknowledged by the F15s and at 1629:38 they declare, *"(F15 c/s) we got radar traffic."* However, at this point what is believed to be the EV97 is approximately 6nm SE of the F15s manoeuvring. No SSR return is observed throughout the radar replay from the EV97. Moreover, ZONE does not provide TI that can be correlated to the position of the EV97 relative to the F15 flight.

Boscombe reported that the PSR and SSR were fully serviceable at the time of the occurrence.

ZONE then instructs the F15 flight to turn R onto heading 140°, which was not acknowledged. Over 30sec later at 1630:19 the F15s reported, *"140 (F15 c/s) is visual with radar traffic confirm you want us at 140*" which ZONE acknowledges. The F15 pilot's written report stated that they had radar lock at around 6nm, targeting pod acquisition at around 4nm and visual at around 2nm. Given the content of the F15 crew's report, that the radar contact relating to the second piece of TI was approximately 2nm NE of the F15s and that the EV97 is approximately 1·7nm in their 12 o'clock, it is clear that the F15s had locked onto and then sighted the EV97.

Although ZONE did not provide TI to the F15s on the EV97, the F15 crew's interpretation of TI on AC4 allowed them to obtain sensor and then visual acquisition of the EV97 and to avoid it by a margin that they deemed appropriate.

From an ATM perspective, the issue to be addressed is the lack of TI on the EV97 to the F15s. Given that ZONE passed TI on the other traffic that was relevant to the F15s an HF related cognitive failure or a deliberate decision not to pass TI can be discounted; therefore, it appears reasonable to argue that the EV97 either did not paint on the surveillance display due to the ac's size, construction or presenting aspect to the radar aerial, or was obscured by radar clutter. However, it has been impossible to determine exactly what occurred.

UKAB Note (2): The diagram was created using a combination of the Clee Hill, Heathrow 10cm and Pease Pottage radars. The EV97 is seen as an intermittent primary only radar return but exhibiting severe track jitter throughout and F15E No2 is showing as a primary only return displaced echelon port to the Lead ac. The radar recording shows the Airprox occurs at 1630:33, the EV97 appearing to pass between the 2xF15Es, the closest being F15E Lead on its LHS by 0·1nm with F15E No2 0·3nm on its R.

HQ 3AF comments that it appears that in complying with Boscombe ZONE's instructions, particularly the R turn to 140°, the formation was brought into confliction with the EV97 which, it is reasonably suggested above, was probably not painting on ZONE's display. Fortunately, the formation lead obtained radar contact on the EV97 in time to see and avoid.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and from the appropriate ATC and operating authorities.

Members were mindful of the disparate descriptions of the event from the reports submitted by both crews. The EV97 pilot had seen the F15Es pass either side of his ac whilst the lead F15E crew had reported that both of their ac had passed the ac they sighted on their L. The radar recording does not show the F15Es changing formation positions, the No2 always remaining in echelon port with the lead ac, and the EV97 probably passing between the formation. This geometry was thought to be the most likely, even taking into account the severe track jitter exhibited by the primary only return that is believed to be the EV97. The F15E pilot's report was submitted some 5 weeks after the Airprox which could have clouded his recollections of the scenario to some degree. Some

Members questioned whether the ac that the F15E flight had acquired on radar and IR pod and then visually might have been AC4 as it was TI on this ac that preceded the F15E crew's call of 'radar contact'. The Board also noted that the range reported by the F15E crews for commencing radar tracking (6nm) was consistent with both the EV97 and AC4. However, AC4 had passed nearly 2nm away and 800ft below the F15E pair; both the F15E crew and EV97 pilot reported a much closer encounter. Pilot Members wondered whether the F15E's onboard equipment is capable of acquiring a very small ac of the EV97's size flying at 85kt head-on and presenting a very small target aspect. A military pilot Member opined that the F15E ac had a modern on-board radar system capable of detecting and tracking targets over a broad speed range and a large area around the ac; he believed the combination of radar and IR sensors had enabled the F15 crews to detect and then visually acquire the EV97. Members agreed that it would have been prudent for the EV97 pilot to have called Boscombe Down for a service as this would have given ZONE the 'heads-up' of the ac's presence; in the event ZONE did not see the EV97 on radar as he had vectored the F15Es towards the Boscombe O/H but unfortunately had placed the ac in conflict. One Member thought that perhaps the F15E lead pilot queried the heading assigned because he was concerned that he was heading towards the EV97 which he had just seen ahead. In his assessment of the 'miss distance', the EV97 pilot believed that the F15Es were small jet ac, which would create the impression that the ac were a lot closer than they actually were. Notwithstanding his underestimation of the 'miss distance', it was the proximity of the F15Es which caused the EV97 pilot concern and was the cause of the Airprox.

Turning to risk, one pilot Member expressed concern that, from the information available, he was not convinced that the F15E crews had seen the EV97 and that the ac had passed uncomfortably close with no action being taken by either crew such that a definite risk of collision had existed. This view was not shared by the other Members who believed that, on the balance of probability, the F15E crews had seen the EV97 in good time and were content with the separation but may have misjudged it due to the small size of the ac. Although the EV97 pilot had limited options for avoiding the 2 F15Es, he had elected to continue level and on track and watched them pass either side. These sightings by both crews were enough to persuade the Board that any risk of collision had been effectively removed.

PART C: ASSESSMENT OF CAUSE AND RISK

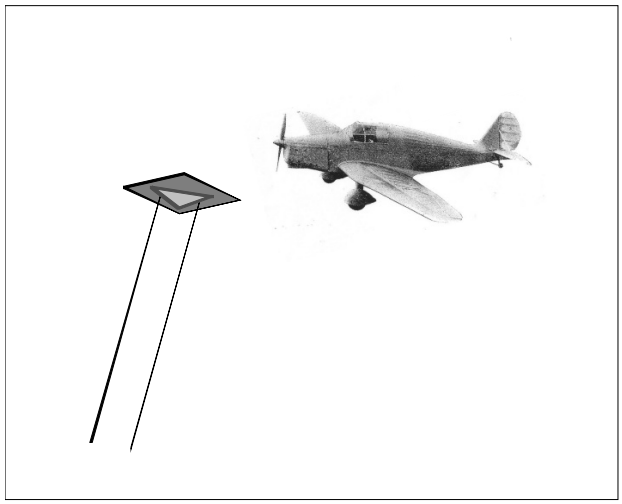
Cause: The F15E crews flew close enough to cause the EV97 pilot concern.

Degree of Risk: C.

AIRPROX REPORT No 2011021

AIRPROX REPORT NO 2011021

Date/Time:	27 Mar 2011 1130Z (Sunday)	
Position:	5206N 00050W (3nm N Milton Keynes)	
Airspace:	Lon FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Tipsy Belfair	Kite
Operator:	Civ Pte	NK
Alt/FL:	1450ft (QNH 1014mb)	NK
Weather:	VMC HAZE	NK
Visibility:	6km	NK
Reported Separation:	50ft V/10m H	NK
Recorded Separation:	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE TIPSY BELFAIR PILOT reports that he was en-route to Turweston on a pleasure flight, heading 250° in the cruise at 95kt in hazy weather and he kept his alt low to aid forward visibility. He was navigating by map, stop watch and compass without GPS or other nav aids.

Just after crossing the M1, he saw what he initially thought to be a large hawk slightly above them and to their left. He was surprised to see a bird so high in the reduced visibility especially as the air was quite smooth with only about an 8kt breeze and no significant thermals to carry a bird to that height. Many years ago when he was learning to fly, he was taught that a hawk can out-manoeuvre any aircraft so when encountering one it is unwise to manoeuvre your aircraft as this will confuse the bird and may inadvertently increase the risk of collision. As the 'hawk' passed by about 30ft off his port side and 50ft above, he noticed that it was not a bird, but a kite with strings visible below it; it was much larger than a hawk and delta-shaped (like small flex-wing microlight). It was static and did not change position as he would have expected a bird to do. He was shocked and when clear he turned but could not re-acquire it as he was looking into hazy sun and did not wish to increase the risk of hitting either it or the string by circling.

He could not identify any obvious person or site on the ground, which was open farm land and small villages. He thought that it could have been free flying, blown in wind, and stabilised by strings as he would not expect a tethered kite to fly so high.

Friends in a preceding aircraft flying slightly lower than him, on a similar track about 3min ahead, said they thought they had seen a large hawk flying in the same vicinity and above them and he thought that it might have been the same object.

He observed that here are increasing numbers of NOTAMed kite flying sites but they generally do not state the upper limit of the activity, which he thought might indicate that they are operating above 60m (~200ft) iaw the Rules of the Air; if that is the case he thought that the max height should be included in NOTAMs.

UKAB Note (1): The closest NOTAMed kite flying was 25nm to the W and the subject kite flyer could not be traced.

UKAB Note (2): Neither the Tipsy nor the kite showed on recorded radar.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted solely of a report from the Tipsy pilot.

Despite extensive procedural searching it was not possible to trace the kite flyer; further, it was established that the activity was not NOTAMed [although there was a NOTAM for kite activity 25nm further W].

Members agreed that the Tipsy pilot had seen the kite as early as feasible and, since he opted not to take any avoidance, they agreed that there had been no risk that the ac would have collided with the kite.

The Board was informed that the ANO restricts the height of kite flying in open FIR to 60m without CAA permission [no record of such permission being granted for a kite in this location and time]. Without doubting the pilot's report, Members expressed surprise that it was feasible to fly a kite at such a high alt.

While noting the Tipsy pilot's remarks about maintaining course when confronted by a bird of prey, the GA Member drew attention to the CAA Safety Sense Leaflet 10 which advises pilots to 'attempt to fly above birds in their flightpath' as birds normally descend away from approaching ac. Further, the DAP Advisor pointed out that, where possible, AUS will always include a top height in kite flying NOTAMs; he also advised that kites are often used to train captive birds of prey.

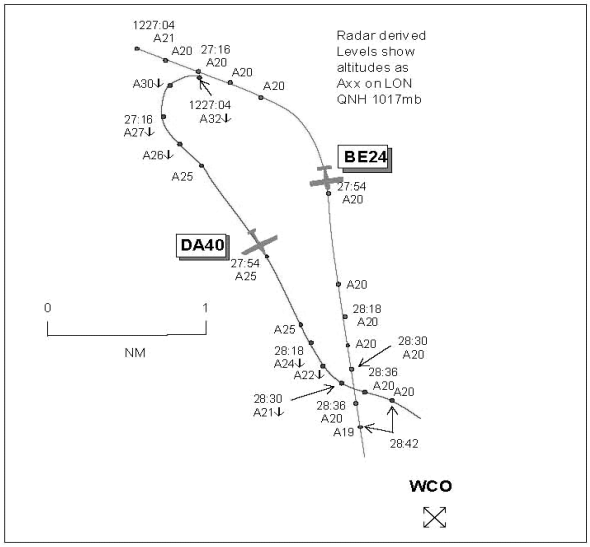
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict in Class G airspace with an untraced kite.

Degree of Risk: C.

AIRPROX REPORT NO 2011022

Date/Time:	28 Mar 2011 1229Z	
Position:	5152N 00058W (1nm NW WCO)	
Airspace:	LFIR	(Class: G)
	Reporting Ac	*Reporting Ac*
Type:	BE24	DA40
Operator:	Civ Trg	Civ Trg
Alt/FL:	2000ft	3000ft
	(QNH 1017mb)	(QNH 1017mb)
Weather:	VMC HAZE	VMC CLBC
Visibility:	4000m	7km
Reported Separation:		
	30ft V/0m H	0ft V/5m H
Recorded Separation:		
	<100ft V/Nil H	



BOTH PILOTS FILED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE BE24 PILOT reports flying a dual CPL Training Exercise from Wycombe, VFR and in receipt of a BS from Farnborough N on 132·8MHz, squawking 5034 with Mode C. The visibility was 4000m in haze and the ac was coloured white/red with anti-collision, nav and landing lights all switched on. They had been tracking inbound to WCO when 15D from CPT. When inbound on 350° QDR heading 170° at 120kt and level at 2000ft QNH 1017mb nothing was seen approaching the beacon and as they passed over it, he thought, he showed the student how they know they had station passage. They both became aware of a loud noise and saw a blue/white DA40 about 10m away before it passed above and slightly behind them, estimating vertical separation at 30ft. He pushed the elevator control fully down for avoiding action, his student stated seeing the other ac's tyre creep marks. He made

an Airprox call to Farnborough N and soon after they heard the DA40 flight also report an Airprox. He assessed the risk as high, believing that both ac had been in the other's blind spot.

THE DA40 PILOT reports carrying out a dual training GH sortie from Elstree, VFR and in receipt of a BS from Farnborough N on 132·8MHz, squawking 5034, he thought [actually 5036], with Modes S and C. The visibility was 7km flying 1000ft below cloud in VMC and the ac was coloured white with nav and strobe lights switched on. At the time of the Airprox they were about 5nm N of WCO NDB, heading W to E at 115kt and level at 3000ft, he thought, QNH 1017mb. The other ac, a BE24, was first seen in their 7 o'clock as it passed 5m behind them on a S'ly heading at the same level and they maintained their heading and kept visual with it until no further risk was posed. The BE24 pilot first reported the Airprox whilst airborne followed by themselves. He assessed the risk of collision as high.

THE FARNBOROUGH LARS CONTROLLER reports working as the LARS N and E controller bandboxed under moderate traffic conditions that did not require the frequencies to be split. At approx 1229Z the BE24 pilot reported on frequency that he wished to report an Airprox on a DA40 ac in his close vicinity. The controller acknowledged the request, noted that the flight was receiving a BS and asked the pilot to make the report on landing. The BE24 then returned to Wycombe Air Park. Shortly after the DA40 pilot, under a BS, informed him that he would also be filing an Airprox which the controller acknowledged. At all times both flights were under a BS with the relevant QNH.

ATSI reports that the Airprox occurred at 1228:36 (UTC), in Class G airspace in the vicinity of the WCO NDB.

The Diamond Star DA40 was operating on a local VFR flight from Elstree, conducting a GH exercise and was in receipt of a BS from Farnborough LARS.

The Beech Musketeer (BE24) was operating on a local VFR flight from Wycombe Air Park, conducting a CPL training exercise and in receipt of a BS from Farnborough LARS.

The Farnborough Radar controller was operating LARS N and E in a combined (bandboxed) mode. Traffic levels were reported as moderate with a number of other flights on frequency.

The weather at Farnborough and Luton were provided:

METAR EGLF 281220Z VRB04KT 7000 BKN043 14/05 Q1017=

METAR EGGW 281220Z VRB03KT 8000 BKN032 12/04 Q1016=

The BE24 flight was already on frequency and in receipt of a BS from Farnborough, with an allocated squawk 5034 when, at 1207:32, the DA40 flight made an initial call to Farnborough, but satisfactory 2-way communication was not established until 1208:48. The DA40 pilot reported, *"(DA40 c/s) we are a D A forty just out of Elstree er just passing overhead Bovingdon now two thousand three hundred feet on a Q N H one zero one five two P O B intentions er just gonna do some er general handling in the Westcott region between er er three thousand feet er to er one thousand feet request a Basic Service."* The Farnborough controller agreed a BS, allocated a squawk of 5036 and passed the London QNH 1017mb. This was acknowledged correctly by the DA40 pilot. (It was noted that the DA40 pilot's written report erroneously indicated the squawk as 5034.) At 1214:10 the DA40 pilot reported climbing to 3000ft.

At 1227:04 the radar recording shows 3 ac operating in close proximity in the vicinity of Westcott, with the SSR labels overlapping and garbling. An expanded radar picture showed the BE24 indicating altitude 2100ft on a SE'ly track. The DA40 was indicating altitude 3200ft in a L turn, passing through a W'ly track. The third ac was tracking N indicating altitude 3000ft.

At 1227:16 the radar recording shows both ac established on a SE'ly track with the DA40 positioned 0·4nm to the SW of the BE24. The BE24 was indicating altitude 2000ft and the DA40 was indicating altitude 2700ft in a descent.

About 1min later at 1228:18 the radar recording shows the BE24 had turned R onto a S'ly track, indicating altitude 2000ft and converging with the DA40, which was tracking SE and indicating altitude 2400ft in the descent. The DA40 was ahead and in the BE24's 2 o'clock position at a range of 0·3nm.

By 1228:30 the radar recording shows the 2 ac converging on steady tracks with the BE24 indicating altitude 2000ft and the DA40 indicating altitude 2100ft. The DA40 was slightly ahead and in the BE24 aircraft's 2 o'clock position at a range of 0·1nm.

[UKAB Note (1): The CPA occurs before the next sweep which at 1228:36 shows the ac having crossed, the BE24 at 2000ft 0·1nm SW of the DA40 which is indicating 2000ft. It is estimated that the ac crossed with no horizontal separation and <100ft vertical separation.]

At 1228:42, the radar recording shows that the 2 ac tracks diverging, with the DA40 indicating altitude 1900ft and the BE24 indicating altitude 2000ft.

At 1229:02, the BE24 pilot called Farnborough and reported the Airprox*, "Farnborough Radar er erm just in the Westcott area this time just er like to file an Airprox against er er D A Forty.....over flew us by about thirty feet erm from the west to the east we're flying erm north to south.*" The controller acknowledged the call and requested the pilot file the report on the ground at his destination. The pilot agreed and then reported leaving the frequency and squawking 7000.

Following these RT exchanges at 1229:52, the DA40 pilot also reported the Airprox, *"..listened to the last transmission yeah like to also er file an Airprox er just er passed us from behind by about thirty feet we're now heading er northbound and er two thousand feet Q N H one zero one seven.*"

The DA40 and BE24 flights were both in receipt of a BS from Farnborough LARS. The Farnborough radar controller's workload was considered to be moderate. The radar labels of the 3 ac manoeuvring in the WCO area were shown to be overlapping and garbling. CAP 774, UK Flight Information Services, Chapter 2, Paragraph 1, states:

'A Basic Service is an ATS provided for the purpose of giving advice and information useful for the safe and efficient conduct of flights. This may include weather information, changes of serviceability of facilities, conditions at aerodromes, general airspace activity information, and any other information likely to affect safety. The avoidance of other traffic is solely the pilot's responsibility.'

Paragraph 5, states:

'Pilots should not expect any form of traffic information from a controller/FISO, as there is no such obligation placed on the controller/FISO under a Basic Service outside an Aerodrome Traffic Zone (ATZ), and the pilot remains responsible for collision avoidance at all times. However, on initial contact the controller/FISO may provide traffic information in general terms to assist with the pilot's situational awareness. This will not normally be updated by the controller/FISO unless the situation has changed markedly, or the pilot requests an update. A controller with access to surveillance-derived information shall avoid the routine provision of traffic information on specific aircraft, and a pilot who considers that he requires such a regular flow of specific traffic information shall request a Traffic Service. However, if a controller/ FISO considers that a definite risk of collision exists, a warning may be issued to the pilot.'

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC authorities.

It was clear to Members that this had been a very serious Airprox. Undoubtedly the visibility had played a part in the proceedings; however, within this Class G airspace, the pilots were responsible for maintaining their own separation from each other through see and avoid. It was not clear whether the BE24 student was under an IF Hood with the instructor responsible for the lookout as well as monitoring the student's actions whilst tracking towards the WCO NDB on instruments, or whether the crew were sharing the lookout responsibility. However, they were alerted to the DA40's presence only when it was heard before seeing it as it passed 30ft above and then behind, effectively a non-sighting and a part cause of the Airprox. The DA40 instructor also only saw the BE24 as it passed 5m behind in his 7 o'clock at the same level, another effective non-sighting and other part cause. The radar recording showed that there had been ample opportunity for both pilots to see each other's ac prior to the CPA but this had not occurred. Initially both ac were head-on about 1.5min before CPA with the DA40 1200ft

above and turning L to the SE. The DA40 was always ahead of, and displaced to the SW of, the BE24 as it converged from its R descending. Although this geometry made it more difficult for the DA40 pilot, the BE24 was there to be seen even before he turned L just before the Airprox. Members considered that, if it was available, a TS would have been a more appropriate level of service, to assist the pilots in building better SA of the surrounding traffic. Members noted that Farnborough controller did not issue a traffic warning. The controller was working 2 sectors bandboxed with moderate traffic levels so it may have been that the controller did not see the impending confliction while scanning a large area of responsibility or because of the overlapping labels in the busy WCO area.

Turning to the risk, with effectively non-sightings by both pilots and the ac passing by luck - the avoiding action taken by the BE24 pilot was considered to have been too late to affect the outcome - the Board were left in no doubt that there had been an actual risk of collision during this Airprox.

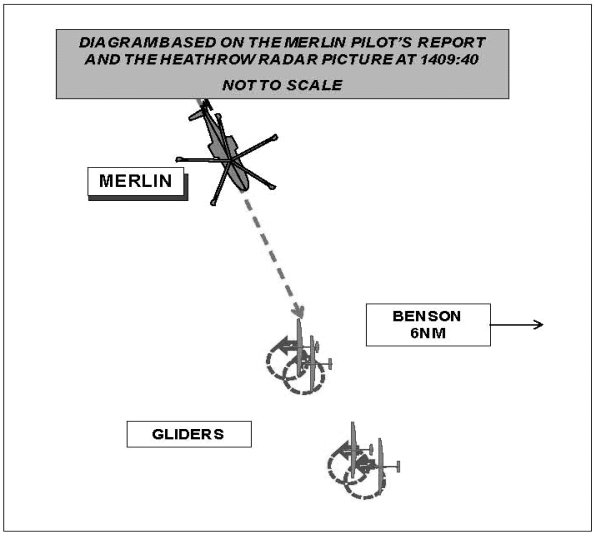
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Effectively, non-sightings by the pilots of both ac.

Degree of Risk: A.

AIRPROX REPORT NO 2011023

Date/Time:	28 Mar 2011 1410Z	
Position:	5136N 00114W	(1nm S Didcot)
Airspace:	Oxford AIAA	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Merlin	Untraced Glider
Operator:	HQ JHC	NK
Alt/FL:	1900ft (QFE 1009mb)	NK
Weather:	VMC CLBC	NK
Visibility:	8km	NK
Reported Separation:	0ft V/50m H	NK
Recorded Separation:	NK	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE MERLIN PILOT reports flying a green ac with all lights switched on, recovering to Benson in slightly hazy conditions, but flying out of sun, in receipt of a TS from Benson APP. While under radar vectors, heading 170° at 120kt, about 1nm S of Didcot the crew identified a glider due W, slightly above them about 400m away; they immediately informed Benson APP which was operating with SSR only. Thirty sec after first identifying this glider another was seen passing down the LH side, descending through their height (1900ft) in a LH turn to the N, within about 50m of their ac; the glider was seen to depart to the N. They did not take any avoiding action as the glider had descended through their height and was turning away from them.

The HP reported an Airprox to Benson on the frequency in use at approx 1410Z and the sortie continued with the ac recovering to Benson without further incident. He assessed the risk as being high.

Despite extensive procedural tracing, the glider pilot could not be located.

UKAB Note (1): The Benson APP controller provided a report but, for brevity, it has not been included as it is essentially the same as the HQ 1GP BM SM report below.

HQ 1GP BM SM reports that this Airprox occurred between a Merlin HC3 in receipt of a TS from Benson APP, reduced due to operating SSR only and an untraced glider.

Since Benson was operating SSR-only due to planned maintenance on the Watchman radar, it was not possible for ATC to have acted as a safety barrier to this occurrence, given that the glider was non-transponding. That said, the reduction of service to SSR-only was not passed until after the Merlin pilot had informed APP of his sighting the first glider mentioned in his report; 21sec after this that the pilot declares the Airprox with the second glider.

The operation of non-transponding ac combined with operating SSR-only leaves one final safety barrier; namely 'see and avoid'. However, this final barrier is prejudiced when the visual acquisition task is made more difficult by reduced visibility and the small size and white colour scheme of the target ac.

UKAB Note (2): The recording of the Heathrow 10cm radar shows the Merlin throughout tracking 170°, squawking with Modes C and elementary Mode S, initially at an alt of 3000ft. The ac is tracking towards two intermittent primary only contacts manoeuvring in its 12-1230 position. At 1409:40 the helicopter commences a slow descent just as both the primary contact disappear from radar in its 1230 position at about 1.5 and 2nm respectively (there are another 2 gliders at a distance of 4nm in the 12 o'clock). The Merlin passed through the approximate position that the closest glider last painted at 1409:59 at an alt of 2600ft. The primary only contact reappears at 1nm W of the Merlin's track at 1410:37. There are other gliders in the area.

HQ JHC comments that It is not possible to ascertain when, and indeed if, the conflicting glider saw the Merlin, but in either case, a reported separation of 50m is clearly very concerning, whether verified by radar recording or not.

From the HQ 1GP BM SM comment, it appears that the Merlin was unaware that the TS being provided was reduced until after he had reported the sighting of a gilder in reasonably close proximity. The absence of primary radar was probably a factor in this incident. It is also clear that the final safety barrier - as identified by HQ1GP BM SM – was see and avoid but in the event, the Merlin saw the glider too late to take any avoiding action.

HQ JHC considers that a mid-air collision with a glider or light coloured small ac is a very significant risk- this was the second Airprox in that area in the space of a month. This is a particularly problematic area in terms of gliding activity and Benson instrument traffic - which is subject to both geographical and airspace constraints and the necessity to maintain aircrew currency and competency in instrument flying and approaches. These issues were brought sharply into focus last year, during NOTAMed gliding competitions and/or when the radar service being provided by Benson was derived from SSR-only information since the Watchman radar had a long-term unserviceability.

This Airprox indicates that the local gliding community may not be fully cognisant of the flying operations at RAF Benson – it could be considered unwise for a glider pilot to choose to operate in that particular piece of airspace if the pilot understood that a Puma or Merlin ac was very likely to be operating there, whilst knowing that the glider itself is difficult to see. It appears that the risk acceptance differs between the gliding community and other aviators.

It is widely recognised that the small size and white colour scheme of gliders (and other small light ac) makes visual acquisition extremely difficult, whilst glider construction also means that they are difficult to see on radar. In the short term, JHC ac operating in the RAF Benson area are encouraged to try to obtain a primary radar-derived TS when this is practical. In the medium term, JHC HQ supports the initiative by RAF Benson that this specific problematic airspace be mandated as 'transponder-equipped ac only' which would enable all ac to be seen on both primary and secondary radar whether they are radar-reflective or not.

In addition to efforts to improve the airspace issue, JHC HQ requests that the UK Airprox Board recommends the fitting of transponders to all gliders and similarly small, light coloured general aviation ac, in order to reduce both the frequency of Airproxes and the likelihood of an actual collision (there have been 9 assessed Airproxes involving gliders and military RW ac in the last 3 years). Further, JHC HQ requests that the UK Airprox Board undertake to educate the glider community on the risk of mid-air collision in the vicinity of military aerodromes.

AIRPROX REPORT No 2011023

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the Merlin pilot, transcripts of the relevant RT frequencies, radar recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

[Some of the discussion in this incident also applies to 2011028.]

The HQ JHC Member reported that it was concerning that the Merlin pilot was not informed that they were operating under a reduced TS, due to the primary radar being on maintenance, until after he had reported the presence of the first glider to APP; had he known, he would have been aware that information on gliders would not have been forthcoming from ATC.

A military Advisor, familiar with both fast-jet and gliding operations opined that there was a widespread lack of understanding of gliding operations among both military aircrew and ATC staff; he urged closer co-operation to foster mutual understanding. He went on to say that the MoD is trying to provide liaison staff at major gliding competitions so that up-to-the-minute information about movements/routes can be relayed to military airspace users. Noting the HQ JHC comment regarding the high military traffic levels around Didcot, a gliding Member stated that it was *'the busiest area in Britain'* for gliding traffic due to precisely the same airspace constraints that funnel both N/S traffic and E/W traffic through the area; the power station is a particular focus as it often provided good thermals.

There was genuine concern from both military and gliding Members that despite a previous mid-air-collision in the area, little had been done to integrate or separate the traffic (on the day of the mid-air collision there had been in excess of 100 gliders transiting the area). Unlike other areas where there were more obvious solutions: not all traffic in the area is radio equipped, but for ac that are fitted with radios and for those pilots with RT licences, Benson is not necessarily the obvious station to call (Farnborough/Brize Norton being the LARS providers); many gliders from several often distant airfields N, S, E and W of the area transit through the area and, finally but importantly, Benson instrument patterns are also constrained by the airspace and RW direction.

A military controller Member reminded the Board that, notwithstanding that the Watchman primary radar was unavailable on this occasion, gliders are very difficult for controllers to 'see' and react to as they are often 'invisible' on ATC radars; he suggested that more effort be put into inexpensive technological solutions. A gliding Member suggested that such a solution already exists, namely FLARM, which is widely used by gliders. In his opinion FLARM was a more practical solution for gliders' traffic awareness and collision avoidance than Modes C and S transponders. It was agreed, however, that neither the CAA nor the MoD are likely to pursue this course unless it is more widely acceptable and used universally, preferring the (currently) ICAO agreed Mode C/S solution.

Notwithstanding the difficulty of seeing gliders on primary radar, the Board also queried the necessity for conducting maintenance on the primary radar during hours of the day when gliding activity was likely to occur. Members agreed that maintenance should schedule for hours when there were likely to be the fewest number of aircraft without transponders airborne.

The DAP Advisor informed the Meeting that there is an established procedure for proposing and agreeing airspace changes and, as far as he was aware, no application had been made for a TMZ (Transponder Mandatory Zone) in the Benson area; he went on to say that should HQ JHC make such an application it would be handled in the normal manner with all interested parties being consulted. That being the case, the Board noted the HQ JHC recommendation but could neither support nor reject it and advised an application through the correct channels.

Regarding the proposed recommendation regarding the mandatory fitment of transponders to gliders and GA aircraft, the Board noted that in this incident, since Benson were operating 'SSR only', had the glider been squawking, Benson would have been able to pass TI to the Merlin crew allowing them to take avoidance. However, it was pointed out that the Board had made a similar recommendation following an Airprox between a glider and a Tornado (Airprox 2005 186): 'The CAA should continue to promote with renewed urgency the production of a lightweight transponder and, when available, consider mandating its carriage and use in gliders'. This recommendation was agreed but the consultation process did not result in legislation but increased the areas where they are mandatory, albeit with only small changes in Class G airspace. Although some Members were in agreement with the JHC recommendation, others were not and, since this aspect had been recently reviewed by

the CAA, the Board could not support the recommendation. [UKAB Note (3): The Board was more or less equally divided regarding mandatory use of transponders].

The JHC Member stated that, in view of their concern over the degree of risk they perceive of a mid-air-collision between one of their ac and a glider or light ac, HQ JHC is looking at all measures to mitigate this risk; they are, however, anxious that the GA/Gliding community should co-operate in ensuring that the airspace is available for safe and flexible use by all operators.

The Board was concerned that a (at least one) glider had flown so close to a large helicopter and apparently chosen not to make a report. Members agreed unanimously that it was inconceivable that the glider pilot neither saw nor heard the Merlin (it was seen to discontinue thermalling and depart to the N). A Member noted the great advances made in the reporting culture among professional aviators and opined that, on the evidence of this incident, the benefits of such a culture do not appear to have been realised by glider pilots. The Gliding Member undertook to discuss the topic with the BGA officers.

Several different causes were considered but, since there was no report from the glider pilot giving his perspective, Members were forced to conclude, somewhat unsatisfactorily, that the incident had been a conflict in Class G airspace. Regarding the degree of risk, since the Merlin pilot did not see the glider until it was too late to initiate any meaningful avoidance, and in the absence of a report from the glider pilot, it was agreed unanimously that there had been an erosion of normal safety margins.

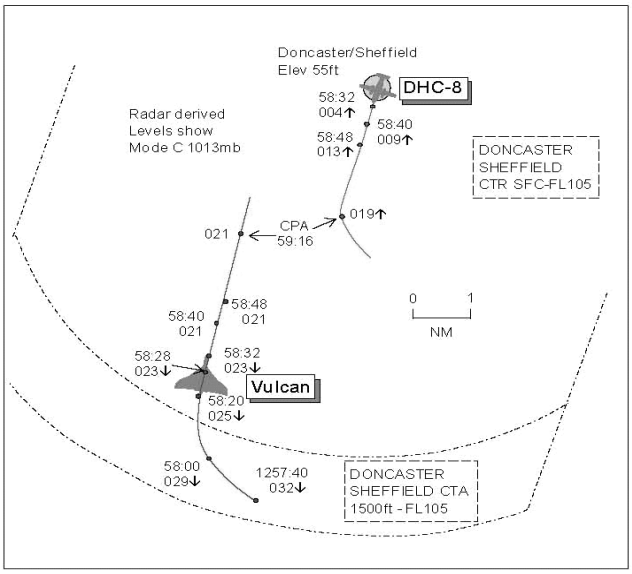
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict in Class G Airspace between the Merlin and an untraced glider.

Degree of Risk: B.

AIRPROX REPORT NO 2011024

Date/Time:	29 Mar 2011 1259Z	
Position:	5326N 00103W (3nm SSW Doncaster/Sheffield - elev 55ft)	
Airspace:	CTR	(Class: D)
	Reporting Ac	*Reported Ac*
Type:	DHC-8	Vulcan
Operator:	CAT	Civ Pte
Alt/FL:	↑2000ft (QNH 1012mb)	2000ft (QNH 1012mb)
Weather:	VMC HAZE	VMC CLBC
Visibility:	5000m	8km
Reported Separation:	NR	Not seen
Recorded Separation:	Nil V/1·9nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE DHC-8 PILOT reports on departure from Doncaster IFR and in communication with Doncaster squawking with Modes S and C. Their departure clearance from RW20 was an UPTON 1A SID squawk 7773 climbing to FL60. The departure involves making a series of R turns shortly after departure based upon ILS/DME distances from Doncaster and using/establishing on radials from GAM VOR, which is 12nm S of Doncaster. Whilst taxying for departure they heard the Vulcan crew call on the Tower frequency stating the flight was at 4000ft 23nm S of

the aerodrome requesting a visual recovery. Tower asked if the crew had called Radar, to which the crew replied, "negative" so the crew was instructed to call Radar. At the hold Tower told them to line up and as they entered the RW whilst awaiting take-off clearance they were given an amendment to their UPTON 1A departure clearance to stop climb at 5000ft QNH 1012mb, which was set and read back. After a pause Tower cleared them for take-off, gave surface wind information and then issued TI on the Vulcan S of the aerodrome joining RH downwind, he thought, for the RW20 cct. The FO asked Tower to confirm their take-off clearance which was confirmed. A normal full power, flap 5 take-off was carried out and on passing 600ft the Tower controller, with an urgent tone in his voice, instructed them to stop climb at 2000ft and to call Radar on 126·225MHz. This was read back and actioned by the PNF (Capt) changing the selected altitude to 2000ft and checking ALTSEL was still armed whilst the FO continued to hand fly correctly. On passing 1060ft, "one to go and acceleration altitude" was called followed by the FO calling, "flap zero" which was actioned by the PNF who changed frequency and called Radar as quickly as possible stating that they were climbing to 2000ft on RW heading. Heading 210° at 170kt they had not reached the first significant R turn on the SID at 1·5DME I-FNL but it was approaching very quickly. As there had been an urgent tone in the Tower controller's instruction and they knew the Vulcan was inbound from the S and the in-flight visibility was 4-6km at best, a developing uneasy feeling made him decide it was better to give their actual heading rather than the SID for speed of identification, clarity and accuracy. Radar instructed them to turn L heading 090° and maintain 2000ft without using any terminology such as 'immediately' or 'avoiding action' but there was a distinct urgent tone to his instruction. The PNF altered the heading bug and read back the instruction, the FO commenced the L turn by hand flying before engaging the AP to complete the turn which took them 160° or more away from the first track turn of the UPTON 1A and 110° off their current heading. Selection of AP also reduced the likelihood of an altitude bust during the level-off and the FO adjusted the power appropriately. The FO reported, from a quick glance to his R once he had commenced the turn, that he had seen the Vulcan pass down their RHS at the same height and close but because of the poor visibility flying into sun and the physical side profile of the ac, the actual miss distance was difficult to judge. They were then in a position to continue with their normal take-off SOP actions of setting climb power and bleeds to on/normal. This had all happened very quickly owing to their full power, flap 5, 24-Tonne take-off with a 15° pitch-up climb attitude accelerating through 170kt to 200kt+ and a ROC >2500fpm. Radar then instructed them to climb to FL60 and turn L direct to UPTON and to call Scottish Control on 133·8MHz. After establishing with Scottish they were asked to contact Doncaster Radar on Box 2, which PNF did. They were asked if they had seen the Vulcan, how close it was, had they received a TCAS alert and would they be reporting the incident. The Capt confirmed that the FO had seen the Vulcan but owing to poor visibility the distance was difficult to judge and that a report would be submitted. No TCAS alerts had been generated and he assessed the risk as medium. He went on to state that the UPTON 1A and all Doncaster SIDs were not present in the FMS database which meant the departure was flown on raw data using the heading bug, initially hand flown until normally above acceleration altitude. With a normal take-off using FMS the PF asks for the FMS NAV mode to be engaged and he monitors the flightpath which would have, on this occasion, turned the ac R in accordance with the SID towards the oncoming Vulcan. However in this case the PF was actually hands-on controls following raw data and did not follow the SID R turn automatically and was able to react instantly to the L heading 090° instruction given by Radar.

THE VULCAN PILOT reports inbound to Doncaster VFR and in receipt of a TS from Doncaster Radar on 126·55MHz, squawking 6163 with Modes S and C. The visibility was 8km flying 2000ft below cloud in VMC. They were handed over to Doncaster Radar from Wyton and were issued a discrete code before they requested a visual join. They positioned to join downwind LH for RW20 at 180kt and were alerted to a DHC-8 getting airborne and they were told to maintain 2000ft but were not on a radar heading. They heard Radar tell the DHC-8 flight to turn onto 090° but they were not aware of its location relative to their ac and did not see it at any time.

THE DONCASTER/SHEFFIELD APR reports screening a U/T controller when the Vulcan flight requested a VFR joining clearance into the CTA for landing at Doncaster. The flight was issued a 6163 squawk and identified 4nm SE of GAM before being given clearance to enter VFR not above 4000ft. The crew requested to join downwind LH for RW20 and was cleared to do so. Meanwhile the DHC-8 flight had been released on an UPTON 1A departure climbing to 5000ft owing to overflying traffic. The Vulcan squawk was garbling with other traffic operating in the GAM area and when it reappeared it was noticed that the ac had tracked W through the RW20 climbout. At this time he had also taken over from the trainee and was attempting to stop the DHC-8 departure and also to ask the Vulcan flight to maintain 3000ft however, both attempts were unsuccessful. The Vulcan then turned R back towards the aerodrome for a LH cct and the DHC-8 flight, which was now on frequency, was given an immediate L turn and its climb stopped at 2000ft. The Vulcan passed behind the DHC-8 by about 2nm and joined downwind LH; the DHC-8 flight was given further climb once clear.

ATSI reports that the Airprox occurred at 1259:16 UTC, at a position 3nm to the SSW of Doncaster Airport, within the Doncaster CTR, Class D CAS. The Manual of Air Traffic Services (MATS), Part 1, Section 3, Chapter 4, Page 1, for the 'Integration of VFR flights with IFR Traffic in Class D CTR', paragraph 3.2 & 3.3 states:

'Instructions issued to VFR flights in Class D airspace are mandatory. These may comprise routeing instructions, visual holding instructions, level restrictions, and information on collision hazards, in order to establish a safe, orderly and expeditious flow of traffic and to provide for the effective management of overall ATC workload.

Routeing instructions may be issued which will reduce or eliminate points of conflict with other flights, such as final approach tracks and circuit areas, with a consequent reduction in the workload associated with passing extensive traffic information. VRPs may be established to assist in the definition of frequently utilised routes and the avoidance of instrument approach and departure tracks. Where controllers require VFR aircraft to hold at a specific point pending further clearance, this is to be explicitly stated to the pilot.'

The Vulcan was inbound to Doncaster VFR from Lyneham in order to be based at the airfield for the summer season. The arrival of the Vulcan was considered to be a high profile event at the airfield. In this regard the Radar controller had been asked to arrange for the ETA to be notified to the airfield in advance of the Vulcan's arrival.

The DHC-8 was departing IFR from Doncaster Airport on a scheduled flight to Jersey and was cleared for the Standard Instrument Departure (SID) 'UPTON 1A' from RW20. This required a R turn after departure to the SW climbing to altitude of 5000ft.

[UKAB Note (1): The UK AIP states UPTON 1A SID as 'Climb straight ahead to 555 QNH (500 QFE) or I-FNL D0.5 whichever is later, then turn right onto track 210°. At I-FNL D1.5 turn right onto track 250°. When passing GAM VOR R331 turn right to intercept GAM VOR R325.Cross GAM D13 at or above 4000. At GAM D14 turn to intercept GAM VOR R328, cross GAM D18 at FL60, to UPTON. (8%).']

RW20 was the notified RW in use. The Radar controller was providing an Approach RCS, together with a trainee under supervision. The Radar controller indicated that traffic levels were moderate with a number of ac on frequency, including traffic crossing the CTR at FL65 and traffic holding overhead Gamston at 3000ft.

METAR EGCN 291220Z 19006KT 150V240 9000 NSC 15/06 Q1013=

At 1252:25 the Vulcan flight initially contacted the Tower for a visual join. The RT was distorted and required 2 calls to establish two-way communication. Tower instructed the Vulcan flight to contact Radar.

At 1253:04, the Vulcan flight called Doncaster Radar, *"...Vulcan is for recovery we're twenty miles to the southeast at four thousand feet on er one zero zero seven for a visual join."* Doncaster Radar instructed the Vulcan crew to squawk 6163 and passed the QNH 1012. The Vulcan crew did not respond to this transmission and the controller called the Vulcan flight again. The Vulcan crew responded *"er Vulcan is squawking six one six three."* There was no readback of the QNH.

At 1253:54, the Vulcan crew requested a Traffic Service and Radar responded, *"Vulcan roger it's a Traffic Service and you're clear to enter controlled airspace er on track the Foxtrot November Yankee er VFR not above altitude four thousand feet and report field in sight."* The Vulcan crew replied requesting the QNH and QFE. Radar passed the QNH 1012, RW20 and QFE 1011. The Vulcan crew acknowledged, *"One zero one one ???not above four thousand on the er QNH one zero one two Vulcan."* The radar recording shows the Vulcan's position, 18·2nm SSE of Doncaster Airport tracking directly towards the airfield.

The Vulcan's clearance to enter CAS on track the FNY NDB, VFR not above altitude 4000ft, had the potential to conflict with IFR departures from RW20. At this point the Radar controller made a phone call to advise the airport authority of the Vulcan's arrival.

At 1255:36, the radar recording shows the Vulcan at an altitude of 4000ft, crossing the boundary of CAS. Later, when discussed, the Radar controller acknowledged that the pilot was not advised of the change in service from 'Traffic Service' to a 'Radar Control Service'. The Manual of Air Traffic Services, (MATS) Part 1, Section 1, Chapter 5, Page 1, paragraph 1.2.2, states:

'Pilots must be advised if a service commences, terminates or changes when:

a) they are operating outside controlled airspace; or

b) they cross the boundary of controlled airspace.'

At 1256:00, Tower coordinated the release of the DHC-8 and Radar issued a clearance to route, "UPTON 1A stop climb at 5000ft on QNH 1022". This required a R turn at an altitude of 555ft.

At 1257:00, the radar recording shows the Vulcan to be 9·8nm S of Doncaster. The Vulcan flight reported, *"Er Vulcan's clear of Gamston and request further descent for a downwind left hand join."* Radar responded, *"Vulcan Roger you can descend at your discretion traffic shortly getting airborne from Doncaster is a Dash Eight er turning er initially southwest bound before turning northeast bound climbing through your level."* The Vulcan crew responded, *"That's copied are we er clear downwind join."* The Radar controller confirmed, *"Vulcan affirm you can expect a downwind lefthand join for Runway two zero."* The Vulcan crew replied, *"Downwind lefthand join approved Vulcan.*"

Meanwhile, at 1256:38, Tower cleared the DHC8 flight for take-off and passed TI to the DHC-8 on the Vulcan, *"(DHC8)c/s traffic is a Vulcan eight miles south of the airfield erm to the east of climb out to position downwind lefthand visual."* At 1257:35, the Tower confirmed that the DHC-8 flight was cleared for take-off.

Later the Radar controller indicated that the intended plan, was for the DHC-8 to depart to SW, with the Vulcan remaining E of the airfield to join downwind LH for RW20.

At 1257:40, the radar recording shows the Vulcan crossing the extended C/L for RW20 at a range of 8·2nm and tracking NW. In order to confirm the joining instructions Radar transmitted, *"Vulcan confirm you're looking for a downwind lefthand join for Doncaster."* The Vulcan crew did not respond to this transmission.

The Radar controller explained that the phone call to the aerodrome authority had proved distracting. This had resulted in the late recognition of the developing situation and potential conflict with the DHC-8 departure. The Radar controller contacted Doncaster Tower and instructed them to hold the departing DHC-8. The Tower controller advised Radar that the DHC-8 was already rolling.

Radar instructed the Tower to stop the DHC-8 climb at 2000ft and indicated the Vulcan would stop descent at 3000ft.

The Radar controller took over from the trainee and at 1258:01, instructed the Vulcan flight to stop descent at 3000ft, *"Er V-Vulcan er stop descent altitude three thousand feet."* There was no response from the Vulcan crew and the radar recording shows the Vulcan passing altitude 2900ft.

At 1258:20, the radar recording shows the Vulcan at a range of 7nm, indicating altitude 2500ft. The Radar controller called the Vulcan flight again, *"Vulcan Doncaster."* The Vulcan crew replied, *"Vulcan six miles field in sight to Tower."* Radar responded to the Vulcan, *"Yeah maintain three thousand feet Sir three thousand feet there's traffic just airborne below you climbing one thousand feet below."* The Vulcan crew did not respond to this transmission. The radar recording shows the Vulcan now passing altitude 2300ft at a range of 6·1nm tracking 005° on the western side of RW20 climbout.

Also at 1258:20, Tower instructed the DHC-8, *"...if you stop your climb now at two thousand feet."* This was acknowledged by the DHC-8 crew and at 1258:37, the DHC-8 flight was transferred to Radar. The DHC-8 crew's written report indicated that the urgent tone in the Tower controller's voice had caused an uneasy feeling and this would result in the pilot reporting to radar, RW heading, rather than the SID designator.

Following the lack of response to his last instruction, at 1258.40, Radar called the Vulcan, *"Vulcan did you copy."* The Vulcan crew replied, *"Vulcan Vulcan's levelling at two thousand feet."* The radar recording shows the Vulcan at range of 5·5nm indicating altitude 2100ft.

At 1258:50, the departing DHC-8 flight called Radar, *"(DHC8)c/s with you climbing two thousand feet runway heading at the moment."* Radar responded, *"(DHC8)c/s turn left immediately left please heading zero nine zero*

maintain two thousand." The DHC8 pilot replied, *"Maintain two thousand left zero nine zero (DHC8)c/s."* The radar recording shows the range between the 2 ac is 3·8nm with the Vulcan indicating altitude 2100ft and the DHC-8 indicating altitude 1300ft.

At 1259:16 the radar recording shows the 2 ac, at a position 3nm SSW of Doncaster Airport, passing abeam each other at a distance of 1·9nm, with the Vulcan indicating altitude 2100ft and the DHC-8 indicating altitude 1900ft. Radar told the Vulcan flight, *"Vulcan the traffic just airborne in your right two o'clock at two miles turning east."* The Vulcan crew did not respond to the transmission. When the 2 ac had passed abeam, the DHC-8 was instructed to climb to FL60.

The Vulcan was now SW, tracking towards the W side of the airfield. Radar advised the Tower that the Vulcan would now be joining downwind RH. Radar instructed the Vulcan flight, *"and er Vulcan join downwind right hand for Runway two zero the circuits now clear contact the Tower one two eight seven seven five."* The Vulcan crew responded, *"Vulcan was that for us to Tower."* Radar replied, *"Affirm one two eight seven seven five."* There was no readback of the instruction to join downwind RH and the Radar controller did not challenge the Vulcan crew's incomplete readback. The Vulcan then turned R and crossed to the E side of the airfield and joined downwind LH.

The controller was asked if there was any action that might have prevented this incident or similar future occurrence. The controller indicated that the phone call to the airport authority had been distracting and resulted in a delay to the corrective action which would have resolved the situation earlier. The controller indicated that the Vulcan was a heavy, fast ac and considering the type of approach and high profile nature of the arrival, a restriction on all departures would have been appropriate. In addition, with the pilot's agreement, radar vectors to join a LH cct, would have ensured that safety was not compromised.

The controller indicated that the Vulcan pilot's lack of response to various transmissions was frustrating and not helpful in the circumstances. There was some discussion and speculation about the possible reasons. It later became apparent that the Vulcan crew had reported a control problem (Yaw damper) to the Tower on joining the cct. However it was not clear if this may have been a factor and there was not sufficient information to establish a cause for the Vulcan crew's non-response to Radar's transmissions. Rule 30 of the RoA states:

'Subject to Rule 31, whilst flying within Class B, Class C or Class D airspace during the notified hours of watch of the appropriate air traffic control unit, the commander of an aircraft shall:

(a) cause a continuous watch to be maintained on the notified radio frequency appropriate to the circumstances; and

(b) comply with any instructions which the appropriate air traffic control unit may give.'

Separation standards are not prescribed for application by ATC between VFR flights or between VFR and IFR flights in Class D airspace. However, ATC has a responsibility to prevent collisions between known flights and to maintain a safe, orderly and expeditious flow of traffic.

The controller had a responsibility to ensure that the Vulcan's routeing to join downwind LH was not in conflict with the departing DHC-8. The Radar controller, acting as the OJTI to the trainee, was distracted by the non-operational telephone call. CAA ATSI considered that this resulted in the situation developing, which the controller was unable to resolve in a satisfactory manner and for which the controller must accept some responsibility.

CAA ATSI considered the lack of response from the Vulcan crew on 6 occasions, was a significant contributory factor that caused a delay in resolving the conflict.

The DHC-8 pilot intuitively recognised that there was a problem and elected to report on RW heading, rather that R onto the SID. This significantly contributed to a resolution of the situation.

Recommendation.

CAA ATSI recommends that the ATSU reminds controllers of the requirement to ensure that non-operational conversations must not be permitted to interfere with a controller's operational duties. MATS Part1, Appendix E, Page 2, paragraph 2, states:

'Non-operational and other conversations have the potential to distract a controller from their primary task of providing a safe air traffic service. Examples include telephone conversations with external agencies, such as airline representatives, and discussions between controllers conducted on the telephone, intercom or, in some cases, face to face, following an unplanned traffic situation.

Non-operational conversations must not be permitted to interfere with a controller's operational duties. Procedures at units should ensure that non-urgent telephone calls from external agencies could be accommodated without prejudicing the controller's primary task.'

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC authorities.

Several elements highlighted in the comprehensive ATSI report were raised by Members in a lively and lengthy debate. From the initial call to Approach by the Vulcan crew, which was distorted and needed 2 calls to establish 2-way communication, there was a train of events which went unbroken leading to the Airprox. The Vulcan crew did not reply to the instruction to squawk, prompting another transmission from the controller to obtain a read-back but this reply did not include the QNH. The next RT exchange included a clearance to enter CAS, VFR on track to the Doncaster OH, which was answered with an incomplete read-back of the routeing that went unchallenged by the controller. At the time this instruction was issued the Radar controller was not aware of the impending DHC-8 IFR departure. The Radar controller expected the Vulcan would track direct to the OH and be in a position from which its crew would then join the visual cct. It was then that Radar telephoned the Airport Authority. When Tower called for a departure release on the DHC-8, the Radar controller was happy to release the flight on its UPTON 1A departure as he had formulated a plan to allow the Vulcan to join LH downwind which he assumed would keep the ac to the E of the RW20 climbout. So when the Vulcan crew called for further descent he cleared the flight to descend without a level restriction but passed inaccurate TI on the departing DHC-8's routeing once airborne, stating the ac would be turning NE instead of NW after departure before approving the LH downwind join by the Vulcan. Meanwhile the DHC-8 crew had been cleared for take-off by Tower and informed of the Vulcan's expected routeing to the E of the climbout. In passing TI to both flights the controller had discharged his responsibilities with respect to IFR and VFR traffic in Class D airspace; separation standards are not prescribed, and he believed that the ac would not be in confliction if the ac had followed his plan. However, it was apparent to controller Members that even if the Vulcan carried out the Radar controllers plan, flying towards the OH could still conflict with the DHC-8 as the ac could route very close to the extended C/L of the RW before turning R to position downwind LH. Had the controller been more positive with the Vulcan crew by stating that the flight must remain E of the RW20 climbout track and specified a distance, this would have clarified the Vulcan crew's 'air picture' of the traffic situation. When the TI and take-off clearance were issued to the DHC-8 flight, this was the last chance that its crew had to assess the information and elect not to take-off if they were unhappy with the Vulcan's flightpath. The DHC-8 crew was reminded, 1min after the initial take-off clearance and TI were issued, that the flight was cleared for take-off; this delay was thought by Members to have been due to the crew assimilating the traffic situation prior to departing.

From then on the situation deteriorated as the Vulcan did not route direct to the OH but tracked NW, crossing the RW20 climbout at a range of just over 8nm before Radar recognised the situation albeit late. Although the Vulcan's radar return had been garbling with traffic in the GAM area, Members were concerned that Radar allowed himself to be distracted in making the telephone call to the Airport Authority. This led to a late recognition of the Vulcan's flightpath, which was not in accordance with his intended plan, and this had caused the Airprox. He tried to confirm that the Vulcan would be turning R to join downwind LH, however this transmission went unanswered. Radar then tried to stop the DHC-8 departing but the ac was already rolling for take-off so he attempted to apply vertical separation by asking Tower to stop the DHC-8 at 2000ft, advising the ADC that he would stop the Vulcan at 3000ft. However, when Radar instructed the Vulcan flight to stop descent the ac was already passing 2900ft and the crew did not respond. After another call to the Vulcan flight its crew replied that they were at range 6nm with the airfield in sight and transferring to Tower. Members commented that this call would have been normal had the ac been flying into a military aerodrome but flying into Doncaster within Class D airspace the Vulcan crew should not have expected 'military style' procedures to be acceptable. In the event, however the Vulcan remained on the Radar frequency. Given the METAR visibility value, this sighting is consistent with the in-flight visibilities reported by both crews, the Vulcan crew viewing down-sun and the DHC-8 crew flying into sun. Radar asked the Vulcan crew to maintain 3000ft and informed them of the DHC-8 traffic climbing 1000ft below however there had been no

response. By now the Vulcan was W of the climb-out tracking 010° and towards the W side of Doncaster aerodrome. Radar again called the Vulcan flight asking if the crew had copied his last transmission but the crew then reported levelling at 2000ft. Immediately thereafter the DHC-8 flight made its initial call to Radar and was given an immediate L turn onto 090° and was told to maintain 2000ft. As the ac were about to pass at the CPA, Radar passed TI on the DHC-8 to the Vulcan crew but again this transmission was not acknowledged. Radar informed Tower that the Vulcan would be joining RH downwind, then instructed the flight to do so and passed the frequency but the crew queried whether that transmission was for their flight. Radar repeated the frequency but did not challenge the lack of read back to the joining instruction. Thereafter the Vulcan turned R and passed over the aerodrome to the E before turning downwind LH.

Pilot Members agreed that the DHC-8 crew had displayed excellent CRM. During a particularly high workload phase of their flight their SA of the situation was first-rate which had enabled them to execute a L turn immediately when instructed by Radar as the subject ac approached the CPA. Members agreed that the Radar controller's efforts were hampered by the communication difficulties with the Vulcan and were disappointed that the Vulcan crew had missed so many RT calls and repeatedly given incomplete read–backs. However, Members agreed that unless ATC challenged any missing or incomplete read-back there was no agreement reached between both parties. Although the DHC-8 passed the Vulcan unsighted by its crew, the flightpaths flown by both ac combined with the actions taken by Radar and the DHC-8 crew were enough to allow the Board to conclude that any risk of collision had been effectively removed.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Late recognition that the Vulcan was not flying in accordance with the controller's expectations.

Degree of Risk: C.

AIRPROX REPORT NO 2011025

Date/Time:	30 Mar 2011 1238Z	
Position:	5816N 00330W	(17nm SW WIK)
Airspace:	N560D	(Class: F)
	Reporting Ac	*Reported Ac*
Type:	SF 340	Tornado GR4
Operator:	CAT	HQ Air (Ops)
Alt/FL:	FL80	FL075
Weather:	VMC CLBL	VMC CLBL (4000ft above cloud)
Visibility:	NK	10km
Reported Separation:	0ft V/1nm H	500ft V/3nm H
Recorded Separation:	300ft V/2.8nm H	

See Diagrams below

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE SF 340 PILOT reports flying a passenger flight inbound to Kirkwall heading 043° on N560D at 230kt and FL80; they were squawking as directed with Modes C and S, nav lights and HISLS were on, and TCAS was fitted and serviceable. When they had about 30nm to run to WIK he saw a TCAS contact 6nm W of them just as the controller asked for their meteorological conditions; he replied, "VMC between layers". They were given an immediate turn on to 090°, followed by an avoiding action turn further R onto 120°; at that point he became visual with a single Tornado ac. They were then turned onto a heading of 180° as two more contacts appeared and he

was given a further turn on to 270° to avoid them. When the ac was on track he became visual with two Tornados manoeuvring below them.

He reported the Airprox to ScACC and his company assessing the risk as being low.

THE TORNADO GR4 PILOT reports flying a singleton OCU low level training sortie in a grey ac with strobes and HISLs switched on; TCAS was not fitted. They were squawking 7001 with Modes C and S, heading 140° at roughly 300kt having broken off an attempt to prosecute a low level SAP on a heading of 065°, about 20nm W of Wick. Low cloud had forced a high workload emergency abort from low level at 1235; following the abort they levelled initially at 8000ft and set a heading of 140° for recovery to Kinloss for a booked practice diversion.

Aware of the proximity of Class F airspace SW of Wick, he contacted Lossie APP in order to obtain a radar service. While establishing radio contact with Lossiemouth at the edge of ADR N560D, they set 1013mb and descended to level at FL75 in order to be at the correct quadrantal FL. Prior to formal radar identification by ATC, Lossie APP informed them of civilian traffic 5nm ahead, crossing R to L, 100ft above. Lossie APP then informed them that the traffic was taking avoiding action, and at 1236:30 updated the position of the civilian traffic as being 2 o'clock at 3nm. At this point they observed the civilian traffic in the position called by ATC (3nm away and 500ft below), but they could not determine the ac type.

They perceived no confliction based on visual separation, but followed a subsequent air traffic recommendation to turn L onto a heading of 090°. The pilot was VMC throughout this incident.

The report was filed in response to an Airprox report believed filed by the civilian ac; he assessed the risk as low/none.

ScACC MORAY PLANNER/TACTICAL CONTROLLER reports that he was providing a SF 340 with a DS on N560D [Class F] inbound to Kirkwall. The ac had left FL90 and was descending to FL70 when he saw a 7001 squawk in the ac's 10 o'clock at about 5nm with no mode C. It appeared that the mode C was then activated by the military ac and it was showing FL072 climbing but on a roughly parallel track to the SF 340 heading. He asked the SF 3400 pilot for his flight conditions and he reported they were IFR [sic – see SF 340 pilot's report above] so he gave the ac a precautionary turn onto 090°. Almost immediately the military ac turned towards the SF 340 and commenced a further climb so he gave an avoiding action turn onto 120°. He did not consider a vertical solution as the military ac was climbing towards his traffic which was descending.

The SF 340 pilot then reported that he had the military ac on TCAS so the controller took no further action. By that time, the ac were very close and the STCA was flashing red. He then realised the SF 340 pilot had only stated he had the ac on TCAS but had not stated that he had a RA so he gave a further avoiding action turn onto a heading of 180°. Lossiemouth radar then called him but they were both too busy to co-ordinate with each other.

He then saw second pair of ac squawking 7001 that was also climbing out from the same area. As a precaution he turned the SF 340 away from these ac but he eventually managed to get co-ordination with Lossiemouth radar.

The controller asked the SF 340 pilot if he wished to file an Airprox and he said yes.

THE RAF LOSSIEMOUTH APP CONTROLLER (Lossie APP) reports a Tornado ac free-called on Stud 4 and she observed a fast moving track in the vicinity of its reported position. There was a further return about 5nm ahead of it and slightly above, displaying an ORCAM squawk, following the route of N560D. She called the ac to the Tornado, using the words 'traffic believed to be you has traffic' advising that the ac was indicating slightly above but descending. She gave the Tornado a Lossiemouth squawk and called the Moray Sector Controller (MOR) who answered almost immediately; she could hear the controller giving advice to the SF 340 involved, however, despite her best efforts she was unable to speak to the controller. She then formally identified the Tornado and placed it on a TS. Throughout her attempts to contact the MOR controller she continued to pass information to the Tornado regarding the other ac until the Tornado pilot reported "visual". The (Lossie) controller heard the MOR ask his ac whether or not he was 'still visual' but she could not effect co-ordination with MOR as the Controller was talking to the SF 340 continuously.

She believes that the ac came within approximately 3nm and 100ft – the height being based on the mode C readout. The civil traffic was given a RH turn from a NE'ly heading then through S onto NW so she asked the Tornado to head E, which took it further away from the civil traffic.

She heard the civil controller ask the SF 340 if he wished to file an Airprox, at which time she asked the Lossie Supervisor (Sup) to listen in. The Sup eventually managed to effect co-ordination on her behalf but by that time the ac were diverging; the Tornado to the E of N560D heading E and the SF 340 to the W of the ADR tracking N.

She handed the ac to Director for a radar-to-visual recovery and was relieved by another qualified controller.

UKAB Note (1): Both NATS and RAF Lossiemouth conducted comprehensive internal investigations; for brevity they have not been included as they are summarised in the ATSI and HQ 1Gp BM SM2 reports below.

ATSI reports that an Airprox was reported by the pilot of a SF 340 when it came into confliction with a Tornado, 17nm SW of WIK, as the SF 340 descended through FL080. The Airprox was also reported by the Prestwick Centre MORAY controller (MOR). The SF 340 was on a flight from Glasgow to Kirkwall and in receipt of a DS from the MOR sector on 129.225MHz. The Tornado had been on a low level sortie when cloud forced an emergency low level abort and established contact with Lossiemouth APP in order to receive a radar service.

The MOR sector was being operated as a combined tactical and planner position, his workload was assessed as light to medium and there were no reported unserviceabilities or distracting factors.

ATSI had access to the SF 340 pilot's report, the Tornado pilot's report, the ScACC watch and unit investigations, recorded area surveillance and transcript of frequency 129.255MHz.

The SF 340 established contact with the MOR sector at 1221:40, the ac was maintaining FL170 and a DS was agreed; the SF 340 continued inbound WIK on ADR N560D and at 1230:20 it was descended to FL090 and 3 min later it was given further descent to FL070.

At 1235:35 a 7001 return (the Tornado) appeared on the display 11nm N of the SF 340 but initially there was no Mode C readout. The return initially tracked parallel to the SF 340 and the Tornado's Mode C initially showed as FL078 with the SF 340 descending through FL093.

At 1236:00 the MOR controller requested the SF 340's flight conditions and the pilot replied, "*between layers, VMC at the moment*". By 1236:04 the Tornado had commenced a right turn and was tracking perpendicular to the ADR at FL080. STCA activated at 1236:23 at which time the MOR provided TI as, "*pop-up traffic in your ten o'clock at a range of 5 miles",* followed by the instruction, "*turn right immediately heading 090 degrees".* The pilot read back the instruction and, at 1236:35, the controller upgraded this to, "*avoiding action turn right immediately onto a heading of 120 degrees"* and updated TI was provided.

At 1236:49 a high-level STCA activated when the ac were 5nm apart on converging tracks, the SF 340 descending through FL082 and the Tornado maintaining FL082.

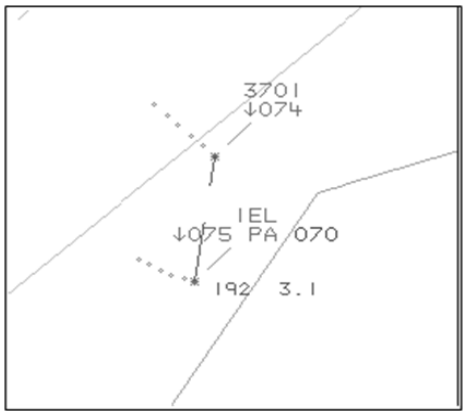
The SF 340 pilot then informed the controller, "a*nd have TCAS contact erm visual now"*.

The SF 340's right turn can be seen to take effect at 1236:58, at which time the STCA alert downgraded to low severity.

At 1237:00 the MOR controller initiated a call to Lossie APP. The line remained open as the MOR controller listened to the Lossiemouth controller who was then handling the Tornado. [See UKAB Note (2)]

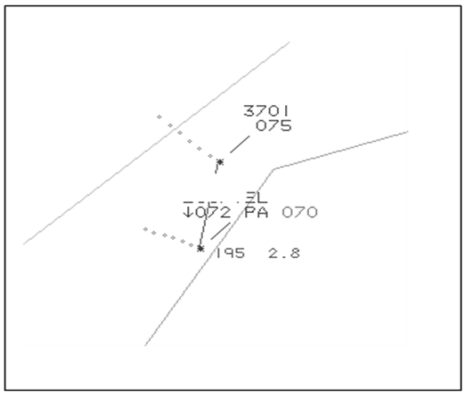
AIRPROX REPORT No 2011025

At 1237:10 the Mode A code of the Tornado changed to 3701 (Lossiemouth) and by 1237:30 both ac were on parallel SE'ly tracks, 3.1nm apart, the SF 340 descending through FL075 and the Tornado descending through FL074 (see photo below).



(PC MRT 1237:30)

At 1237:20 the MOR controller asked the SF 340 pilot if they were still visual with the traffic. The pilot replied, "*Negative, we're in cloud now*". The controller then gave a right turn onto a heading of 180°. The minimum distance between the two ac was 2.8nm laterally, 300 feet vertically, at 1237:40.



(PC MRT 1237:40)

By 1238:00 the Tornado had taken up an E'ly track and the SF 340 was instructed to continue its right turn and resume own navigation to Kirkwall. It was only at this time that the workload of the Lossiemouth controller permitted co-ordination with the MOR controller.

The MOR controller correctly noted that although the SF 340 pilot had reported visual and having TCAS contact, an RA had not been reported. These facts had prompted him to ascertain if the SF 340 had remained visual with the Tornado; when the response was negative, he gave further avoiding action as necessary.

The CPA occurred 17nm SW of WIK in Class F advisory airspace between a SF 340 at FL072 and a Tornado at FL075. Minimum lateral distance was 2.8nm.

The Tornado had aborted a low level sortie and sought the assistance of Lossie APP during its recovery. During this time it came into confliction with the SF 340 NE bound on the ADR. The PC MOR controller observed the emergency climb out and instructed the SF 340 accordingly.

Controllers providing a DS will provide specific surveillance derived TI and issue headings and/or levels aimed at achieving planned deconfliction minima. MATS Pt 1 stipulates that against un-co-ordinated traffic the planned

deconfliction minima is 5nm or 3000ft. Whilst the deconfliction minima were not achieved in this case the following actions mitigated and minimised the impact of the encounter:

Prompt TI by the MOR controller.

The MOR controller followed the actions of the Lossie APP on an open telephone line, thus providing complementary instructions to the SF 340.

Recognising that an RA had not been reported by the SF 340 the controller updated the avoiding action as necessary.

HQ 1GP BM SM reports (abridged to avoid duplication) that following the Tornado's initial call, Lossie APP was able to correlate their radar return with its reported position and immediately passed TI on the SF 340 stating, "*traffic south, 5 miles right to left, indicating slightly above descending, civil traffic just 100ft above descending*"; at that point the SF 340 was bearing 187°, 6.8nm from it and descending through FL085. Shortly thereafter [1236.58 from Lossie APP transcript] APP rang MOR and although the call was answered immediately, the MOR controller was too busy initially to conduct any liaison.

At 1236:45 it is evident on the radar replay that the SF 340 has turned right, eventually rolling out onto a SE'ly track. Throughout the incident sequence APP continued to pass TI to the Tornado on the SF 340 and then at 1237:23 suggested a left turn onto E to increase the separation between the ac. At that point the SF 340 was 3.5nm SSW of the Tornado and both ac were indicating FL075. Moreover it is around that point that the Tornado crew became visual with the SF 340, reporting as such at 1237:31.

At 1237:44 the Tornado's turn onto E is evident on radar and coincides with the CPA, with 2.8nm lateral and 300ft vertical separation existing.

The Tornado crew correctly prioritised the low-level abort and, once established at a safe level and cognisant of the presence of the ADR, contacted APP for a radar service. APP provided a good level of service to the Tornado passing accurate TI allowing them to visually acquire the SF 340 in good time but, conscious of the MOR controller's responsibilities and the difficulty in establishing liaison with him, also suggested a turn onto E to increase separation between the 2 ac.

This was a confliction in uncontrolled airspace where the safety barriers provided on the one hand by the provision of TI in aiding aircrew to 'see and avoid' and on the other by the provision of deconfliction advice iaw CAP 774, resolved the situation before safety was compromised.

UKAB Note (2): The Tornado first show on the PC MRT at 1235:35 as a 7001 squawk with no Mode C. The Tornado called Lossiemouth at 1236:20 with the call sequence being completed 6sec later and the first TI on the SF 340 was passed a further 8sec later. Analysis of the respective transcripts shows that MOR and Lossie APP initiated calls to one another at precisely the same time (1236:58). The call however, was not answered by the MOR controller until 1238:20 (to the nearest 20 sec). The MOR RT transcript shows that RT frequency was in continuous use from 1237:20 to 1238:20; the Loss APP frequency was busy continuously from 1236:19 to 1238:04. The CPA was at 1237:40.

UKAB Note (3): The analysis of the PC MRT radar recording confirmed the analysis conducted by ATSI above (and NATS). The pair of Tornados mentioned by the SF 340 pilot cross from L to R under the SF 340 well after the Airprox (3½ min) when the SF 340 is re-established inbound WIK, 5nm W of the ADR C/L; they are never above FL040 (3000ft below the SF340)

HQ AIR (OPS) comments that the Tornado crew correctly prioritised the need to conduct a Low Level Abort before the need to avoid the Class F airspace. They then sought to obtain a radar service as soon as was practical; perhaps a call to ScACC Mil on the ICF would have allowed quicker coordination with ScACC MOR given the co-location of those 2 agencies. Nevertheless, the ScACC controller reacted promptly to the pop up traffic and gave avoiding action to prevent a further erosion of separation.

AIRPROX REPORT No 2011025

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

A majority of Members agreed that this had been a potential conflict on a Class F ADR, recognised as such as soon as it became apparent by both controllers, who acted swiftly and correctly to resolve the situation, preventing any actual conflict or risk of collision.

Pilot Members noted that the Tornado crew had demonstrated good awareness of the ADR, acted appropriately by being predictable (to the controllers) and crossing it at right angles and level at the (lowest) appropriate quadrantal FL. Further, as soon as they had the capacity following the emergency climb out from Low Level, the Tornado crew contacted the appropriate Radar Unit (Lossie App is the local LARS unit) for assistance. Members observed that although ScACC and ScACC (Mil) are co-located at Prestwick Centre, the respective controllers are not adjacent; co-ordination would still have required a telephone call and would not have been any quicker had the Tornado crew called ScACC (Mil) rather than Lossie App.

Controller Members also observed that both controllers had, in their opinion, acted quickly and correctly, not allowing a conflict to develop. Although the Moray Sector controller did not achieve the desired deconfliction parameters, Members agreed that in the circumstances, he could not have done any more. Members also noted that both Controllers had initiated calls to each other at about the same time but at the precise moment of the calls, both had been too busy to initiate co-ordination; the open line however had been useful in that it allowed them both at least some information on each other's actions.

Members also observed that the ScACC controller had noted quickly that the Saab was not reacting to a TCAS RA, merely that he had a TCAS contact for the Tornado; on realising this he immediately acted by attempting to gain the desired (horizontal) separation from the latter. TCAS terminology for pilots had been the subject of a previous UKAB Recommendation (2010018) resulting in the CAA issuing Safety Notice SN-2011/012 of 8 Sep 2011.

Members discussed at length the risk associated with the incident and whether it should be classified as risk Category C or E. While everyone agreed that the actions taken by the aircrew and controllers had removed the risk of a collision, the controllers were required to work hard and had difficulty in coordinating their actions; furthermore despite being given avoiding action the S340 did not maintain 5nm/3000ft separation from the Tornado and there was confusion over whether the S340 was responding to a TCAS RA. These factors were enough to satisfy some Members that the event had been an Airprox with a Risk Category C. Other Members opined that the event was a routine event for this type of airspace and normal procedures, safety standards and parameters had pertained; therefore it would be misleading to consider it to be an Airprox event. The latter view prevailed by a small majority.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A potential conflict resolved by both controllers.

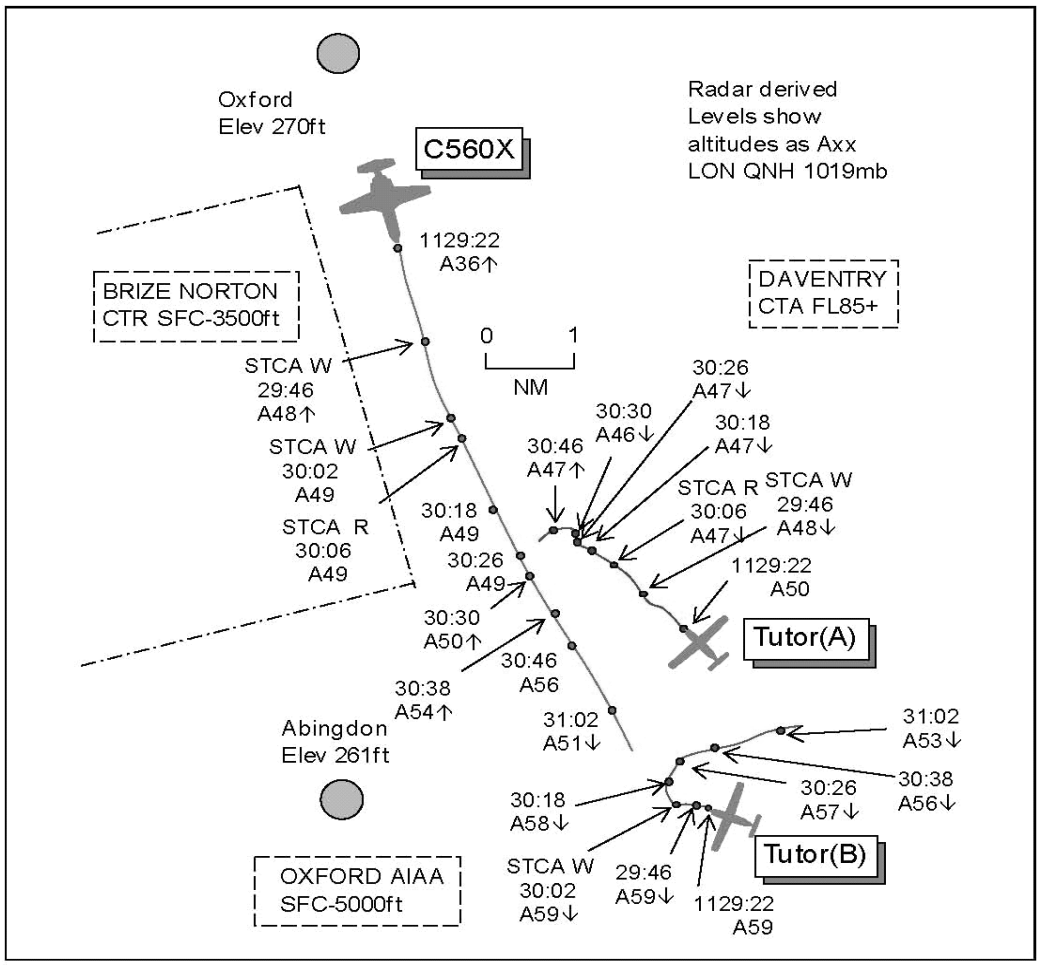
Degree of Risk: E.

AIRPROX REPORT NO 2011026

Date/Time: 1 Apr 2011 1130Z
Position: 5144N 00115W (15nm N CPT)
Airspace: Oxford AIAA (Class: G)
Reporter: LTC OCK/SE LOW

	1st Ac	*2nd Ac*	*3rd Ac*
Type:	C560X	Tutor(A)	Tutor(B)
Operator:	Civ Exec	HQ Air (Trg)	HQ Air (Trg)
Alt/FL:	5000ft (QNH 1017mb)	5000ft (QNH)	FL50
Weather:	VMC CLNC	VMC CLAC	VMC CLAC
Visibility:	>10km	>10km	NR
Reported Separation:	400ft V/NR H	above V/2nm H	Not seen

Recorded Separation:
C560X v Tutor(A) 200ft V/0·7nm H
C560X v Tutor(B) 200ft V/1·8nm H



AIRPROX REPORT No 2011026

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE LTC OCK/SE LOW CONTROLLER reports that an Oxford departure, the C560X, had been given a clearance to remain outside CAS and to call for join. He noticed that there were 2 Benson ac operating on the route towards CPT between FL40 and FL60. As the C560X flight called on frequency climbing to FL50, STCA activated against the first Benson ac [Tutor(A)] which was at FL49. He told the C560X crew that they were under a BS only but that there was traffic 11 o'clock 5nm now descending to FL48. He re-called the traffic at 2nm at the same level before the C560X was seen to climb to FL54 and its crew reported that they had climbed owing to traffic. In taking the climb the C560X came into conflict with the second Benson ac [Tutor(B)] so he called this as traffic and gave the C560X flight a joining clearance on track CPT altitude 6000ft to enable further climb. When the C560X flight was inside CAS he asked the crew if they had seen the traffic to which they replied that they had not seen it but had responded to a TCAS RA. While this event occurred outside CAS and under a BS, a flight on frequency activating STCA with 2 other unknown ac and reporting a TCAS RA could be a distraction.

THE C560X PILOT reports outbound from Oxford, IFR and in communication with London on 135·8MHz, squawking 5251 with Modes S and C. They had received a clearance from Oxford to take-off RW19 with a L turn to CPT and to climb to 5000ft with the assigned code and to contact London after take-off. After calling London they were assured again of 5000ft to CPT under a 'Traffic Advisory' service, he thought. Heading 150° at 240kt and maintaining 5000ft they received TI on traffic in their 1230 position, he thought, range 6nm. Neither the PF in the RHS nor he could visually acquire the traffic but it was shown on TCAS to be closing quickly and almost at the same height. He switched the TCAS from 12nm to 6nm range but then received a TCAS RA 'climb, climb'. The co-pilot initiated the manoeuvre without delay and he also increased the ROC. This climb took them to 5800ft; a second ac was no immediate threat owing to their climb. He informed London as soon as the frequency wasn't occupied. Flight conditions were VMC but they never visually acquired any traffic. Shortly thereafter they were cleared to FL60 and were fully IFR controlled.

THE TUTOR(A) PILOT reports teaching an elementary flying exercise to a UAS student at 100kt and in receipt of a TS from Benson. The visibility was excellent above a uniform layer of cloud, tops 3500ft. The controller alerted him to fast moving traffic to his NW with which he was already visual in his 1030-11 o'clock approximately 3nm away and at the same height, 5000ft; he acknowledged this accordingly. The other ac was on an opposite track and it was clear that his continued heading would keep him well clear of it. The other ac appeared to maintain its heading in a gentle climb and passed abeam on his LHS at range 2nm and at high speed, sufficiently far enough away to make it difficult to identify the ac type but he thought it was a Citation. At no point was there any perceived risk and the Citation did not deviate from its track throughout. He maintained visual contact with Citation throughout until it cleared to the S.

THE TUTOR(B) PILOT reports flying a dual training sortie from Benson and in receipt of a TS from Benson squawking with Modes S and C. About 4nm S of Oxford he was flying above 8/8th cloud outside CAS on recovery to Benson in excellent visibility. He was on an E'ly heading at FL50 when he was advised of fast moving traffic 2nm to the NW, behind him, 200ft below and climbing. He did not consider this traffic to be a threat but asked ATC to keep him posted. He was later advised that the other ac was submitting an Airprox

THE BENSON APPROACH CONTROLLER reports operating bandboxed with Director. At 1115 he received a telephone call from Oxford with TI on an ac departing Oxford squawking 5251 climbing to 5000ft to join CAS at CPT. He was asked if he wanted to work the flight and due to him having no traffic to affect at the time he declined after consultation with Zone. At 1130, 15min after the TI was passed, he witnessed an ac leaving the Oxford ATZ squawking 5251 and, as now he had traffic in the area, he passed TI to Tutor(A) pilot, who called visual, and to another Tutor flight, Tutor(B), whose pilot asked to be kept updated. Both Tutors were under a TS and due to the non-threatening heading of the traffic he did not consider an update to be relevant and therefore none was passed. Shortly after this Tutor(A) flight downgraded to a BS and changed frequency to Stud 7. Shortly after this he was relieved for lunch and on arrival back in the Tower he was informed that LTC S had filed an Airprox on both Tutors.

ATSI reports that an Airprox occurred approximately 10nm N of CPT when the C560X came into confliction with a Tutor at altitude 5000ft.

The C560X departed Oxford for a flight to Bern, Switzerland. The C560X was in contact with the LTC OCK sector on 132·125MHz and in receipt of a BS.

The Tutor had departed Benson and was on a training flight, in receipt of a TS from Benson Approach.

LTC OCK was manned by one controller and there were no reported unservicabilities or undue distractions. The OCK controller filed an Airprox report. ATSI assessed the controller's workload as 'light'.

ATSI had access to controller and pilots' reports, transcript of frequency 132·125MHz, recorded area surveillance and the ANSP unit report.

The C560X flight departed Oxford's RW19 cleared, *"left turn to Compton, climb altitude 5000 feet, squawk 5251"*. The code 5251 was the airways Mode A code for the flight and was code-c/s converted on the OCK controller's situation display. The C560X was airborne at 1128 (UTC).

The LTC Manual of Air Traffic Services (MATS) Part 2 STH 5.7 Para 5.8.2 states:

'All departures from Oxford requesting an airways join at CPT are pre-noted to Brize Radar. On occasions, Brize Radar may provide a service to such departures subject to workload.'

Further provision is also made for Oxford ATC to pass details of departures towards CPT to Benson, when Brize Radar will not work such departures. ATSI were unable to ascertain if the C560X flight was offered to either Brize Norton or Benson for a service.

The C560X appeared on the OCK controller's situation display at 1129:23 as it passed through altitude 3600ft. Pease Pottage was the radar in use.

At 1129:25 the C560X pilot called the OCK sector and a BS was assigned. The ac was 18·5nm N of CPT, where the base of CAS is FL085.

[UKAB Note (1): Pilots are notified in UK AIP ENR 1-6-1-1 (12 Mar 09) that no DS or TS will be available on any London Control frequency below FL070.]

Under a BS controllers are not obliged to pass TI; however, a controller with access to surveillance derived information may pass a warning to pilots if that controller considers a definite risk of collision exists.

At 1129:40 the OCK controller informed the C560X flight, *"(C560X c/s) although it's a Basic Service outside be advised there is traffic in your 11 o'clock range of approximately 5 miles showing flight level four nine er descending actually four eight now unverified.*" The controller's transmission ended at 1129:52, by which time STCA low-level alert had activated between the C560X and an A3610 return [Tutor(A)]. Both ac were at altitude 4800ft (London QNH was 1019mb), Tutor(A) in the C560X's 11 o'clock range 3·8nm.

The C560X pilot replied, *"Yeah, we have contact er one thousand below."* The controller did not detect this discrepancy.

Another low-level STCA warning activated at 1130:02 on a Benson squawk A3611, Tutor(B), at altitude 5900ft in the C560X's 11 o'clock, range 5·4nm.

At 1130:05 a high-level STCA warning activated between the C560X and Tutor(A).

The controller updated the TI on Tutor(A) at 1130:16, *"and (C560X c/s) previously mentioned traffic at about two miles now er in your 11 o'clock opposite direction showing four seven unverified."* The C560X crew acknowledged with, *"Er".* The C560X was now at altitude 4900ft with Tutor(A) at 4700ft, range 1·8nm closing from the L, 11 o'clock.

[UKAB Note (2): The CPA occurs at 1130:26 when Tutor(A) passed down the LHS of the C560X with lateral separation 0·7nm, the C560X showing altitude 4900ft and Tutor(A) at 4700ft. The next sweep 4sec later shows the lateral separation still at 0·7nm with the C560X climbing through 5000ft and Tutor(A) descending through 4600ft.]

AIRPROX REPORT No 2011026

At 1130:49 the C560X flight reported, *"…we had to climb up due to er climb advisory of the TCAS of the mentioned traffic we're descending to five thousand again."* The C560X had climbed to altitude 5600ft. STCA had ceased on Tutor(A) but reactivated on the 3611 return, Tutor(B).

The controller acknowledged the C560X's climb and at 1130:57 gave TI on Tutor(B) return which by now had turned E'bound away from the track of the C560X, *"…there's further traffic now in your nine o'clock showing five four unverified you are clear to enter controlled airspace in the climb to altitude six thousand feet if you want to climb."*

No further TCAS incidents were reported.

Shortly before leaving the OCK frequency the controller asked the C560X pilot if they had seen the Tutor traffic, to which the reply was negative. The flight conditions later reported by the C560X pilot were 'VMC (visibility >10km in haze)'.

The controller later acknowledged that even though outside CAS under a BS, the activation of conflict alert between the C560X and the 2 other ac, plus the reporting of the RA, could have been an undue distraction. There were no other reported incidents on the sector at the time.

The Airprox occurred in Class G uncontrolled airspace 15nm N of CPT at altitude 5000ft when the C560X, inbound CPT, came into confliction with Tutor(A) operating in the vicinity.

Outside CAS the responsibility for collision avoidance rests solely with the pilot of each ac however, subject to the level of service agreed through ATSOCAS, controllers may provide TI (or deconfliction advice) as necessary.

At the time of the incident the C560X flight was in receipt of a BS; however the OCK controller deemed that the relative positions of each ac were such that a warning, in the form of TI, was necessary. Tutor(A) flight, being visual with the C560X, was able to avoid the C560X having been provided TI from Benson Approach.

There is no obligation for a third party agency to provide services to Oxford departures via CPT and similarities between this Airprox and an earlier Airprox (2011004) should be noted. London Oxford Airport has published its intention to procure surveillance equipment for operational readiness in 2012 at which time the procedures relative to all ANSPs in the Oxford-Compton area should be reviewed.

HQ 1GP BM S M reports that this incident was filed as an Airprox by the LTC OCK controller and involved 2 individual Tutors operating VFR in receipt of a TS from Benson APP and a Citation 560X which had departed Oxford in receipt of a PS from them and latterly a BS from TC OCK.

All altitudes quoted within the report, unless stated otherwise, are based on the SSR Mode C information from the RAC supplied radar replay.

At 1115:24, Oxford contact Benson stating, *"five-three-five-four squawk, climbing up towards CPT at 5, do you need to work him?"* The procedure between Oxford and Benson is that as Benson is not a unit with a mandated LARS task; they only accept Oxford traffic if they have IFR traffic that they need to de-conflict with the Oxford traffic. In this case, Benson had no such traffic.

[UKAB Note (3): The C560X assigned code was 5251.]

At 1129:45 the Citation is approximately 3·2nm S of Oxford climbing through 4800ft, with Tutor(A) 4·3nm SE at 4800ft in a slow descent, tracking NW.

Shortly afterwards at 1129:50 Tutor(A) turned L approximately 20° bringing it more directly into confliction with the Citation. At 1129:57 APP passed accurate TI to Tutor(A) flight stating, "*traffic north-west, three miles* [radar replay shows 3·7nm]*, tracking south, fast moving, one hundred feet above climbing*."

By 1130:01 Tutor(B) is 5·7nm SE of the Citation, tracking W, indicating 5900ft, with the Citation now maintaining 4900ft.

At 1130:09 Tutor(A) pilot reported visual with the Citation, with 2·1nm lateral separation existing and Tutor(A) indicating 4700ft in descent. However, the pilot of Tutor(A) stated in his report that they were already visual with the Citation at the point when TI was passed.

At 1130:15, Tutor(B) commences a long R turn onto NE.

The CPA between Tutor(A) and the Citation occurs at 1130:26 with 200ft vertical and 0·7nm lateral separation shown on radar. The pilot of Tutor(A) stated that the Citation could be seen to be "*flying the opposite track to me and it was clear that our continued heading would keep us well clear of each other*."

At 1130:35 APP passed accurate TI to Tutor(B) flight stating, "*traffic north-west, two miles* [radar replay shows 2·6nms]*, tracking south-east, fast moving, two hundred feet below climbing*." At 1130:38 the Citation has climbed to 5400ft which accords with the pilot's report to the TC OCK controller that they had manoeuvred in accordance with a TCAS RA. Although Tutor(B) pilot requested to be kept "*posted*" on the position of the Citation, with the relative courses of the ac no further update was required from APP with the Citation tracking through Tutor(B)'s 6 o'clock range 2·1nm.

The CPA between Tutor(B) and the Citation occurs at 1131:02 with 200ft vertical and 1·8nm lateral separation shown on radar.

Realistically, the Airprox did not involve Tutor(B) and occurred between Tutor(A) and the Citation. However, Tutor(A) pilot was visual with the Citation at an early point in the incident sequence, enabling him to assess the situation and determine that sufficient separation existed.

Focussing specifically on the Mil ATM issues, APP provided accurate TI to the Tutors in accordance with the criteria laid down within CAP774. Moreover, by adapting their phraseology to include the term "fast moving" they provided a better "picture" for the Tutor aircrews involved. Given the number of Tutors operating within the local area and that both Tutors had previously been passed TI on each other, exclusion of the term "fast moving" might have suggested that the TI referred to another Tutor.

In terms of the timeliness of the TI to both Tutors, based upon the information presented to APP in terms of the relative tracks of Tutor(A) and the Citation and the speed of Tutor(A), passing TI earlier than 1129:57 would have been nugatory. Moreover, in terms of the TI to Tutor(B), 1130:35 represented their first opportunity to pass TI given that they had been involved in an RT exchange with a third Tutor, involving the passing of TI to that flight. This exchange lasted from the point where approximately 4·2nm lateral separation had existed between Tutor(B) and the Citation, to the point where TI was passed to Tutor(B) at 2·6nm.

Finally, the Unit raised the issue of the landline liaison between themselves and Oxford at 1115:24 and their status as a non-LARS unit. Whilst a hindsight-bias argument could be created to suggest that APP could have contacted Oxford to pass TI to them on the Tutors, no clear benefit from such an activity could have been gained from Oxford's perspective, given the absence of surveillance equipment at that unit which would result in the passing of very generic TI to the Citation. Moreover, Oxford clearly transferred control of the Citation to LTC OCK relatively early, enabling LTC OCK to give more effective TI, despite only being able to offer a BS outside CAS.

This Airprox occurred in Class G airspace where the Mil aircrews and controllers involved discharged their responsibilities under CAP774 and the Rules of the Air exactly.

HQ AIR (TRG) comments that both Tutors operated under a TS and received timely TI that enabled them to deconflict from traffic, in Class G airspace, that did not see them. The activation of STCA and TCAS provided an additional benefit, firstly to the controller and secondly to the Citation, by highlighting a potential conflict in 'see and avoid' airspace.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of all 3 ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

The LTC OC/SE Low controller was undoubtedly concerned when the C560X flight was transferred to his frequency in potential conflict with 2 ac, Tutors (A) and (B). Although the C560X flight was flying under IFR, in Class G airspace there was equal responsibility on all crews to maintain their own separation from other ac through see and avoid. The controller was limited to providing a BS but issued a traffic warning to the C560X crew as the flightpaths were in apparent conflict, which was reinforced when STCA activated. The controller updated the warning when separation reduced to 2nm, the C560X crew reporting 30sec later that they had manoeuvred in response to a TCAS RA against Tutor(A). Members noted that the radar recording does not reflect the C560X crew's perception of the TCAS evolution as the ac's Mode C only indicates a climb as it passes abeam Tutor(A) with 0·7nm horizontal separation and 200ft vertical. The LTC controller also passed a traffic warning on Tutor(B) but by now that Tutor was tracking E'ly and the C560X had descended back to 5000ft, below it. Meanwhile, unbeknown to the LTC controller, both Tutor(A) and (B) flights were operating under VFR and a TS from Benson. Tutor(A) flight was issued with TI by Benson on the C560X which he had already seen and was taking visual separation against. (B) flight was given TI and was not concerned given the geometry, content the C560X would pass behind.

A controller Member, familiar with LTC operations, stated that an initial joining clearance would not be issued until the flight called on frequency owing to the uncertainty of the departure time from Oxford and its time en-route. The airspace in the CPT area is complicated by Luton outbound flights climbing to FL70, the lowest available level, or above, so invariably flights seeking to join are told to remain outside CAS until the controller is sure of traffic situation. Members noted that in this incident, although it was not relevant to the Airprox, the Oxford clearance to the C560X had not included the instruction to remain clear of CAS; rather it had cleared the ac to CPT at 5000ft. Members sympathised with the controller's predicament, being on the receiving end of a situation where STCA activated and a TCAS RA was reported. However, the Tutor crews had fully discharged their responsibilities whilst the C560X crew, although unable to visually acquire the Tutors, were cognisant of their presence from the LTC controller's warnings and TCAS, and had followed the TCAS guidance. The Board believed that LTC controller, from the information presented, had perceived a conflict between the IFR C560X and VFR Tutors but there had been no erosion of normal safety standards or parameters.

The CAA SRG Advisor informed the Board that a new routeing had been established out of Oxford towards KENET and Brize would endeavour to provide a service for those flights.

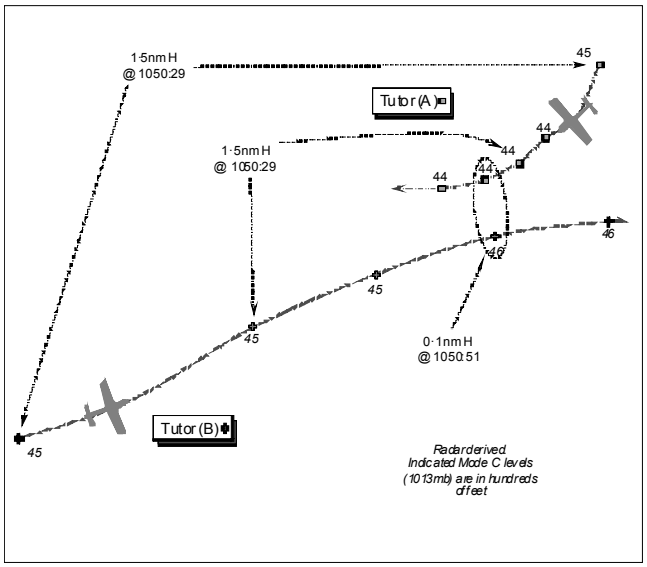
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Controller perceived conflict in Class G airspace.

Degree of Risk: E.

AIRPROX REPORT NO 2011027

Date/Time:	1 Apr 2011 1050Z	
Position:	5056N 00152W (9½nm N of Bournemouth Airport)	
Airspace:	London FIR	(Class: G)
	Reporting Ac (A)	*Reporting Ac (B)*
Type:	Grob Tutor TMk1	Grob Tutor TMk1
Operator:	HQ Air (Trg)	HQ Air (Trg)
Alt/FL:	4500ft	5000ft
	RPS (1014mb)	RPS (1014mb)
Weather:	VMC	VMC
Visibility:	30km	30km
Reported Separation:		
	120ft V	200-300ft
Recorded Separation:		
	200ft V @ 0·1nm H	



BOTH PILOTS FILED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PILOT OF GROB TUTOR T Mk1 (A), a QFI, reports that he was conducting a basic flying grading exercise in VMC above overcast cloud cover with tops to 3000ft amsl. He was in receipt of a 'listening watch' from Boscombe ZONE, on UHF and a squawk of A2677 selected with Mode C; elementary Mode S is fitted, but TCAS is not.

Flying level at 4500ft PORTLAND RPS (1014mb), heading 270° at a position about 270SAM24d [the Airprox occurred at 271SAM20d] with the candidate in control, maintaining straight and level flight, a late spot of conflicting traffic necessitated avoiding action being taken by him as the P-I-C. The conflicting ac – another Grob Tutor – was first sighted 200m ahead and to avoid it he dived to the R as simultaneously, the other ac climbed. Minimum vertical separation was about 120ft and the Risk 'very high'. Subsequently, he set course approximately E to continue the teaching element of the sortie. The conflicting traffic was identified as an ac from his Unit and the decision was made to discuss the Airprox on the ground before reporting action was initiated.

He added that the contrast between the cloud tops and the sky was affected by milky cirrus cloud above the horizon. His ac is coloured white; the HISLs and landing light were on.

THE PILOT OF GROB TUTOR T Mk1 (B), a QFI, reports he was teaching flying grading exercise 2 (effects of controls 2) to a candidate whilst keeping a listening watch with Boscombe ZONE on 256·5MHz; a squawk of A2677 was selected with Mode C; elementary Mode S is fitted, but TCAS is not.

Flying wings level at 5000ft (1014mb) above solid 8/8th cloud, heading 120° at 100kt to the N of Bournemouth, he became aware of another Tutor ac in his 11 o'clock, 100m away, slightly below the horizon and closing on a constant bearing. He broke to the R immediately and estimated that the two ac passed within 200 to 300ft of each other. As the other ac was well camouflaged against the undercast he saw it later than he would have liked. Initially he did not think an Airprox report was necessary, but he decided to discuss the situation with this colleague on the ground after landing; the Airprox was filed subsequently and he assessed the Risk as medium. His ac is coloured white; the HISLs and landing light was on.

THE GROB TUTOR PILOTS' UNIT commented that the Tutor colour-scheme is notoriously difficult to spot under the conditions experienced during this Airprox. Middle Wallop asked if the colour-scheme could be altered but was told this was not possible, although it is interesting to note that the display Tutor has a different colour scheme.

None of the Middle Wallop Tutor fleet currently has a Collision Avoidance System fitted, but the Unit's ac are scheduled to be fitted starting in June 2011.

THE BOSCOMBE DOWN ZONE CONTROLLER (ZONE) reports that he was operating LARS during a quiet period with little traffic when two Grobs called on UHF 256·5MHz. These flights were operating on a 'Listening Watch', where no ATS is provided. However, as they have a duty of care, he requested these two ac to squawk 'ident'. A further Grob Tutor pilot called up whom he also requested to squawk 'ident'. Observing two of these Grob Tutor ac in close proximity to each other, he called the other ac to the two crews; one called visual and the other just acknowledged his transmission. Shortly afterwards he handed over the position. Subsequent to the Airprox being filed, he listened to the RT tape recordings, but no mention of any Airprox was made by the pilots of any Tutor ac whilst on the frequency.

HQ 1GP BM SM reports that this Airprox occurred between a pair of Middle Wallop based Tutors operating VFR in receipt of a "Listening Watch" from Boscombe ZONE.

'Listening Watch' was introduced for Middle Wallop based Tutor ac conducting general handling in the vicinity of Boscombe Down, to facilitate co-ordination with Boscombe Down's IFR traffic when required. There is no form of flight following or undertaking to provide an ATS inherent in this 'listening watch'; the Tutor pilots simply 'check-in' on the ZONE frequency and are acknowledged. However, following the unit's investigation into this occurrence and that of Airprox 2011029, Boscombe Down ATC became concerned that their controller's perception of their 'duty of care' had blurred the line between their responsibilities toward ATSOCAS mandated within CAP774 and that of a 'Listening Watch'. Consequently, this concept has been withdrawn with Boscombe Down ATC applying ATSOCAS iaw CAP 774. A manning study is also being undertaken at Middle Wallop ATC to facilitate greater provision of ATSOCAS by that unit to their own station-based ac.

Both pilots report 30km visibility with nil weather and OVC cloud at 3000ft. The pilot of Tutor (A) reports that their visual acquisition task was hampered with the contrast between the cloud tops and the sky affected due to milky cirrus cloud above the horizon. The pilot of Tutor (B) reports a similar difficulty due to the lack of contrast between the colour scheme of Tutor (A) and the white background, compounded by their constant relative bearing.

Tutor (B) called ZONE initially at 1027:57 and, as ZONE was 'quiet…with little traffic', was instructed to squawk ident. At 1035:33, [over 15min before the Airprox occurred] the crew of Tutor (A) called ZONE and was also asked to squawk ident. Shortly after the pilot of Tutor (A) acknowledged this instruction, ZONE passed TI to Tutor (A) stating, "[callsign (A)] *Tutor 12 o'clock 1 mile manoeuvring indicating 8 hundred feet, correction 5 hundred feet below*." The pilot of Tutor (A) replied that they were visual. ZONE then immediately passed TI to Tutor (B), stating that the ac that was the subject of that TI was "*visual with you*," making it clear that it was Tutor (A). This TI was acknowledged by Tutor (B) at 1036:24 and there were no further transmissions from ZONE to the subject Tutors until 1054:44.

ZONE states in their report that shortly after passing TI to the Tutors, they handed over the console position to a second controller. Subsequently, ZONE has confirmed that this handover took place between 1036:24 and 1054:44, with the second controller's voice evident on the tape at 1054:44. However, neither controller nor the Supervisor could state exactly when the transfer of control position occurred, nor were any details of the handover evident on the RT tape transcript due to the absence of 'live mic' recording.

The CPA occurred at 1050:51, with 200ft vertical separation and a minimum horizontal separation of 0·1nm.

Notwithstanding the conceptual limitations of the 'Listening Watch', perceiving a duty of care to exist, the first ZONE controller identified the subject Tutors and passed them TI on each other, with Tutor (A) replying that they were visual with Tutor (B). Although it has proved impossible to determine the point at which the handover of control position took place, the limitations of the 'Listening Watch' as briefed to Boscombe Down Controllers meant that they were not required to provide any flight following or TI. Moreover, the Tutor pilots' reports and subsequent conversation with the pilot of Tutor (B) have highlighted that the aircrew were under no illusion that they were in receipt of an ATS. Furthermore, given the time elapsed from the passing of TI to the CPA it is clear that the TI passed between 1036:10 and 1036:23 was irrelevant to the air situation at the time the Airprox occurred.

From a BM perspective, notwithstanding the first ZONE controller's perceived 'Duty of Care', Boscombe Down ATC had no responsibility towards the provision of TI to the Tutor crews.

HQ AIR (TRG) comments that the procedures for avoiding mid-air collisions are currently being reviewed at Middle Wallop. The embodiment of TCAS should help reduce this risk further but only against transponding traffic.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

ZONE had conscientiously passed a warning to the Tutor pilots about each over 15min before the close quarters situation, despite the 'Listening Watch' provided, but this was plainly not relevant to the air situation when the Airprox occurred later. A 'Listening Watch' was not an effective ATS and contributed nothing to the pilot's SA. Members were encouraged that the Unit, in the interests of standardisation, has subsequently reviewed their procedures and applied the extant FIS stipulated for use nationally in conformity with CAP774. The HQ Air Trg Member added that the outcome of the review initiated by No1 EFTS subsequent to Airprox 2011029, whereby the Army Flying Grading organisation was seeking an increase in controller manpower with a view to Middle Wallop ATC providing a TS to such flights, was still awaited. There was, however, a fine balance to be struck between achieving the primary training goals of the sortie and the provision of a compatible ATS to enhance the pilots' SA with the attendant increase in RT and potential interruption to flying instruction. The Traffic Alert System (TAS) embodiment to the Tutor fleet would probably have averted this Airprox and a current Tutor pilot Member, familiar with TAS, extolled its worth. [Post Meeting Note: The UKAB was subsequently advised that two of Middle Wallop's Tutor airframes had already been equipped with TAS, two are currently being fitted out, with the last due for fitment by the end of September 2011.]

The Board was briefed by the HQ Air Training Member that the issue of a more conspicuous colour scheme for service Grob Tutor ac has been considered in great detail. Unfortunately, there was no 'easy fix' as the dark colours that have been applied to other training ac, eg black to Hawk and Tucano ac, can adversely affect the Glass Reinforced Plastic (GRP) structure of the Tutor because of the heat absorption characteristics of dark colours.

Turning to the Airprox itself, it was apparent that both pilots were operating VFR and approaching each other head-on, or nearly so, separated vertically by only 100ft Mode C. Each was therefore responsible for sighting the other ac in sufficient time to afford appropriate visual separation. The pilot of Tutor (A) reports that Tutor (B) was first sighted 200m ahead and to avoid it he dived to the R as, the other ac climbed. The pilot of Tutor (B) notes that he saw the other ac marginally later at a range of 100m and broke to the R immediately, estimating that the two ac passed within 200 to 300ft of each other. This led Members to agree, unanimously, that this Airprox had been the result of a late sighting by both pilots. Whilst not doubting the veracity of the report from the pilot of Tutor (A) in any way, the dive was not readily apparent on the radar recording, whereas the R turn was shown clearly taking effect at the CPA of 0·1nm – 185m. At this point Tutor (B)'s Mode C evinces a climb of 100ft. It was indeed fortunate that each pilot had chosen to take the action that he did, complimentary to that of his colleague and in conformity with the Rules of the Air, thereby averting a more serious situation. Nevertheless, the Board concluded that at these distances the safety of the ac involved had been compromised.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Late sightings by the pilots of both ac.

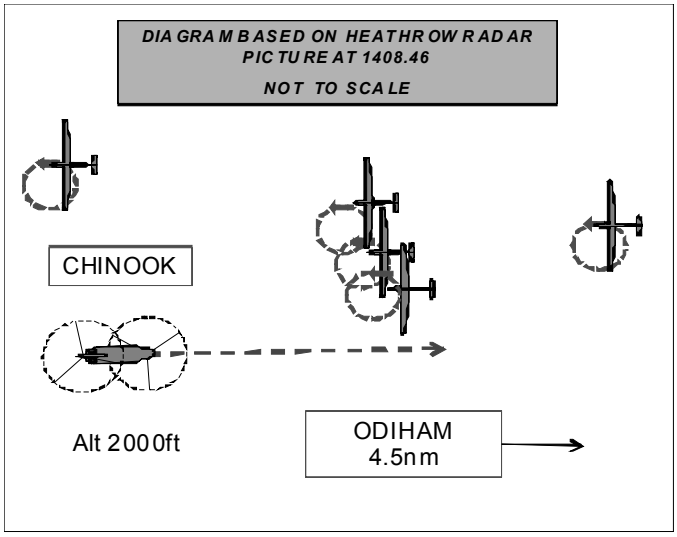
Degree of Risk: B.

AIRPROX REPORT No 2011028

AIRPROX REPORT NO 2011028

Date/Time: 7 Apr 2011 1409Z
Position: 5116N 00105W
(5nm W Odiham - elev 405ft)
Airspace: Odiham MATZ (Class: G)

	Reporting Ac	*Reported Ac*
Type:	Chinook	Untraced Glider
Operator:	HQ JHC	N/K
Alt/FL:	1600ft (QFE 1013mb)	NK
Weather:	VMC CAVOK	NK
Visibility:	20km	NK
Reported Separation:	0ft V/150m H	NK
Recorded Separation:	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE CHINOOK PILOT reports flying a green helicopter on an SRA recovery to Odiham under a TS, in good weather conditions, squawking as directed with Mode C and S with no CWS fitted. While under radar vectoring heading 085°, out of sun, at 120kt, just prior to descent ATC called traffic in their 11 o'clock with no height and then cleared them to descend on the glideslope. On looking in the 11 o'clock the traffic was identified an estimated 300m away, and although it was much closer than acceptable, it was not an actual collision risk. The LH seat pilot then saw another object in their 9 o'clock, slightly higher than them and about 150m away, which transpired to be a white glider banking to the R away from their ac. This was perceived to pose a high collision risk as they had descended through the alt of the glider and he reported the incident to ATC on the frequency in use.

The glider was seen late and only after the call about the other ac from ATC; they were in a period of high workload with the HP 'heads in' on instruments while the NHP had just completed pre-landing checks and set up the approach aid (GPS) requiring further time 'heads in'.

UKAB Note (1): Despite extensive procedural tracing action the glider pilot could not initially be identified. However after a further approach the following e-mail was received:

'On Thursday the 7th of April I took a launch from Lasham airfield in my LS8 glider (reg given) with the intention of flying a task to the North. The weather didn't turn out as predicted and I was finding it difficult to stay airborne locally to Lasham so I abandoned the original task and decided to stay local to the airfield. The visibility on this day varied from 5n to 6km looking into sun and 10km looking down sun. About an hour into the flight when I was just south of Basingstoke and slowly climbing in a thermal I spotted a Chinook helicopter about 2 to 3 miles away approaching my location from the west. After another two turns I became obvious that he had not seen me so I straightened up and headed North. I would estimate the separation between us was 500 to 600ft. If I had carried on circling my estimation was that he would have passed 200ft below me. I was fully aware of his position at all times and I chose to move away because I suspected that he was flying a simulated instrument approach and there would only be one set of eyes looking out'.

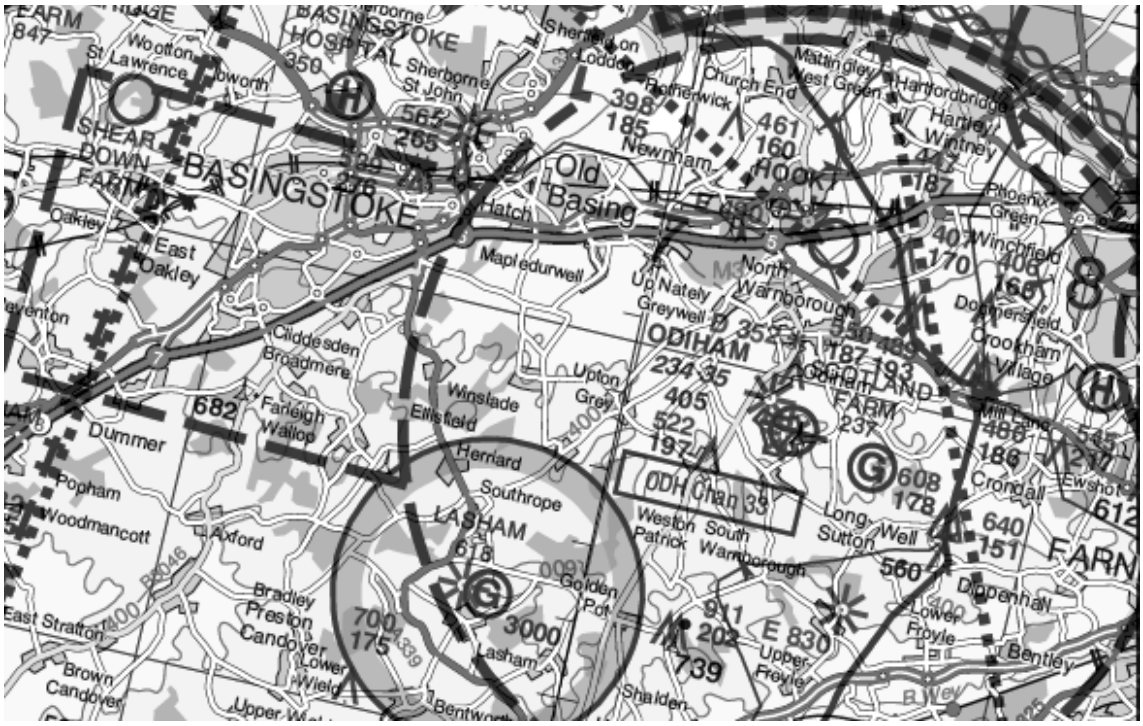
The pilot did not say if there were any other gliders in the area as shown on the radar, nor if he was the closest glider to the Chinook. Further 'just S of Basingstoke', his reported position is about 6nm on the C/L for RW09 and about 1½ nm W of the reported incident position; it is therefore thought unlikely that he was the reported glider.

THE TD CONTROLLER reported that he was training a UT controller on SRA when the Chinook was handed over from APP. Communication was established at 7.5nm final, about half a mile south of the CL. Conflicting traffic was seen at a range of 5 and a half miles final and half a mile N of the CL. The Chinook was converging with the

CL while the glider continued to manoeuvre in the Chinook's 11 o'clock at about 2nm. Following the initial handover of the Chinook he instructed the UT controller to call the glider to the Chinook; the pilot acknowledged the traffic and continued as instructed. A few moments later, the pilot stated his intention to file an Airprox against the glider, later explaining that he thought the glider pilot was operating in an inappropriate area and displaying poor airmanship to the detriment of flight safety.

HQ 1GP BM SM reports that this Airprox occurred 4.5nm W of Odiham between a Chinook conducting an SRA in receipt of a TS from Odiham TD and an untraced glider.

Lasham airfield is a notified glider site approximately 4.5nm SW of Odiham, which has a mandatory military avoidance of 2nm radius up to 3000ft agl. The UK Mil LFHB contains a further warning that "*intensive gliding activity takes place within 5nm of Lasham*." The diagram below shows the local area.



The Chinook free-called Odiham APP at 1402:08 while 8nm WSW of Odiham, was identified and was placed on TS, reduced by APP, stating, "*reduced traffic information, you are entering an area of high traffic density with Lasham gliders*."

Although the Chinook requested a PAR for RW09, this was not available as the PAR was on maintenance; an SRA was offered and accepted.

At 1407:24 APP transferred control of the Chinook to Talkdown (TD), with comms being established at 1407:35 when the Chinook was 7nm out. TD was manned by a trainee and an experienced instructor. From 1407:35 until 1408:08 there was an almost continuous RT exchange between TD and the Chinook.

At 1408:16, TD passed TI to the Chinook stating, "*traffic north-east, 1 mile, manoeuvring, no height information, possibly gliders"* and almost immediately, the pilot responded that they were visual with the traffic. At that point on the radar replay one primary-only contact can be seen 1nm NE of the Chinook, with 2 further intermittent primary contacts 1.5nm to the NE.

The radar replay shows that the CPA probably occurs at about 1408:37. At 1408:39, the next sweep of the radar after the CPA, there are 4 primary-only contacts almost directly N of the Chinook, the closest of which is just to the NW. Although the minimum separation cannot be measured, it is likely to accord with the Chinook pilot's report.

Based upon the Chinook pilot's sighting report and their position on radar, the gliders were on, or just N of, the extended CL at about the same height as the Chinook within the instrument pattern.

The TD instructor reported that he instructed the U/T controller to call the glider to the Chinook; it is assumed that this prompt occurred between 1408:08 and the passing of TI at 1408:16. Given the RT exchange between TD and the Chinook in the 43sec after the initial call, 1408:08 would have been the first opportunity to pass TI. Moreover, the TD instructor correctly assessed that there was sufficient time to prompt TD to pass TI, before the delay became unacceptable. It is considered that that TI was passed by TD in a timely manner and enabled the crew to visually acquire at least one of the gliders operating in that area, 14sec before the CPA.

The operation of the gliders in such a constrained piece of airspace causes both technical and human problems. The lack of SSR in gliders and the ac construction makes them almost invisible to surveillance radars and it is impossible to identify the number of gliders operating in the area, thereby making it impossible for ATC to pass anything more informative than generic TI. Furthermore, there is a risk for the aircrew that, given the difficulty in visually acquiring gliders, once they have sighted one glider, the human eye will focus on that for a short period and exclude other objects, thereby reducing the time available to visually acquire any other targets.

Notwithstanding that the gliders were operating within Class G airspace, their position close to the RW approach path of a busy airfield at about the same alt as the glidepath is not considered good airmanship.

This Airprox involved a late sighting of the gliders by the Chinook crew at a time of high cockpit workload. A contributory factor was that the gliders chose to operate, inside the MATZ, close to the Odiham instrument pattern.

BM SM Spt recommends that Odiham continue to engage with the local flying community to develop awareness of their operations.

UKAB NOTE (2): The recording of the Heathrow radar shows the Chinook throughout as described by in the HQ 1 GP BM SM report. There are multiple primary only intermittent contacts, presumed to be gliders, manoeuvring just to the N of the Odiham RW09 C/L.

HQ JHC comments that the comments by HQ 1 GP BM SM are fully supported. The poor airmanship displayed by the glider pilots who chose to operate on the extended centreline of a busy airfield at around the same altitude as the glide path, undoubtedly made an Airprox much more likely to happen. The lack of SSR in gliders has been highlighted, alongside the glider's construction, as making them difficult to see on surveillance radars and by the human eye (especially when scanning for several ac at once).

HQ JHC considers that a mid-air collision with a glider or light coloured small ac is a very significant risk. This Airprox indicates that the local gliding community is probably not fully cognisant of the flying operations at RAF Odiham and/or that the risk acceptance differs between the gliding community and other aviators.

It further supports the requests in HQ JHC comments on Airprox 2011023 - that the UK Airprox Board recommends the fitting of transponders to all gliders and similarly, light coloured small ac in order to reduce the frequency of Airproxs and the likelihood of an actual collision between a military RW ac and a glider, and that the UK Airprox Board undertakes to educate the gliding community on the risk of mid air collision in the vicinity of military aerodromes.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the Chinook pilot, transcripts of the relevant RT frequencies, radar photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

Members agreed that soaring close to the instrument approach path to the active RW of a busy military airfield is, at best, ill-advised.

The gliding Member was surprised that there was not a closer liaison between Odiham and Lasham and better communication between Odiham ATC and Lasham. There were several plausible suggestions one of which was that Lasham gliders operating inside the MATZ or close to the instrument pattern, should listen out on a nominated

(VHF) frequency on which Odiham ATC could broadcast the presence of instrument traffic as soon as they become aware of an ac inbound; this would allow gliders temporarily to remain clear of the area. The HQ 1 GP BM SM Advisor stated that there was liaison between Odiham and Lasham, but others suggested that this might not be at the level required to agree integration procedures.

Several civilian Members expressed surprise that a military ac on a SRA (or GCA) should operate in receipt of a TS as they considered that pilots on instrument approaches should be in receipt of a higher level of service; they acknowledged, however, that military instrument approaches are usually flown in Class G rather than Class D airspace, which is generally the case at civilian airfields with similar traffic densities. In any case, this incident where there were gliders soaring close to the RW C/L provides a good example of why a DS can be inappropriate as the ac would be vectored round the 'unknowns' and never achieve the aim of conducting a radar approach; that being the case, a TS was the only feasible option.

The HQ JHC recommendation regarding compulsory fitment of transponders was not supported by the Board; the reasoning was discussed previously on Airprox 2011023 and is outlined in that report.

The reluctance of glider pilots to submit reports was again a factor in assessing this Airprox. The Board was grateful for the glider pilot's report at UKAB Note (1), but agreed that, since this pilot was slightly further out from Odiham, it was likely that he was not the one who came closest to the Chinook. Members did not believe that the reported pilot could have come so close to a Chinook without becoming aware of it at some stage. However, in the absence of a report from the glider pilot, it was impossible to determine whether and/or when he saw the Chinook and whether and/or when he took avoiding action. Therefore the Board reluctantly concluded that the incident had been a conflict on the Odiham approach. In assessing the risk, the Board noted that the Chinook crew saw that the glider was 150m distant and turning away from them and therefore agreed that on balance, there had likely been no risk of collision.

PART C: ASSESSMENT OF CAUSE AND RISK

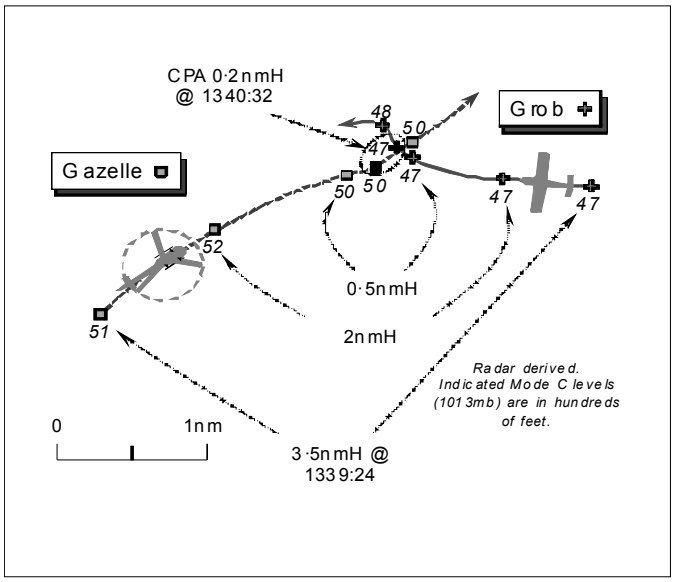
Cause: A conflict on the instrument approach to Odiham.

Degree of Risk: C.

AIRPROX REPORT No 2011029

AIRPROX REPORT NO 2011029

Date/Time:	6 Apr 2011 1340Z	
Position:	5102N 00154W (9nm SW of Boscombe Down - elev 407ft)	
Airspace:	London FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Gazelle	Grob Tutor T Mk1
Operator:	MoD FTR	HQ Air (Trg)
Alt/FL:	5000ft	-
	QFE (1011mb)	QNH
Weather:	VMC Sky Clear	VMC CLAH
Visibility:	50km	10km
Reported Separation:		
	Nil V/200m H	NK
Recorded Separation:		
	300ft V/0·2nm H (~370m)	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE WESTLAND GAZELLE HT Mk3 HELICOPTER PILOT reports he was conducting advanced training, VFR to the S and SW of Salisbury under a TS from Boscombe APPROACH (APP), demonstrating a flight test technique. A squawk of A2612 was selected with Modes C and S on; TCAS is not fitted. His helicopter has a white colour-scheme; the white HISLs were on.

Before the Airprox occurred traffic had been previously called by APP out to the E, which had been identified about 5min earlier operating at very low level (about 1000ft) with no confliction. Flying level at 5000ft Boscombe QFE (1011mb) heading 090° at 80kt, APP called two contacts, believed to be to the N of his ac. One was identified going away as no confliction - the other was not identified [seen]. Subsequently, on looking up from the cockpit instruments both pilots saw a white fixed-wing light ac in a banked R turn at 12 o'clock, 300-400m away and slightly below his helicopter. Minimum horizontal separation was 200m as the other ac – the Grob Tutor – resumed its course; he took no avoiding action as the Tutor had already turned away by the time they saw it. He then made a call to APP to state that he was visual with another ac now passing astern, but did not recall having been told about it. The Risk was assessed as 'high' and he added frankly, both student and instructor were looking heads-in at the time of the Airprox.

THE GROB TUTOR T MK1 PILOT reports he had departed from Middle Wallop for a local elementary training sortie, his third of four sorties of the day with a total brakes-off to brakes-on time of 5hr 50min. He does not recall the specific weather conditions although they would have been suitable for the exercise he was teaching, which was Straight and Level 1 & 2 with perhaps 1min of manoeuvring.

During the period that the Airprox occurred he would have been flying between 3000-6000ft amsl whilst operating between the SAM VOR radials of 270° to 300°, from 10nm to 30nm range. Boscombe ZONE was providing a 'listening watch' on 256·500MHz and a squawk of A2612 was selected with Mode C on; Mode S is fitted but TCAS is not.

He does not recall experiencing any event suggesting an Airprox had occurred and his normal practice on seeing another ac is to turn to avoid it or, if appropriate, increase the separation distance. Whilst they occasionally see other non-Middle Wallop ac in the local training area, he did not recall seeing any other ac on this particular day that had caused him any safety concern.

His aeroplane is coloured white with a blue stripe and all the ac's lighting was on.

THE BOSCOMBE DOWN APPROACH CONTROLLER (APP) reports the Gazelle helicopter was under his control throughout this sortie. The helicopter was operating out to 15nm SW of Boscombe Down at an altitude of 5000ft. At the same time, there were a number of Middle Wallop ac operating in the same area, mostly indicating below FL40 Mode C. There were, however, two ac indicating at about the same level as the Gazelle; one contact manoeuvring 2nm away to the NE and the second, was about 4nm E tracking W. Both of these ac were called to the Gazelle pilot, who reported visual with both ac. As the Gazelle pilot had called visual with the traffic, no further TI was offered. A short time later, the Gazelle pilot reported that an ac had passed close by at the same level. This was identified as the E'ly of the two contacts that had earlier been called to the Gazelle crew.

THE BOSCOMBE DOWN ZONE CONTROLLER did not submit a report.

HQ 1GP BM SM reports that this Airprox occurred between a Gazelle HT Mk3 conducting flight test training in receipt of a TS from Boscombe APP and a Tutor T Mk1 operating under a 'listening watch' from Boscombe ZONE.

'Listening Watch' has been introduced for Middle Wallop based Tutor ac to facilitate coordination when required against Boscombe Down ac operating under IFR. There is no form of flight following or any undertaking to provide an ATS inherent in this 'listening watch', the Tutor crews simply 'check-in' on the ZONE frequency and are acknowledged.

At 1338:47, APP passed TI to the Gazelle crew on other unrelated traffic to the NE of the Gazelle, *"…traffic north east 3 miles manoeuvring believed to be fixed wing flight level 4-5"*, which was acknowledged with *"..looking".* This was updated at 1339:12, *"…unknown contact north north east 2 miles South West"*, with which the Gazelle pilot reported visual 3 sec later.

At 1339:25, APP passed TI to the Gazelle crew on the subject Tutor stating, "*further traffic, east-north-east, 4 miles, west bound, flight level 4-7*." Following this transmission at 1339:29, the Gazelle pilot replied that they were, "*visual with traffic*." When the TI was issued the LATCC (Mil) radar recording shows that the Tutor was 3.5nm ENE of the Gazelle indicating 4700ft Mode C (1013mb), with the Gazelle indicating 5100ft Mode C. [UKAB Note (1): The CPA occurred at 1340:32 with the Tutor turning R through the Gazelle's 12 o'clock at a range of 0·2nm and below it with vertical separation of 300ft Mode C evident.] At 1340:47, the Gazelle pilot stated on the APP frequency, "*gone behind her.*"

From an ATM perspective, although the Gazelle pilot reports that they could not recall being informed of the Tutor, it is clear that APP did pass accurate TI about the Tutor. Moreover, the Gazelle pilot immediately reported visual with, *"visual with traffic"*. However, at that time (1339:29) the ac that had been the subject of the previous TI passed at 1338:47, and updated at 1339:12, was approximately 1.2nm N also indicating 4700ft Mode C. Given the amount of background traffic and the similarity of the positions of the aircraft involved, the Gazelle crew may have missed APP stating "*further traffic*" and thought that the TI related to the ac that he had previously called visual with. This hypothesis is consistent with the Gazelle pilot's belief that he had not been passed TI on the subject Tutor and their late sighting of it. Nevertheless, from APP's perspective, the controller passed timely and accurate TI to the Gazelle crew in accordance with CAP774, to which they replied that they were visual.

UKAB Note (2): This Airprox occurred at the base and just below the Boscombe Advisory Radio Area (ARA) promulgated in the UK AIP at ENR 5-2 which gives the lateral co-ordinates of the Area within Class G airspace and the vertical limits of FL50 – FL195. It is noted in Remarks that:

'Considerable test flight activity. Test flight activity often requires the pilots to fly profiles which limit their ability to manoeuvre their aircraft in compliance with the Rules of the Air. Such flights will receive a radar service from Boscombe Down or the Swanwick Military Special Tasks Cell.'

HQ AIR (TRG) comments that the Tutor complied with extant Group Air Staff Orders (GASOs) regarding the requirement or otherwise to operate under a TS. The Tutor pilot was also operating clear of the ARA on this occasion but is not required to. However, following this incident, a local review of procedures, initiated by No1 EFTS, is under way. Unfortunately, segregation of test flights is not always practical and operating under a TS is the next best option. However, this incident highlights that even with perfect TI the system can break down if crews misinterpret the TI given or choose not to take their own separation based upon it. Collision avoidance in this case relied on the 'see and avoid' principle, the flaws of which were exposed here. The ongoing embodiment of a Traffic

Alerting System on the Tutor will add a further layer of mitigation and should avoid the concentrating effect of any potential alternative geographical airspace limitations.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, a report from the APP controller involved and reports from the appropriate ATC and operating authorities.

The Gazelle crew had wisely sought to supplement their lookout with a TS whilst engaged in their intensive instructional sortie and it was evident that APP was conscientiously providing a good level of TI to assist the crew's SA. The HQ 1Gp report coupled with the RT transcript and radar recording confirm that the Gazelle crew had indeed been passed comprehensive TI by APP about the subject Grob Tutor when it was 3·5nm away, before they subsequently sighted it 300-400m away and slightly below their helicopter, believing they had not been told about it. As the Gazelle pilot had reported just 4 sec after APP's transmission, *"visual with traffic",* it was understandable that such a reply would have assured the controller that the subject Grob had been seen and that the Gazelle crew would maintain their own separation, making any further update superfluous. Controller Members recognised that all the essential elements of TI were included in APP's transmission, and the Board agreed with HQ 1Gp BM SM's contention that the Gazelle pilot had probably missed or not assimilated correctly the *"further traffic..",* perceiving that the TI related to the ac previously seen. This was most unfortunate but such mistakes can happen occasionally in a busy traffic scenario and which are virtually impossible to guard against. Notwithstanding any assistance from ATC, in Class G airspace it is the pilots' responsibility to see and avoid other traffic; the Board agreed that part of the Cause here was a late sighting by the Gazelle crew.

All involved were undoubtedly doing their best to complete their specific instructional/training assignments as efficiently as possible and there was a fine balance to be struck between achieving the primary training goals of the sortie with the provision of a compatible ATS to enhance the pilots' SA. However, the Board was somewhat surprised that the Grob Tutor pilot had not similarly availed himself of a TS. In the Board's view a 'Listening Watch' contributed nothing to the pilot's SA and Members were surprised that a BS was not being requested at a minimum, or preferably a TS. The Board welcomed the review initiated by No1 EFTS; the HQ Air Trg Member briefed the Members that the Army Flying Grading organisation was seeking an increase in controller manpower with a view to Middle Wallop ATC providing a TS to such flights as the norm.

As it was the Grob Tutor pilot reports that he had not seen the Gazelle at all, or if he did, had discounted it as a factor. It was feasible that the R turn evinced by the radar recording might have been an avoiding action turn but this was conjecture. The Board could assess the Airprox only on the basis of the reports provided and Members concluded that this was a non-sighting by the Tutor pilot. The Board determined, therefore, that this Airprox had resulted from a non-sighting by the Tutor pilot and a late sighting by the Gazelle crew. The radar recording shows that 300ft of vertical separation existed at the closest point of 0·2nm as the Tutor crossed ahead and probably when the Gazelle pilot had spotted the Tutor. Furthermore, the Gazelle pilot had realised that the Tutor was turning away from his helicopter at the CPA and his ac was passing clear astern so no avoiding action was necessary. This convinced the Members that in these circumstances there was no Risk of a collision.

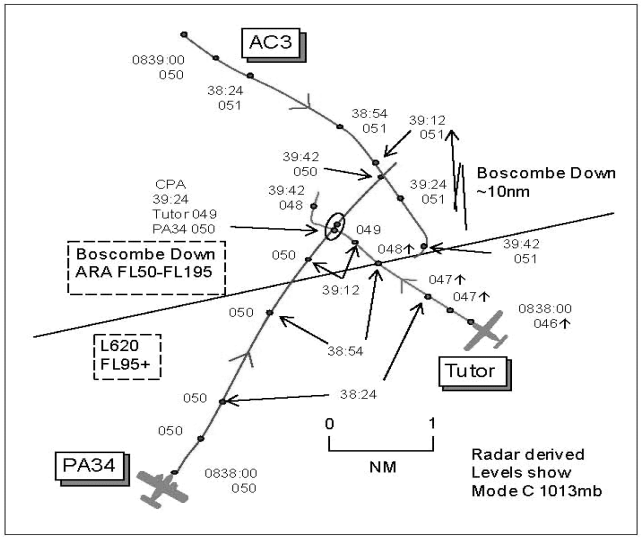
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A non-sighting by the Tutor pilot and a late sighting by the Gazelle crew.

Degree of Risk: C.

AIRPROX REPORT NO 2011030

Date/Time:	12 Apr 2011 0839Z	
Position:	5059N 00145W (6nm SSE Salisbury)	
Airspace:	Boscombe ARA	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Grob Tutor TMk1	PA34
Operator:	HQ Air (Trg)	Civ Trg
Alt/FL:	5000ft ↑ (RPS 1028mb)	FL50
Weather:	VMC CLOC	VMC CLOC
Visibility:	50km	30km
Reported Separation:	100ftV	Not seen
Recorded Separation:	100ft V/<0·1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE TUTOR PILOT reports flying a dual grading sortie from Middle Wallop, VFR and under a 'listening watch' with Boscombe Zone on 233·85MHz, squawking with Modes S and C. The visibility was 50km in VMC and the ac was coloured white. Operating in the SW training area the student was flying the ac straight and level at 5000ft RPS 1028mb and 100kt with a slightly high nose attitude and a small ROC established. Following a lookout scan to the L the required radio frequencies for recovery were selected by the student. A lookout scan was conducted from the ac's nose to the RHS tailplane by the ac Capt and student. During the scan to the L a light twin-piston engine ac was seen passing directly O/H from the 7 o'clock sector passing to the 2 o'clock sector about 100ft above. This sighting was too late to take avoiding action. The Capt took control and levelled the ac; he assessed the risk as medium.

THE PA34 PILOT reports flying a dual training sortie from Oxford, IFR and in receipt of a TS from Boscombe Zone on 126·7MHz, squawking with Modes S and C. The visibility was 30km in VMC and the ac was coloured white/ blue. About 6nm SE of Boscombe heading 050° at FL50 and 160kt a student seated in the rear seat saw a Tutor about 0·5nm away approaching from his 3-4 o'clock and 300-500ft below. The Tutor then executed a manoeuvre to position itself in their 6-7 o'clock at approximately the same level or slightly below. The student did not think there was a risk of collision. Boscombe informed them of traffic and he saw an ac, AC3, which crossed ahead from L to R and slightly above, but the Tutor was probably hidden beneath the starboard wing. This Tutor was not seen by either of the operating crew. The rear-seated student took pictures of the Tutor when it was positioning behind their ac.

UKAB Note (1): The UKAB received the Boscombe RT transcript on the 1st July which revealed that the Airprox had occurred immediately before the PA34 flight made its initial call to Boscombe Zone. ATSI was requested to contact Bournemouth however the ATSU had returned their RT tapes back into service and owing to the delay the controller would not be able to provide a meaningful report.

HQ 1GP BM SM reports that this Airprox occurred between a PA34 operating IFR in VMC that reported being in receipt of a TS from Boscombe Zone and a Tutor operating VFR in VMC under a "listening watch" with Boscombe Zone. All levels are based upon SSR Mode C except where otherwise stated.

The "listening watch" was introduced for Middle Wallop based Tutor ac conducting GH in the vicinity of Boscombe Down, to facilitate coordination for the latter unit's IFR traffic when required. There is no form of flight following or undertaking to provide an ATS inherent in this "listening watch"; the Tutors simply "check-in" on the ZONE frequency and are acknowledged. However, following the unit's investigation into this occurrence and that of Airprox 2011029, they became concerned that their controller's perception of duty of care had blurred the line between their responsibilities toward ATSOCAS mandated within CAP774 and that of a "Listening Watch."

Consequently, this concept has been stopped, with Boscombe applying ATSOCAS iaw CAP774 and a manning study being undertaken at Middle Wallop to facilitate greater provision of ATSOCAS by that unit to their Stn-based ac.

At 0824:40, Bournemouth pre-noted Zone with details of the PA34 routeing toward Oxford. Zone passed Bournemouth a new SSR 3A for the PA34 of 2651 and the conversation ended with Zone instructing Bournemouth to freecall the PA34 to, "*126·7…clean and clear*." This is acknowledged, with Bournemouth stating, "*126·7 once clear, thanks*."

At 0838:24 the PA34's SSR 3A changed from Bournemouth's code to a Boscombe Zone SSR 3A of 2651. At this point the Tutor is 2·4nm NE of the PA34 indicating FL047, with the PA34 indicating FL050.

[UKAB Note (2): The radar recording shows the PA34 tracking 030° and Tutor tracking 310° converging on a line of constant bearing, the Tutor in a slow climb reaching FL049 at 0839:11 with the PA34 0·5nm to its SW at FL050. Simultaneously AC3, which was seen by the PA34 crew, was crossing 1·25nm ahead and 100ft above. The CPA occurs at 0839:24 with the Tutor passing just behind and below the PA34 with <0·1nm lateral and 100ft vertical separation existing.]

At 0839:45 the PA34 flight called Zone, *"PA34 c/s with you flight level 50"*. Zone replied, *"PA34 c/s Boscombe Zone identified flight level 50 traffic service traffic south west 1 mile similar heading 200ft by the way"*. The PA34 pilot responded, *"Traffic service visual with the traffic PA34 c/s"* however, by this stage, the Tutor is 0·8nm SW of the PA34 and no longer a factor.

The PA34 pilot stated that the Tutor was sighted by a student in the rear of the ac, in the 3 to 4 o'clock position, at a range of approximately 0·5nm. Given the relative positions of the ac, this sighting was approximately co-incident with the CPA. The Tutor was not sighted by the handling crew at any point during the incident sequence. Moreover, the PA34 pilot's report makes no mention of having received TI on the Tutor from Bournemouth.

Unfortunately, whilst the unit were informed about the Airprox within 3 days of the occurrence, their incident reports were not completed until just over 2 months after the event. Consequently, the involved Boscombe controllers could not recall any details of the incident and so there is no record, other than the transcript, of Zone's workload.

Although the language used in the prenote between Bournemouth and Boscombe was ambiguous, it is reasonable to argue that the intent behind it was clear; that the PA34 flight could be free-called to Zone once clear of CAS and if clear of confliction. At the point when the Boscombe SSR 3A code was set by the PA34 flight, 2·4nm lateral separation existed between the PA34 and the Tutor, with the confliction evident on the radar replay. While it has not been possible to determine whether Bournemouth provided TI to the PA34 flight on the Tutor prior to releasing them to Boscombe Zone, nor what their taskload or physiological state was, based upon the available evidence it is the contention of BM SM that the PA34 was released by Bournemouth in confliction with the Tutor.

Whilst information to determine the point at which Bournemouth instructed the PA34 to contact Zone was not available to this investigation, the PA34 was squawking the Boscombe assigned SSR3A for 83sec prior to initial contact with Zone. This length of time can be viewed as an aggravating factor to the occurrence, in terms of its effect on delaying the provision of TI to the PA34; however, the source of this delay could not be determined.

These issues notwithstanding, both crews were expected to discharge their responsibilities to "see and avoid" other traffic and, in this instance, neither crews became visual until around the CPA, with providence the only safety barrier.

HQ AIR (TRG) agrees that whilst the Tutor pilot reports the PA34 passing from his 7 o'clock to 2 o'clock, this geometry is not substantiated by the radar data. The radar trace indicates the PA34 passing from the Tutor's 10 to 4 o'clock, almost directly overhead. It is unlikely that he sighted the PA34 before the CPA. The PA34 passenger report is also not consistent with a sighting of the Tutor at 0·5nm assuming that the reported 3-4 o'clock is correct. From the radar trace, the Tutor was only in the 3-4 o'clock at or beyond the CPA, when the range was significantly less. The lookout scans of both crews were therefore ineffective. The hazard posed by recognised weaknesses in the "see and avoid" system are being mitigated by the fitment of Traffic Avoidance System (TAS) to the Tutor fleet, with fleet embodiment expected in Oct 11. Action is also ongoing to provide a more effective ATS either from Boscombe Down or Middle Wallop.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the Boscombe Down RT frequencies, radar video recordings and reports from the appropriate ATC authority.

The Board were disappointed that Boscombe Down ATSU had filed their reports late, which had prevented reports being available from Bournemouth. Without any input from Bournemouth, Members could only assess this Airprox on the limited information available. It was clear that after the pre-note to Boscombe, there had been no radar handover and the PA34 flight had been free-called so the level of service would be established during the initial RT exchange. This first call to Boscombe, however, occurred after the subject ac had passed at the CPA. Both ac were flying in Class G airspace where pilots are responsible for maintaining their separation from other flights through see and avoid. Although the Tutor would have been shielded from view by the PA34's wing and engine configuration during the later stages of the encounter, Members agreed that the Tutor was there to be seen for some considerable time prior to this as it converged from the PA34 crew's front R quarter. However, it appeared to be on a line of constant bearing where the ac would appear as a stationary object in the pilot's field of view with no relative movement making it difficult to visually acquire during a lookout scan. The student seated in the rear of the PA34 saw the Tutor but it passed unsighted to the operating crew, a part cause of the Airprox. Similarly, the PA34 was there to be seen by the Tutor pilot, approaching on a constant bearing from his forward L quarter; however, he saw it only as it passed O/H, effectively a non-sighting and the other part cause of the Airprox.

The TI passed to the PA34 flight on the Tutor to its SW was not assimilated by its crew. They reported 'visual' with the traffic but this was another ac, AC3, that had passed ahead from L to R and slightly above and which was by then to their SE. The Tutor pilot's sighting of the PA34 occurred at the CPA, too late to take avoiding action, but he instinctively levelled-off his ac. These non-sightings by both crews as the ac passed by luck with minimal separation, corroborated by the radar recording, left the Board in no doubt that an actual risk of collision existed during this encounter.

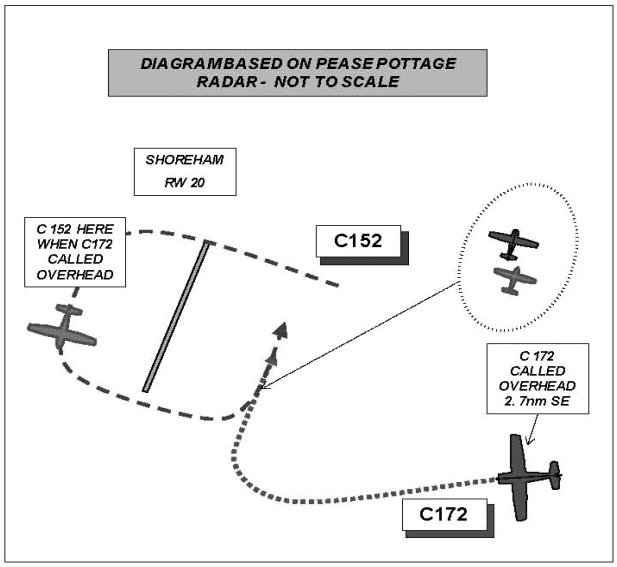
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A non-sighting by the PA34 crew and effectively a non-sighting by the Tutor pilot.

Degree of Risk: A.

AIRPROX REPORT NO 2011031

Date/Time:	9 Apr 2011 1612Z (Saturday)	
Position:	5050N 00019W (Shoreham DW RW 20 - elev 7ft)	
Airspace:	Shoreham ATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	C152	C172
Operator:	Civ Trg	Civ Comm
Alt/FL:	1100ft (QFE 1022mb)	1100ft
Weather:	VMC CLBC	VMC CAVOK
Visibility:	>10km	10km
Reported Separation:	0ft V/40m H	NR
Recorded Separation:	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE C152 PILOT reports flying a VFR instructional flight in a blue and white ac, in contact with Shoreham TWR, squawking 7000 [he thought] but Mode C was not fitted. Having been cleared for an overhead (O/H) join, he was in the overhead at 2000ft descending to be downwind at 1100ft, when a C172 [with a C/S that he recognised] reported at the Brighton VRP and was also cleared for an O/H join after requesting a L base join. He [the C152 pilot] descended dead side and flew cross-wind at the cct height of 1100ft then turned downwind heading 020° at 90kt. As he was rolling out of the turn onto downwind from crosswind he saw the C172 appear in his 11 o'clock, 40m away, descending onto downwind from above. The C172 then reported downwind before him and ATC then asked for his position; he responded that he was downwind behind the C172 that had just cut in front of him.

He reported the Airprox to TWR on the frequency in use and slowed his ac by using flap to reposition behind the C172. He assessed the risk as being medium.

After landing he went to the TWR and explained that the C172 had descended on the live side onto downwind traffic having not reached the dead side after being cleared for the overhead join. The C172 pilot reported at Brighton when he [the C152 pilot] was already in the overhead, leading him to believe that there would be no conflicting traffic.

THE C172 PILOT reports that at the time of the reported Airprox, he was flying a VFR local flight, squawking with Mode S and rejoining the Shoreham cct and in communication with TWR. He did not hear any Airprox call on the RT or receive any notification at the time; furthermore the Airprox reporting form was sent by email and went directly to his 'junk' folder so he did not see it for over a week.

He believes that the other ac came close behind him just after he had joined the cct at 1100ft.

He flew two O/H joins that day descending on deadside and crossing exactly over the upwind end of the RW; he also joined via base and cross-wind. He recalls that other ac had been flying wide ccts, not slowing down expeditiously and not making RT calls in the correct positions. On occasion ac were flying outside the ATZ boundary which made sequencing difficult. Since he was not given the timing of the incident, he could not recall the precise details and he saw many ac as Shoreham is always busy on Saturdays; however, he always slows down to achieve correct spacing with other ac. He does recall that on that day the cct sequencing was becoming hazardous due to ac flying wide ccts, others joining wide upwind, (not across the upwind threshold) and some flying standard O/H joins.

He did not see the other ac but assessed the risk as being low.

ATSI reports that the Airprox occurred in the Class G airspace of the Shoreham ATZ which is a circle of 2nm radius centred on RW 02/20 and extending to 2000ft aal (7ft).

The Shoreham controller was operating a combined Aerodrome and Approach control position, without the aid of surveillance equipment and RW20 was in use with a left hand traffic pattern. The controller reported the workload as being high but due to a staff shortage he was unable to split the two positions. As part of the tactical management of the circuit, the controller was instructing ac to join overhead which allowed them to position sensibly into the busy traffic pattern.

The UK AIP page AD 2-EGKA-1-7 (29 Jul 10), paragraph 6, states:

'c) Circuit heights are 1100ft aal for all runways.

d) Variable circuits at discretion of ATC.

e) Unless otherwise instructed aircraft joining the circuit will overfly the aerodrome maintaining 2000ft aal, until instructed to descend to circuit height on the inactive (dead) side of the runway in use and join the circuit by crossing the upwind end. Pilots should note that there would frequently be helicopters operating both 'liveside' and 'deadside' in the ATZ up to 600ft'.

CAA ATSI had access to radar recordings provided by NATS Swanwick and written reports from the controller and pilots.

The weather for Shoreham was:

METAR EGKA 091550Z 13010KT CAVOK 14/10 Q1023=

METAR EGKA 091650Z 11005KT CAVOK 14/10 Q1022=

At 1605:30 the C152 in receipt of a BS, reported N of Brighton pier at 2700ft and requested a join for ccts. The TWR controller replied, *"(C152)c/s roger circuits approved report er overhead at two thousand feet Q F E one zero two two",* the pilot responded, *"Q F E one zero two two report overhead (C152)c/s.*"

At 1608:30, the C172, in receipt of a BS, called at Brighton pier and requested a left base rejoin but TWR replied, *"(C172)c/s overhead join at the moment I'll advise if I can improve Q F E one zero two two"* and the pilot responded, *"overhead join (C172)c/s.*"

Using Mode S the C172 was observed on the radar recording approaching from the E.

ATSI noted that the controller did not obtain a readback of the QFE, did not give the RW in use, the cct direction or traffic information; however, the RT loading was high and it was evident that the circuit was extremely busy.

At 1609:40 the C152 pilot reported overhead and TWR responded, *"(C152)c/s descend deadside report downwind"* and the pilot acknowledged, *"report deadside (C152)c/s".* It is not possible to identify the C152 using the radar recording; the pilot's report states that the transpoder was selected ON with a code of 7000, however a primary only contact (with no SSR) can be seen approaching the overhead from the E co-incident with the RTF reports made by the C152 pilot.

At 1609:50 the radar recording shows the C172, 4.4nm E of the airfield indicating FL012, and following the coastline Westbound.

At 1611:02 the C172 reported overhead but the radar recording shows it was positioned 2.7nm SE of the airfield tracking W at FL016 (1843ft alt). The TWR controller responded, *"(C172)c/s descend deadside report downwind"* and the pilot acknowledged saying, *"descend deadside report downwind (C172)c/s".* At the same time, the primary contact is observed passing 0.5nm SW of the airfield tracking E and crossing the upwind end of the RW.

AIRPROX REPORT No 2011031

At 1611:46 radar recording shows the C172, 1.4nm SE of the airfield in a right turn at FL014 (Alt 1643ft), towards the begining of the downwind leg with the primary contact in the crosswind position, tracking E with the ac 1nm apart and converging; the radar return on the primary contact is then lost.

At 1612:32, radar recording shows the position of the C172 is 1.2nm to the E of the airfield, the pilot reporting, *"(C172)c/s downwind to land".* During the investigation, the controller stated that he expected both ac to join overhead in sequence and was not expecting the C172 to be ahead. The TWR controller then requested the position of the C152 saying, "(*C152) report your position"* and the pilot replied, *"(C152)c/s just er turned downwind been cut up by the Cessna*"; the C152 pilot was then instructed to follow the C172.

The Manual of Air Traffic Control, Part 1, Section 2, Chapter 1, Page1 Paragraph 2.1 states:

'Aerodrome Control is responsible for issuing information and instructions to aircraft under its control to achieve a safe, orderly and expeditious flow of air traffic and to assist pilots in preventing collisions between:

a) aircraft flying in, and in the vicinity of, the ATZ'

The controller's workload was high and in order to ensure that traffic was sequenced appropriately into the busy traffic pattern, he instructed both pilots to join overhead. The radar recording shows that when the C152 reported overhead, the C172 was 4.5nm E of the airfield. The overhead call from the C172 pilot was made when the aircraft was 2.7nm SE of the airfield, approaching the ATZ boundary. The C172 was then seen to route directly to the downwind position.

The C172 pilot did not correctly communicate the aircraft position to ATC. Rule 45 of the Rules of the Air (RoA), paragraph 6 (c) states:

'…….communicate his position and height to the air traffic control unit, ...at the Aerodrome on entering the zone and immediately prior to leaving it.'

The C172 pilot did not comply with the controller's instruction to join overhead the airfield. Rule 45, paragraph 3 states:

'If the aerodrome has an air traffic control unit the commander shall obtain the permission of the air traffic control unit to enable the flight to be conducted safely within the zone.'

Further Rule 12 (a) of RoA, states:

'the commander of the aircraft……shall:

conform to the pattern of traffic formed by other aircraft intending to land at that aerodrome or keep clear of the airspace in which the pattern is formed'

UKAB Note (1): Although the C172 shows on the radar recording (as outlined above in the ATSI report), the primary response believed to be the C152 had disappeared before the CPA. The separation could not therefore, be determined.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar recordings, reports from the air traffic controller involved and reports from the appropriate ATC authorities.

Although Members were aware of other recent incidents at Shoreham, in keeping with current practice, this incident was assessed in isolation and without reference to other agencies or reports.

In assessing the part played in this incident by the participants, Members noted that the C152 pilot had flown 'by the book' integrating safely into the visual fixed-wing cct and as expected by the Controller.

However, the Board considered this incident to be a serious case of flying indiscipline by the C172 pilot.

There is little doubt from the reports, the RT transcript and the radar recording, that at the time of the incident Shoreham was very busy, the ccts being flown were not all standard and the controller was working to his capacity. A GA Member observed that when non-radar equipped airfields are busy and the airspace permits, standard overhead joins are a straightforward way of ensuring safe sequencing of ac joining the visual cct and, wisely in the view of Members, the Controller elected to implement this. The Shoreham AIP entry, as detailed in the ATSI report above, makes it clear that, unless otherwise approved by ATC, this is the preferred method of joining the Shoreham cct; in this case ATC specifically and clearly rejected the C172 pilot's request to joinon left base, due to the heavy traffic load, and the pilot read-back the instruction indicating that he fully understood that he was required to join over head. Notwithstanding this instruction, Members agreed that there was no doubt that the C172 pilot had disregarded it, gave inaccurate position reports contrary to ROA Rule 45, and, as clearly described in the ATSI report, proceeded to join directly downwind. Furthermore, he did not integrate safely into the visual circuit pattern being formed by ac ahead (the C152) as required by the ROA Rule 12. Had the C172 pilot joined as instructed by the Controller, Members agreed unanimously, that the incident would most likely not have occurred.

A GA Member pointed out that, although ATC procedures might sometimes seem lengthy and inefficient, they are designed to ensure safety even in the busiest scenarios.

The Board was informed by the ATSI Advisor that the Controller was not aware that the C172 had joined the visual circuit downwind when he submitted his report in response to the reported Airprox; he became aware of the geometry of the Airprox only when it emerged during the investigation. There was some discussion by Controller Members as to whether the Controller could have noticed that the C172 pilot was not complying with his instruction to join overhead. They noted however, the high workload, that the control position faces in the opposite direction to that of the C172's approach and has a restricted view behind and none overhead; that being the case Members agreed that it would be unreasonable to expect the Controller to note that the C172 was not flying an overhead join and to attempt to correct the situation.

In assessing the risk, Members noted that the C152 did not see the C172 until it appeared 40m away in his 11 o'clock, descending from above; in the absence of any information to the contrary, it was accepted that this estimate of range was accurate. That being the case the C152 pilot was not in a position to take any avoiding action to influence events. Since during the C172's turn onto downwind the C152 would have been obscured by the former's floor then, on rolling out, it would be almost directly below, the C172 pilot did not see the C152 before the CPA.. In these circumstances there was, in the Board's unanimous view, an actual risk that the ac would have collided.

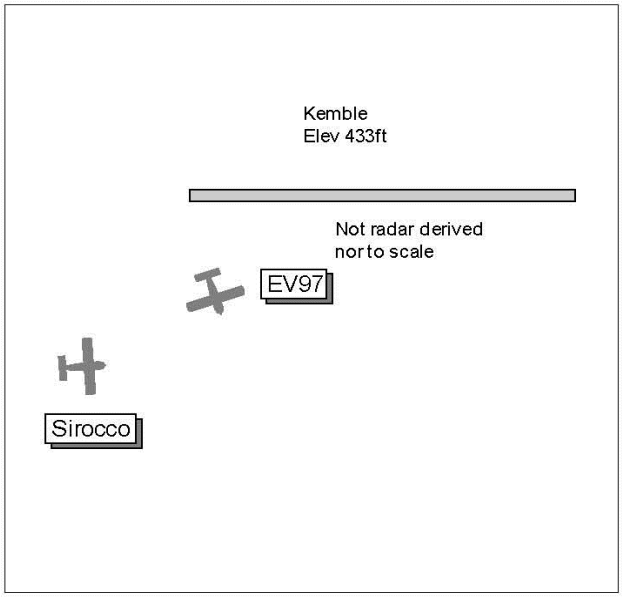
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The C172 pilot did not comply with the ROA or ATC instructions and gave incorrect position reports, flying into conflict with the C152 which he did not see.

Degree of Risk: A.

AIRPROX REPORT NO 2011032

Date/Time:	9 Apr 2011 1514Z (Saturday)	
Position:	5140N 00203W (O/H Kemble - elev 433ft)	
Airspace:	ATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Evektor EV97 Eurostar	Jurca Sirocco
Operator:	Civ Trg	Civ Pte
Alt/FL:	1500ft ↓ (QFE 1014mb)	1500ft↓ (QFE 1008mb)
Weather:	VMC	VMC HAZE
Visibility:	>10km	5000m
Reported Separation:	100ft V	150-200ft V
Recorded Separation:	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE EVEKTOR EV97 EUROSTAR PILOT reports flying a dual test flight with a PPL holder for revalidation of a NPPL, VFR and in communication with Kemble. The visibility was >10km in VMC. The PF joined O/H for RW08 from the W at 2000ft QFE 1014mb and at the midpoint made a gentle turn 30° R starting a descent. On realising his mistake the PF straightened out, climbed back to 2000ft and correctly turned L with the cct pattern, first over the live-side - where they encountered a Cessna inbound from the NW about 200ft higher - before then crossing the RW08 numbers as per CAA recommendation and starting a descent at 80kt. Their lookout to the W was into sun but in any event they did not see the Sirocco until it passed; it was almost certainly in a blind spot under their starboard wing. Looking up at the Cessna above to see how it was going to join they saw the Sirocco as it flashed past about 100ft below and a little behind their ac on a heading of 060°, close enough to give them a fright. At the time they were about 1500ft QFE in a gentle L turn descending deadside to cross the RW26 threshold numbers at cct height. He reported the 'Airmiss' to Tower. The Sirocco appeared to climb to 2000ft and proceeded to fly a wide LH cct outside the ATZ, for as they approached the end of the downwind leg the Sirocco was so far away he thought it was flying away. Afterwards, on reflection, both he and his student thought at the time that the Sirocco was a large ac (he commented that it looks like a Space Shuttle); perhaps this was a trick of the bright sunlight, so that his perception of the Sirocco's wide cct was a misjudgement. He thought the Sirocco pilot went straight into a large LH pattern after going through the O/H, intending to join at cct height 1000ft. He opined that he emphasised in training the importance of accurate flying in the ATZ, a FREDAH check on approach, confirmation of the QFE and joining O/H at 2000ft or in line with this and other standard procedures. Also a greater emphasis on listening out on the radio for the position of other traffic and on lookout for this and any other traffic.

THE JURCA SIROCCO PILOT reports flying solo inbound to Kemble VFR and in communication with Kemble on 118·9MHZ with transponder switched off. The visibility was 5000m in haze in VMC and the ac was coloured white/ green with no lighting fitted. Whilst joining for RW08 directly from the W descending on the deadside through 1500ft QFE 1008mb heading 090° at 120kt the other ac was not seen until it crossed above his flightpath from L to R by 150-200ft with minimal horizontal separation, too late to take avoiding action. He assessed the risk as high.

THE KEMBLE FISO reports on duty in the VCR when an Airprox was reported at 1515Z by the pilot of an EV97 Eurostar against a Jurca Sirocco. Both ac were joining via the O/H for RW 08LH in good VMC conditions (+10km, FEW 040, QFE 1014 [actually 1008mb]). Aerodrome traffic levels were light with 3 ac joining, 1 outbound VFR SE'ly and 1 pending departure. The Sirocco was the third of the 3 ac to request join and was given relevant TI on cct and joining traffic. At the time the Airprox was reported the EV97 was over the RW heading S and descending crosswind towards the deadside. The Sirocco was seen to join straight down the RW (heading 080°) at a level

slightly below the EV97. The Airprox was witnessed by the second FISO (on duty as VCR Assistant) who mentioned, a few moments before the Airprox was reported, that separation appeared to be compromised.

The pilot of the Sirocco was later interviewed by the Operations Manager later in the day who confirmed that he had not seen the Eurostar until after they had passed. The pilot of the EV97 confirmed that he was submitting an occurrence report to the CAA for investigation. Both pilots were reminded of the need for care to be taken whilst flying in the cct and in particular to joining at the correct heights.

ATSI reports that the Airprox was believed to have occurred at 1514, within the ATZ at Kemble Airport, which consists of a circle, radius 2nm, centred on RW08/26 and extends to 2000ft above the aerodrome elevation (436ft).

The Airprox was reported by the pilot of an EV-97 Eurostar Microlight operating on a local detail from Kemble. The second ac was a Jurca Sirocco, inbound to Kemble from Badminton.

A FISO service was provided at Kemble. Traffic levels were reported as light with RW08 in use.

CAA ATSI had access to RT recording and radar recording provided by NATS Swanwick, together with written reports from both pilots and the FISO.

Although not a requirement, Kemble do provide an RT recording facility, but on this occasion the recorder failed to record time signals. The transcription was therefore aligned to the time of the Airprox occurrence at 1514 UTC.

The FISO reported the weather conditions as good VMC (+10km FEW040). The written reports from the EV97 pilot and FISO indicate that the QFE was 1014, however the RT transcript and ATSU confirm that the QFE was 1008. The weather for Lyneham is provided;

METAR EGDL 091450Z 09010KT 9999 FEW045 BKN300 19/09 Q1023 BLU NOSIG=

At 1508:40, the EV97 pilot called Kemble Information and reported, *"(EV97)c/s returning from the west approximately four miles out for an overhead join."* The FISO replied, *"(EV97)c/s report overhead er for runway zero eight lefthand the Q F E one zero zero eight one aircraft descending deadside one aircraft joining from the northeast."* The EV97 pilot acknowledged, *"QFE one zero zero eight for zero eight left hand (EV97)c/s."*

At 1509:23, the Sirocco pilot called, *"(Sirocco)c/s is returning to you from Badminton present position five miles west of the field at two thousand feet er request joining instructions over."* The FISO replied, *"(Sirocco)c/s Runway zero eight the Q F E is one zero zero eight er circuit traffic is about to report downwind er I've got one joining from the northeast one other aircraft joining from the west."* The Sirocco pilot responded, *"(Sirocco)c/s runway zero eight lefthand Q F E one zero zero eight.*"

At 1511:23, the EV97 pilot reported O/H.

At 1512:35, the FISO advised another flight that was climbing towards the O/H before setting course, *".....look for traffic in the overhead descending deadside and traffic joining from the west via the overhead.*"

At 1513:39, the Sirocco pilot reported O/H and the FISO advised, *"(Sirocco)c/s one aircraft low over the piano keys one aircraft established base leg."* The Sirocco pilot replied, *"Roger"* and the FISO added, *"I've got one other Eurostar reported in the overhead unsighted to me.*"

At 1514:00, the EV97 pilot reported the Airprox, *"Er Kemble (EV97)c/s descending deadside I'd just like too report an Airmiss with the traffic going e-west to east at about fifteen hundred feet.*" This was acknowledged by the FISO followed by a crossed transmission believed to be to the Sirocco, *"Gol..... for zero eight."* The Sirocco pilot acknowledged the call with *"Roger.*"

The FISO's written report indicated that EV97 was O/H the RW heading S and descending towards the deadside and the Sirocco was observed to join straight down the RW heading 080°.

The EV97 pilot's written report indicated that the EV97 ac was at a height of 1500ft and the Sirocco was 100ft below.

Using the radar recording it was not possible to identify the ac concerned or the occurence itself; however, at 1514:12, radar recording shows three contacts in the Kemble overhead. One contact is crossing the threshold area of RW08 tracking S and another contact is tracking 085° and positioned 0·5nm S of the RW.

At 1517:32 the FISO asked the EV97 pilot, *"....confirm visual with the er Sirocco."* The EV97 pilot responded, *"Is er that the aircraft on and extremely wide left base over."* This FISO advised, *"affirm"* and the EV97 pilot confirmed the Sirocco was the ac involved in the Airprox.

The FISO provided information to both flights. The Manual of Flight Information Services, CAP410 Part B, Chapter 1, Page 1, Paragraph 2.1, states:

'The FISO has the following specific responsibilities:

a) issuing information to aircraft flying in the aerodrome traffic zone to assist the pilots in preventing collisions.

The written reports from both pilots indicated that they each sighted the other late.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, a report from the FISO involved and a report from the appropriate ATC authority.

With both the EV97 and Jurca Sirocco joining the cct, both crews were responsible for maintaining their own separation from other traffic through see and avoid. The EV97 pilot had reported approaching from the W to execute an O/H join and the FISO issued appropriate TI to aid their SA on other traffic, which included traffic joining from the NE, a Cessna. The Sirocco pilot had then called, also inbound from the W, and was given TI by the FISO, including that on the EV97. However, the Sirocco pilot did not declare his intentions of how he intended to integrate into the traffic pattern. After the EV97 pilot reported O/H the FISO informed departing traffic about the EV97 descending O/H and the Sirocco, which he believed was also joining via the O/H, the norm being a standard O/H join unless stated otherwise. About 1min later the Sirocco reported O/H and was told about the EV97 O/H but unsighted to the FISO. It was then that the Airprox occurred. Members sympathised with the EV97 pilot's predicament as he would not have been expecting the Sirocco to be joining as it did and unannounced, however Members agreed that both ac were still joining the cct to fit in with other traffic already established in the visual cct pattern. The EV97 crew were looking up at the Cessna above when the Sirocco was first seen as it passed slightly behind and 100ft underneath their ac, effectively a non-sighting and a part cause of the Airprox. The Sirocco pilot elected to join directly onto the deadside descending, only seeing the EV97 as it crossed from L to R 150-200ft above, with no time to take avoiding action, which Members agreed was effectively a non-sighting and the other part of the cause of the Airprox. It was clear that these 2 ac had passed each other by chance, neither pilot seeing each other's ac in time to affect the outcome, which led the Board to agree unanimously that an actual risk of collision had existed during this incident.

PART C: ASSESSMENT OF CAUSE AND RISK

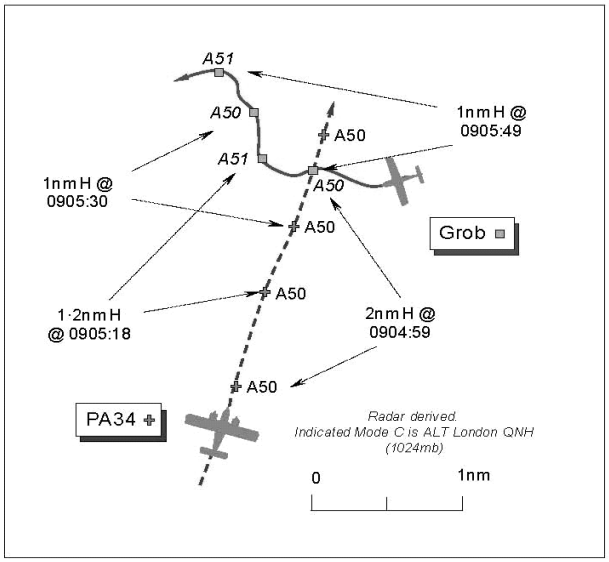
Cause: Effectively, non-sightings by the pilots of both ac.

Degree of Risk: A.

AIRPROX REPORT NO 2011033

Date/Time: 13 Apr 2011 0905Z
Position: 5139N 00123W
(10nm SE of Brize Norton A/D
Airspace: Oxford AIAA (Class: G)

	Reporting Ac	*Reported Ac*
Type:	PA34-200T	Grob Tutor T Mk1
Operator:	Civ Trg	HQ Air (Trg)
Alt/FL:	5000ft	NR
	QNH (1023mb)	NR
Weather:	IMC IICL	NR
Visibility:	10km	NR
Reported Separation:		
	Nil V/0.5nm H	NR
Recorded Separation:		
	Nil V/1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PIPER PA34-200T (PA34) PILOT reports he was conducting a local IFR training flight from Oxford and was tracking towards the OX NDB whilst in receipt of a TS from Brize RADAR on 124·275MHz. The assigned squawk was selected with Modes S and C on; TCAS is not fitted.

Heading 005° at a position 190° OX 11·5nm, flying level at the cloudbase of 5000ft QNH (1023mb) at 150kt, he spotted a light single-engined ac at a similar altitude within 0·5-1nm dead-ahead also at the base of cloud and in intermittent IMC. He took no avoiding action as the other ac – a Grob Tutor - was seen at the same altitude in a level turn and appeared to roll out on a heading of SW. Visual contact was intermittent and about 15-30sec after sighting the Grob, Brize reported the traffic, which by that time was no longer a risk. The Risk was assessed as 'medium'. An Airprox was not reported on RT, but filed through his company safety management system.

THE GROB TUTOR T MK1 PILOT, a QFI, did not provide a detailed account within his Airprox report, just a narrative. He commented that in response to this Airprox in Class G airspace in the vicinity of Wantage, he was conducting elementary flying training consisting of general handling and practice forced landings with a student, whilst in receipt of a TS from Benson. He has no recollection of the event as it was over 1 month ago and today – 20 May, the date of writing - was the first he had heard of it. He opined that if there had been any threat to his ac he would have remembered it vividly, and being under a TS with Benson APPROACH, they would have alerted him to it.

THE BRIZE NORTON ATC UNIT SUPERVISOR reports that the PA34 pilot experienced an Airprox with what he believed to be a Tutor. He was not the controller at the time and it has not been possible to obtain a report from the controller providing the TS at the time of the Airprox.

HQ 1GP BM SM reports that this Airprox occurred in Class G airspace between a Tutor operating VFR conducting GH and PFLs N of Wantage in receipt of a TS from Benson ZONE and a PA34 inbound to Oxford in receipt of a TS from Brize RADAR (RAD).

It took some time for the Radar Analysis Cell (RAC) to trace the crew of the Tutor and hence the fact that they were in receipt of an ATS from Benson; consequently, Benson ATC were unable to provide any input to the investigation. Due to an internal issue at Brize Norton, the unit did not commence reporting action until 2 months after the event; consequently, although they could provide an RT tape transcript, the controller could recall little of the event. This situation was exacerbated by the fact that the PA34 pilot omitted to report the Airprox to RAD.

The PA34 pilot reports operating IFR in VMC, albeit intermittent IMC flying at the base of cloud and spotting the Tutor at "a similar level within 1nm dead ahead…the aircraft was seen to be turning and appeared to roll out on a heading south-west. Approximately 15-30 secs after sighting Brize reported the traffic, which by this time was no longer a risk."

CAP774 states that:

'Pilots should be aware that a Traffic Service might not be appropriate for flight in IMC when other services are available.'

The Brize Norton Supervisor reports that the controller and unit workload was medium to low, a fact borne out by the RT transcript. That said, RAD's workload in the period leading up to the Airprox was constant. Furthermore, RAD recalls that:

'for whatever reason I felt behind the drag curve and the session felt busy/complex [and that] this fact was picked up by one of the other controllers.'

At 0901:12 the PA34 was identified and placed under a TS after which followed a continuous, albeit low-level, work load for RAD involving landline liaison and transmissions to other ac. At 0901:53, (the earliest point of the radar replay), the PA34 was approximately 18nm S of Brize Norton tracking NNE, with the Tutor 9nm N of the PA34, tracking E indicating 5000ft Mode C. At 0903:28, the Tutor commenced a turn, rolling out onto a westerly track at 0904:05, at which point the PA34 is 4·5nm SW, indicating 4800ft.

At 0905:18, the Tutor is just through the PA34's 12 o'clock with 1.2nm lateral separation existing; however, the Tutor commences a R turn onto NW thereby reducing the separation between the 2 ac, exacerbated by the greater airspeed of the PA34.

During the period 0905:07 to 0905:29, RAD was involved in the identification of and passing instructions to another unrelated ac. This unrelated ac does not appear on the replay and further investigation with BZN has suggested that this ac was an Oxford departure, placing it approximately 17nms N of the CPA. Immediately after RAD has completed this liaison with the un-connected ac and co-incident with the CPA, RAD passed TI to the PA34 at 0905:31 stating, "*traffic north 1 mile similar heading similar level*." At this point the Tutor is 1nm NNW of the PA34.

CAP774 states that:

'Traffic is normally considered to be relevant when, in the judgement of the controller, the conflicting aircraft's observed flight profile indicates that it will pass within 3nm and, where level information is available, 3000ft of the aircraft in receipt of the Traffic Service. However, controllers may also use their judgement to decide on occasions when such traffic is not relevant, e.g. passing behind or within the parameters but diverging.'

The safety of operations in Class G Airspace is predicated on the ability of aircrews to 'see and avoid' each other's ac, backed up with airborne equipment such as TCAS and the provision of ATSOCAS where pilots opt for a level of ATS appropriate to their task and meteorological conditions. CAP 774 is clear that whilst the provision of TS to ac in IMC is possible, it may not be appropriate when other services are available. In this instance DS was available and may have been more appropriate given the prevailing meteorological conditions.

Given RAD's lack of recall of the event it has proved impossible to state conclusively why TI was not passed earlier. One hypothesis is that RAD assessed the relative speeds of the ac, concluding that the PA34 would pass through the Tutor's 6 o'clock and that TI might not be required: re-visiting that assessment when the Tutor commenced their turn at 0905:21 reducing separation. An alternative hypothesis is that, although RAD did not have a high taskload, they were consistently engaged in tasks throughout the period prior to them passing TI, thereby delaying the passing of that TI. Moreover, based upon their statement, it is clear that RAD's perceived workload was high with them feeling "behind the drag curve." There are a number of potential psycho physiological explanations for this including pathological, the disruption of Circadian rhythm, fatigue and life-stresses. Although there is no clear evidence to identify a specific factor, RAD's psycho physiological state may have affected their ability to divide their attention between their tasks or to match their workrate to the task load, thereby delaying the identification of the confliction between the PA34 and the Tutor and hence the passing of TI.

This Airprox resulted from a late sighting by the PA34 crew, the late provision of TI by RAD and the meteorological conditions hampering their visual acquisition task. It has been impossible to determine conclusively why TI was not passed to the PA34 earlier than 0905:31.

HQ AIR (TRG) comments that both ac appear to have been operating close to the base of cloud cover where visual contact was reported by the PA34 crew to be affected by cloud. Despite this the PA34 sighted the Tutor before TI was given and no avoidance was required. The reporting delay was unfortunate in that it prevented the gathering of accurate data on the Tutor pilot's TI and visual status. It might reasonably be assumed that he received good TI and was visual with the PA34. Whilst the wisdom of operating close to the base of cloud cover even with a TS may be questioned, it may be the only way to complete a particular sortie profile. That said, any factor that reduces the ability to conduct an effective lookout must be given due regard by pilots and the ATC service upgraded or the profile limited accordingly if required.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, a transcript of the relevant Brize RAD RT frequency, radar video recordings, together with reports from the appropriate ATC and operating authorities.

The Board was disappointed that further detail was not available from Brize Norton and here it was evident that the PA34 pilot had not reported the Airprox on the RT to the controller providing the TS. No matter if a pilot subsequently elects to withdraw an Airprox report, which is entirely within their prerogative, reporting the Airprox on RT at the time immediately alerts the controller and the ATSU to take the necessary reporting action. In that way none of the essential detail necessary for a complete understanding of the Airprox is lost. The Board was briefed that the Airprox was received some 5 days after the event; once identified, the RAC had endeavoured to contact the Tutor pilot's unit on 12 separate occasions. All efforts proved fruitless until contact was eventually established through the Station Flight Safety Officer. Unfortunately, therefore, the Tutor pilot's report was not received until over 30 days after the Airprox had occurred. Consequently, the Benson ATC RT recordings were not available.

As the Tutor pilot was not aware of the Airprox until some weeks after the event, he could recall little detail of his sortie and his account contributed little to the understanding of this event; whether he saw the PA34 or not was unclear. Members recognised that the PA34 pilot was teaching an IFR procedure, flying towards the 'OX' beacon intermittently in IMC, just at the base of cloud in Class G airspace. Whilst the PA34 crew had availed themselves of a TS from Brize RADAR, in the GA pilot Member's view, if a DS had been available then this would have been a more suitable ATS whilst flying in IMC. The MAA Advisor suggested that if the PA34 had been flying at an IFR quadrantal level, it would have afforded some separation against other IFR transit traffic in level flight. Similarly, a DS might have assisted the Tutor pilot with his traffic avoidance responsibilities. The Tutor pilot, who was conducting general handling VFR, shared an equal responsibility to see other ac when operating in Class G airspace. Nevertheless, it remained the PA34 pilot's responsibility under the 'Rules of the Air' to 'see and avoid' the Tutor on his starboard side so that he could afford appropriate separation irrespective of whether RAD passed TI or not.

Notwithstanding the controller's relatively low but constant workload and any other higher priority traffic, the Board considered that the TI passed by RADAR at 1nm range had been issued at a relatively late stage. Nevertheless, by the time the TI was transmitted at 0905:31, the Tutor is shown on the radar recording in the PA34's 10:30 position, 1nm away. Consequently, if this TI was passed 15-30 sec after the PA34 pilot saw the Tutor dead-ahead, as he reports, then he had seen it at a range greater than his estimated 0·5-1nm, because the radar data shows the Tutor to be at a range of 2nm when in the PA34's 12 o'clock. Therefore, in the Board's view, there was enough time to avoid the Grob by a greater margin if need be when he saw it. However, avoiding action was not warranted it would seem, as the PA34 pilot reports the Grob was in a level turn and appeared to roll out on a heading of SW flying away from him – as replicated by the radar recording. Controller and pilot Members alike concluded that this had been a relatively benign event and agreed unanimously that this Airprox report had stemmed from a sighting of traffic operating in Class G airspace, where normal standards of safety had been maintained.

AIRPROX REPORT No 2011034

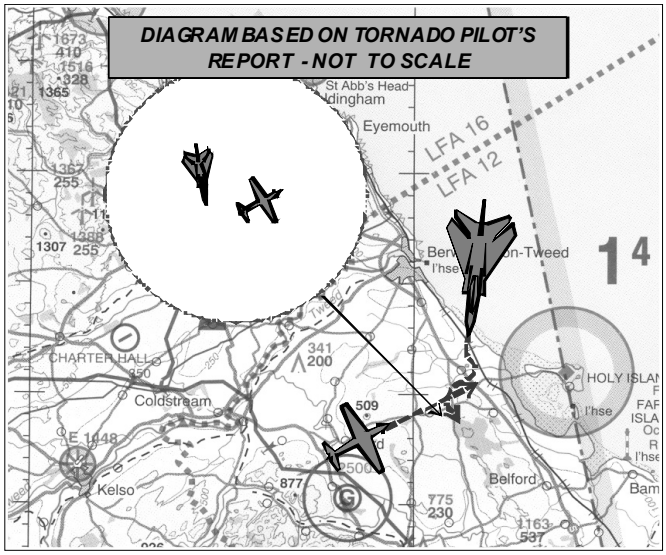
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Sighting Report.

Degree of Risk: E.

AIRPROX REPORT NO 2011034

Date/Time:	14 Apr 2011 1453Z	
Position:	5539N 00156W	(5nm SSE Berwick)
Airspace:	UKDLFS	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Tornado GR4	Tucano
Operator:	HQ AIR (Ops)	HQ AIR (Trg)
Alt/FL:	260ft MSD (RPS 1011mb)	250ft MSD
Weather:	VMC CLBC	VMC CLBC
Visibility:	20km	20km
Reported Separation:	<1000ft H	NK
Recorded Separation:	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE TORNADO GR4 PILOT reports flying a grey ac with all lights switched on, squawking 7001 with Mode C, as No 2 of a pair of Tornado GR4 ac conducting evasion training with a Hawk. They were heading 185° at 430kt and at 360ft and following a bounce by the Hawk they were separated from the flight lead by about 5nm, when the pilot saw a small ac in 1.30 position at about one mile range and slightly high. He instinctively manoeuvred to the L but after about 15° of turn, he quickly realised the ac was tracking from R to L. A further L turn would have put the Tornado belly-up to the ac and exacerbated the chance of a collision, so he reversed to the R and descended to 260ft agl. They passed below and slightly behind the ac, which was by then clearly identifiable as a Tucano (black with yellow sunburst on wings) and he assessed that they passed within 1000ft [H] of it. The Tucano was initially in straight and level flight but just before they passed it turned R (belly-up) to them. The time from initially sighting the Tucano to passing it was 7sec.

He had been conducting an aggressive all-round look out scan due to the knowledge of the presence of a bounce ac and this would have been a slightly different scan to that conducted on a normal low level navigational cruise.

He reported the incident after landing and informed Linton on Ouse [the Tucano base] and assessed the risk as being low due to his avoidance.

THE TUCANO PILOT reports that he was flying with an instructor in a black ac with yellow wing flashes and at the time was in the immediate area of the reported incident but neither pilot was aware of another ac. They were squawking 7001 with Modes C and S and TCAS 1 was fitted.

UKAB Note (1): The incident took place about 2nm inland from the coast in low, rolling, wooded terrain and neither ac shows on the recorded radars. The Tornado mission tapes were retained and reviewed but the incident is not recorded.

HQ AIR (OPS) comments that if the geometry of the incident is as reported by the GR4 pilot, the initial 15° of turn would have put the Tucano in the 2 o'clock. With the relative speeds (430kt vs 240kt) the GR4 would have been

passing well ahead of the Tucano despite the fact that it was tracking to the E. The decision to reverse the turn may therefore have reduced the separation somewhat but provided him with greater confidence in the fact that the risk had been reduced. Without the benefit of any radar recording it is not possible to confirm the geometry precisely. However, if the GR4 pilot actually perceived the Tucano was tracking R to L, i.e. moving towards his nose even after the initial turn, it is likely that the Tucano was much closer to his nose at first sighting. In this case, the reversal of the turn was essential and a greater initial risk existed.

HQ AIR (TRG) comments that it is noted that the TCAS did not appear to highlight the confliction. This is not unknown in the low-level environment where terrain masking can reduce the effectiveness of the equipment but this incident occurred in a relatively flat area. This incident has reminded the Tucano community of the necessity of not relying on their electronic aids for spotting traffic and the need to maintain a robust visual scan. The crew made a turn shortly before the CPA and may well have been focussing their attention on acquiring a turn point or target in the lead-up to the incident. They are also likely to have been focussing more into the turn where the threat is generally considered to be higher.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac and reports from the respective ac operating authorities.

Despite there being no supporting data, the Board agreed that this had been a fairly routine encounter between two ac operating legitimately in the UKADLFS. Both ac were operating in good VMC and should have been visible to the other crew. The Tucano instructor had been instructing his student in low level flying techniques as the Tornado had been descending back to low level, initially at least, on a line of constant bearing. Members were unable to offer any explanation as to why the Tornado was not displayed on the Tucano TCAS1 as there were no obvious constraints; the Board endorsed HQ Air (Trg)'s comments regarding lookout. Members accepted the HQ Air reasoning for the Tornado reversing his direction of turn and possibly reducing the separation but, keeping the Tucano visible thereby removing any risk of collision.

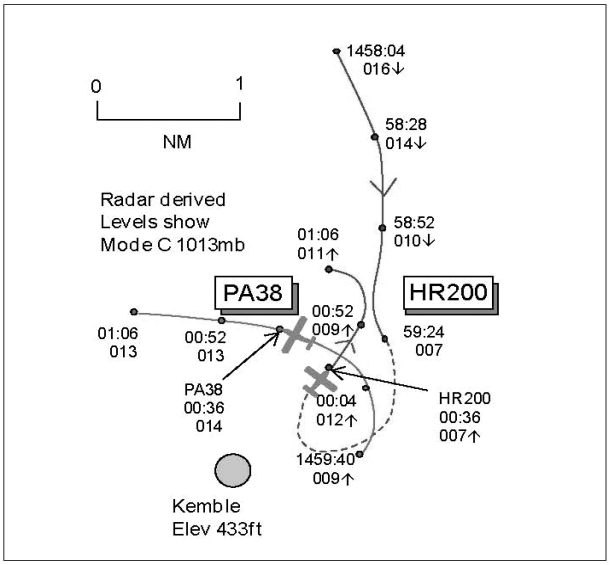
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A non-sighting by the Tucano crew and a late sighting by the Tornado crew

Degree of Risk: C.

AIRPROX REPORT NO 2011035

Date/Time:	17 Apr 2011 1500Z (Sunday)	
Position:	5141N 00202W (1nm NE Kemble - elev 433ft)	
Airspace:	ATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	PA38	Robin HR200
Operator:	Civ Pte	Civ Club
Alt/FL:	600ft↑ (QFE 1008mb)	1000ft↓ (QNH 1022mb)
Weather:	VMC CLBC	VMC HAZE
Visibility:	8km	3500-4000m
Reported Separation:	200ft V	500ft V
Recorded Separation:	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PA38 PILOT reports flying a solo sortie at Kemble VFR and in communication with Kemble Information on 118·9MHz, squawking 7000 with Mode C. The visibility was 8km flying 4000ft below cloud in VMC and the ac was coloured blue/white with nav and strobe lights switched on. He was turning onto the crosswind leg at 80kt following a touch and go from RW08 in a LH cct and climbing through 600ft QFE when he first saw another ac about 300-400m ahead, just L of the port side engine cowling, approximately 200ft below passing directly beneath. He called Tower and advised that an ac was approaching RW26 from R base having just passed beneath him. Kemble Tower did not respond to him but immediately advised other traffic to abort landing on RW26 as the RW in use was 08LH. The other ac's pilot apologised and aborted before Kemble Tower advised the pilot of a 3rd ac to turn R immediately; the position of this ac was unknown to the PA38 pilot. After reporting to the Tower post flight of his intention to file an Airprox, ATC had already briefed the other pilot of his error. Throughout his flight Kemble had advised all pilots that the RW in use was 08LH. He assessed the risk as medium.

THE ROBIN HR200 PILOT reports flying solo inbound to Kemble, VFR and in communication with Kemble Information on 118·9MHz, squawking with Mode C. The visibility was variable 5-6km out of sun; however, when flying directly towards the aerodrome at 1000ft QNH 1022mb at 90kt to enter the traffic pattern the afternoon sun reduced visibility to 3500-4000m. The ac was coloured white/red with nav and anti-collision beacon switched on. His approach path was severely restricted owing to considerable noise abatement areas surrounding the aerodrome. His request to ATC regarding areas to avoid (villages) received a reply of, "avoid all of them" so his approach was a weaving pattern to avoid villages and farms as they became visible. The aerodrome came in sight to the SW and he was in contact with ATC listening out for other traffic. He noted 1 departing ac about to take-off and 2 others in the cct; both of these ac he saw passed to the R. The ac taking-off became visible in the haze about 500-550m away and was seen to immediately take on a new course by turning L onto approximately 020° to cross the aerodrome boundary at an angle to the departure RW, presumably either to set course immediately or to comply with noise abatement procedure, or both. He turned R into the traffic pattern whilst the departing ac, a low-wing single-engine Piper type, was above his level and continued heading 020°, temporarily on a reciprocal heading about 500ft above. The departing ac's pilot called ATC stating, "Light ac below me approaching airfield". He continued turning R and was about to call ATC when he received an instruction, "Both ac to immediately turn R for avoidance"; both flights turned R instantly. At this time the other ac had overflown his ac above and presumably continued on course after the R turn. ATC directed him on to downwind cct procedure with 2 ac ahead which completed their ccts and landed. No ac followed his ac, he thought, as he flew downwind, base and final. After landing he reported to ATC and discussed the incident with the 'controller' and he apologised for any part he played in it. He assessed the risk as none.

THE KEMBLE FISO reports RW 08LH in use. Visibility about 8km in haze, sunny. Traffic levels were moderate. The Robin flight called and was given relevant information, with RW and cct correctly read back. He then requested a R base join and was accordingly requested to report R base. He duly did so and was requested to report final. The PA38 pilot then reported final for a touch and go, which he duly performed before a PA28 then lined up and departed. The Airport Manager, acting as assistant, then noticed an ac turning R base for RW26. He immediately requested the PA28 pilot to perform a R turn; the PA38 was not at this time visible from the tower, but its pilot made a call indicating that the other ac had passed just below him.

ATSI reports that the Airprox was reported to have occurred at 1500, within the visual cct and to the NE of Kemble Airport. The ATZ consists of a circle, radius 2nm, centred on RW08/26 and extends from SFC to 2000ft above the aerodrome elevation (436ft).

The Airprox was reported by the pilot of a PA38 in the LH cct and the other ac was an Robin HR200 inbound to Kemble from Gloucestershire.

A FISO service is provided at Kemble. RW08 was in use with LH ccts with traffic levels reported as moderate.

CAA ATSI had access to radar recording, provided by NATS Swanwick, together with written reports from pilots and the FISO. The radar recording showed a number of ac in the vicinity of Kemble squawking 7000. However it was not possible to identify the ac concerned or the occurence itself.

Although not a requirement, Kemble do provide an RT recording facility but due to a fault, no recording was available for the period.

The weather for Lyneham is provided;

METAR EGDL 171450Z 03004KT 9999 FEW040 SCT060 17/09 Q1023 BLU NOSIG=

The FISO's written report indicated that the HR200 called for joining and was passed the relevant information with the RW in use and cct direction. After a correct readback the HR200 requested a R base join and the FISO asked the HR200 to report R base.

The HR200 pilot's written report indicated that the field was to the SW (i.e. approaching from the NE). It was not clear why the pilot requested a R base join for RW08.

The PA38 flight was in the LH cct for RW08 and reported on final for a touch and go. After the PA38 departed from the touch and go, a PA28 lined up and departed. The FISO assistant, noticed an ac turning on a R base for RW26 and this was later identified as the HR200.

The PA38 pilot indicated that, after completing the touch and go, when crosswind in a climbing L turn at a height of 600ft, the other ac (HR200) was observed passing below. The PA38 pilot advised Kemble about the other ac (HR200).

The PA38 pilot indicated that he heard Kemble FISO advise the HR200 to abort landing on RW26 as the RW in use was 08 LH.

The HR200 pilot's written report indicated that the ac was out of position, due to the avoidance of noise sensitive areas in haze and sun conditions. The HR200 pilot discussed the incident afterwards with the FISO.

The pilot of the PA38 indicated that a report was made to Kemble Tower after the flight.

No MOR report was received from the FISO; however, an internal FISO report was forwarded at a later date. The Kemble FISO manual, page 36. Paragraph 10.1, states:

'Reporting of incidents shall be carried out in accordance with CAP 410, CAP 382 and the Air Navigation Order (ANO).'

It was noted that the current version of CAP410 dated 7 March 2002, does not align with the ANO (and reflected in CAP382). For example CAP 410, Part A, Chapter 8, Page 2, paragraph 5.4, relates to MOR reporting and states:

'Although mandatory reporting applies only to public transport aircraft registered in the UK or operating under the jurisdiction of a UK Operator, and all turbine powered aircraft, FISOs are to report all occurrences regardless of the category or nationality of the aircraft.'

Whereas the ANO Article 226 (3) states:

'This article applies to occurrences which endanger or which, if not corrected, would endanger an aircraft, its occupants or any other person.'

The HR200 inbound from Gloucestershire was considered to be approaching the airfield from the NE and it was not clear why, approaching from that direction, the pilot wanted to join on R base for RW08.

The pilot of the HR200 indicated that the ac was out of position, due to the avoidance of noise sensitive areas in haze and sun conditions.

ATSI RECOMMENDATION

It is recommended that CAA ATSD should review and update CAP410 to ensure the document is correctly aligned to UK legislation.

UKAB Note (1): The Clee Hill radar recording does not capture the CPA but at 1458:04 shows a 7000 squawk (possibly the HR200) approaching Kemble from the N with 3·3nm to run descending through FL016 (1870ft QNH 1022mb) which fades after the sweep at 1459:24 1·5nm NE of Kemble at FL007 (970ft QNH 1022mb). Another 7000 squawk appears 16sec later, possibly the PA38, 0·9nm E of Kemble indicating FL009 (1170ft QNH) in a L turn passing heading 040°. The PA38 continues the turn towards the downwind leg and at 1500:36 indicates FL014 when 1·1nm N of Kemble turning through heading 280°. At the same time a 7000 squawk appears, believed to be the HR200, 0·5nm SE of the PA38, tracking 030° indicating FL007 (970ft QNH) and climbing. The PA38 rolls out downwind at 1501:06 at FL013 (1570ft QNH) whilst the HR200 climbs to FL011 (1370ft QNH) and also turns L onto the downwind leg 1·7nm NNE of Kemble.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, radar video recordings, a report from the FISO involved and a report from the appropriate ATC authority.

Members could not understand the HR200 pilot's mindset. He had been informed that the RW in use was RW08 but had positioned onto R base and then final for RW26 and this had brought his ac into conflict with the departing PA38, causing the Airprox. The HR200 pilot had reported seeing the departing PA38 and 2 other ac in the cct so this should have alerted him to the fact that he was approaching the 'wrong end' of the RW as they were flying in the opposite direction to his cct pattern. Members agreed that there was no substitute for carrying out a standard O/H join, particularly when visibility is reduced, which allows the pilot concerned to orientate himself with the duty RW and integrate his ac into the pattern already established by other traffic in the cct. The PA38 pilot was undoubtedly surprised when, as he was turning onto the crosswind leg climbing through 600ft, he saw the HR200 300-400m ahead before it passed 200ft below. When the FISO became aware of the HR200's position – without an RT transcript there was no corroboration of what was said or when the transmissions were made – the HR200 pilot was informed of his error and the traffic sequence was re-established. The HR200 pilot reported sighting the PA38 and estimated that it passed 500ft above his level. Members believed that from the geometry of the encounter, with the HR200 fading at 970ft QNH on R base shortly before the PA38 appears climbing through 1170ft QNH (637ft QFE), the vertical distance between the ac was more likely to be in the region of those reported by the PA38 pilot - 200ft; if the separation had been 500ft, the HR200 would have been flying very close to the ground some distance from the RW. Taking all of these elements in account the Board considered that the flightpaths flown by both pilots had led to safety being compromised during this Airprox.

PART C: ASSESSMENT OF CAUSE AND RISK

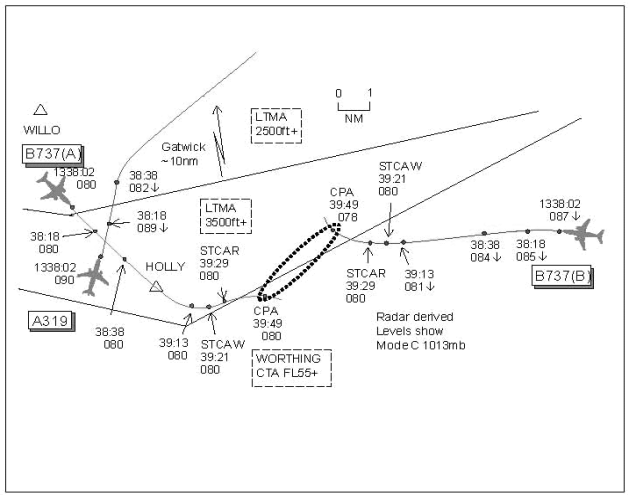
Cause: The Robin HR200 pilot joined for RW26 when RW08 was in use, and flew into conflict with the PA38.

Degree of Risk: B.

AIRPROX REPORT NO 2011036

Date/Time: 14 Apr 2011 1340Z
Position: 5054N 00002E (16nm SE Gatwick)
Airspace: LTMA (Class: A)

	Reporting Ac	*Reported Ac*
Type:	B737-400(A)	B737-400(B)
Operator:	CAT	CAT
Alt/FL:	FL80	NR
Weather:	VMC NR	VMC NR
Visibility:	50km	NR
Reported Separation:	200ft V/2·5nm H	Not seen
Recorded Separation:	200ft V/3nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE B737(A) PILOT reports inbound to Gatwick IFR and entering the WILLO hold via HOLLY at 220kt and FL80. In a L turn at HOLLY opposite direction traffic was noticed also at FL80 descending heading towards WILLO heading 270°. ATC issued an avoiding action heading, reversing their turn. The AP was disconnected and the turn was reversed maintaining FL80; TCAS generated a TA and they saw minimum separation of 200ft/2·5nm. Prior to the TA another flight, an A319, declared a PAN, owing to a medical emergency, at FL100 inbound to HOLLY which was given a N'ly heading and immediate descent clearance towards their flight; this incident had raised their awareness.

THE B737(B) PILOT reports that being unaware of an Airprox until being informed post incident. Whilst inbound to Gatwick IFR another flight, an A319, suddenly declared an emergency and was quickly vectored ahead of other traffic, including their ac with associated rapid re-vectoring of various flights. At no time did he feel the safety of his flight was in any doubt nor recollect any TCAS TA or RA alerts.

THE LTC GATWICK INT DIR reports having not long taken over the position when an A319 flight declared a PAN with a pax in need of immediate medical assistance. The off-going controller, who was still at the desk, asked if she wanted to split the sector. She looked at the traffic levels and decided that it would probably be OK; it turned out to be the wrong call. She turned the A319 flight L onto 010°, telephoned the Tower, and then turned an ac, B737(B), at TIMBA L onto 270° to go behind, instead of in front of the A319. She then remembered thinking she had better descend the A319 as it was still at FL90. B737(A) was also on track HOLLY at FL80. Tower wanted more details about the pax so she asked the A319 crew for more details which were passed onto Tower. She had been aware of the ac she turned W to go behind the A319, B737(B), was not descending very quickly and was approaching B737(A) which was nearly at HOLLY and about to turn L. She gave the B737(B) flight a R turn onto 010° and then gave avoiding action R turn onto 120° to the B737(A) flight. Both flights then proceeded to flash white [STCA low severity alert] and then red [high severity] at FL80; she did not know if these two flights lost separation. Prior to being relieved she was unaware that there had been a loss of separation between the A319 and B737(A). She was uncertain how this had occurred.

AIRPROX REPORT No 2011036

ATSI reports that the Airprox occurred at 1339:18 UTC, in Class A, CAS, at a position 16·5nm, to the SE of Gatwick Airport.

The Airprox involved 2 Boeing 737-400 ac, B737(A) and B737(B). At the same time an Airbus A319 ac declared a medical PAN. All 3 ac were inbound for Runway 26L at Gatwick with 2 other ac ahead in the traffic sequence. B737(A) was inbound IFR from Glasgow, routeing from the NW to HOLLY. B737(B) was inbound from Cagliari (Sardinia), routeing from the SE to TIMBA.

The Gatwick INT controller had just taken over the position and was operating the sector bandboxed, providing a RCS as radar director. An authorised airline pilot visitor had been plugged into the sector prior to the controller taking over. The visitor and outgoing controller remained in the vicinity of the sector. Traffic levels were assessed by CAA ATSI as medium.

The controller was not initially aware of the Airprox and had reported an ATC Incident with a loss of separation between the A319 aircraft and B737(A).

CAA ATSI had access to RTF and radar recordings, together with the controller, unit and pilot written reports.

METAR EGKK 131020Z 23006KT 190V280 9999 SCT032 SCT040 13/08 1021=

The controller had just taken over the position and had planned a traffic sequence with 5 ac in the traffic pattern.

At 1336:30, 2 ac were already established in the pattern followed by:

B737(B) from the SE, descending to FL080 routeing to TIMBA,

B737(A) from the NW, at FL080 routeing to HOLLY then WILLO

A319 from the SW, descending to FL090 routeing HOLLY then WILLO.

At 1336:55, the B737(B) flight at FL096, 26nm SE of Gatwick, was turned L onto a heading of 290° and given descent to FL070. At this point the range between the 2 B737 ac was 23nm. The projected heading did not ensure separation from the WILLO stack. LTC MATS Part 2, GAT 4.6.1 states:

'If KK [Gatwick] INT vectors an aircraft that is at, or above, the Minimum Stack Level from one holding stack towards the other, the relevant flight progress strip is to be moved to the appropriate stack designator to indicate that it has become traffic to aircraft in that stack. KK SPT is to be kept informed.'

The controller decided not to move the strip of B737(B) from the TIMBA to WILLO stack (or 'cock-out' the strip which was the controllers prefered method). Had this been done it would have highlighted the conflict. The controller intended to monitor the interaction between the 2 B737 ac and planned to turn B737(B) R into the downwind traffic pattern before coming into conflict with B737(A).

The controller confirmed that the Vertical Stack Lists (VSLs) were not displayed and did not feel that the sector was busy enough to warrant them. Had the VSLs been displayed it may have helped to highlight the confliction. LTC MATS Part 2, DAT 8.9.6.1 states:

'….Where stack management is part of the role of the sector, ……, the appropriate VSL palettes should be displayed at all times,……'

At 1337:07, the A319 flight declared a medical PAN. The controller elected to change the order of the arrival sequence, giving the A319 priority, ahead of the 2 B737 ac. This changed the dynamics of the earlier plan. The controller removed the A319 fps from the WILLO display and held it, whilst advising the outgoing controller of the PAN. The strip was then moved to the fps display directly in front of the controller (note: this is common practice when ac are no longer in conflict). The outgoing controller offered to split the position but the INT controller assessed the workload as acceptable for bandboxed operations and declined the offer. Later, the INT controller acknowledged that this was the wrong decision.

At 1337:49, the distance between the 2 B737 ac was 16nm. B737(B) flight, now passing FL089, was turned L onto a heading 270°. Because of the increased workload and non-standard configuration of the strip management, the conflict between the B737 ac was not highlighted. The ATSU reports that the controller momentarily forgot about the presence of B737(A), most likely because the controller became focused (note: tunnelling effect) on moving the A319 forward in the approach sequence.

At 1338:01, the A319 flight, level at FL090 and converging with B737(A) at FL080, was instructed to descend to an altitude of 4000ft. This resulted in a loss of separation as the 2 ac passed. Because of the ac trajectories and relative positions as the 2 ac diverged, STCA did not activate. The minimum separation was reported as 2nm and 400ft as the ac diverged. The written report from the pilot of B737(A) indicated the crew were aware of the early descent given to the A319, which heightened their situational awareness, as they monitored the A319 on TCAS.

[UKAB Note (1): The CPA between the A319 and B737(A) occurs at 1338:18 with the A319 0·5nm NE of B737(A), 900ft above and descending.]

The controller turned the A319 downwind and requested details of medical emergency. The pilot passed the details and confirmed that the company were aware and had requested an ambulance.

At 1339:13, the distance between the 2 B737 ac was 7nm. B737(B) was passing FL081 in the descent to FL070, with B737(A) maintaining FL080. The controller instructed B737(B) to turn R onto a heading of 010°. At the same time B737(A), on a SE'ly track and approaching HOLLY, was commencing a L turn towards WILLO.

The outgoing controller who was monitoring the situation, alerted the controller to the confliction and at 1339:19, the controller issued avoiding action, *"(B737(A))c/s avoiding action turn right heading one two zero degrees."* The B737(A), already commencing a L turn towards HOLLY, reversed the direction of turn. At 1339:49 radar recording showed the required minimum separation of 3nm was maintained with vertical separation of 200ft.

The Airprox was attributed to the Gatwick INT controller momentarily forgetting about B737(A), when providing vectors to B737(B), which brought the 2 ac into conflict. The crew of B737(A), already at a heightened state of awareness because of the loss of separation with the A319, became concerned about the proximity of B737(B).

A number of factors were considered to be contributory:

The controller did not accept the offer to split the sector which would have eased the workload and may have prevented the incident.

The medical PAN increased the workload significantly, resulting in the controller's change of plan and caused the controller to request for full details of the medical emergency, when these had already been passed to the company and an ambulance arranged.

The short period of time since the handover and the presence of a visitor in the vicinity of the sector were considered to have been an added distraction.

The controller was not using the vertical stack lists (VSLs) which may have alerted the controller to the potential confliction.

The controller's plan to turn B737(B) towards the WILLO stack, and monitor the separation as the ac descended, did not provide appropriate safeguards once the controller's attention was diverted by the medical PAN.

The controller did not correctly move the B737(B) strip to the WILLO stack in accordance with MATS Pt2 instructions. This would have highlighted the conflict.

The incident was resolved by the action of the outgoing controller, who, aware of the medical PAN, continued to monitor the situation and alerted the controller to the confliction. This showed good team resource management and resulted in avoiding action, which prevented a loss of separation between the 2 B737s.

The crew of B737(A) also monitored, on TCAS, the A319 being given early descent, which resulted in the loss of separation and which raised the level of awareness of the B737(A) crew.

The ATSU has completed a unit investigation and will make appropriate recommendations to:

Ensure that if a pilot in such circumstances has already arranged medical assistance, they simply advise ATC of the medical PAN.

Issue an OPNOT reminding controllers of the correct methods of strip moving when vectoring ac from the confines of one hold to another.

Ensure that the MATS Pt2 guidance for the use of VSLs is amended from 'should' be displayed at all times to 'shall' be displayed at all times.

CAA ATSI is content with the actions and proposed actions of the ATSU provider.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC authorities.

Members could add little to this report. When INT DIR changed her arrival sequence order, owing to the A319 emergency, she placed B737(B) on a new radar heading of 270° whilst it was descending to FL70, through the level of B737(A). A controller Member familiar with LTC operations noted that B737(B) was descending slowly when it would normally be expected to have descended below an ac in the HOLLY area. However, INT DIR had forgotten about B737(A) when she vectored B737(B) and this had brought the ac into conflict and caused the Airprox.

As she noted in her report, with hindsight the offer to split the sector should have been taken up but at the time the controller believed traffic levels were acceptable. Members applauded the Team Resource Management shown when the off-going controller, who had remained close-by and monitored the situation, pointed out the confliction prior to STCA activating. INT had just issued B737(B) flight a R turn onto 010° for sequencing behind the A319 before she issued an avoiding action turn onto 120° to B737(A). B737(A) crew was already at a heightened state, owing to the A319 flight having descended when it passed O/H their ac. They had noticed the approaching B737(B) and had promptly actioned the avoiding action turn away from it, resulting in no erosion of separation. All of these elements when combined allowed the Board to conclude that any risk of collision had been quickly and effectively removed.

PART C: ASSESSMENT OF CAUSE AND RISK

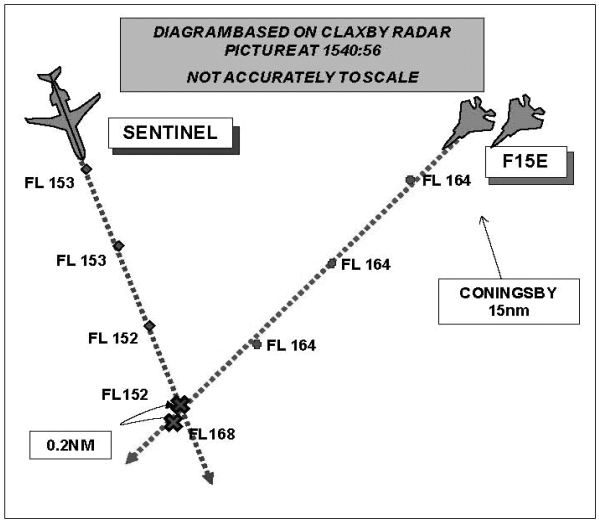
Cause: The Gatwick INT DIR vectored B737(B) into conflict with B737(A).

Degree of Risk: C.

AIRPROX REPORT NO 2011037

Date/Time: 1 Mar 2011 1541Z
Position: 5251N 00010W (15nm S CONINGSBY)
Airspace: Lincs AIAA (Class: G)

	Reporting Ac	*Reported Ac*
Type:	Sentinel	F15Ex2
Operator:	HQ AIR (Ops)	USAFE
Alt/FL:	FL150	NR
Weather:	VMC CAVOK	NR
Visibility:	20km	NR
Reported Separation:	500ft V/0m H	NR
Recorded Separation:	1600ft V/0.2nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE SENTINEL PILOT reports flying a grey ac on a training flight under IFR, with all lights switched on, under a TS from London Mil and squawking with Modes C and S. While heading 165° at 250kt on the climb-out from RAF Waddington, a pair of F15Es was seen to the left of the ac about 6nm away, above them but they appeared not to be closing. As they passed through FL140 the HP asked the NHP to check whether London Mil had them on Radar. On passing FL150 the pair was seen to be closing on a heading of 210° and on a collision course. At that point the TCAS generated a TA immediately followed by a RA of 'adjust vertical speed' suggesting a descent [he believed] to remain clear of conflict so he initiated a descent and the ac passed between 500 and 1000ft directly overhead. Once clear, the TCAS enunciated 'clear of conflict' and the pilot continued the flight as normal. He reported the Airprox to London Mil and assessed the risk as being medium.

THE F15E PILOT reports that he was contacted over 2 months after the event (see UKAB Note 1 below); he recalls that he was leading a pair of but could not recall precisely the mission details. He thought that they were in level flight on RTB and had just entered the Wash AIAA when his wingman called a radar contact. The pilot 'boresighted' the traffic, got a radar lock and shortly afterwards saw the traffic on their RHS at about 9nm. He could not initially tell the ac aspect because of its range but thought that it was going the same way.

About 15sec later he realised that they were on a collision course and saw that the traffic was continuing to climb up towards their formation. At about 3nm he saw that the Sentinel was not stopping its climb and he directed the pair to climb to avoid it; they climbed about 500-700ft and then passed directly over it.

He considered filing an 'incident report' and instructed that their tapes be retained for a couple of weeks, but he decided against reporting it because they had full awareness of the traffic from just inside 10nm and they thought they had passed more than 1000ft above the Sentinel.

The F15Es were under a TS from London Mil who only called the traffic after they had already passed it; he thought that the call was something like, 'Traffic left 9 o'clock 3 miles, Eastbound'.

He did not assess the risk.

UKAB Note (1): The incident was reported on ASIMS by the Sentinel pilot on the day following the event. The report was not released by the Station, however, until over 7 weeks later, hence the delay in contacting the F15E HQ and London Mil; fortunately the RT and radar recordings were still available.

UKAB Note (2): The recording of the Claxby radar shows the incident as depicted above. The Sentinel levels at FL153 (at 1540:43) then descends by 100ft before continuing its climb after the ac cross. The F15Es are initially level at FL160 but climb to FL170 as the ac cross before descending again.

HQ 1GP BM SM reports that this Airprox occurred in Class G airspace between a Sentinel operating IFR in VMC in receipt of a TS from LJAO (North-East TAC) and a pair of F15Es operating VFR in VMC, in receipt of a TS from LJAO (East TAC).

All altitudes stated are based upon SSR Mode C information derived from the radar replay unless otherwise stated.

Initially this occurrence was reported by the LJAO North-East TAC as a TCAS-RA report; when the Unit was advised 6-8 weeks later that this incident had been filed as an Airprox by the Sentinel crew [see UKAB Note (1)], the LJAO East TAC had no recollection of the occurrence other than that it was busy; consequently, there is no Defence Flight Safety Occurrence Report (DFSOR) from the LJAO East TAC. However, it appears from the transcript that in the period up until around 60sec before the commencement of the incident sequence at around 1540:03, LJAO East TAC had been operating under a relatively high workload, with 5 speaking units on freq which were geographically dispersed across the LJAO East/North-East AoRs. This workload had rapidly tailed off to 2 speaking units, with 2 formations of F15Es routing from EGD323C at medium level beneath Y70 to the East Anglian (EA) MTRA for GH. Research has demonstrated that psycho-physiological alertness reduces significantly immediately following a high to low workload transition and remains so for up to 15min, regardless of the individual's motivation for the task. Further research has proved that humans consistently over-estimate their level of psycho- physiological alertness.

LJAO North-East TAC described their task complexity as medium and workload as medium to low, with the Sentinel climbing out from Waddington on a South-Easterly track and a single Typhoon on a medium-level transit 6nm SE of the Sentinel on a similar track; consequently, LJAO North-East TAC's geographical focus was tight. It has not been possible to establish LJAO North-East TAC's workload prior to the incident sequence.

Both tracks worked by LJAO North-East TAC were identified and placed under an ATS by about 1539:41 at which point, from extrapolation of the radar data, about 7.8nm separation existed between the Sentinel and F15E formation. There are no further recorded landline conversations or transmissions to or from LJAO North-East TAC until 1540:09. At approximately 1540:03 LJAO East TAC requested from the F15E formation what levels they required for GH in the EAMTRA. At that point, the F15E formation was at FL160, 5.6nm E of the Sentinel climbing through FL141.

At 1540:09 the Sentinel called LJAO North-East TAC stating *"(Sentinel C/S) has traffic in the er in our ten o'clock, similar height, approximate range 5 miles, can you confirm?"* at that point, the F15Es were 5nm E of the Sentinel at FL160 which was climbing through FL144. In his report the Sentinel pilot said that, at that point, the F15Es appeared "not to be closing". LJAO North-East TAC responded at 1540:20, "*you got er Typhoon (*LJAO North-East TAC's other track) *left 11 o'clock five miles flight level hundred ah traffic left 9 o'clock at 3 miles flight level 160, appears to be a pair*". From the Sentinel pilot's report it is clear that they were monitoring the F15Es and as they passed FL150 assessed them to be on a collision course (at 1540:22 coincident with LJAO North-East TAC passing TI). The Sentinel pilot reported that it was at that point that the TCAS generated a TA closely followed by a RA of adjust vertical speed. Eleven sec later the Sentinel pilot advised LJAO North-East TAC that they were manoeuvring in accordance with a TCAS RA; at that point 2.7nm lateral and 700ft vertical separation existed, with the Sentinel indicating FL153 and the F15Es FL160.

At 1540:41 LJAO East TAC asked the F15E pilot to confirm the altimeter setting that they wished to operate on in the MTRA. This question was followed immediately, without pause, by LJAO East TAC passing TI to the F15E formation on the Sentinel stating, "*traffic er 12 o'clock half a mile crossing right to left indicating flight level 150 climbing*" with the F15E formation reporting, "*Tally.*" At this point 0.9nm lateral and 1200ft vertical separation existed suggesting that the Sentinel has descended in response to the TCAS RA and that the F15E formation had climbed to avoid the Sentinel, (as stated in their report).

The F15E formation reports that both elements of the formation were visual with the Sentinel at a range of about 9nm and at that stage they considered there to be no risk of collision. Although this is before the radar replay commences, by extrapolation of the data, it has been possible to determine that this would have been about 1539:31; the F15 leader reported that he realised that they were in conflict with the Sentinel around 15sec later.

At that point, again by extrapolation of the radar data, about 7nm lateral separation existed between the F15s and the Sentinel; the leader further reported that when they were about 3nm apart, he instructed the formation to climb over the Sentinel, which accords with the radar data.

As far as the Airprox element of this occurrence is concerned, the Sentinel and F15 crews acquired each other visually in good time, enabling them to monitor the situation and decide upon appropriate courses of action; initially both crews considered there to be no risk of confliction but updated that assessment as the range closed and took action to resolve the confliction. However, the timeliness of the TI provided to both ac requires further examination.

Given the question posed by LJAO East TAC to the F15E formation at 1540:41, immediately followed by the passing of TI to them, it is reasonable to suggest that the first time that LJAO East TAC perceived there to be a confliction was shortly after 1540:41, (during the transmission). Moreover, it is reasonable to suggest that, given their workload history, LJAO East TAC may have been suffering from reduced psycho-physiological alertness which served to delay their perception of the growing confliction. While LJAO East TAC passed TI to the F15E formation at 1539:17, which from reviewing the radar data may have been regarding LJAO North-East TAC's Typhoon, this TI immediately followed their period of high workload. There was then a period of about 39sec where LJAO East TAC made no transmissions and their workload appeared to be low.

Thirty eight sec elapsed between LJAO North-East TAC completing their initial RT liaison with the ac under their control at 1539:41 and the Sentinel requesting information on the F15s at 1540:09. It is inappropriate to discuss whether LJAO North-East TAC would have passed TI without the intervention of the Sentinel; however, given the gap between 1539:41 and 1540:09, best controlling practice suggests that the opportunity existed for a more timely warning to be given. It is possible that this missed opportunity may be grounded in reduced levels of psycho-physiological alertness caused by LJAO North-East TAC's workload history; however, it is not possible to substantiate this hypothesis.

Whilst LJAO East TAC and LJAO North-East TAC were obligated to provide TI earlier in accordance with CAP774, given the range at which the crews visually acquired each other's ac, this factor was neither causal nor contributory.

HQ AIR (OPS) comments that both elements could see each other and there was no risk of collision. The Sentinel had right of way and initially maintained its course; however, once the TCAS RA was generated, the crew responded. The F15Es avoided the Sentinel by a safe margin but flew close enough to generate the TCAS event. The delay of 7 weeks for the DFSOR to leave the station is unacceptable and will be investigated.

HQ 3 AF comments that both the Sentinel and the F15E pair had each other in sight from around 6nm and 9nm respectively and both subsequently took adequate avoiding action, one by following a TCAS RA and the other by climbing. However, in view of the convergence of the 2 tracks it is surprising that, according to the HQ 1Gp BM SM analysis, no coordination took place between LJAO(North-East TAC) and LJAO(East TAC) and both flights received little, if any, meaningful traffic information; the absence of either action should be considered a contributory factor.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

Members noted that this incident took place in Class G airspace where 'see and avoid' is the primary means of collision avoidance. Despite the good weather conditions, both pilots sensibly opted for a TS in order to assist with this responsibility.

Despite that there may have been inadequacies by both Controllers most Members were of the opinion that this was a TCAS RA incident rather than an Airprox. Both crews saw/were aware of the opposing ac/flight from an early stage, even before the respective controllers could have reasonably been expected to pass information regarding the other ac. That being the case avoidance was primarily the responsibility of the pilots and both had correctly exercised that responsibility thus removing any risk of collision. Despite that TI should have been passed

to both pilots as stated in the HQ 1 GP BM SM report above, it also followed that contrary to that report, the lack of such TI was not contributory to the incident.

While noting the F15 crew's decision to take vertical avoidance, Members pointed out that depending on the nature of the climb it would still (most likely) cause a TCAS RA, as was the case in this incident and the Sentinel pilot was obligated to react to that RA causing (avoidable) disruption to his planned flightpath. A small heading change by the F15 flight to pass behind the Sentinel would have avoided the TCAS RA.

PART C: ASSESSMENT OF CAUSE AND RISK

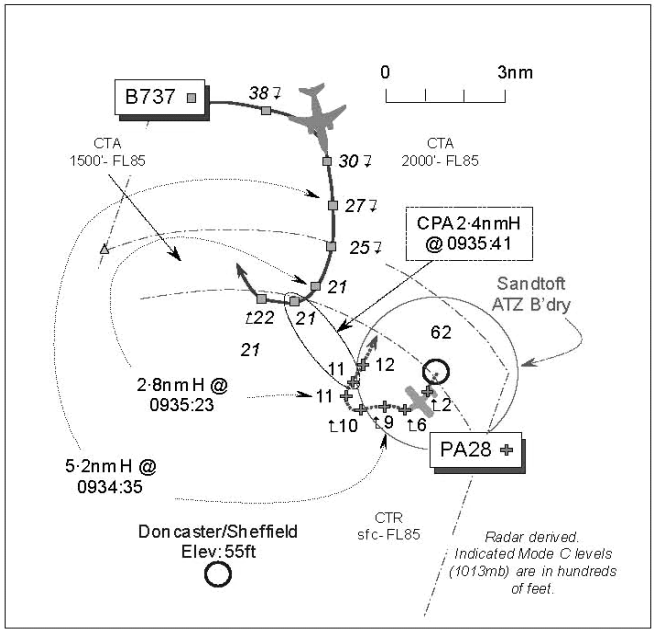
Cause: A conflict in Class G airspace resolved by the crews of both flights.

Degree of Risk: C.

AIRPROX REPORT NO 2011038

Date/Time: 5 May 2011 0935Z
Position: 5334N 00056W (6·5nm NNE Doncaster/Sheffield - elev 55ft)
Airspace: Doncaster CTR (Class: D)
Reporter: Doncaster APR

	1st Ac	*2nd Ac*
Type:	B737-800	PA28
Operator:	CAT	Civ Trg
Alt/FL:	2500ft↓	800ft↑
	QNH (1017mb)	QFE
Weather:	VMC CLOC	VMC CLOC
Visibility:	10km	9km
Reported Separation:		
APR	1000ftV/4nm H	
	4nm H	Not seen
Recorded Separation:		
	1000ft V/2·4nm H	



CONTROLLER REPORTED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE DONCASTER APR reports that he was vectoring the B737 for an ILS RW20. When it was approaching 8nm on a closing heading of 170° for the ILS an ac was observed squawking A7000 leaving Sandtoft on a SW'ly track. As the B737 reached 8nm and reported LLZ established the A7000 squawk was observed climbing, indicating 1300ft and continuing to route W. As the ac left the Sandtoft ATZ without any indication of a turn he gave avoiding action to the B737 flight of 'turn R heading 360°, climb altitude 2500ft'. Sandtoft were contacted by telephone and they stated that 1 ac was in the visual cct. The pilot of that ac, subsequently identified as the PA28, called on frequency requesting a BS for GH. As it was now identified the B737 was given a closing heading for the ILS and once 'established', was transferred to TOWER. The PA28 pilot was informed of the reporting action taken. Minimum separation was estimated to be 4nm and 1000ft.

THE B737-800 PILOT (B737) reports he was inbound to Doncaster IFR and in receipt of a RCS from Doncaster on 126·225MHz, squawking A6217 with Modes S and C. About 5nm from touchdown on the ILS to RW20 descending through 2500ft QNH (1017mb) at 170kt, avoiding action was requested by Doncaster ATC to avoid a PA28. The AP was disengaged and he thought a L turn, [but actually R], was initiated at 2500ft according to ATC

instructions followed by a second approach. The PA28 was not seen but radar separation was given as 4nm as the PA28 penetrated CAS without ATC clearance. No TCAS alerts or warnings were received.

THE PIPER CHEROKEE WARRIOR II (**PA28) PILOT**, a flying instructor, reports flying a dual training sortie from Sandtoft, VFR and in receipt of an A/G Service from Sandtoft RADIO on 130·425MHz, squawking A7000 with Mode C. The visibility was 9km in VMC and the ac was coloured blue/white; no lighting was mentioned. After departing in crosswind conditions the ac was handled by his student, but he had to take control on initial climbout for the first cct and calm his student owing to the turbulent conditions. By the time the ac was under control in stable flight in the hands of the instructor climbing through 800ft QFE, the initial climb out had become extended leading to a wider cct than normal. The cct height at Sandtoft is 1000ft and the ATZ extends to 2000ft aal. Sandtoft A/G had no phone call to let them know that an ac was inbound or in the Doncaster cct. He did not see the B737 or any other ac at the time.

ATSI reports that the Airprox occurred at 0935:28, at a position 6nm NNE of Doncaster Airport within the Doncaster Class D CTR. The B737 was inbound to Doncaster, IFR, from Tenerife. The PA28 was operating on a VFR flight from Sandtoft aerodrome.

Sandtoft is positioned 7.5nm to the NE of Doncaster Airport and has an ATZ of a circle 2nm radius centred on RW05/23 and extending from the surface to 2000ft above aerodrome level (elev 13ft). The southwestern part of the ATZ lies within the Doncaster Sheffield CTR (Class D). The upper limit of the ATZ lies partly within Doncaster Sheffield CTAs (bases 1500ft and 2000ft amsl).

The Letter of Agreement between Doncaster and Sandtoft, states:-

3) Pilots of transponding aircraft remaining within the Sandtoft ATZ will be expected to squawk the 'VFR Aerodrome Traffic Pattern' conspicuity code (7010) in accordance with AIC 9/2007.

8) Doncaster Radar will inform Sandtoft via the direct line of all aircraft being vectored for an approach to runway 20. This telephone call should be made at approximately 20DME. Specific mention should be made of all arrivals of 'Heavy' vortex category.

10) Pilots must ensure that they are in receipt of an ATC clearance from Doncaster Radar 126.225 MHz before entering Doncaster Controlled Airspace.'

RW20 was the notified Runway in use.

The applicable Doncaster/Sheffield METAR for 0920Z - 14011KT CAVOK 12/06 Q1020=

At 0929:18, the B737 crew, in receipt of a Radar Control Service, established contact with Doncaster RADAR, in the descent to FL070 with information 'Quebec'. RADAR responded advising that information 'Romeo' was current, QNH 1020mb, with vectoring for the ILS RW20 and No 1 in traffic. The B737 crew was given descent to an altitide of 2500ft, QNH (1020mb) and was then vectored right hand for the ILS approach RW20. At 0933:13, the radar recording shows the B737 positioned 11.8nm N of Doncaster Airport on right base.

At 0930:55, the B737 crew was advised about an aircraft that would be entering the hold at 3500ft, RADAR instructing the B737 crew, "*...in the event of a go around not above 2 thousand 5 hundred feet Q-N-H 1-0-2-0....".* This was acknowledged correctly by the B737 pilot.

At 0933:33, the B737 crew was given a closing heading for the ILS, "[B737 C/S] *turn right heading of 1-7-0 degrees closing from the right report established when established descend with the glidepath."* The B737 pilot responded, *"Right heading 1 ???? er clear for the ILS* [B737 C/S]". At this point the radar recording shows a 7000 squawk [the PA28] appearing 0.5nm to the SSW of Sandtoft airfield tracking SW at low level.

At 0934:40, RADAR passed TI on the unknown traffic, later identified as the PA28, "[B737 C/S] *traffic er left 11 o'clock 4 miles er indicating a thousand feet believed to be remaining in the Sandtoft circuit."* The B737 pilot replied, *"We have on TCAS and we're established...*[B737 C/S]*....established on the ILS."*

At 0934:59, the radar recording shows the PA28 leaving the Sandtoft ATZ on a WSW'ly track towards the Doncaster final approach at FL010 (converts to altitude 1189ft QNH (1020mb), with 1mb equal to 27ft).

At 0935:07, RADAR gave avoiding action to the B737 crew, "[B737 C/S] *roger it's now avoiding action turn right heading 1-3 correction right heading 3-6-0 degrees that previously reported traffic still climbing and tracking towards."* The B737 pilot responded, *"er roger which altitude then right er 2 say again the heading,"* The RADAR controller replied, *"right 3-6-0 altitude 2 thousand 5 hundred feet."*

The Manual of Air Traffic Control Services (MATS), Part 1, Section 1, Chapter 5, Page13, states:-

'15.2 The action to be taken by controllers when they observe an unknown aircraft, which they consider to be in unsafe proximity to traffic under their control, in various types of airspace is as follows:

(Class D). If radar derived, or other information, indicates that an aircraft is making an unauthorised penetration of the airspace, is lost, or has experienced radio failure – avoiding action shall be given and traffic information shall be passed.'

Although not a factor in the Airprox, ATSI noted that the radar controller did not use the correct avoiding action phraseology and did not pass the relative position, distance and heading of the PA28 [when it was issued].

MATS Part 1 App. E, Page 11, states:

'(A/c identity) avoiding action, turn left/right immediately heading (three digits) traffic ([left/right] number) o'clock (distance) miles opposite direction/crossing left to right/right to left (level information).'

At 0935:20, the radar recording shows the PA28, 2.3nm to the SW of Sandtoft, outside the ATZ in a R turn. The distance between the two ac is 3.3nm.

At 0935:28, the B737 crew reported at 2300ft, climbing back to 2500ft QNH and turning R heading 360°. The radar recording shows the distance between the aircraft as 2.8nm, with both ac in a R turn. The B737 is indicating FL021 (ALT 2289ft QNH) and the PA28 is indicating FL011 (ALT 1289ft QNH). The CPA occurs at 0935:41 at a range of 2.4nm with a minimum vertical separation of 1000ft Mode C.

At 0936:31, the PA28 pilot called Doncaster RADAR and apologised. At 0936:35, the radar recording shows the PA28 leaving the Doncaster CTR. Thereafter, the B737 was vectored for the ILS without further incident.

The PA28 pilot's written report indicates that a student was flying the ac, under the supervision of an instructor, in turbulent conditions with a crosswind. This resulted in a wider than normal cct. The pilot also commented that no call had been received by Sandtoft RADIO A/G Station regarding the inbound B737. Doncaster ATSU indicated that a call was made in accordance with the LoA. It was not possible to verify the phone conversations that occurred. The PA28 pilot required a clearance to enter the Doncaster Class D airspace before leaving the Sandtoft ATZ to the SW.

As the B737 turned onto the ILS for RW20, RADAR observed unknown traffic - the PA28 - in the vicinity of Sandtoft aerodrome. The controller considered it likely that the unknown traffic - the PA28 - was operating in the Sandtoft circuit and passed TI to the B737 crew. When it became clear that the unknown traffic - the PA28 - was leaving the Sandtoft ATZ on a WSW'ly track, the controller became concerned and gave avoiding action to the B737 crew in order to resolve the confliction.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequency, radar video recordings, reports from the air traffic controller involved and from the appropriate ATC authority.

In the absence of a landline transcript, it was not possible to resolve independently whether the Sandtoft A/G Operator was informed of the B737 inbound to Doncaster beforehand or, conversely, whether Sandtoft advised Doncaster about the circuiting PA28. However, it was plain that the PA28 pilot had not selected the appropriate squawk for an ac remaining within the Sandtoft A/D circuit in accordance with the LOA. Whether the PA28 pilot

was intending to continue the flight outwith the ATZ, clear of CAS, had not been revealed by the PA28 pilot but the A7000 squawk might have been why the APR was perhaps paying close attention to the flight when the PA28 approached the ATZ/CTR boundary.

The PA28 instructor reports he had to take control of his aeroplane, in what were challenging wind conditions for his student. However, the radar recording clearly showed that the PA28 had entered the Doncaster CTR during his Crosswind to Downwind turn. The Board was surprised that the PA28 pilot had not seen the B737 at all. Nevertheless, it was evident that the PA28 pilot's excursion outwith the ATZ was quickly detected on radar by the alert APR who watched it carefully whilst keeping the B737 crew appraised through the transmission of TI. The crew also had the PA28 displayed on their TCAS but it was evident that the controller took positive action at an appropriate stage before TCAS was called upon to act. The Board agreed that the B737 crew had little impact on this Airprox other than that they had complied promptly with the avoiding action instructions issued by the Doncaster APR. Controller Members recognised that the APR had acted correctly and the radar recording reflects that the APR passed these instructions to the B737 crew, turning their ac off the LLZ and back into the pattern, moments after he observed the PA28 penetrating the Class D Doncaster CTR. The Members agreed unanimously that the Cause of this Airprox was that the PA28 pilot entered controlled airspace without clearance and into conflict with the B737 established on the ILS. Furthermore, the APR's prompt action ensured that separation of 1000ft and 2·4nm was preserved, thereby removing entirely any Risk of a collision.

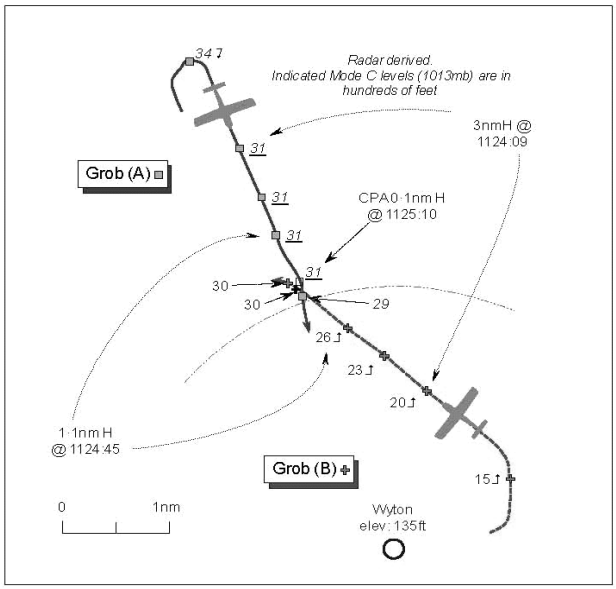
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The PA28 pilot entered controlled airspace without clearance and into conflict with the B737 established on the ILS.

Degree of Risk: C.

AIRPROX REPORT NO 2011039

Date/Time:	4 May 1125Z	
Position:	5224N 00008W (347° Wyton A/D 2·7nm - elev 135ft)	
Airspace:	FIR/ATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Grob Tutor (A)	Grob Tutor (B)
Operator:	HQ Air (Trg)	HQ Air (Trg)
Alt/FL:	↓3000ft	↑3000ft
	QFE (1018mb)	RPS
Weather:	VMC	VMC
Visibility:	30km	>10km
Reported Separation:		
	Nil V/30-50m	NR
Recorded Separation:		
	100ft V/0·1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PILOT OF GROB TUTOR (A) reports he was the PIC of a VFR instructional sortie flying the ac from the LH seat, whilst on recovery to Wyton in perfect weather conditions with excellent visibility and no significant cloud. He was in receipt of a BS from Wyton TOWER on 119·975Mhz and a descent and overhead join had been approved.

AIRPROX REPORT No 2011039

About 3m N of the aerodrome, the recovery checks had been completed and he had demonstrated a lookout turn before initiating a descent. While teaching the cruise descent to 3000ft QFE (1018mb) heading S at 100kt, with a view to manoeuvring for the overhead join, another Tutor ac [the callsign of Tutor (B) was given] appeared from behind the left canopy bar in their 10-11 o'clock position at a similar height and in a shallow climb from L to R at an estimated range of no more than 100m. He took aggressive avoiding action by executing a descending turn to the L, passing below and 30-50m behind the other Tutor ac. The pilot of the other Tutor ac appeared to take no avoiding action and he assessed the Risk as 'very high'. He spoke with the PIC of Tutor (B) who, before his evasive manoeuvre, had not seen their ac.

A squawk of A7000 was selected with Mode C; Elementary Mode S is fitted, TCAS is not. The ac is predominantly white with a blue fin flash; the HISL and nav lights were on.

THE PILOT OF GROB TUTOR (B) reports he was airborne on a VFR training sortie from Wyton but was in receipt of a TS from Cottesmore ATC on 130·2MHz. Heading 330° in the climb at 80kt, he was informed by Cottesmore ATC of another ac 2nm to the N. Climbing through 3000ft, he thought 4nm N of Wyton but actually at a range of 2·7nm from the A/D, he dropped the right wing to have a good lookout and thought he saw something flash by underneath to starboard, but he could not be sure. He assessed the Risk as 'medium'.

A squawk of A7000 was selected with Mode C; elementary Mode S is fitted, TCAS is not. Although not specified the ac was presumed to have the same colour scheme as Tutor (A) – predominantly white with a blue fin flash. Wing-tip strobes lights, the nose taxi light and nav lights were all on.

THE WYTON AERODROME CONTROLLER (TOWER) reports that the pilot of Tutor (A) reported an Airprox at a position 3nm N of the aerodrome at 3000ft QFE (1018mb). The reported ac was also a Grob Tutor and believed to be another Wyton based ac. The runway-in-use was RW08, the prevailing visibility 30km and the A/D Colour State BLUE.

UKAB Note (1). The UK AIP at ENR-2-2-2-5, notifies the Wyton ATZ as a circle radius 2.5nm centred on RW08/26 extending from the surface to 2000ft above the aerodrome elevation of 135ft and active in Summer from Sunrise to Sunset. Wyton does not have a MATZ.

ATSI reports that the Airprox occurred at 1125:10, in Class G airspace, 2.7nm to the NNW of Wyton A/D and just outside of the Wyton ATZ.

Grob Tutor (A) was operating VFR on a training exercise and returning to Wyton for recovery, in receipt of a BS from Wyton TOWER. Grob Tutor (B) had departed VFR from Wyton on a training exercise, in receipt of a TS from Cottesmore ZONE.

Wyton TOWER and APPROACH (APP) were operating as separate positions without the aid of surveillance equipment.

The Wyton 1050 and 1150 UTC METAR:

1050Z 11009KT 9999 FEW040 SCT250 13/02 Q1023 BLU=

1150Z 14009KT 9999 FEW045 SCT250 14/02 Q1022=

Tutor (B) departed from Wyton's RW08 at 1122:15. The pilot of Tutor (B) reported switching to Wyton APP at 1122:57 and at 1123:50, reported calling Cottesmore.

Five seconds later at 1123:55, the pilot of Tutor (A) contacted Wyton APP for a visual recovery in receipt of information 'Echo' and was transferred to Wyton TOWER. At 1124:20 the pilot of Tutor (A) contacted Wyton TOWER and requested an overhead join. TOWER instructed Tutor (A) to join for RW08, QFE 1018mb, circuit clear. This was correctly acknowledged by the pilot of Tutor (A), in receipt of a BS.

At 1125:12 Tutor (A) reported the Airprox 2nm to the N of Wyton A/D, with another Tutor.

The written report from the pilot of Tutor (B), indicated that whilst climbing on a northwesterly track and in receipt of a TS, Cottesmore ATC informed him of another aircraft 2nm to the N.

The Wyton TOWER controller had advised Tutor (A) that the circuit was clear. The situational awareness of the pilot of Tutor (A) could have been aided if the Wyton TOWER or Wyton APP controllers had passed TI in general terms regarding the recent departure of Tutor (B). However, it is likely that the positions and routeings of both ac were unknown to Wyton and the pilot of Tutor (B) had quickly switched from TOWER to Wyton APP and then to Cottesmore ZONE.

At the time of the Airprox Tutor (A) was in receipt of a BS from Wyton TOWER operating to the N of the Wyton ATZ. The Manual of Air Traffic Services, Part 1, Section 1, Chapter 11, Page 4, paragraph 3.5.1, states:

'Pilots should not expect any form of traffic information from a controller, as there is no such obligation placed on the controller under a Basic Service outside an Aerodrome Traffic Zone (ATZ), and the pilot remains responsible for collision avoidance at all times. However, on initial contact the controller may provide traffic information in general terms to assist with the pilot's situational awareness. This will not normally be updated by the controller unless the situation has changed markedly, or the pilot requests an update. A controller with access to surveillance derived information shall avoid the routine provision of traffic information on specific aircraft, and a pilot who considers that he requires such a regular flow of specific traffic information shall request a Traffic Service. However, if a controller considers that a definite risk of collision exists, a warning may be issued to the pilot.'

HQ 1GP BM SM reports that Tutor (B) was outbound from Wyton VFR and was calling for a TS from Cottesmore ZONE, when Tutor (A) was positioning for an overhead join at Wyton, in receipt of a BS from Wyton.

The Airprox was not declared to Cottesmore at the time and with the length of time that elapsed between the submission of Tutor (B)'s report, the Cottesmore ATC personnel involved could not recall the incident. Consequently, this investigation is based upon the reports of the aircrew involved, the Cottesmore RT tape transcript and the retrospective recollection of Cottesmore ZONE.

Although Cottesmore airfield has closed, the LARS/ZONE task and Wittering APP tasks remain at Cottesmore ATC. Both control positions are manned throughout their notified operating hours and where it is identified that ZONE is busy, Wyton Tutor crews are pre-briefed to contact APP on UHF. In this case, the pilot of Tutor (B) called Zone on VHF at 1124:14 but was instructed to standby. At 1125:02, ZONE passed accurate TI to the pilot of Tutor (B) stating, "*traffic believed to be you has traffic 12 o'clock, half a mile, similar height*" which was acknowledged by Tutor (B).

Between 1124:14 and 1125:02, ZONE was called by 2 other flights, both being instructed to standby. Although the individual controllers involved in the occurrence were unable to recall any detail, subsequent analysis of the audio tapes by the unit identified that the control position was in the process of being handed over. The handover was completed at some point after 1129:23, with the new controller's voice evident at 1130:23. However, the off-going controller felt that the handover was commenced at around 11:24, almost co-incident with the pilot of Tutor (B)'s initial call, but they could not recall this with any clarity. Moreover, as there is no 'live-mic' recording, no details of the handover were recorded.

MAA RA 3003(2), through MMATM Ch 3 Para 4, states that:

'A change of controller should not be attempted until a suitable point is reached during the recovery of aircraft under control.'

The pilot of Tutor (A) reports that Tutor (B) "*appeared from behind the left canopy bar in our 10-11 o'clock position*." The radar replay depicts the Tutors on a constant relative bearing, in the position described by Tutor (A), until the range had decreased to 0·7nm at 1124:54. Shortly after this both Tutors turn, maintaining the confliction, with the CPA of 0·1nm occurring at 1125:10.

Based upon the tape transcript, there appears to be a burst of a higher taskload for ZONE at the point that the pilot of Tutor (B) calls at 1124:14. Moreover, given ZONE's response to Tutor (B) and the other 2 ac to, "*standby*", it is reasonable to argue that they were engaged in another task that is not evident on the tapes. This would support ZONE's recollection that they had just commenced the handover of the control position.

It is clear from the controller's subsequent actions that they correctly maintained control of the position in accordance with the regulation. Moreover, despite having not yet been able to identify Tutor (B) as it departed Wyton, ZONE passed TI to the pilot of Tutor (B) about Tutor (A) in as timely a manner as could be expected given the RT loading on the frequency.

Based upon Tutor (A) pilot's report, their late sighting of Tutor (B) appears to be as a result of the ac's constant relative bearing and position behind Tutor (A)'s canopy arch. It is likely that a similar explanation underlies the effective non-sighting of Tutor (A) by the pilot of Tutor (B). The ongoing embodiment of TAS to the Tutor fleet will serve as an effective additional safety barrier to similar recurrences.

HQ AIR (TRG) comments that the application of deconfliction plans at Wyton is under review by HQ 22 (Trg) Gp. Notwithstanding this, the pilot of Tutor (B) received accurate TI on Tutor (A), but at very close range, without any indication of whether it was on a converging heading. Whilst TAS may make such incidents less likely in the future, units still need to ensure they apply robust deconfliction systems, particularly around the airfield. With the known hazard of blind spots in the Tutor, an active lookout scan is required in order to cover these areas.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, a report from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

Members noted that the pilot of Tutor (B) had promptly left the Wyton APP frequency, called Cottesmore ZONE as soon as he passed the upper limit of the Wyton ATZ and that the crew of Tutor (A) had called 5sec after Tutor (B) had switched to ZONE. It was suggested that both pilots, who were equally responsible for avoiding each other's ac, might have potentially gained better SA on other aerodrome traffic from the pilots RT calls to APP, or possibly from a warning by the controller about the inbound ac, but such information might well have been incomplete without the benefit of radar data. Notwithstanding the completion of the Wyton Tutor fleet TAS embodiment programme, the HQ Air Ops Member stated that the review of the Unit's deconfliction plans was still in progress. He also emphasised that the pilot of Tutor (B) might not necessarily have received any additional warning if he had stayed with Wyton APP whilst in the immediate vicinity of the ATZ. Nevertheless, as soon as the controller was able to do so, Tutor (B) had been given TI by ZONE and Members commended the Cottesmore controller for this prompt call. Unfortunately, Tutor (B) pilot was unable to make use of this TI before he caught a fleeting glimpse of Tutor (A) as it flashed by underneath to starboard. Therefore, in the Board's view the first part of the Cause was effectively a non-sighting by the pilot of Tutor (B).

Fortunately, the crew in Tutor (A) had spotted the other ac just in time, as it appeared from behind the canopy bar in their 10-11 o'clock but only 100m away in a shallow climb, and took aggressive avoiding action, descending and turning to the L to pass below and 30-50m behind Tutor (B). The radar recording reflected that Tutor (B) was beneath Tutor (A)'s nose and closing on a steady relative bearing immediately before the Airprox occurred. All this led Members to conclude that a late sighting by the crew of Tutor (A) was the other part of the Cause.

The descending L turn had enabled the pilot of Tutor (A) to manoeuvre away he reports, but the radar recording reflected that horizontal separation was no more than 0·1nm – 185m – and from his account was a lot less at an estimated 30-50m. A test pilot Member commented that at these distances this class of aeroplane does not have a rate of roll high enough to facilitate swift avoiding action by turning away. Such aeroplanes take time to respond to a pilot's control inputs and change their flight path to a significant extent; another pilot Member added that an instinctive bunt might be all that could be achieved at very close quarters. Although Tutor (A) had descended 200ft in one sweep of the radar (4sec data update rate), only 100ft of vertical separation had resulted against Tutor (B) as it levelled: one CAT pilot Member considered this was sufficient to avert an actual Risk of collision, however, this was a solitary view. The overwhelming majority of the Members perceived that, although the pilot of Tutor (A) had managed to react in the short time available at these close quarters, it was barely effective and the Board concluded that an actual Risk of collision had existed in the circumstances reported here.

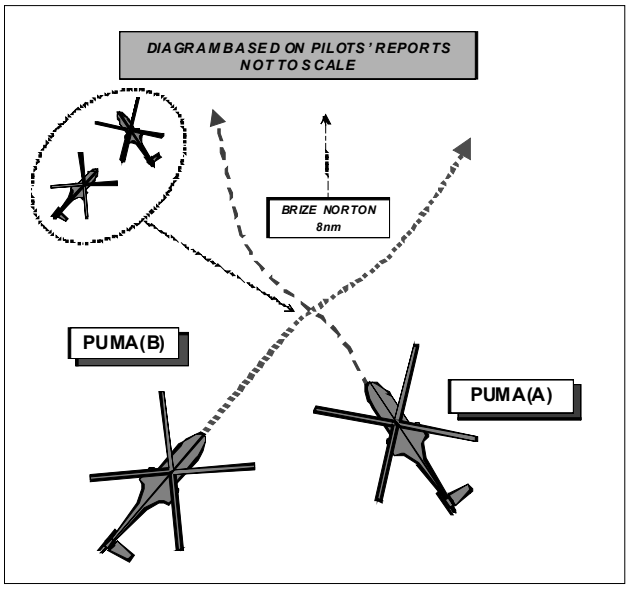
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Effectively a non-sighting by Tutor (B) pilot and a late sighting by Tutor (A) crew.

Degree of Risk: A.

AIRPROX REPORT NO 2011040

Date/Time:	11 May 2011 2128Z	
Position:	5137N 00133W (2nm SE Faringdon)	
Airspace:	UKNLFS	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Puma	Puma
Operator:	HQ JHC	HQ JHC
Alt/FL:	250ft agl (RPS 1017mb)	300ft (RPS 1017mb)
Weather:	VMC CLBC	VMC CLBC
Visibility:	10km	20km
Reported Separation:	0 V/200m H	50ft V/300m H
Recorded Separation:	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

PUMA (A) PILOT reports that during a night tactical training sortie, while operating on NVDs in Night LFA 1, displaying standard nav and red strobe lights, IR formation lights, and in receipt of a BS from Brize, they unexpectedly came within 200m of another Puma (Puma B) in flight.

Both sorties were due to lift at the same time, were de-conflicted during Night Brief and out-briefed at the Joint Ops Desk; however, they (Puma (A)) departed 15min late.

While in LFA 1, S of BZN CTZ, the other Puma lifted from Field 4 to Field 8 and called changing frequencies from Benson App to Brize Zone. He saw it an estimated 8km away and continued to call Brize Zone for a zone crossing while heading 330° at 120kt. The other ac was already working Brize Zone and its crew had not identified them.

They were in a medium workload situation and the Brize frequency was busy but eventually he gave a position report and requested clearance to cross the CTZ. At that point they thought the other Puma was 2km away in their 9 o'clock and he thought that it would to cross behind them but on his second glance the captain realised that it was only 200m away and took avoiding action by breaking [presumably left].

After consultation on the ground, the other Puma pilot was only aware of them crossing through his 12 o'clock position, 200m away, when the position call was made and they [the reporting Puma] took avoiding action. He assessed the risk as being Medium.

Both crews then continued their flight without further incident.

PUMA (B) PILOT reports that he was flying a Night Competence to Instruct (C2I) sortie in the RAF Benson local area. They were displaying red HISLs, nav lights and NVG formation lights and were in receipt of a BS from Brize Zone. They had a comprehensive deconfliction brief before takeoff and the initial part of the sortie was flown

without incident. On lifting from the second training field, the crew was aware of another Puma operating at another Benson training field nearby but noted that they were still orbiting the field and not a confliction.

They then transited towards a training field close to the edge of Brize Norton CTZ and changed to the Brize Zone frequency iaw local procedures. Bearing in mind the previously noted location of the other Puma and that it still had to carry out an approach and landing at the field, it was assessed that it would be well ahead, although they were not visual with it at that stage. Shortly after initial contact with Brize, while heading 040° at 100kt, in a moderate workload situation, they heard the other Puma call up for a transit from the training field to a Brize VRP to the W of the CTZ earlier than expected, which caused the HP/Captain to look for the ac. Shortly after this, he saw the Puma almost directly ahead of them at a distance that was assessed to be 200-300m.

While continuing without manoeuvring would not have resulted in a collision, the HP elected to carry out a gentle level right-hand turn to increase the separation between the ac. Once both ac were well clear, contact was established on the FM radio to confirm that both crews were aware of what had just occurred and to confirm that it would be discussed further on the ground. He assessed the risk as being low and the sortie was continued without further incident.

The crew commented that both crews had been operating with poor-quality 3rd-generation NVG. The deconfliction plan was robust and both crews were aware of the rough location of the other ac. The issue arose because the crew of the other Puma assessed that the distance between ac was considerably greater than it actually was due to the difficulty of judging distance on NVG. This was compounded because the crew were operating on a different frequency and did not hear the call that the other ac was lifting from the field site, having conducted their approach considerably quicker than had been anticipated. Both crews believed that the incident had been caused by the single U/VHF radio in the Puma HC1; had the crew of Puma (B) been aware that Puma (A) had lifted from the field site earlier than expected, they would have had much better SA.

HQ 1GP BM SM reports that at the CPA both Pumas were in receipt of a BS from Brize Zone.

Due to the low alt of the ac, the Airprox was not visible on the radar recording, although both ac did paint intermittently both before and after the incident. That being the case, this report is based on the pilots' reports and the RT transcript.

Both Pumas called Zone within a short period of each other between 2126:45 and 2126:53, with Zone answering Puma (B) first, placing it on a BS. On their initial call, Puma (B) stated that they would be, "*operating to the south of the Zone into a er Benson field eight, just up against the edge of the Zone*" and Puma (A) stated on the initial call at 2127:52 that they were, "*two miles south of Faringdon, visual with the other traffic, request Faringdon Burford crossing at er low level*".

Based upon the pilot's reports, it is reasonable to assume that the Airprox occurred shortly after 2127:52 and that Puma (A) crew was visual with Puma (B). This is supported by the statement in Puma (A) pilot's report that he thought that they sighted Puma (B) at a range of 2km but quickly realised that the separation was far less. From an ATM perspective, Zone was not in a position to affect the outcome of this occurrence.

UKAB Note (1): The very intermittent radar data from the Clee Hill recording broadly supports the diagram above.

HQ JHC comments that this incident occurred when all reasonable measures for deconfliction had been taken on the ground prior to launch. A combination of events – the late launch of one ac, the misjudging of distance on NVG and the early completion of a serial, resulted in the two ac unexpectedly coming into close proximity with each other. It is recognised that the preference would be to conduct essential low flying training elsewhere in the UK in areas of lower density airspace, but the current bounds of the NRR make this difficult. This HQ has already articulated the mitigation measures in place in NRR1 in recent Airprox discussed at the UK Airprox Board.

It is clear that the fitting of TCAS, which is being actively pursued by this HQ, would have significantly helped to prevent this incident. The CO of 230 Sqn is, in addition, investigating the use of the VHF-FM radio for deconfliction between Benson based squadrons.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

Procedural deconfliction is precisely that, it is only accurate at a specific time and is dependent on there being no late changes to routes or timings, both of which are often tactically necessary and therefore commonplace; nonetheless such 'deconfliction' is helpful provided that its limitations are clearly understood; further, it can be very difficult in multi-aircraft situations. It was not clear to the Board whether this particular deconfliction plan contained contingencies for delays or rerouting but in this situation where only 2 ac were involved, Members considered that, despite the difficulty, the delay of Puma (A) should have been relayed to Puma (B) and the effect of that delay assimilated by both crews.

Notwithstanding any deconfliction plan and that it was night, the incident took place in the 'see and avoid' environment of a multi-user night low flying area. Although the crew of Puma (A) 'saw' Puma (B) they initially misinterpreted its range and therefore underestimated the threat it posed; the crew of Puma (B) on the other hand did not see Puma (A) until it was 'ahead' of them and flying away. The Board interpreted this as being an 'effective non-sighting' by Puma (B) crew. When assessing the part played by Crew (A), there was much more discussion. The Board had no information on the part played by cultural lighting or terrain but assumed that they had not been significant factors since the ac was seen by at least one crewmember; its range, however, was initially overestimated significantly. While accepting the difficulty of estimating range at night, a Member familiar with NVG operations expressed surprise, as in his experience the opposite (i.e. an underestimate) is more usual.

Although the flight paths of the two ac were such that they were not going to collide, Members considered that there had been a compromise of normally accepted safety margins.

PART C: ASSESSMENT OF CAUSE AND RISK

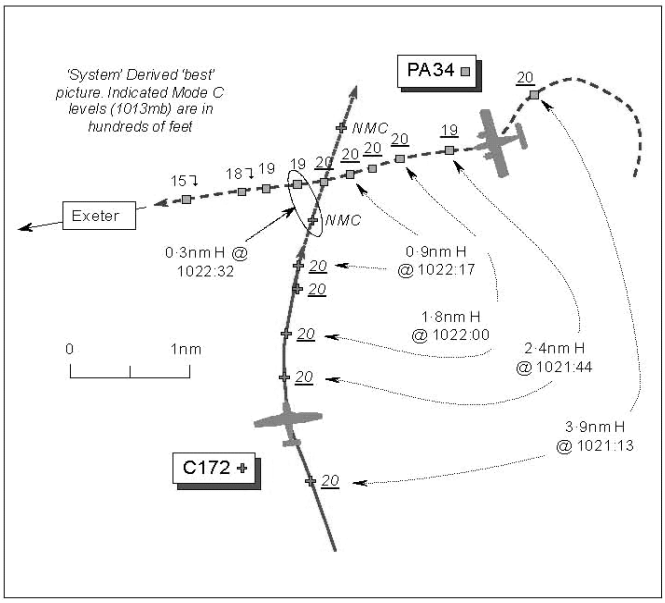
Cause: Effectively a non-sighting by Puma (B) crew and a late appreciation of Puma (B)'s range by Puma (A) crew.

Degree of Risk: B.

AIRPROX REPORT No 2011041

AIRPROX REPORT NO 2011041

Date/Time:	13 May 2011 1022Z	
Position:	5045N 00316W (5·8nm E of Exeter - elev 102ft)	
Airspace:	London FIR	(Class: G)
Reporter:	Exeter ATC	
	1st Ac	*2nd Ac*
Type:	PA34-200T	C172
Operator:	Civ Trg	Civ Club
Alt/FL:	2200ft	2300ft
	QNH (1021mb)	(N/K)
Weather:	VMC CLBC	VMC
Visibility:	10km	>10km
Reported Separation:		
	100-200ft V/½nm H	100ft V/300-400m H
Recorded Separation:		
	0·3nm H	



CONTROLLER REPORTED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE EXETER APPROACH RADAR CONTROLLER (RADAR) reports that he liaised with Plymouth MILITARY (MIL) [a LARS ATCRU] regarding the intentions of an A4540 squawk observed 7nm SE of Exeter. [UKAB Note (1): This was reported to be an Apache helicopter at the time, but the reported ac was subsequently positively identified by the RAC as the subject C172.] Plymouth MIL advised that they were no longer providing an ATS; the pilot had been instructed to squawk A7000 and leave the frequency. However, the ac continued to squawk A4540 and tracked northbound towards the final approach to RW26 at the same level as the PA34 which was at 8nm Final on an ILS approach. Two calls were made on 128·975MHz in an attempt to raise the pilot but neither met with a response. The PA34 crew was passed TI twice about the unknown ac and after the second call the pilot reported visual with an aeroplane. The PA34 Examiner subsequently telephoned to advise he believed the reported ac was a C172.

The squawk was lost as it tracked through the RW26 FAT, before a contact appeared squawking A7000 continuing towards Dunkeswell. Further investigation lead to a possibility of the ac being a C172 based at a local aerodrome.

The 1020UTC Exeter METAR: 230°/6kt 190°V280°; >10km Nil Wx; SCT 032, SCT040 QNH1021. Wessex RPS 1015mb; Portland RPS 1017mb.

THE PIPER PA34-200T PILOT, reports he was the PIC conducting an Instrument Rating examination of a candidate, executing an ILS approach to Exeter's RW26 under IFR in VMC, but with IF screens in place. They were in receipt of a TS from Exeter RADAR on 128·975MHz and the assigned squawk was selected with Mode C; neither TCAS nor Mode S are fitted.

RADAR had advised them of unknown traffic from about 8nm Final on the ILS. At about 6nm Final to RW26, heading 260° at 120kt, level at 2200ft Exeter QNH (1021mb) flying about 200ft below cloud, they obtained visual contact with the other ac about 1nm to the S. It was a high-wing single-engine aeroplane - probably a C172 – approaching from their 10 o'clock, 1nm away at a similar altitude and crossing obliquely astern from their 10 o'clock into their 5 o'clock. The pilot under examination continued to fly the approach whilst he as PIC monitored the other ac visually as it passed about 100-200ft below his ac and ½nm astern at the closest point. No avoiding action was taken as none was necessary following the visual sighting. He assessed the Risk as 'low' in the prevailing conditions, but highlighted the lack of protection given to published instrument approaches in the 'Open FIR'. His ac is coloured white with black detailing; the HISLs and landing lights were on.

THE REIMS CESSNA-F172M PILOT (C172) reports that at the reported time of the Airprox, he was returning to Dunkeswell from a local VFR solo sightseeing flight with 2 passengers. He had been in receipt of a BS from Plymouth MIL but could not recall the squawk assigned; Mode C was on. Neither TCAS nor Mode S are fitted. The ac is coloured white and blue; the wingtip HISLs were on.

His route had taken him westbound along the coast from Lyme Regis to overhead Sidmouth before turning N for Dunkeswell. About 2-3nm due N of Sidmouth, heading N in a level cruise at 2300ft at 100kt, some 500ft below and 10km clear of cloud, he saw the other ac late about 300-400m away, crossing ahead from R – L. At the closest point the other ac – a cream coloured PA34 – passed about 100ft above his ac 300-400m away with a 'low' Risk. He did not consider that any avoiding action was necessary to maintain flight safety and none was taken.

In retrospect, given their proximity to Exeter Airport, it would have been appropriate to have called Exeter RADAR earlier on 128·975MHz before calling Dunkeswell RADIO to join their cct.

ATSI reports that the Airprox occured in Class G airspace, 5·8nm to the ENE of Exeter Airport. The PA34 was an IFR training flight, making an ILS approach to Exeter's RW26 in receipt of a TS from Exeter RADAR. The C172 was a VFR flight operating from Dunkeswell A/D, routeing along the coast from Lyme Regis to Sidmouth, before turning N.

At 1017:55, the radar recording shows an unknown contact [the C172] 10nm to the SE of Exeter Airport, squawking A4540 [Plymouth (Mil)], tracking W along the coastline, indicating 2000ft (1013mb) (converts to an altitude of 2216ft Exeter QNH (1021mb) at 1mb/27ft). The PA34, squawking A0422, is 3.5nm NE of Exeter Airport, tracking eastbound and outbound for an ILS approach to RW26.

At 1020:30 the radar recording shows the C172 7.2nm SE of Exeter, turning R onto a northerly track towards the final approach for RW26 and still displaying a Plymouth (Mil) squawk of A4540. RADAR liaised with Plymouth Mil and the controller's report indicated that Plymouth Mil advised that the ac had left their frequency and been told to squawk A7000.

At 1021:14, RADAR passed TI to the PA34 crew about the C172, *"...unknown traffic 10 o'clock range 3 miles intentions unknown appears to be crossing left to right indicating same level at the moment descending."* The PA34 pilot replied, *"keeping a good lookout* [PA34 C/S]." The radar recording shows the PA34 on an 8nm Final indicating 2000ft (1013mb) [2216ft QNH] and the unknown C172 in the PA34's 10 o'clock at a range of 4nm indicating 2100ft (1013mb) [2316ft QNH]. The PA34 pilot reported localiser established at 6.8 DME.

At 1021:45, RADAR updated the TI, "[PA34C/S] *the unknown traffic* [C172] *again now in your 11 o'clock range 2 miles appears to be crossing left to right indicating 2 thousand 2 hundred feet same level.*" At 1022:00, RADAR tried unsuccessfully to establish RT contact with the unknown ac; however, at this point the PA34 pilot reported visual with the unknown C172.

[UKAB Note: The radar recording shows the C172, in the PA34's 10 o'clock at 1.8nm, both ac indicating 2000ft (1013mb) (2216ft QNH) at about the point the PA34 pilot reported visual contact. The SSR label of the C172 disappears at 1022:17, leaving only intermittent primary radar returns until the pilot selected A7000 after the ac had passed. The CPA occurred at 1022:32, when the C172 is shown passing 0·3nm to port of the PA34 before drawing astern, the PA34 indicating 1900ft (1013mb) – about 2116ft QNH.]

The PA34 was in receipt of a TS from Exeter RADAR. When it became apparent that the unknown traffic, squawking A4540 was likely to come into conflict with the PA34, the Exeter RADAR controller tried to obtain the ac's intentions from Plymouth Mil. RADAR passed TI to the PA34 crew on the unknown traffic. When this TI was updated, the PA34 pilot sighted the C172 and continued to monitor the ac until it had passed.

The Manual of Air Traffic Services (MATS) Part 1, Section 1, Chapter 11, Page 5, paragraph 4.1.1 and 4.5.1, states:

'A Traffic Service is a surveillance based ATS, where in addition to the provisions of a Basic Service, the controller provides specific surveillance derived traffic information to assist the pilot in avoiding other traffic. Controllers may provide headings and/or levels for the purposes of positioning and/or sequencing; however, the controller is not required to achieve deconfliction minima, and the avoidance of other traffic is ultimately the pilot's responsibility.

The controller shall pass traffic information on relevant traffic, and shall update the traffic information if it continues to constitute a definite hazard, or if requested by the pilot. However, high controller workload and RTF loading may reduce the ability of the controller to pass traffic information, and the timeliness of such information.'

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequency, radar video recordings, a report from the air traffic controller involved and reports from the appropriate ATC authority.

It was evident that RADAR had detected the potential for a confliction with the unknown ac and passed comprehensive TI to the PA34 crew twice. After the controller's second transmission of TI at a range of 2nm, the PA34 PIC reported visual contact with the C172; the radar recording reflects this was when the conflicting ac was 1·8nm away and slightly more distant than the PA34 pilot's estimate of 1nm. The Board noted that the PIC of the PA34 was content to allow the pilot under examination to continue to fly the approach, whilst he monitored the other aeroplane visually and watched as the C172 crossed obliquely astern from their 10 o'clock into their 5 o'clock, at a similar altitude, before the twin was descended on final approach. Whilst in this situation the C172 pilot was required by the 'Rules of the Air' to 'give way' to the PA34 on his right he reports that he had not seen the twin until it was about 300-400m away, crossing ahead from R – L, and somewhat later than the PA34 P-i-C. The Members agreed unanimously that the late sighting by the C172 pilot of the PA34 was the Cause of this Airprox.

Recorded radar data shows that before their tracks crossed both ac were at the same altitude – 2216ft amsl. Although the Board recognised that this Airprox occurred in Class G airspace, where both pilots were operating legitimately in accordance with the ANO, Members considered it unwise that the C172 pilot flew at pattern altitude through a promulgated IFR approach 'feather' that is clearly marked on VFR charts. Plainly the C172 pilot had to cross through the extended centre-line to reach his home base at Dunkeswell at some stage, but pilot Members concurred with his own expressed view that it would have been better airmanship to have done so whilst in communication with Exeter RADAR who could have provided an earlier warning about the PA34 in their ILS pattern.

The radar recording shows the separation at the CPA was 0·3nm and although the C172 pilot saw the PA34 late, it seems he saw the PA34 in time to ensure that he passed clear astern. Neither the PA34 pilot, nor the C172 pilot considered that avoiding action was warranted. Furthermore pilot Members considered the PA34 PIC was always in a position to take control and effect robust avoiding action if need be. Therefore, in these circumstances, the Board concluded that no Risk of a collision had existed.

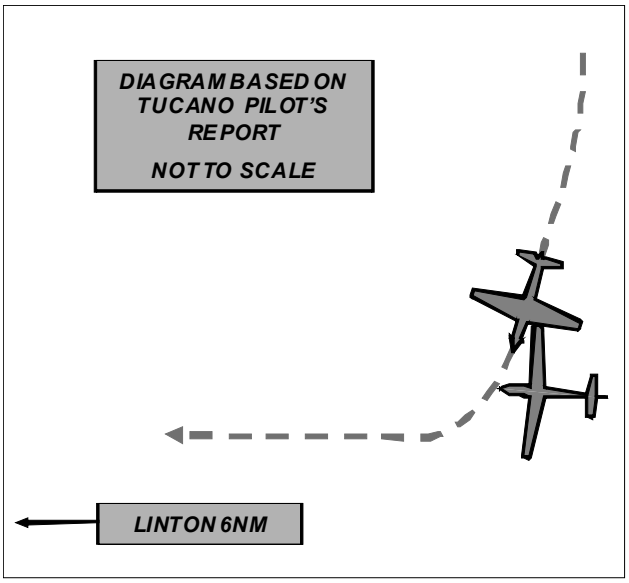
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A late sighting by the C172 pilot.

Degree of Risk: C.

AIRPROX REPORT NO 2011042

Date/Time:	19 May 2011 1238Z	
Position:	5403N 00100W (6nm E Linton - elev 53ft)	
Airspace:	Lon FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Tucano	Untraced Glider
Operator:	HQ AIR (TRG)	NR
Alt/FL:	2500ft	NR
	(QFE 1015mb)	NR
Weather:	VMC CAVOK	NR
Visibility:	40km	NR
Reported Separation:		
	100ft V/Nil H	NR
Recorded Separation:		
	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE TUCANO PILOT reports that he was flying a black ac with all lights on, on a dual local training flight from Linton-on-Ouse, squawking 4576 [he thought] with modes C and S; TCAS1 was fitted. While heading 240° at 260kt and at 2500ft (QFE) on recovery to Linton-On-Ouse in receipt of a BS, a contact with height unknown was passed by Linton APP. Despite keeping a good lookout no ac was seen and, as there was no contact on TCAS, they suspected the contact to be a glider. Just before turning R to line up on the extended C/L for RW28, the handling pilot caught sight of a white, low-wing glider flying from left to right immediately in front of them and level with their ac. He bunted hard to -0.5G to avoid a collision and flew underneath a white low-wing glider in straight and level flight, clearing it by about 100ft. He assessed the risk as being very high [and reported the incident to TWR on first contact].

UKAB Note (1): Despite extensive procedural tracing action, the glider could not be identified.

LINTON-ON-OUSE APPROACH CONTROLLER (APP) reports that at about 1240 [1237:01 from transcript] the Tucano called for a visual recovery. The aerodrome details were passed and the ac turned towards the aerodrome [and a BS was agreed]. As the ac turned he noticed a non squawking (primary) contact 1nm S of its position, tracking NW. He passed TI to the pilot, who replied that he was 'looking'; he then reported visual and changed frequency to TWR.

UKAB Note (2): The Tucano shows on the Great Dun Fell radar recording throughout, initially squawking 4577. It changed squawk to 4506 at 1238:35 then turned R onto the RW28 15sec later. The glider does not show at any time.

HQ 1GP BM SM reported that this Airprox occurred between a Tucano on a VFR recovery at 2500ft QFE, in receipt of a BS from Linton APP and an un-traced glider, 6nm E of Linton-on-Ouse

The Airprox does not appear on the radar replay, consequently this investigation has been based on the tape transcript and reports of the pilot and controller involved.

At 1237:01, the Tucano pilot free-called APP for a visual recovery and was passed the airfield details and placed under a BS in accordance with the Linton FOB.

APP reported that as the Tucano turned to position for the recovery he noticed a primary radar contact and passed TI stating, "*traffic believed to be you has traffic south, one mile, tracking north-west, no height information*". The

next transmission from the pilot was at 1238:19 stating, "*field in sight, squawking circuit, to tower*" which was acknowledged by APP.

It would appear that the CPA occurred shortly before 1238:31 with the Tucano's first call on the TWR freq being, "*Er, Tucano C/S just gone underneath the glider";* 21sec later at 1238:52 and without a further transmission from the Tucano, TWR broadcast joining instructions to the Tucano.

[UKAB Note (3): At 1238:28 the Tucano was descending through FL026.]

In accordance with the service principles laid down within CAP774, APP deemed that a collision risk existed for the Tucano and provided the crew with TI. The ac captain and NHP at the time of the occurrence later stated that they wished to add their thanks to APP for the TI which was, "timely and focussed our attention and lookout at a time when we were also concentrating on the recovery and 'gaining visual' with the airfield".

Gliding activity within the Vale of York has been recognised at Linton as their greatest risk. The Stn has taken action to attempt to mitigate this risk and continues to engage with the local flying community to raise awareness of their operations. In terms of the Airprox itself and to paraphrase the Stn Cdr's comments, having received TI which alerted them to the presence of the glider, the crew visually acquired it, albeit later than ideal and took action to prevent a collision.

HQ AIR (TRG) comments that Linton is taking steps to reduce the risk from local gliding activity. Non-squawking, difficult to see ac, flown in the vicinity of approach paths to military airfields however, continue to be a significant hazard.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included a report from the Tucano pilot, transcripts of the relevant RT frequencies, radar recordings, a report from the air traffic controller involved and reports from the appropriate ATC and operating authorities.

An experienced Gliding Member was concerned that glider pilots might be perceived by the Board as being non-cooperative by not filing reports and by operating close to military airfields. He opined that they were just as safety-aware as other airspace users and many of their safety initiatives go unnoticed. Most are, however, part-time pilots and the education process is necessarily continuous and unrelenting; he accepted that the Military authorities wish to raise the profile of the risk of collisions with gliders and concurred this position. He also briefed that if the Tucano pilots report that the ac involved was a 'low-wing' glider, was accurate, in his opinion, it would most likely have been a motor glider; if that were the case, it could have taken off from anywhere in the UK and would therefore be very difficult to trace.

The Board commended the vigilance of the APP Controller for pointing out the intermittent primary only radar contact to the Tucano crew (on a BS) while they were descending and turning into conflict with it; this, Members considered, had been a significant factor in raising their level of lookout and had possibly lead to them seeing the glider, albeit later than optimum. The crew did, however, see the glider just in time for their 'bunt' to take effect and thereby prevent any risk of collision; the lateness of this reaction, however, convinced Members that there had been a reduction of normally accepted safety margins.

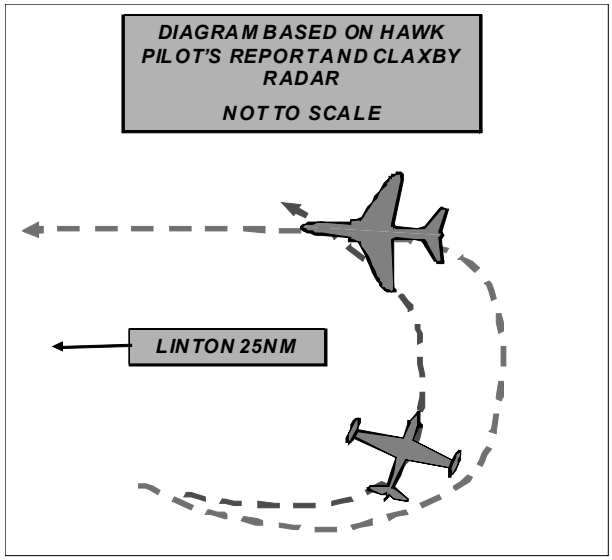
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Possibly a non-sighting by the glider pilot and a late sighting by the Tucano crew.

Degree of Risk: B.

AIRPROX REPORT NO 2011043

Date/Time:	17 May 2011 1410Z	
Position:	5408N 00031W	(25nm E Linton)
Airspace:	London FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Hawk T Mk1	Untraced Light ac
Operator:	HQ AIR (Ops)	NK
Alt/FL:	2000ft (RPS 1011mb)	NK
Weather:	VMC CLBC	NK
Visibility:	20km	NK
Reported Separation:	0ft V /1000ft H	NK
Recorded Separation:	NK	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE HAWK T MK1 PILOT reports flying a dual Forward Air Controller (FAC) training sortie in a NOTAMed area in the Yorkshire Wolds [see UKAB Note (2)] in a black ac with all lights switched on, squawking 7001 with Mode C; TCAS and Mode S were not fitted. Following the completion of a simulated ground-directed target attack profile at low level, the ac was repositioned overhead the target area in a steady level left turn at 2000ft amsl and 300kt in order to complete a high workload RT debrief for the student FAC. After one orbit the rear seat pilot made the captain aware of a white light ac with 'podded wingtips' and displaying white strobes, 1000ft away, co-altitude and maintaining a constant 'nose on' attitude towards them. He attempted to change the geometry between the two ac but it had no effect and he thought that the ac was deliberately following their flight profile.

In order to terminate the conflict he was forced to level the wings and accelerate his ac away from the following ac and, once safe separation between the two ac was established, the debrief was continued. The light ac was then seen to depart to the NW whereupon a waggle of the wings was observed.

He reported the incident by telephone and ASIMS on landing and assessed the risk as being medium.

THE HAWK UNIT station commander commented that the light ac pilot displayed poor airmanship, through apparently deliberate penetration of a correctly promulgated NOTAM.

UKAB Note (1): The Hawk shows on the radar throughout the incident manoeuvring aggressively in the target area. The light ac does not show at any time and could not be traced.

UKAB Note (2): The exercise was NOTAMed as follows:

H1637/11 NOTAMN

Q) EGTT/QWELW/IV/BO /W /000/190/5406N00035W005

A) EGTT B) 1105170800 C) 1105171530 E) FORWARD AIR CTL EXER. FAST JET ACFT WILL CONDUCT HIGH ENERGY MANOEUVRES WI 5NM RADIUS 5406N 00035W (YORK WOLDS, N YORKS). MAJORITY OF ACTIVITY BLW 5000FT. NON-EXER MIL CREWS CTC JACKPOT CONTROL ON 297.725MHZ OR 137.075MHZ. CTC 01677 456161. 11-05-0462/AS 3 F) SFC G) 19000FT AMSL)

HQ AIR (OPS) comments that without input from the untraced aircraft it is difficult to assess its intentions. However, it would appear that it was visual throughout and there was no actual risk of collision. A warning about

the activity and its location was issued and it is disappointing that this appears to have been deliberately ignored. The Hawk pilot was wise to use his superior performance to separate from the subject traffic.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the Hawk pilot, radar recordings, and a report from the Hawk operating authorities.

It was unfortunate that the second ac (ac 2) could not be traced as a pilot's report would have facilitated a fuller investigation of this incident. Members opined that there are not many ac types (with tip tanks/pods and a bubble canopy) that fit the reported description of the untraced ac as amplified by the Hawk pilot by telephone to the UKAB; further in order to fly the profile reported the ac 2 must have been capable of fairly high performance. Members also noted that the ac had not been squawking, which most likely excluded military ac; also that it did not even show as a primary contact in an area where radar performance is fairly good, thus also probably excluding ac such as a (red and white) Jet Provost which is otherwise similar to the description. There is one fairly high performance light training ac on the UK register with a colour scheme that matches that reported but it is based well away from Yorkshire and it was established that it was not airborne on the day of the incident.

Members agreed that it was disappointing that the pilot of the ac 2 had apparently deliberately disregarded the military NOTAM; although the NOTAMed area was not an 'exclusion', Members considered that it would have been good airmanship to treat it as such.

Although the pilot of the ac 2 apparently considered his manoeuvres safe as he had probably deliberately 'tracked' the Hawk, Members again agreed that this had been most unwise although, not in contravention of the ANO [although probably in breach of military regulations if they applied]. Since the pilot of ac 2 had selected the separation and had the Hawk in sight throughout, most Members agreed that, while he had been unwise and probably too close, there had been no conflict and that this incident was a sighting report with no risk of the ac colliding; one pilot Member however, disagreed and suggested that there had been a conflict and that the Hawk pilot had resolved it.

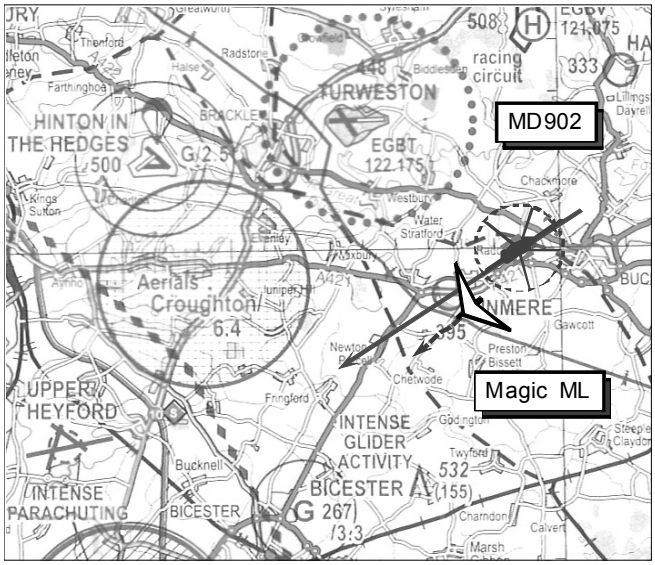
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Sighting report.

Degree of Risk: E.

AIRPROX REPORT NO 2011044

Date/Time:	20 May 2011 0952Z	
Position:	5159N 00103W (5nm E of Croughton)	
Airspace:	London FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Magic Laser Flexwing ML	MD902 Explorer
Operator:	Civ Pte	Civ Comm
Alt/FL:	2000ft amsl	<1000ft amsl
Weather:	VMC CLBC	VMC CLBC
Visibility:	50nm	>10km
Reported Separation:	300ft V/nil H	500ft V/100ft H
Recorded Separation:	Not recorded	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE MAGIC LASER FLEXWING MICROLIGHT PILOT (MAGIC ML) reports that he had departed from a private strip at Buttermilk Hall Farm [about 5nm SSW of Northampton] for Oaklands [N of the Brize CTR] and was flying a level cruise at 2000ft, some 2000ft clear below cloud with an in-flight visibility of 50nm. In transit, passing about 5nm E of Croughton aerials heading 230° at 45kt, a dark blue and white helicopter passed 300ft directly beneath his Magic ML on the same heading. The helicopter – the MD902 – passed so close that the severe turbulence from the blades caused his ML to dive almost vertically down and turn to the R; an immense effort was required to resume level flight after descending about 200ft during the recovery. He assessed the Risk of collision as 'medium' but the risk to his life was 'very high'. He stated that the severe turbulence from the helicopter needed extreme corrective measures to escape from an almost irrecoverable position.

His Magic ML's wing has a white top surface and yellow under surface. He was not in communication with any ATSU.

THE MD902 EXPLORER HELICOPTER PILOT (MD902) reports that he was in transit from Wyton to a field location within the Brize Norton CTR under VFR and in receipt of a BS from Brize ZONE on 124·275MHz. The assigned squawk was selected with Modes C and S; TCAS is fitted.

In level flight in VMC, not above 1000ft and more likely 500-600ft, on a direct track passing E of Croughton aerial farm at 125kt with the A/P engaged, both he and his front-seat observer saw the ML ahead at the same time, late, some 15sec before passing 100ft horizontally and 500ft vertically clear beneath the ML.

They had approached the ML from astern and it looked to be in a level cruise, flying straight and level, but he added candidly that the late visual sighting could only be attributed to its static position in the upper windscreen. Their heading was the same as the ML's but he assessed that they were slightly to the side of the ML, well below and clear of it and so continued to pass it.

He could not recall any other specific details as they simply continued their flight and he had not expected that their flight path would cause undue alarm. Once ahead, in acknowledgement of their proximity he may have 'waggled his wings' as he would generally do to indicate they had sighted the other traffic, but he cannot recall in this instance if he did so.

He assessed the Risk as 'none' and stated their transit altitude had been chosen to remain clear of extensive light fixed-wing & glider traffic that day.

AIRPROX REPORT No 2011044

THE BRIZE NORTON ZONE CONTROLLER reports that he was operating 119·00MHz at the reported time of the Airprox, but because of the intervening period between the occurrence and when he was told about it, he could recall nothing of significance. From the FPS the MD902 helicopter pilot was under a BS outside the Brize CTR, when he called on the frequency at 0948Z; the flight was transferred to Brize TOWER at 1003Z. No report of an Airprox was made on the frequency.

UKAB Note (1): The RT transcript reveals that the MD902 pilot reported in transit "..not above 1 thousand feet.." and was subsequently "..cleared to enter Brize controlled airspace not above height 1 thousand feet on the Brize Q-F-E 1-0-0-9".

UKAB Note (2): Analysis of the LATCC (Mil) Clee Hill Radar recording shows the MD902 as an SSR contact only, identified by its discrete squawk, transiting the Airprox location near Finmere (elev: 395ft amsl), however, the Magic ML is not evident at all. The MD902 maintains a transit altitude of 900-1000ft throughout and is shown at 0952:56, at a position 5nm E of Croughton tracking 235° level at an altitude of 1000ft London QNH (1019mb) – equating to a height of broadly 600ft agl.

HQ 1GP BM SM reports that this Airprox occurred east of Croughton and approximately 25nm ENE of Brize Norton.

Although the MD902 is visible on the radar recording, the ML is not. Moreover, no mention is made on the Brize ZONE RT transcript of the MD902 crew being visual with a ML. Whilst the Clee Hill Radar is available to Brize controllers and was the source of the radar recording, it is a selectable option, rather than a composite radar picture together with the Brize Norton ASR/MSSR. It has not been possible to determine which radar source ZONE was utilising at the time of the Airprox.

The Brize ZONE controller involved was wholly unaware that an incident had occurred at the time and could not recall any events when made aware of the Airprox.

From an ATM perspective, ZONE was providing a BS to an ac that was likely to be operating at or below the vertical limits of their radar coverage and had no reason to suspect that a collision risk existed. Moreover, whilst the MD902 pilot was visual with the ML, it is clear that the Magic ML pilot was concerned about the rotor blade turbulence, rather than the physical position of the MD902.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequency, radar video recordings, a report from the air traffic controller involved and reports from the appropriate ATC authority.

The ML pilot reports he was flying at an altitude of 2000ft whereas the MD902 pilot was maintaining a level cruise at an altitude not above 1000ft – as indicated on Mode C from the recorded radar data. The ML pilot estimated the vertical separation at 300ft before he was affected by turbulence and the MD902 pilot estimated 500ft. A Member suggested that the helicopter pilot might have been better placed to judge the separation from below and helicopter Members agreed that the MD902 pilot would not have thought that 500ft separation could have posed a hazard to the ML; furthermore the MD902 pilot reports a slight lateral offset as he overtook the ML. By the time the ML pilot had recovered to level flight he had lost 200ft putting him between 100ft and 300ft above and behind the helicopter and in a position where he was more likely to be affected by its wake. Whilst the recorded radar data suggested that the vertical separation might have been somewhat more than either of the pilots' estimates, without a comparable indication from the ML, which was not fitted with a transponder, this could not be resolved with any degree of certainty.

The ML was seen by the helicopter pilot late he reports, 15sec before he flew under it – a sighting range of about 0·33nm away at a closing speed of 80kt. However, the ML would have remained on a constant bearing with no crossing motion to draw attention to it as the MD902 approached from astern. With the yellow wing under-surface of the ML possibly quite difficult to see against a background cloudscape, the MD902 pilot probably saw the ML as soon as was feasible in these circumstances.

Instances of ML and ultra-light pilots being concerned by the wake vortex/turbulence created by passing helicopters are not new to the Board. What was unusual in this case, however, was that the MD902 had under-

flown the flexwing ML with its pilot reporting that the severe turbulence from the helicopter needed extreme corrective measures to escape from an almost irrecoverable position. The wake turbulence associated with downwash and rotor blade tip vortices are known hazards to ac flying behind and below helicopters, but at these distances any detrimental effects on the aerodynamic lift properties of a flexwing ML flying above the MD902 were thought by some pilot Members to be negligible. The Board counts within its Membership several highly experienced fixed-wing test pilots and military and civilian helicopter pilots, who understood fully the dangers inherent in passing close to a ML. However, the effects of helicopter rotor downdraught on MLs passing above the rotor 'disc' was not clear to them at all as it was generally accepted, rightly or wrongly, that there was 'clean' air above the rotor disc with significantly disrupted air below, astern and flowing to either side. Therefore, whilst not doubting the sincerity of the ML pilot's report in any way, Members considered alternative causes for the effect described by the ML pilot. It seemed feasible that the startling effect of hearing and then seeing the under-flying helicopter at close quarters could have distracted the ML pilot to such an extent that he almost lost control of his aircraft. Alternatively, coincidental atmospheric turbulence might have caused the effects reported. However, the Board was concerned that there have been a number of incidents in which ML ac/para gliders/hang gliders etc appear to have been affected by helicopters at unexpected distances and aspects. A test pilot Member was keen to ensure that this was resolved and with this in mind the Chairman undertook to investigate whether there is any existing research into the phenomenon.

[Post Meeting Note: Enquiries with the CAA's Fluid Dynamics specialists raised doubts that such a 'suck down' effect would exist, but they continue to look into this possibility in some detail and will submit their views to the Board.]

Following on from previous Airprox where helicopters had over flown MLs and para gliders, Members were keenly aware that the Board was charged with assessing the Risk of a collision between the two ac and not the risk associated with the helicopter's rotor downwash. This was not in any way meant to diminish important safety lessons - but it was not strictly within the Board's remit when assessing the inherent Risk of a collision. Moreover, the Board only considered what had actually occurred and not what might have happened if circumstances had been slightly different. After a wide-ranging debate, Members concluded that the Cause of this Airprox was that the MD902 pilot flew close enough to cause the flexwing ML pilot concern. Whilst Members recognised that the safety of the ML had not been assured until he regained controlled flight, in so far as the collision risk was concerned both pilots had operated in accordance with normal rules and parameters.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The MD902 pilot flew close enough to cause the flexwing ML pilot concern.

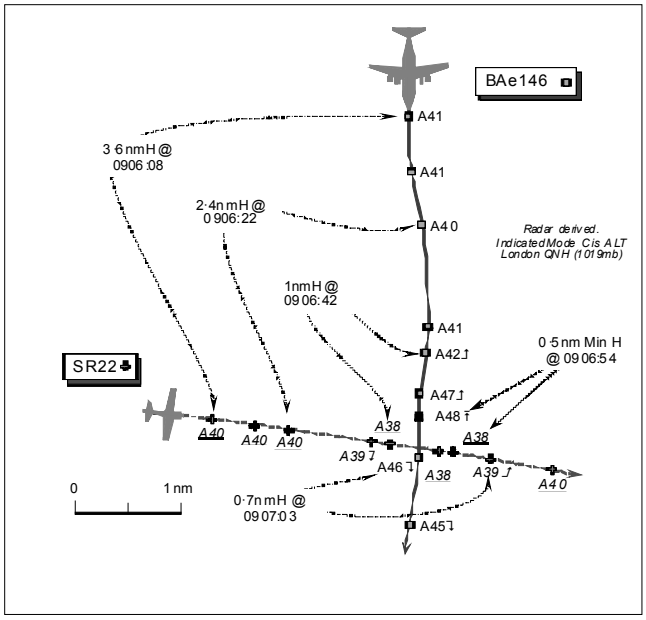
Degree of Risk: E.

Recommendation: The Board was concerned that there have been a number of incidents in which Microlight/para gliders/hang gliders etc appear to have been affected by helicopters at unexpected distances and aspects. Director UKAB was charged to investigate whether there is any existing research into the phenomenon.

AIRPROX REPORT NO 2011045

Date/Time: 19 May 2011 0906Z
Position: 5208N 00003E (5½nm SW of Cambridge)
Airspace: London FIR (Class: G)

	Reporting Ac	*Reported Ac*
Type:	BAe146	Cirrus SR22
Operator:	HQ Air (Ops)	Civ Pte
Alt/FL:	4000ft	4000ft
	QNH (1018mb)	QNH (1018mb)
Weather:	IMC CLBL	VMC NK
Visibility:	30km	>10km
Reported Separation:		
	400ft V/<1nm	NK
Recorded Separation:		
	Nil V @ 2·4nm H	
	0·5nm Min H @ 1000ft V	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE BAe146 PILOT reports he was in transit to Northolt on an IFR flight, routeing SIVDA to BARKWAY (BKY), and had descended wings level at 230kt from FL100 to 4000ft London QNH (1018mb) into cloud with London MILITARY [LJAO E-TACTICAL] under a TS. A squawk of A4671 was selected following a handover to Luton RADAR, but before two-way RT was established with the Luton controller, heading 200° 10nm N of BARKWAY (BKY), TCAS showed traffic at the same altitude of 4000ft moving R to L. Flying in between cloud layers with FEW at 5000ft, TCAS enunciated a CLIMB RA and the guidance was followed, ascending to an altitude of about 4600ft, before returning to their previously 'cleared' level. The other ac – a white civilian low-wing single-engine propeller driven aeroplane - passed less than 1nm in front and 400ft below their ac with a 'high' Risk of collision. No TI had been given by London MIL. Once they had established RT comms, Luton RADAR asked whether details of the other ac had been passed to them on handover. Luton stated they would complete a report on the incident. The recovery to Northolt was completed without further incident.

THE CIRRUS SR22 PILOT reports he was had departed from Gloucestershire Airport under VFR and was in receipt of a BS from Cambridge. A squawk of A7000 was selected with Mode C. TCAS is not fitted; elementary Mode S is fitted.

Flying an E'ly heading at 150kt, established in a level cruise at 4000ft QNH, below cloud in VMC, ATC had advised of other traffic but it was not seen.

His ac has a white colour-scheme; the HISLs and nav lights were on.

THE LATCC (MIL) LJAO EAST TACTICAL CONTROLLER (E-TAC) reports screening a UT whilst controlling the BAe146 inbound to Northolt under a TS, with a PLANNER in situ. As far as could be recalled everything was normal, with timely calls of TI. As the event took place over 24hr ago he could not recall any other detail.

THE LATCC (MIL) LJAO EAST PLANNER CONTROLLER (E-PLAN) could not recall the event.

THE LUTON INTERMEDIATE RADAR CONTROLLER (RADAR) reports that a radar hand-over was given by London MIL who were providing a TS to the BAe146 inbound to Northolt; it was agreed that it would be accepted at 4000ft London QNH. London MIL was asked if TI had been passed on 2 contacts ahead and he was told that it had. One of those contacts was tracking eastbound indicating 4000ft QNH. The BAe146 pilot called and declared that he had responded to a TCAS RA against the unknown ac and was now returning to 4000ft from

4600ft. There was traffic inbound to Luton tracking W to go through the Luton 'gate', but this traffic was still descending through 6500ft QNH and so unaffected.

The BAe146 pilot was later asked if London MIL had passed TI, he said that they had not but as they were IMC he had reacted to the RA. He also said that they got a late visual sighting of the ac through a gap in the cloud.

He opined that as TI had not been passed when providing a TS, coupled with the instruction to change frequency so close to an unknown ac, this seemed very dangerous. Especially as this could have led to a loss of separation with other Luton traffic. The pilot advised that he would be filing a report.

ATSI endorsed the report provided by NATS Ltd relating to the involvement of Luton RADAR in this Airprox, an abridged version of which is included below.

NATS LTD reports that the BAe146, had been operating outside CAS under the control of London MILITARY (LJAO E-TAC) and at 0858 was pre-noted to Luton RADAR for a 'Charlie' arrival inbound to Northolt. Luton RADAR was being operated by a trainee monitored by an instructor. At this time the BAe146 was outside the range at which Luton RADAR was operating so the controller asked for the ac to be handed over later, when it was within 30nm of Luton.

At 0904:21, the BAe146 was seen on radar to change from the LJAO East squawk to A4671 - the Luton RADAR squawk. Shortly afterwards, Luton RADAR answered a telephone call from LJAO but was interrupted by the RT. The telephone call continued at 0905:03 with LJAO E-PLAN offering a handover of the BAe146:

Luton RADAR: *"Roger, I've got the details...".*

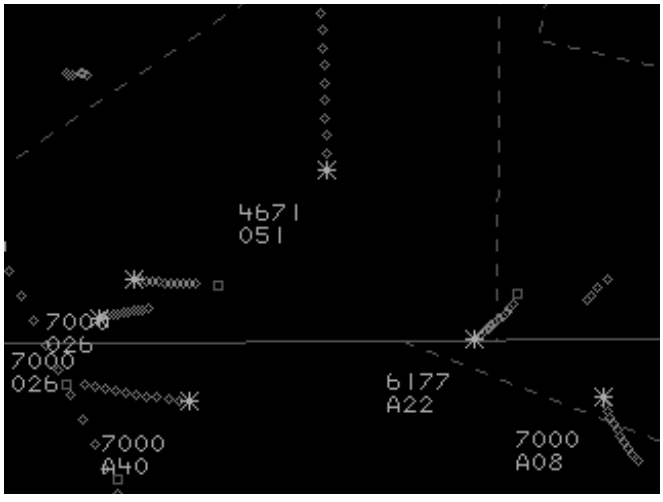
LJAO E-PLAN: *"He's* [the BAe146] *currently Cambridge, North West, 7 miles, tracking south, squawking 4-6-7-1".*

Luton RADAR: *"Identified".*

LJAO E-PLAN: *"Descending Flight Level 4-0, traffic service".*

Luton RADAR: *"..OK have you called the traffic in his 1 o'clock and 10 o'clock?"*

The traffic visible to Luton RADAR at this time is shown on the radar snapshot below:



LJAO E-PLAN: *"Affirm all traffic around that area called".*

Luton RADAR: *"Roger OK traffic service, 1-2-9 decimal 5-5-0 Q-N-H 1-0-1-8".*

LJAO E-PLAN: "*1-2-9 decimal 5-5-0 and QNH was what sorry"*

Luton RADAR: *"1-0-1-8 millibars".*

LJAO E-PLAN: *"1-0-1-8 do you want him on that now?"*

Luton RADAR: *"yes please 4 thousand feet".*

LJAO E-PLAN: *"Roger 4 thousand feet 1-0-1-8."*

Luton RADAR: *"Thank you, co-ordinated".*

At 0906:08 while the Luton RADAR controller was speaking to Luton TOWER a high severity STCA warning was generated. This downgraded to a low severity warning at 0906:12 before almost immediately upgrading again to a high severity alert at 0906:18

The pilot of the BAe146 made his initial report on the frequency at 0907:04:BAe146 pilot: "Luton [BAe146 C/S] *with you...just had a T..traffic R-A..4 thousand 5 hundred feet at this moment in time recovering to 4 thousand feet 1-0-1-8".*

Luton RADAR: *"From radar you appear to be clear of that traffic now and Q-N-H 1-0-1-8 millibars it's a traffic service."*

This was acknowledged by the pilot of the BAe146 before instructions for a 'Charlie' arrival for Northolt were passed and acknowledged.

At 0914:25, the Luton RADAR Instructor enquired, "[BAe146 C/S] *just out of interest, on your handover when you got transferred from the military, had they passed the traffic that you had the TCAS with?"* The pilot of the BAe146 replied, *"Negative…we'll file a report… (unintelligible),they offered 4 thousand feet and we were I-M-C although we did see the traffic in a gap in the cloud. It passed below us and we got within 600ft over the top."* The Luton RADAR Instructor acknowledged *"..roger I'll do the same because they said they were going to pass the traffic so I'll file as well."* The BAe146 pilot was then instructed to contact Northolt APPROACH.

From both the radar recording and the Airprox report from the BAe146 pilot, it is clear that having been handed over from London MILITARY, but before establishing contact with Luton RADAR, the BAe146 pilot had received and responded to a TCAS RA. Radar shows the maximum level reached by the BAe146 was 4800ft.

The decision of the BAe146 pilot to accept a TS whilst flying in IMC outside Controlled Airspace rather than a DS may have had an effect. CAP774 Chapter 3 para 3 states:

'Pilots should be aware that a Traffic Service might not be appropriate for flight in IMC when other services are available.'

HQ 1GP BM SM reports that this Airprox occurred approximately 10nm N of BKY between a BAe146 flying IFR in IMC and an SR22 operating VFR in VMC, in receipt of a BS from Cambridge. Although at the time of the Airprox the BAe146 was switching to Luton RADAR, the incident sequence starts whilst the ac was in receipt of a TS from LJAO E-TAC, 51 sec prior to the CPA.

On completion of an air test, the BAe146 began to route towards BKY via SIVDA descending to 4000ft London QNH and, at 0859:00, was pre-noted by E-TAC to Luton RADAR. E-TAC was under training with two other ac pre-noted to them but only the BAe146 was on frequency at the time of the occurrence.

At 0904:40, E-TAC passed TI to the BAe146 crew on an unrelated ac squawking A7000, calling, "*multiple contacts..right 1 o'clock..range of 5* [7.3nm] *and 6 miles* [8.7nm]*, indicating 3 thousand feet and below*." The BAe146 crew replied that they were, "*looking..those contacts on TCAS*." At this point the SR22 is 2nm S of the 2 unrelated ac.

At 0905:03, E-PLAN commenced a handover on the BAe146 to Luton APP during which, at 0905:10, E-TAC passed TI to the BAe146 on unrelated traffic descending into Luton.

All ac in receipt of an ATS from LJAO, LAC, TC or PC are depicted as "foreground tracks" with full data blocks, whilst other ac are displayed as "background tracks" with limited data blocks showing only the SSR Mode C. There is no colour or brightness change between foreground or background tracks on the LJAO surveillance displays. The Unit investigation states that the SR22's data block was obstructed from E-TAC's view by the data block of high-level GAT. Analysis of the radar replay demonstrates that 0905:10 is the latest point at which the data block from the high-level GAT ac could have obscured this view, taking into account the possible variations of label orientation on the E-TAC surveillance display.

As the handover between E-PLAN and Luton RADAR drew to a conclusion at 0905:18, Luton asked, "*have you… called the traffic in his 1 o'clock and 10 o'clock*?" E-PLAN replied, "*affirm, all traffic around that area has been called*." At that point the unrelated ac squawking A7000 on which TI had been passed were approximately in a 2 o'clock position. The SR22 is in the BAe146's 1 o'clock at 7.7 nm with 1300ft of vertical separation existing; a second ac inbound to Luton is in the BAe146's 10 o'clock position. At this point, TI had not been passed on either the SR22 or the second Luton inbound.

At 0905:30, E-TAC passed TI to the BAe146 on the second Luton inbound, with the handover of the BAe146 between the E-PLAN and Luton terminated at 0905:39. At this point, 6·7nm lateral and 1000ft of vertical separation exist between the SR22 and BAe146. At 0906:07, the BAe146 crew acknowledged E-TAC's instruction to contact Luton RADAR, at which point 3·6nm lateral and 100ft vertical separation exist.

At 0906:42, with lateral separation reducing to 1nm but vertical separation increasing from 400ft as the BAe146 climbed through 4200ft London QNH, the BAe146 pilot's response to the TCAS RA CLIMB can be seen. Minimum horizontal separation occurred at 0906:54 with 0·5nm lateral and 1000ft vertical separation established after the tracks had crossed.

[UKAB Note: The BAe146 contacted Luton RADAR at 0907:04; however, this occurred after the SR22 had crossed ahead of the BAe146 and after the CPA.]

There are two causal/contributory aspects to this Airprox: those of the provision of an ATS and the BAe146 pilot's decision to fly in IMC in receipt of a TS, through airspace that the Unit acknowledges as being "congested." This report will assess the former.

LATCC (Mil)'s investigation identified that E-TAC's view of the SR22's SSR data block was obstructed by the data block of an overflying GAT ac. Furthermore, the range scale used on the surveillance display will have reduced the "on-screen" angular difference between the SR22 and the unrelated SSR 3A 7000 traffic, on which the BAe146 was passed TI, to the point that the ability of E-TAC to differentiate the traffic was compromised. However, analysis of the radar replay suggests that E-TAC would have had an un-obstructed view of the SR22's data label from 0905:10, some 54 sec before E-TAC transferred control of the BAe146 to Luton. Given the proximity of the SR22 at 0904:40 to the un-related ac squawking A7000 on which E-TAC passed TI, it is possible that E-TAC sub-consciously later discounted the SR22 as a conflict, believing that they had passed TI on it. This perception may have been reinforced by the statement from the BAe146 crew that they could see those contacts on TCAS. This hypothesis is given weight by the absence of TI on the SR22 to the BAe146 from 0904:40, despite the fact that the confliction is evident. Although only 24-hours had elapsed between the incident and completion of their DFSOR, E-TAC was unable to recall any detail of the occurrence. Consequently, whilst we can draw the conclusion that from E-TAC's perspective nothing untoward occurred, we are unable to prove conclusively that E-TAC believed that they had passed TI on the SR22. However, as E-TAC was manned by a trainee and instructor, the fact that the cognitive error was not picked up by the instructor suggests either that the instructor also suffered the same error or that their ability to monitor the trainee was impaired - no information was available to determine which of these hypotheses is correct.

Another aspect that requires assessment is the radar handover conducted between the E-PLAN and Luton RADAR. The phraseology used by Luton at 0905:18 when asking whether TI had been passed is ambiguous, in that it does not specifically identify to which traffic he is referring. However, it is reasonable to argue that it did contain enough information for E-PLAN to have been able to deduce which ac Luton were referring to. Based upon the available evidence, it seems reasonable to argue that the E-PLAN, having heard E-TAC pass TI to the BAe146 crew, assumed that all the relevant traffic had been called.

Given the absence of TI from E-TAC on the SR22, the remaining ATM related safety barrier was penetrated when the E-PLAN assumed that E-TAC had passed all relevant TI. Following this, the remaining safety barriers were 'see and avoid' - that had been prejudiced by flight in IMC – and TCAS, which subsequently enabled the BAe146 pilot to resolve the confliction.

This Airprox represents a confliction in Class G airspace that was resolved by the pilot of the BAe146 [responding to the TCAS RA]. The lack of TI from E-TAC to the BAe146 crew about the SR22, compounded by the assumption by the E-PLAN that all relevant TI had been passed, should be considered as contributory factors.

HQ AIR (OPS) comments that whilst the SR22 contact was not specifically called, the TI passed advised of multiple traffic within a few miles of it. The TI contained no information regarding the direction of travel or speed of the contacts so it is unclear why further detail or updates were not requested. This would have been required for the crew to reliably discharge their responsibility to avoid a collision. In the event, reliance was placed on following TCAS warnings to prevent a collision rather than:

a) gaining visual contact and self-separating (not possible IMC).

b) taking positive separation in azimuth or altitude based on a mental air picture formed from TI (not possible without detailed TI and continued updates).

c) requesting a Deconfliction Service to allow ATC to provide separation based on their air picture.

By being in receipt of a radar service, the crew had complied with guidance in MRP RA 2307, para 26, although this is worded as a directive. The advice in CAP 774 is valid but it is not clear whether the BAe146 crew considered the use of a DS. Such advice, and greater guidance on actions required to safely operate in IMC under a TS could usefully be included in the MRP.

HQ Air will use this and other Airprox examples to highlight the reasoning behind the CAP774 advice to adopt a DS in IMC where possible, to highlight the difficulties of collision avoidance based solely on TI, and particularly to highlight the limited responsibilities of ATC when providing TI.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the LATCC (Mil) and Luton RADAR RT frequencies, radar video recordings, reports from the three air traffic controllers involved and reports from the appropriate ATC and operating authorities.

It seemed to the Members that the cloud base in the vicinity of this Airprox was somewhat patchy, but evidently close to 4000ft, as the reporting BAe146 pilot flying IFR reports being in cloud at this altitude, whereas he subsequently saw the SR22, whose pilot was operating below cloud under VFR. Although the BAe146 was not seen by the SR22 pilot, the radar recording illustrated a slight descent by the SR22 as the tracks crossed, which suggested to some that the pilot might have descended slightly to maintain VMC. Whilst coincidentally this had increased the vertical separation at a critical point, a GA pilot Member observed that it was always preferable to maintain good clearance below the cloud base so that traffic descending through cloud might be detected in good time, especially when flying relatively fast aeroplanes such as the SR22.

It was explained that the BAe146 pilot's Unit invariably attempts to route via CAS whenever possible and the Command had highlighted the advantages of a DS to assist crews in discharging their responsibilities to avoid other ac when flying IMC in Class G airspace. However, controller Members who regularly control traffic in this environment explained that, given the intensity of traffic operating in the 'Open FIR' beneath the London TMA, it can be difficult to achieve the specified deconfliction minima when threading ac through areas of high density traffic. Nevertheless, crews should still ask for a DS where appropriate. The HQ 1 Gp BM SM Advisor added that reductions of service specifically cater for situations where a controller, in endeavouring to provide the best radar service possible in a high intensity situation, is unable to achieve the desired minima against every observed contact. The CAA Standards and Policy Advisor stressed that avoiding action instructions issued under a DS by controllers are provided as 'advice', aimed at achieving specified deconfliction minima; this 'advice' can be accepted or not as the case may be.

Whilst the general consensus was that a DS might have been more appropriate here for an airliner operating in Class G airspace, the BAe146 crew had requested and was in receipt of a TS with LJAO E-TAC with the reasonable expectation of having conflicting traffic in the vicinity pointed out to them. Although the BAe146 crew had not been appraised specifically about the presence of the SR22 within the TI provided earlier, they had been told about, "*multiple contacts..indicating 3 thousand feet and below*". Notwithstanding the Command's view that the BAe146 crew could have asked for further detail or updates, given E-TAC's descent instruction to 4000ft QNH, thereby providing 1000ft above the traffic reported at 3000ft and below, the BAe146 crew might well have been content to track the ac reported by E-TAC on TCAS, unaware of the SR22 themselves at that stage. Evidently E-TAC had not specifically identified the threat of the SR22 that was plainly indicating level flight at 4000ft QNH before the BAe146 was switched to Luton RADAR. Controller Members focused on the prompt given by Luton RADAR to E-PLAN during the handover; the military Area controller Member perceived there was an unfounded assumption on the part of E-PLAN that the SR22 had been called within the TI about the multiple contacts. Members accepted that the terminology used by Luton RADAR, who had done their best to point out the conflicting traffic, should have readily identified the SR22 at the same altitude as the BAe146 to E-PLAN, who should have taken stock of what had and had not been called, so it was unfortunate that the latter did not react more positively or ask E-TAC to simply call it in, which did not occur. Consequently, specific TI had not been given to the BAe146 crew about the SR22 before E-TAC switched the flight to Luton RADAR. The Board agreed that the absence of specific TI from E-TAC about the SR22 was part of the Cause of this conflict in Class G airspace.

The BAe146 crew switched frequency at the critical moment, just as STCA activated, thus they were denied any further input from ATC until TCAS alerted them to the presence of the SR22 and prompted them to take their own avoiding action by responding to the CLIMB RA. This enabled them to resolve the conflict and achieve 900ft of vertical separation above the SR22 during the manoeuvre as the latter crossed ahead and drew to port which, assisted by the slight descent of the SR22, increased to 1000ft at the closest point. Moreover, it was clear from the Luton RADAR RT transcript that the BAe146 crew had managed to spot the SR22 through a gap in the cloud during the occurrence. After weighing all these factors carefully the Cause of this Airprox was unanimously agreed by the Members to be, in the absence of specific TI, a conflict in Class G airspace resolved by the BAe 146 crew using TCAS; the crew's prompt response to the TCAS RA, coupled with the visual sighting, effectively removed any Risk of a collision.

PART C: ASSESSMENT OF CAUSE AND RISK

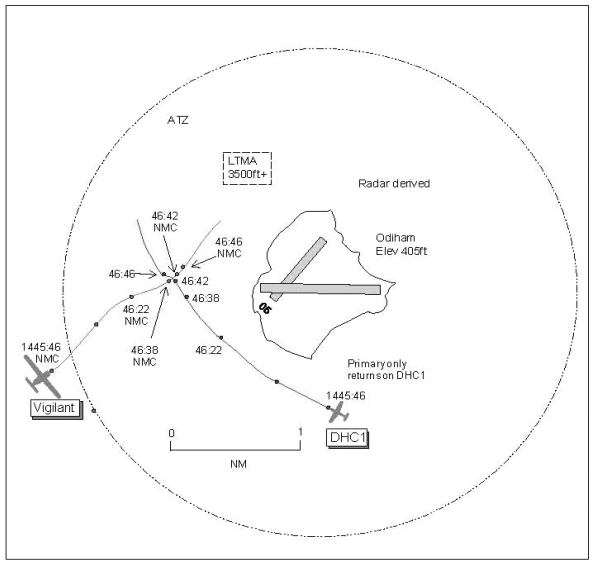
Cause: In the absence of specific TI, a conflict in Class G airspace resolved by the BAe 146 crew using TCAS.

Degree of Risk: C.

AIRPROX REPORT No 2011046

AIRPROX REPORT NO 2011046

Date/Time:	21 May 2011 1447Z (Saturday)	
Position:	5114N 00058W (1nm W Odiham - elev 405ft)	
Airspace:	ATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Vigilant	DHC1
Operator:	HQ Air (Trg)	Civ Club
Alt/FL:	750ft (QFE 1003mb)	1000ft (QFE 1004mb)
Weather:	VMC CLBC	VMC CLBC
Visibility:	30km	10km
Reported Separation:	20ft V/100m H	NR
Recorded Separation:	<0·1nm	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE VIGILANT PILOT reports flying dual training sortie from Odiham VFR and in communication with Odiham Radio on 122·1MHz, squawking 3647 with NMC. The visibility was 30km flying 2000ft below cloud in VMC and the ac was coloured white/dayglo orange with HISLs and landing light switched on. He was a 'B' Category instructor tasked to complete a Gliding Induction Course (GIC) with a Trainee Cadet. The RW in use was RW23 with a RH cct. The RAF Gliding and Soaring Association (RAFGSA), using conventional gliders, were operating from the grass with a LH cct. The RAFGSA DHC1 was using the RW for aerotow operations, departing in the LH cct and rejoining to land from a RH cct. On completion of the GIC exercise a downwind rejoin was planned. He approached Odiham from the NW abeam Old Basing town where a 2min to rejoin call was made to Odiham Radio before he then joined the Vigilant cct through an extended downwind. He was slightly upwind of the normal downwind radio call position heading 050° at 60kt at 750ft QFE 1003mb, owing to thermic conditions, when he then heard another ac's pilot transmit "downwind to land". He was not visual at the time and he immediately made a transmission of "downwind not visual one ahead" for better SA of the other ac. He completed a lookout scan and a red and white coloured DHC1 appeared from below and behind the starboard wing approximately in his 3 o'clock range 100m and 100ft below. The DHC1 had a tow rope attached and was seen to be manoeuvring sharply L to avoid his ac by passing behind. Both he and DHC1 then completed the cct and landed in turn. He assessed the risk as medium.

THE DHC1 PILOT reports flying a local sortie from Odiham, VFR and in communication with Odiham Radio on 122·1MHz; no transponder was fitted. The visibility was >10km flying 2000ft below cloud in VMC and the ac was coloured red/black with nav and strobe lights switched on. Having completed a tug release detail he rejoined the powered cct for RW23 RH cct from the deadside onto the crosswind leg from the upwind end of the RW, as per SOPs. As is normal, whilst complying with the ANO Rule 12, he used the time on the deadside to identify other traffic and conform to the current cct pattern. Before entering crosswind he identified all cct traffic including the reporting Vigilant flight, never losing sight of it. The Vigilant was observed to be on what appeared to be a very wide downwind leg in the process of correcting course to reach the normal downwind position at the start of the upwind end of the RW, not on a reciprocal RW track but tracking nose-in towards the RW. When he levelled his ac to enter crosswind he could see the Vigilant still some way off flying level upwind of the RW slightly L of his ac's nose but at least 100ft below his level. As he had the ac fully in sight before he entered crosswind there was never any risk of collision. His track and position was entirely consistent with entering the crosswind for joining the cct, as illustrated in CAP413, namely across the upwind end of the RW, tight in and perpendicular to it. He progressed along the crosswind leg at 1000ft QFE at 80kt, adhering to the CAP413 guidance to 'Watch for existing circuit traffic and adjust your flightpath to sequence safely' whilst keeping the reporting ac in sight. He had to judge whether such an ac that is on the downwind leg but not yet abeam the upwind end of the RW is sufficiently far upwind that he could sequence safely by turning downwind well ahead of it from his crosswind leg or whether such a

manoeuvre would cause a conflict in which case it would be normal and safe to give way and fit in behind the ac and enter downwind behind it. This latter case was exactly what he did by altering course behind the reporting ac. He believed that there was no Airprox and that as he was watching the other ac at all times from before entering the live side of the cct and was taking sensible actions to ensure separation, there was no risk of collision. He went on to say that because the reporting ac was on the downwind leg but in the process of establishing a more normal distance from the RW by the upwind end, both ac were not at the usual 90° closing angle. This he believed would have given the other pilot an illusion that there was something odd when he altered course to widen his crosswind leg further upwind to position behind the other ac.

UKAB Note(1): The UK Mil AIP at ENR AD 2-EGVO-17 Para 2.17 promulgates the Odiham ATZ as a circle 2nm radius centred on mid-point RW09/27 N511402.90 W0005634.17 from SFC to 2000ft aal; aerodrome elevation 405ft. Para 2.23 Additional Information Para 1 states 'Glider flying during daylight hours (outside ATC Ops hrs contact Odiham Radio or Kestrel Base on 122·1MHz). Special Procedures Para 3 states 'Rwy 05/23. Use restricted to ground and hover manoeuvres by Odiham hel and light ac only.'

UKAB Note (2): Odiham ATC was closed at the time of the Airprox. Frequency 122·1MHz was not recorded.

HQ AIR (TRG) comments that despite the DHC1 pilot's comprehensive report, there is no mention of an initial joining report call iaw CAP413. This would have aided the Vigilant pilot's awareness of other joining traffic. However, without a transcript it is not possible to say that one was not made. Joining a cct at an uncontrolled airfield requires sound lookout and self positioning of traffic and is complicated when ac join unannounced from different directions. The Vigilants are confined to the cct side because of conventional gliders operating on what would otherwise be the 'deadside'. As such, they cannot fly overhead joins and will join the downwind leg either from upwind or at 90 degrees. It is disappointing to note that the DHC1 pilot, with the Vigilant in sight, whilst reportedly trying to assess whether to fit in ahead or behind the Vigilant, continued to a point where separation was reduced to a degree that alarmed the Vigilant pilot. An early turn to position ahead or behind the other joining ac would have avoided the situation. Whilst the DHC1 pilot called 'downwind' he never was according to the Vigilant pilot's report and the radar trace, and the call was therefore contrary to CAP413, being neither on the downwind leg or abeam the upwind threshold. The call did, however, alert the Vigilant pilot to his presence, albeit rather later than necessary. It is unclear which ac, if either, was technically established in the cct at the point the Airprox was called. This incident is probably a conflict between 2 ac joining the visual cct on differing profiles, not aided by incomplete comms. Air Cmd are engaging with RAF Odiham to ensure that cct procedures between Vigilant and Gliding Club ac are robust and to ensure that Club ac conform to the standard RT procedures in the cct.

UKAB Note (3): The Heathrow radar recording at 1445:46 shows the Vigilant 2·2nm WSW of Odiham tracking 050° squawking 3647 NMC. At the same time a primary only return is seen, believed to be the DHC1, 0·9nm S of Odiham tracking 305°. The Vigilant then enters the ATZ on a steady track with the DHC1 converging from its 2 o'clock position. At 1446:22 the Vigilant is seen to have turned R approximately 20° whilst the DHC1 converges from its 0130 position range 0·75nm whilst crossing the extended C/L RW 05/23 onto a crosswind leg. Sixteen seconds later, 1446:38, the Vigilant is seen to have turned L onto a downwind track and is about to pass through the DHC1's 12 o'clock range 0·2nm. The next sweep at 1446:42 shows the DHC1 passing <0·1nm behind the Vigilant and turning sharply L before regaining a NW'ly track.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, radar video recordings and reports from the appropriate operating authorities.

The HQ AIR Trg Member informed the Board that the Flying Order Book did not include details of the glider-tug operations, hence the dialogue between HQ AIR and Odiham. An experienced GA/Gliding Member commented that at any airfield where non-standard ccts are flown, the documentation/orders/instructions should make it clear exactly how ac are segregated or how pilots are expected to integrate. Tug ac pilots are renowned for executing tight ccts on recovery as their overall goal is to climb to 2000ft to drop off a glider and then descend to land as quickly as possible in order to collect the next glider. At other gliding sites tug operations are normally carried out on the same side as the gliders with other traffic flying ccts on the opposite side of the airfield. Although the primary means of integrating into the cct is visually, RT calls by pilots improves the SA of other pilots on frequency, hence the need for timely and accurate position reports. In this Airprox, both flights were returning to join the cct, the

AIRPROX REPORT No 2011047

Vigilant flight joining downwind and the DHC1 crosswind. Without an RT transcript it was unclear what transmissions were made by either pilot; however, it was clear the Vigilant pilot was unaware of the DHC1's presence until a very late stage. His first knowledge of the DHC1 was when its pilot called downwind and, as he was unable to see it, he broadcast his own downwind position. He then visually acquired the DHC1 in his 3 o'clock range 100m and 100ft below when it was apparently still crosswind and about to turn downwind. The DHC1 then turned L and manoeuvred behind his ac. Meanwhile the DHC1 pilot had visually acquired the Vigilant during his rejoin and had continued with his intended cct pattern whilst monitoring the Vigilant's progress. It appeared to Members that the DHC1 pilot had 'pressed on' with his chosen flightpath leaving it until the last minute before manoeuvring his ac to avoid the Vigilant which was effectively in the piece of airspace that he had intended to use. Members agreed that the DHC1 pilot should have altered his flightpath earlier and that he had flown unreasonably close to the Vigilant causing its pilot concern. Although the visual sighting and actions taken by the DHC1 pilot were enough to remove the actual collision risk, the Board concluded that the ac had passed with margins reduced to such an extent that safety had been compromised during this encounter.

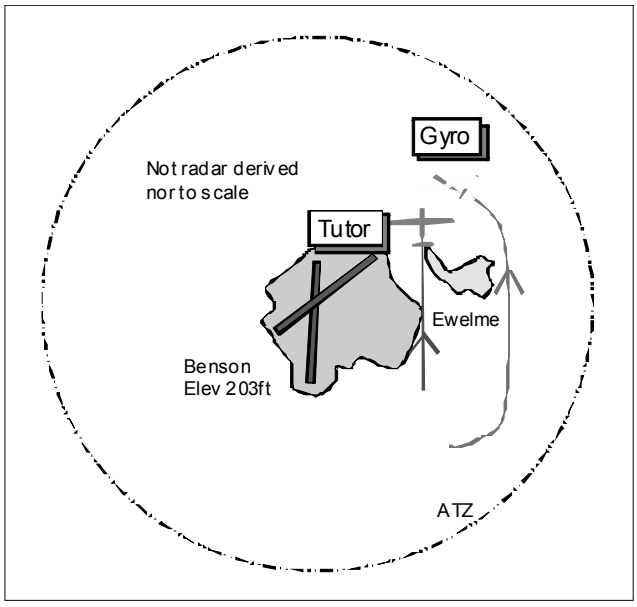
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The DHC1 pilot flew unreasonably close to the Vigilant, causing its pilot concern.

Degree of Risk: B.

AIRPROX REPORT NO 2011047

Date/Time:	8 May 2011 1431Z (Sunday)	
Position:	5138N 00105W (1nm NNE Benson - elev 203ft)	
Airspace:	ATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	MT03 Gyroplane	Grob Tutor T Mk 1
Operator:	Civ Trg	HQ Air (Trg)
Alt/FL:	500ft (QFE)	800ft (QFE)
Weather:	VMC CLOC	VMC NR
Visibility:	>10km	30km
Reported Separation:	20-30m	30ft V/100yd H
Recorded Separation:	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE MT03 GYROPLANE PILOT reports flying a dual local sortie from Benson, VFR and in receipt of an Aerodrome Control Service from Benson Tower on 127·15MHz, squawking 7000 with Modes S and C. The visibility was >10km in VMC and the ac was coloured yellow/blue with nav and strobe lights switched on. He was flying with a fully qualified gyro pilot, who was seated in the front, with himself as Capt in the rear. They had previously carried out 1 cct with a touch and go RW19 and whilst downwind they called for a further touch and go. They were flying the wide 'flying club' cct and once they had passed to the E of Ewelme and were directly O/H a wood to the NE of Ewelme he called final for a touch and go. ATC responded "clear to land" and he started a gentle L turn and descent. He was aware that a Tutor had called downwind but could not remember ATC's response and would have thought ATC would have indicated "one ahead". He continued with his gentle L turn adhering to the oval cct doctrine. When he was adjacent to what would have been the old narrow cct his crewmate stated that they had an ac approaching from their L. Turning through heading 300° at 500ft QFE and 80mph he

looked L and saw an ac, not the reported Tutor, in the downwind position on the flying club cct and at the same time saw the shadow of an ac approaching directly from his L. His crewman became more animated, informing him that it was getting closer. His crewman shouted that it was very close before taking control and commencing a steep diving turn to the R. At this point he, the Capt, spotted the Tutor closing at a similar height before it passed 20-30m above and to their L. He broadcast on the radio "he's just missed us" and believed the Tutor pilot made some response, possibly an apology. ATC then informed them that their permission to land had been revoked and he called going around, allowing the Tutor to land ahead of them. He carried out a short orbit before landing. He had not heard radio calls from the Tutor pilot when the ac was downwind asking for confirmation of his gyroplane's position and no deconfliction advice from ATC. He assessed the risk as high.

THE TUTOR PILOT reports flying a dual training sortie from Benson and in receipt of a BS from Benson Tower on 127·15MHz; the ac's transponder was switched off. The visibility was 30km in VMC and the ac was coloured white; no lighting was mentioned. The student was flying a low level cct LH RW19 and in reply to their downwind call they were told "one ahead". He then heard another ac's pilot call "final" and be cleared by ATC. By the bottom end of the downwind leg heading 010° level at 800ft QFE, despite looking intently into the expected area for the other ac, (down to the L, up the extended approach and dead ahead) neither he nor his student had him in sight. He looked R in his 2 o'clock position and saw a blue/yellow autogyro about 100yd away and 30ft below, belly-up to him banking and descending sharply to the R, already taking avoiding action. The autogyro was operating from the Benson Flying Club in accordance with the FOB which requires an extremely wide cct for noise abatement. The ac is very slow and small, hence difficult to see. He, the Tutor Instructor, was flying a low level cct as per Tutor Instructor's/Student's Study Guide. Although both ac carried transponders, his was switched off iaw Benson SOPs whilst the autogyro pilot reported his transponder was switched on. Also his Tutor's TAS was off iaw current advice for cct work.

THE BENSON AERODROME CONTROLLER reports the Ground and Tower frequencies were bandboxed. At 1420 the Gyro pilot called for a L base rejoin to RW19 having been operating in the vicinity of Benson listening out on frequency. At the time the subject Tutor flight on was frequency conducting visual ccts and another Tutor was at the hold. The Tutor pilot called "final" for a touch and go prior to the Gyro reaching L base and was given clearance. The Gyro pilot was initially unable to see the Tutor so he orbited clear of L base and when visual, integrated into the cct L base. The Gyro pilot was given clearance for a touch and go after the Tutor finished its approach. The Tutor climbed to glide downwind and the other Tutor was lined-up for departure awaiting the Gyro to turn downwind whilst 2 other Tutors taxied. After being issued with take-off clearance, the departing Tutor's pilot asked what the Gyroplane's intentions were, to which he said that he believed it to be doing at least 1 cct. The subject Tutor's pilot called final for touch and go and was told to continue, owing to the departing Tutor pilot asking about the Gyroplane's intentions, but was then given clearance shortly thereafter. As the departing Tutor flight transferred to Approach the Gyroplane pilot called downwind to touch and go and then taxi to dispersal. Another Tutor flight at the hold was then cleared for take-off whilst the subject Tutor flight, which was about to turn downwind, requested a low-level cct which was approved. The Tutor pilot called downwind low-level for a full-stop and was told 1 ahead and a few seconds later the Gyroplane pilot called final but was briefly told to continue for a vehicle to cross the RW. About 30sec later the Tutor pilot called final and was told to continue for the Gyroplane which was still on final. A few seconds later the Gyroplane pilot called asking for confirmation of who had right of way and was told that it was him. It then became apparent that the Tutor had got close to or ahead of the Gyroplane although he was unable to determine this straightaway from their visual aspects from the Tower. The Tutor pilot apologised and asked if he could continue. The controller asked the Gyroplane pilot if he wanted to finish his approach or go around to which he replied "whatever is the easiest". By now he could see that the Tutor was ahead so he revoked the Gyroplane flight's clearance to ultimately go around and allow the Tutor make its approach. Both flights eventually made their respective approaches and taxied back.

HQ 1GP BM SM reports that this Airprox occurred at RAF Benson between a Stn-based Grob Tutor operating in the low-level visual cct and a Gyroplane, operated by the RAF Benson Flying Club, on final to RW19.

Given the low altitude of the Airprox, no radar replay was available.

Wx conditions were appropriate for visual circuit operations with VMC, 30km visibility in nil weather and FEW at 4200ft.

At 1429:05 the Gyro pilot reported, *"(Gyro c/s) downwind one nine touch and go and er then er taxi for dispersal",* which was acknowledged by TWR with, *"(Gyro c/s) surface wind one nine zero one six knots"*. At 1430:09 the

Tutor reported, *"(Tutor c/s) downwind, low, full-stop"* and TWR replied, *"(Tutor c/s) one ahead surface wind one nine zero one six knots",* which was acknowledged.

Shortly afterwards at 1430:24 the Gyro pilot reported, *"…final one nine touch and go"* and, after being briefly continued due to a vehicle crossing the RW, was, *"…cleared touch and go and taxi back"* at 1430:45.

The Tutor pilot reported that as they reached the end of the downwind leg, "despite looking intently into the expected area for the other ac (down to the left, up the extended approach and dead ahead), neither of us had seen him. I looked out to the right two o'clock position and saw a blue and yellow autogyro."

At 1431:18 the Tutor pilot reported final and was instructed by TWR to, *"…continue approach",* which was acknowledged. In reply, at 1431:38 the Gyro pilot stated on freq that they were, *"…bit confused now, does that er, Tutor got right of way?"* which suggested that the Gyro pilot believed that the instruction to the Tutor to *"continue approach"* has placed it ahead of the Gyro. TWR replied, *"(Gyro c/s) negative you're number one."* Immediately after at 1431:45 the Gyro pilot is heard to say on freq, *"yeah we're just missing"* which, according to their report, was just after the CPA.

Both the Tutor and the Gyro pilots make reference to distinctive visual circuit patterns. However, the Stn Flying Order Book (FOB) only states that visual ccts are to be conducted to the E of the airfield for noise abatement, avoiding direct overflight of specific villages and that when the airfield is open 'oval (military) patterns are to be flown' by flying club ac. No mention is made of different visual cct patterns for different ac types and there is no graphical representation of any visual cct pattern within the FOB. Subsequent conversation with ATC at RAF Benson has found that the AEF/UAS operate a circuit inside Ewelme, whereas Rotary Wing and the Stn Flying Club operate a wider cct, outside Ewelme.

After the Gyro pilot's, *"just missing"* transmission the Tutor pilot then transmitted *"Tutor c/s in that case apologies err am I allowed to continue to land."* At 1431:55, the TWR controller is heard to transmit, *"Gyro c/s where are you are you happy to go first Gyro c/s or are you going to go-around."* The Gyro pilot replied, *"Yeah I think so I'll slow down as I believe there's one behind me as well I'll do whatever you want me to."* Subsequent investigation has found that given the small size and low speed of the Gyro it is known amongst ATC personnel to be incredibly difficult to see within the visual cct, more so in certain Wx/light conditions. This point is also highlighted by the Tutor pilot.

Given that both ac are station-based, it is reasonable to argue that TWR could have expected the Tutor pilot to be aware of the Gyro's cct pattern. Moreover, given that both ac had been established within the visual circuit for 10min 22sec prior to the Airprox and that they were both operating on the same freq, it is reasonable to argue that TWR could have expected the Tutor to be both aware of the Gyro and, given the circuit priorities stated on the freq, visual with the Gyro prior to turning finals. Finally, although the Hi-Brite display was available to TWR, nothing in the incident sequence would have prompted them to use it until the transmission by the Gyro at 1431:38. Given that the CPA occurred at around 1431:43, no time existed to allow them to view the Hi-Brite, assimilate the information and provide a timely warning. On the basis of these arguments and given the difficulty of the visual acquisition task for TWR in sighting the Gyro, there was no opportunity for TWR to have affected the outcome of the Airprox.

In terms of the active shortcomings within this Airprox, although the Tutor pilot knew that the Gyro was ahead of them in terms of cct priority and that they were unsighted of it, they committed their ac to the final turn. However, there are a number of latent conditions and contributory factors that can also be identified, one of which may have contributed directly to the Tutor being unable to sight the Gyro.

Akin to Airprox 085/10 between a Hawk and Tutor at RAF Leeming, a lack of graphical representation within the FOB of the disparate visual ccts may have contributed to a lack of awareness by both pilots of each other's visual cct pattern. This hypothesis is supported by the description of the Tutor pilot's visual scan immediately preceding the Airprox, which appears to have excluded the area to the R of the nose.

Notwithstanding that this appears to be an isolated incident, the operation of 2 distinct cct patterns, one inside the other, was a further latent condition and, allied with the Tutor pilot's restricted visual scan, a direct causal factor. Whilst RAF Benson has taken immediate action to stop simultaneous Tutor and flying club operations, this has not

addressed the issue of the disparate cct pattern between the Tutors and rotary wing ac; consequently, a possible re-occurrence of this incident has not been prevented.

Finally, all ac types are mandated to operate to the E of the airfield for noise abatement, rather than, arguably, operational necessity or safety. This is the final latent condition which can be seen as a causal factor.

This Airprox resulted from the decision of the Tutor pilot to commit to a final turn without being visual with the Gyro ahead, which was operating in a different cct pattern.

RECOMMENDATIONS

BM SM has requested that HQ 22 (Trg) Gp provides guidance to operators on mixed cct patterns with differing ground tracks.

BM SM has requested that RAF Benson, through JHC, conducts a Stn-level review of visual cct operations including, but not limited to, the operation of dis-similar ac types and the imperative to operate solely to the E of the airfield.

SATCO BENSON reports that whilst a graphical representation of the RAF Benson visual ccts is now included within the FOB to raise awareness amongst the aircrews, ATC remain concerned that the point of confliction on the base-leg/final turn remains due to the cct.

HQ AIR (TRG) agrees that the potential for conflict caused by the fact that the dissimilar ccts overlap make them unacceptable. Lapses in lookout are inevitable so deconfliction plans based solely on maintaining visual contact between dissimilar types (speeds or patterns) are not robust. That said, the FOB did require flying club ac to conform to 'oval (military) patterns'. It would appear that the flying club pattern conformed to the letter if not the spirit of the order, which would have been included to avoid just this sort of conflict. The safe integration of Stn-based ac is an implicit responsibility of the Stn Cdr, which he discharges through the FOB. Thus, SATCO's concerns should be staffed to the Stn Cdr for resolution of safety concerns and to ensure that operational, training and other priorities are balanced appropriately.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

Members agreed that the underlying factor of this incident was the 2 different cct patterns which overlapped causing potential conflict in the base-leg/final area. The Gyroplane pilot was flying a wider 'oval' cct, in accordance with the procedures for Flying Club ac, and ATC had correctly issued the sequence to the Tutor pilot, *"…one ahead…",* when he called downwind. The Gyroplane pilot then called 'final' as he turned onto base-leg, which is normal when flying the military 'oval cct'. The Tutor pilot heard this call but did not assimilate that the flightpath flown by the Gyroplane would place the ac outside of, but turning towards, his tighter cct inside Ewelme. The Tutor pilot then flew into conflict with the Gyroplane on final which caused the Airprox.

The Gyroplane pilot was cognisant of the Tutor in the cct behind him and saw its shadow but was unable to see it immediately. The pilot seated in the front took control and flew a steep diving turn to the R as the Tutor passed about 20-30m away above and to their L. The Tutor pilot only saw the Gyroplane in his 2 o'clock as it was taking avoiding action, he estimated 100yd away and 30ft below. Members acknowledged that ATC had difficulty seeing the Gyroplane owing to its size and the ongoing problems with the Tutor ac showing intermittently on the Hi-Brite display. The ADC only became aware of the problem when it was brought to his attention by the Gyroplane pilot querying who had right of way after the Tutor pilot called final and was told to continue approach. Taking all of these elements into account, the Board believed that the visual sighting and prompt action taken by the Gyroplane flight was enough to remove the actual risk of collision but the ac had passed with separation margins reduced such that safety was compromised during this encounter.

AIRPROX REPORT No 2011048

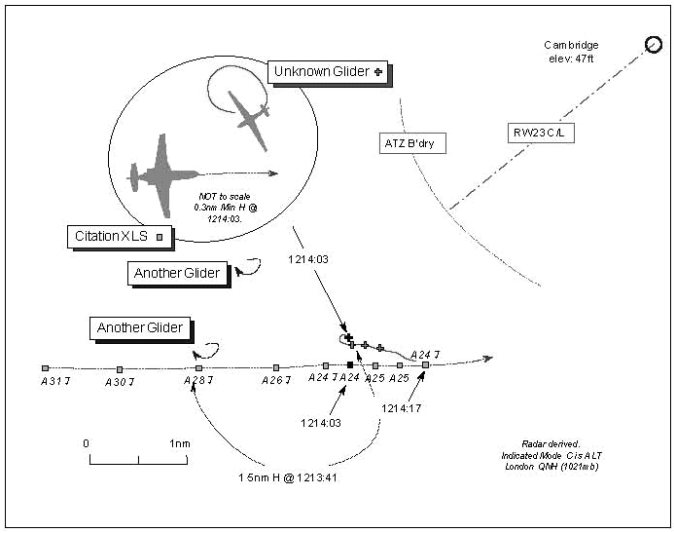
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Tutor pilot flew into conflict with the Gyroplane on final.

Degree of Risk: B.

AIRPROX REPORT NO 2011048

Date/Time:	31 May 2011 1214Z	
Position:	5209N 00011E (4nm SW of Cambridge A/D - elev 47ft)	
Airspace:	London FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Citation XLS	Untraced Glider
Operator:	Civ Comm	NK
Alt/FL:	2400ft↓ QNH (1019mb)	NK
Weather:	VMC CLBC	NK
Visibility:	>10km	NK
Reported Separation:	100ft-200ft V/200yd H	NK
Recorded Separation:	0·3nm H - see Note (3)	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE CESSNA CITATION CE-560XLS (C56X) PILOT reports he was inbound to Cambridge from Oxford under IFR in VMC; his ac was crewed with two pilots. Cambridge APPROACH instructed them to contact TOWER and they had been cleared to join the visual cct to RW23, LH downwind for a visual approach. As they established contact with TOWER, about 4nm SW of the A/D heading 120° at 200kt passing 2400ft QNH (1019mb) in a shallow descent, he spotted a white glider thermalling in his L 10:30 position 0·2nm away nose-on at a similar altitude. The mid-wing single-seat glider was in a RH turn and climbing gently in a thermal. Disconnecting the A/P, he hand flew the ac, making a very gentle turn to the R away from the glider, passing 200yd to the S and 100-200ft above it. Had he done nothing they would not have collided because of their relative flight paths, they would have flown closer than his estimated 200yd horizontally. He does not believe the glider pilot saw his Citation until it was too late as the glider made a distinct wing-wobble at the point he believes the glider pilot might have gained visual contact. At this point he was already positioning his Citation away from the glider that he thought was on the edge of the lateral ATZ boundary, virtually aligned with the centreline of RW23. [UKAB Note (1): Albeit that at an altitude of 2200ft the glider would have been about 150ft above the upper limit of the ATZ.] It was obvious that Cambridge ATC was unaware of the glider's presence and was not in communication with it. The lack of any TCAS warning suggests the glider was either not equipped with a transponder or was simply not squawking.

In his view, it was pure good fortune that placed his Citation in a position that did not require violent avoiding action, hence his assessment of the Risk as 'medium-to-high'.

THE RADAR ANALYSIS CELL (RAC) LATCC (MIL) report that despite extensive tracing action the reported glider could not be traced.

THE CAMBRIDGE AERODROME CONTROLLER (ADC) reports that the Citation XLS had been cleared for a visual approach to join LH downwind for RW23. The pilot reported passing a glider at the start of the downwind

leg, which was acknowledged. The Airprox occurred outside the ATZ and the glider was not visible from the VCR. Radar was not available.

ATSI reports that the Airprox occurred in class G airspace at 1214:03, 4·2nm SW of Cambridge A/D. This position is outside the Cambridge ATZ, which extends to a height of 2000ft aal above the A/D elevation of 47ft and is bounded by a circle 2½nm radius centred on the mid-point of RW23.

It is not clear where the glider – which remains untraced - was operating from. A gliding site is situated at Gransden Lodge, which is notified in the UK AIP as a Glider Launching Site, active from sunrise to sunset, with a vertical limit of 3000ft above ground level (altitude 3300ft). Gliders operate daily from Gransden Lodge subject to weather conditions. Cambridge MATS Part 2, Section 1, Page 29, paragraph 10.4 Gliding Sites, states:

'Gliding takes place at Gransden Lodge 10nm SW of Cambridge. Gransden shall be considered always active although details are usually faxed to ATC when gliding events are scheduled.'

No information or NOTAM had been received regarding any additional gliding event at Gransden Lodge. [UKAB Note (2): RAC's enquiries through Gransden Lodge did not identify any glider pilots who might have been involved in the Airprox reported by the C56X pilot.]

The Airprox occurred on a Tuesday and the UK AIP promulgates the hours of Cambridge Radar, in Summer, as 0800-1700 UTC and by arrangement . The ATSU reported that the provision of a radar service is subject to the availability of suitably qualified staff. No withdrawal of radar service had been promulgated by AIS NOTAM.

Cambridge APPROACH (APP) was providing an Approach (Procedural) Control Service, without the aid of surveillance radar. The ATSU reports that the APPROACH controller on duty was not radar rated and was therefore only able to provide an Approach Procedural Service.

The 1150 UTC Cambridge METAR: 26014KT 230V300 9999 SCT040 15/07 Q1019=

At 1211:40, the C56X crew called Cambridge APP, *"..Cambridge RADAR good afternoon* [C56X C/S] *in the descent 3 thousand feet Q-N-H 1-0-1-9 information Echo Citation Excel."* APP responded, "[C56X C/S] *Cambridge APPROACH unfortunately non radar this afternoon latest information Echo current Q-N-H correct clear to the Charlie Alpha Mike 3 thousand feet for the no delay procedural I-L-S approach runway 2-3."* This was acknowledged correctly by the C56X crew.

At 1212:13, the C56X crew indicated that a visual approach was acceptable. The C56X crew reported field in sight at 1212:40, and was cleared for a visual approach to join downwind LH RW23, initially not below 1600ft. APP passed TI to the C56X crew on a formation of two Cessna ac W of Cambridge, routeing around the city, not above 1300ft. This was acknowledged by the C56X crew and the flight transferred to Cambridge TOWER at 1213:10.

At 1213:30, the C56X crew called TOWER, *"...in the descent 2 thousand feet just crossing the extended...centreline to the..west."* The TOWER controller instructed the C56X crew to report downwind and confirmed the QNH as 1019mb.

At 1214:16, the C56X pilot reported, *"..TOWER* [C56X C/S] *we just passed a glider probably within 3 hundred feet..altitude 2 thousand 2 hundred extended centreline to the west",* which was acknowledged by TOWER. At 1217:12, the C56X pilot confirmed that the glider was just outside the Cambridge ATZ. The TOWER controller's written report indicates that the glider was not visible from the VCR.

The C56X was in receipt of a Procedural Service. The Manual of Air Traffic Services, Section 1, Chapter 11, Page 10, paragraph 6.1.1, states:

'A Procedural Service is an ATS where, in addition to the provisions of a Basic Service, the controller provides restrictions, instructions and approach clearances, which if complied with, shall achieve deconfliction minima against other aircraft participating in the Procedural Service. Neither traffic information nor deconfliction advice can be passed with respect to unknown traffic.'

ATSI Recommendations:

CAA ATSI recommends that Cambridge ATSU promulgates any withdrawal of the radar service outside of the notified hours of operation by NOTAM.

CAA ATSI recommends that Cambridge ATSU, in the absence of radar, and during the notified of hours of gliding activity, remind pilots, that the Gransden Lodge Gliding Site is active.

[UKAB Note (3): An analysis of several recorded radar sources shows four intermittent contacts likely to be gliders operating just prior to the Airprox to the W and SW of Cambridge. At 1213:41, the C56X is shown descending through an altitude of 2800ft London QNH (1021mb), 5·2nm SW of Cambridge A/D and passing the last known location of a glider that had faded from radar 30sec earlier. The radar recording shows the C56X levelling at 2400ft at 1214:03, the altitude the Airprox occurred, some 4·2nm SW of the A/D whilst passing a contact in the C56X's 9 o'clock at a range of 0·3nm and believed to be glider reported by the C56X pilot, which had previously been tracking W but is shown in a R turn as reported. The glider then fades from radar.]

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included solely a report from the C56X Citation pilot, transcripts of the relevant RT frequencies, radar video recordings together with reports from the air traffic controller involved and the appropriate ATC authority.

It was unfortunate, despite the best endeavours of the RAC at LATCC (Mil), that the glider pilot could not be traced. Although Gransden Lodge is the closest gliding site (GS) to the position of the Airprox, there was no suggestion that the glider emanated from this GS; it could have come from much further afield. However, it is unfortunate that the assessment of this Airprox clearly lacks the glider pilot's perspective of the occurrence and is thus not comprehensive.

The Board noted the unavailability of the Cambridge ASR during the period of this Airprox but controller Members recognised the difficulties of maintaining radar services, especially the training of controllers. The Board was briefed that whilst the CAA is keen to see improvements in the availability of radar services at Cambridge, the unit's own aspiration is to provide a radar service throughout their operating hours and endeavours to do so where possible. The Board endorsed the ATSI recommendations. That said, gliders, with a composite structure are extremely difficult to detect and track on primary radar. The Board appreciated that even if a radar controller had been on watch there was no guarantee that the glider would have been continuously displayed and a warning provided by the controller. As it was in the prevailing good weather conditions the C56X pilot had elected to continue with a visual approach.

The C56X pilot reported that the glider pilot might have seen his ac, based on the latter's percieved wing wobble, but a glider pilot Member thought this unlikely and it was not feasible to draw definite conclusions on that aspect. The Member explained that glider pilots are quite used to flying in close proximity to other gliders in thermals and if the approaching C56X had been seen in good time the pilot might not be at all concerned – even at the minimal distances reported here. Whilst others might consider that the glider was operating without due regard for Powered A/D traffic – on the climb-out to RW23 and at the start of the Downwind leg near the ATZ - the recorded radar data reflects that the glider pilot was operating quite legitimately, some 1½nm clear of the Cambridge ATZ boundary, in Class G airspace where 'see and avoid' prevails and not in close proximity to the ATZ as the C56X thought. Moreover, the C56X pilot was required by the Rules of the Air to give way and avoid the glider in these circumstances, which he did successfully with appropriate regard for the glider pilots limited ability to manoeuvre, albeit that he had spotted the thermalling white glider at a similar altitude only 0·2nm away nose-on. Nevertheless, pilot Members understood that such ac with a small cross-sectional area, viewed head-on co-alt, are difficult to spot. Therefore, based on the limited information available, the Members agreed unanimously that while this Airprox had stemmed from a late sighting by the C56X Citation pilot, he had seen the glider in sufficient time to manoeuvre away from it in a manner that did not require a robust response. The radar recording suggesting that the horizontal separation he afforded was a little more than the 200yd to the S he reported. Moreover, Members noted his comment that 'had he done nothing they would not have collided', all of which led the Board to conclude that no actual Risk of collision had existed.

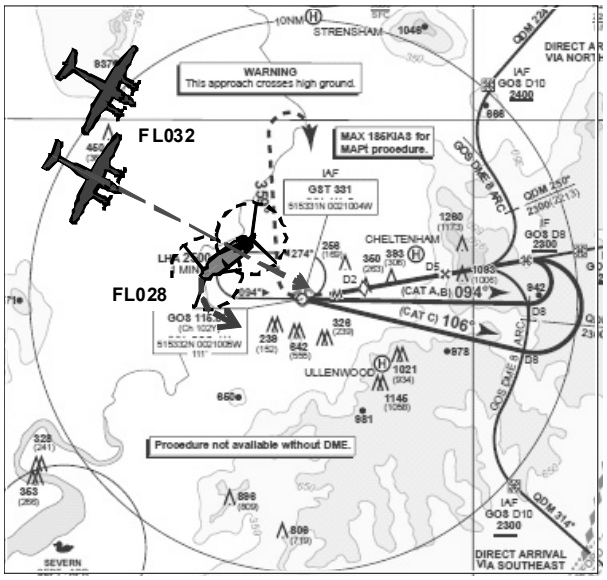
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A late sighting by the Citation pilot.

Degree of Risk: C.

AIRPROX REPORT NO 2011049

Date/Time:	31 May 2011 1237Z	
Position:	5155N 00215W (Gloucestershire Airport- elev 101ft)	
Airspace:	Lon FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Chinook	King Air
Operator:	HQ JHC	HQ AIR (Trg)
Alt/FL:	3000ft	3000ft
	(QNH 1021mb)	(QFE 1003mb)
Weather:	VMC CLBC	VMC CLBC
Visibility:	40km	20km
Reported Separation:		
	150ft V/500m H	400ft V/0m H
Recorded Separation:		
	400ft V/ 0.1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE CHINOOK PILOT reports flying an IFR approach to Gloucestershire on a training flight in receipt of a BS from them, squawking 7000 with Mode C and S in a green ac with all appropriate lights switched on but TCAS was not fitted. While established in the GST NDB hold for RW27 at 3000ft, heading 274° at 120kt, on the Gloucestershire QNH of 1021mb, a two-ship [blue and white, military] King Air formation flew over the top of their ac in straight and level flight. They were spotted initially by the HP and then the Crewman, shortly before they flew O/H and they were estimated to be less than 200ft above the ac. They tightened their left hand turn to avoid them and reported the incident on landing, assessing the risk as being high.

THE KING AIR PILOT reports leading a formation of two blue and white ac with all lights on, on a training flight from Cranwell to Lyneham, squawking as directed with Modes C and S and in receipt of a TS from Lyneham APP. They were heading 100° at 170kt, 5nm NW of GST, as a formation (2x King Airs) had just effected a join-up at 3000ft (QFE) utilising the TS from Lyneham and had just informed Lyneham that they were ready for radar vectors for recovery. Lyneham App called traffic in their 10 o'clock slightly below to the formation and almost immediately they received a TCAS TA from the reported traffic [see Mil ACC report below] which they quickly identified as a Chinook, estimating it to be 1.5nm away. They monitored the Chinook visually, and on TCAS, as it passed below them, the TCAS indicating that it was 4-500ft below, so he decided that the best course of action was to maintain track and altitude, as he perceived there to be no risk of collision. They then recovered to Lyneham with no further incident. He was informed of the Airprox by London Mil and assessed the risk as being low.

ATSI reports that this Airprox occurred at 1236:40 UTC, in Class G airspace, 2.8nm to the NW of Gloucestershire Airport (Gloster).

The Chinook was carrying out a VFR training flight and was entering the GST (Gloucestershire) NDB hold, prior to commencing an NDB approach. An Airprox report was not received by Gloucestershire until later in the day

when the Chinook pilot rang ATC to report that a formation of two King Air ac had passed in close proximity while he was in the hold.

The controller was providing a combined Aerodrome and Approach Control Procedural service without the aid of surveillance equipment. The UK AIP entry for Gloucestershire, Page AD 2-EGBJ-1-6 (8 Apr 10), Paragraph 2.18, states:

'Radar services (Primary only) within 25 NM below FL80, availability subject to manning. Use of 'Radar' suffix denotes availability only. Provision of a specific radar service is not implied.'

CAA ATSI had access to radar and RTF recording, controller and pilot written reports.

METAR EGBJ: 311220Z RWY27 29010KT 9999 FEW030 16/02 Q1021=

At 1226:05, the Chinook pilot called Gloster Approach, reporting 13nm on the GLS 245 radial, climbing to 3000ft on the QNH of 1016; the pilot requested a transit through the overhead and a BS was [initially] agreed.

At 1226:31, the Chinook advised, *....change of intention we'd actually like to pick up the procedure NDB DME for runway two seven with one time hold if that's possible";* App responded, *"(Chinook) c/s affirm still under a Basic Service IFR traffic outbound just airborne from the southwest three thousand feet is a twin squirrel",* the pilot acknowledged and requested a TS. Approach offered a Procedural Service either at a higher level at the Beacon or, for the Chinook to provide own deconfliction against the Twin Squirrel; the pilot replied, *"er Chinook) c/s er no problem we'll remain VFR and er take a Basic Service off you."*

At 1227:11, App instructed, *"(Chinook) c/s report approaching the Golf Seirra Tango at altitude three thousand feet under a Basic Service"* and this was acknowledged.

At 1234:00, the radar recording showed the Chinook crossing the GST (NDB), tracking NE, indicating FL027 prior to commencing a left turn to enter the hold. The recording also showed two ac (later reported as the King Airs) displaying SSR codes 4501 and 4502 (Lyneham). The King Air pilot's report indicated that they were in receipt of a TS service from Lyneham App.

The two ac were indicating FL033 and FL043 respectively and the radar recording showed the ac converging; the ac squawking 4502 descended to FL027 and its transponder is turned off at 1235:00 as the ac formated.

At 1235:22, the controller advised, *"(Chinook) c/s and erm IFR traffic is clear now er you're under a Procedural Service";* this was acknowledged by the Chinook pilot.

At 1235:39 the radar recording showed the Chinook, 1.6nm N of GST, tracking W, indicating FL026 (converting to an alt of 2816 ft, with QNH 1021 and 1mb equating to 27ft). The recording also showed the formation 6.3nm NW of GST, indicating FL033 (converting to 3516ft) and converging with the Chinook.

At 1236:10, radar recording showed the Chinook maintaining FL028 (3016ft) and the formation indicating FL033 (3516ft) with the distance between the ac as 2.6nm.

The radar recording showed the Chinook commencing a left turn in the hold at 1236:36, with the distance between the ac being 0.5nm and with 500ft vertical separation; it was not possible to determine the level of the non-squawking ac. The last radar derived level at 1235:00, indicated FL27 (2916ft).

The ac tracks crossed at 1236:43 at a position 2.7nm NW of GST, with the vertical separation indicated as 500ft [400ft on the Clee Hill radar recording]. Radar then showed the ac tracks diverging with no change in the indicated Mode C level.

The Chinook was in receipt of a Procedural Service and the formation was unknown to the Gloster App controller. The Manual of Air Traffic Services (MATS) Part 1, Section 1, Chapter 11, Page 10, states:

'A Procedural Service is an ATS where, in addition to the provisions of a Basic Service, the controller provides restrictions, instructions and approach clearances, which if complied with, shall achieve deconfliction minima

against other ac participating in the Procedural Service. Neither traffic information nor deconfliction advice can be passed with respect to unknown traffic.'

HQ 1GP BM SM reports that the Chinook was operating VFR, in VMC, on an NDB approach in receipt of a PS from Gloucester App. The King Airs were operating VFR, completing a formation rejoin prior to a visual recovery to Lyneham in receipt of a TS, reduced due to poor radar performance from Lyneham App.

The King Air formation was at 3000ft on Lyneham QFE 1003mb, whilst the Chinook reports operating within the GST NDB hold at 3000ft Gloucester QNH 1021mb (equating to 540ft vertical separation).

APP was operating band-boxed as APP and Zone and providing an ATS to 5-speaking units on 2 VHF frequencies.

At 1234:24, APP passed TI to King Air leader on a primary-only contact stating "*pop-up traffic err your 12 o'clock, 3 miles, similar heading, no height information*" which was acknowledged [this related to a primary only contact about 7nm NW of the Chinook]. At that point, the reporting Chinook was 10.5nm ESE of the formation and King Air (B) was 1.1nm NE of leader on a parallel track, 400ft above but descending to rejoin him. No further TI was passed to either member of the King Air formation throughout the remainder of the incident sequence.

King Air A stated in his report however that APP passed them TI on 'traffic in our 10 o'clock, slightly below [and that] almost immediately we received a TCAS TA from the same traffic which we quickly identified as a Chinook'.

At 1236:12 King Air leader reported "*holding hands, ready to accept vectors*" and at that point the Chinook was 1.2nm E of them.

The CPA occurred at 1236:41, 26.3 nm NW of Lyneham (2.7nm NW of GST), with the Chinook crossing from left to right 0.1nm in front of the King Airs.

In terms of the Airprox itself, it appears reasonable to argue that through the action of confirmation bias and because the subject of the TI passed at 1234:24 was non-squawking, the pilot of King Air (A) miss-perceived that the TI related to the contact that they could see on the TCAS display. Notwithstanding this, the King Air pilot was able to visually acquire the Chinook in sufficient time to assess that they had adequate separation and that no avoiding action was required.

Notwithstanding the distance of the CPA from Lyneham, given that the King Air formation was in receipt of a TS they were, therefore displayed on the Lyneham radar display. Moreover, it is reasonable to assume that the Chinook was also displayed on the Lyneham surveillance display given that it was only 540ft below the formation. It has not been possible to determine why APP did not pass TI to the King Airs regarding the Chinook.

In his report, SATCO Lyneham raised a significant issue by highlighting the limitations of the radar service provided by Gloster and questioning the appreciation by many crews of the level of awareness of Gloucestershire traffic not in receipt of an [App] service. In this instance, the Chinook was operating IFR in receipt of a BS, it would not have been afforded any protection whilst flying the NDB procedure, other than that provided under 'see and avoid'.

Although the result was not intended, the TI passed by Lyneham App, in association with TCAS information, allowed the King Air formation to 'see and avoid' the Chinook.

HQ JHC comments that it is apparent that the Chinook pilot misjudged the separation between the ac; from the radar report and the TCAS information, the vertical separation was likely to have been in the region of 400ft. However, the Chinook pilot reports that they took avoiding action and assessed the risk of collision as high. It is possible that the Chinook crew did not appreciate that a Procedural Service only gives information that, if complied with, achieves deconfliction minima on other ac participating in the Procedural Service – and does not provide deconfliction minima with all ac.

HQ AIR (TRG) comments that the availability of TCAS aided the King Air crew in visually acquiring the Chinook. Whilst it was assessed visually that there was no risk of collision, and it appears that the crew felt they could maintain the separation which existed, it might have been prudent to increase the vertical separation or create some lateral separation. TCAS RA was not selected, which is iaw 22 (Trg) Gp and local TCAS orders and SOPs, because of the relative poor manoeuvrability of a close formation. The apparent confusion over the TI called and

the traffic that was actually sighted highlights the potential for any TI to be misinterpreted and for an incorrect mental air picture to be formed; apparently, the subject of the TI was not sighted. This incident highlights the importance of a continued and comprehensive visual scan in order to pick up those aircraft that may not appear on TCAS or on the controllers radar, or which may not be passed for whatever reason. The ultimate responsibility for collision avoidance remains with the ac crews.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

Members observed that Gloucestershire instrument pattern is frequently very busy with procedural, mainly training traffic, and that Gloster Radar is only available by prior arrangement and has no SSR. They agreed that it is wise to avoid the area of the approach and hold even if in receipt of a radar service from another unit; if this is not possible, pilots should call Gloster App who will advise them of the traffic situation (as they know it). Controller Members added that this advice should also be noted by controllers at adjacent units who should, if possible, route traffic away from the hold and advise that it is active.

Notwithstanding that the Chinook was arguably IFR and the King Airs were VFR, the incident took place in Class G airspace where the normal 'see and avoid' principle applies. In this encounter the opposing ac were almost head-on and both were required to give way under the RoA. The Chinook had just commenced a left turn inbound to the beacon and the pilot tightened that turn. The King Air leader recognised that he was also required to give way but considered that adequate vertical separation already existed and so he 'stood on'. While the vertical separation might seem to have been adequate, had the King Air formation made, even a small track alteration and not overflown the Chinook, it would have signalled to its crew that the King Air crews had seen it and thus most likely removed any concern that they had. In common with most other ac, the visibility from the Chinook above and behind is limited, and therefore the ability of the crew to judge safe separation is equally limited; even more so when in a turn. It was the view of one experienced pilot Member that, despite that the King Air formation leader considered the vertical separation adequate, they had flown unnecessarily close to the Chinook.

It was observed that (anecdotally) there seemed to be widespread misunderstanding by pilots of their responsibilities when operating under a Procedural Service in Class G airspace - whether IFR or VFR in both IMC and VMC (although they may be separated from other participating traffic) pilots are wholly responsible for collision avoidance.

Controller Members endorsed the HQ 1Gp BM SM view that in the circumstances prevailing, Lyneham App should have provided TI to the King Airs regarding the Chinook, since it should have been apparent to the controller that it was in confliction, both laterally and vertically. It was fortunate however, that the TI that the controller passed regarding the other (non-squawking) contact enabled the King Air crew to acquire the Chinook visually (but apparently not the contact to which the TI referred). Notwithstanding the limitations of a TS, Members thought that Lyneham could have provided the King Airs with a better service.

The HQ Air (Trg) Member observed that there had been a number of incidents recently where military crews had not used all the information available to them (including TI and TCAS) to avoid conflicting traffic by greater margins. He informed the Board that HQ Air would be conducting an education programme to improve awareness. The ATSI Advisor pointed out that the post incident procedure would have been much smoother had the Chinook pilot reported the incident to Gloster App on the frequency in use at the time.

When considering the risk, a majority of Members considered the normal safety standards had been maintained and therefore there was no risk of collision.

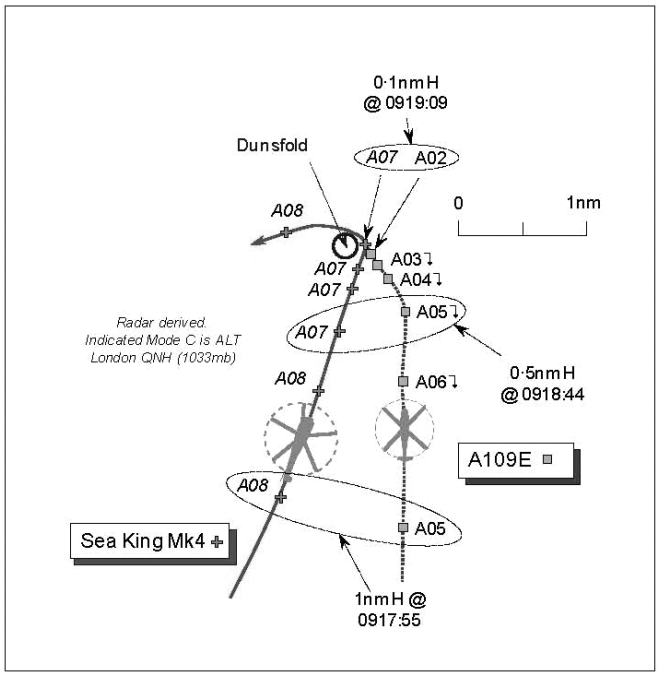
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Chinook crew was concerned by the proximity of the King Air formation.

Degree of Risk: C.

AIRPROX REPORT NO 2011050

Date/Time:	2 Jun 2011 0919Z	
Position:	5107N 00032W (Dunsfold A/D - elev 172ft)	
Airspace:	London FIR	(Class: G)
Reporter:	Dunsfold A/G	
	1st Ac	*2nd Ac*
Type:	Agusta 109	Sea King Mk4
Operator:	NK	MFTR/Civ Test
Alt/FL:	NK	700ft QNH (NKmb)
Weather:	NK NK	VMC CLBC
Visibility:	NK	>10km
Reported Separation:		
Dunsfold A/G:	slightly higher	
	NK	700ft V/1nm H
Recorded Separation:		
	200ft Min V @ 0·5nm H	
	0·1nm Min H @ 500ft V	



A/G OPERATOR [CONTROLLER] REPORTED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE DUNSFOLD AIR/GROUND RADIO OPERATOR (A/G), who is also a licensed ATCO, reports that he was operating from the Control Tower at Dunsfold [situated S of the midpoint of RW07/25] on 119·100MHz when he became aware of a helicopter engine noise behind him. He looked around and saw a white coloured Agusta 109 (A109) helicopter approaching the southern aerodrome boundary at low level at about 400-500ft agl, which flew overhead the Tower descending steadily until it was obscured by the roof and he lost sight of it. As the A109 flew back into view again, he saw a large green Sea King helicopter that veered across ahead of the A109 from R to L, he perceived, at almost the same height, but slightly higher. The incident appeared to take place he thought at a height of about 100ft above the mid-point of the RW. Neither pilot called Dunsfold RADIO on 119·100MHz. The engine noise from the A109 flying above the VCR masked the sound from the Sea King helicopter, so he had seen it late, without any audible warning of its approach. The Sea King then made a slow turn in the Dunsfold overhead and departed to the NW at low-level.

The A109 landed next to a fuel bowser to the N of the RW and was met by an individual who began to refuel the ac once it had shut down. The bowser operator was expecting the A109 as he had received a text message from the pilot saying he was inbound, but the arrival of the A109 had not been notified to him as the A/G Operator. He called Farnborough RADAR immediately who advised that they were not talking to any traffic in the Dunsfold area. Another person who had been monitoring the A/G frequency on the ground also observed this occurrence, and at the time of the incident a high performance vehicle was using the RW for pre-arranged test runs. Subsequently, he went across the A/D to speak to the helicopter pilot and ask him if he was visual with the Sea King and to ask why he did not call on the A/G frequency – 119·100MHz. The A109 pilot's response was 'what helicopter' and stated that he had not called on the A/G frequency because he had 'forgotten it'.

Although the incident took place in Class G airspace at an unlicensed aerodrome without an ATZ, the A/G Operator perceived that both helicopters came within an unsafe distance of one another. This, combined with a non-sighting by the A109 pilot during a late stage of the approach and the omission

of both pilots to call Dunsfold RADIO, especially when a high performance car was using the RW, led him to make this report.

UKAB Note (1): From a subsequent telephone conversation with the A/G Operator it seems that PPR approval had been given to the A109 pilot to operate at the A/D, but the A/G Staffs had not been informed.

THE AGUSTA 109 PILOT's company was contacted many times by the UKAB Secretariat, but to date no report has been provided.

THE SEA KING PILOT reports he had departed from Fleetlands, VFR and was conducting a post maintenance test flight in VMC whilst in receipt of a BS from Goodwood INFORMATION on 122·45MHz. The helicopter is coloured Dark Green with RN markings. The upper and lower white HISLs were on.

Flight safety critical systems (main rotor and tail rotor vibration levels plus both engine power performance indexes and max contingency levels etc) had been proven and were all within limits. At this stage of the flight they were testing the accuracy of the Doppler plot compared to the GPS plot prior to testing the ILS at Odiham and subsequently returning to Fleetlands. During the navigation plot check they routed to on-top Petworth, thence to on-top Dunsfold and to on-top the MID beacon.

Heading 260°, overflying Dunsfold at an altitude of 700ft at 90kt, his observer who was sat in the LHS, saw an A109 take off from the aerodrome below, he thought, that transitioned into their 7o'clock as they were heading W, the A109 appeared also to be heading W. There was no conflict hence they maintained a steady heading, altitude and speed whilst his observer continued to call out the A109's position by clock code, which remained in their 7o'clock. Since the A109 had just transitioned, his Sea King's speed was greater so they waited until there was sufficient lateral separation before turning SW to route towards the MID beacon. He estimated the minimum horizontal separation from the small helicopter as 1nm and the Risk 'none'.

ATSI reports that the Airprox occurred in the vicinity of Dunsfold A/D, in Class G airspace between the A109 and a Sea King Mk4 helicopter.

Dunsfold provide an A/G Service without an ATZ. Neither helicopter crew was in communcation with Dunsfold RADIO. The written report from the pilot of the Sea King indicated that he was in communication with Goodwood INFORMATION. Goodwood provide a FIS, but the incident was not reported to them and no RT recording was available.

The Gatwick METAR for 0920 UTC: VRB08KT 9999 SCT034 20/11 Q1034=

Goodwood provide a FISO service and provide TI to ac flying in the vicinity of Goodwood aerodrome. It is not clear why the Sea King remained on the Goodwood frequency.

UKAB Note (1): At 0918:44, the radar recording shows two contacts separated by 0.5nm, approaching the southern boundary of Dunsfold A/D. The Sea King is the westerly of the two contacts squawking A7000 and indicating an altitude of 700ft unverified Mode C London QNH (1033mb); the easterly contact - the A109 – is at an altitude of 500ft unverified Mode C London QNH. The two helicopters converge and at 0919:09, the distance between the two ac is 0·1nm, with Sea King indicating an altitude of 700ft and crossing ahead of the A109 from the latter's L to R; meanwhile the A109 has slowed and indicates an altitude of 200ft. The Sea King then turns and departs to the W at an altitude of 800ft. The A109 is last shown at an altitude of 100ft and shortly afterwards this contact fades from radar overhead Dunsfold A/D.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included a report from the A/G Station operator, a report from the Sea King pilot, radar video recordings, together with a report from the ATC authority.

Whereas the Board normally receives reports from pilots or controllers, this was an unusual Airprox insofar as it had been originated by an A/G operator. There were, however, precedents for this and the Board recognised that the A/G Station operator involved here is also a licensed ATCO. Furthermore, the initial review of the occurrence had revealed some significant issues worthy of investigation. The Board was briefed that, despite repeated requests through the company, the A109 pilot had not provided a report. Consequently, Members were denied the A109 pilot's perspective on this Airprox and could, therefore, only base their assessment on the limited information available. Board Members expressed their disappointment at the lack of timely action by the company

and the absence of a report from the A109 pilot, which prevented the Board from making a full assessment of the incident.

It was plain that neither of the pilots involved had established two-way RT communication with Dunsfold RADIO on their published frequency, thus the A/G operator was not aware of either flight before they flew into view. Whilst recognising that Dunsfold was now an unlicensed aerodrome with no ATZ and offering only limited ATS facilities, Members familiar with this area are aware that it is still used extensively by a broad range of ac operators. Moreover, other activities not compatible with aviation evidently occur on the A/D. Pilots need to be aware of what is happening, what other ac might be operating in the vicinity and where they can operate safely, which is best accomplished by operating on the frequency established for that purpose. To that end any pilot operating into the A/D, or in the immediate cct area, should be in contact with Dunsfold RADIO, to ascertain information useful for the safe and efficient conduct of the flight. Although the A109 pilot should have been able to see, cross cockpit, the larger dark green Sea King to port, the A/G operator's report suggested that the A109 pilot was unaware of the close proximity of the Sea King as he made his approach; whilst there was no reason to doubt the veracity of the A/G Operator's report, this could not be substantiated without the pilot's account. Therefore the Board agreed that the first part of the Cause was, probably a non-sighting by the A109 pilot.

From the Sea King pilot's comprehensive account, it was evident that he had not detected the presence of the smaller A109 to starboard as they approached Dunsfold from the S and it was not until their Sea King turned westbound over the A/D that the A109 was seen. Moreover, his observer had not realised that the A109 was landing; when spotted, it was most probably positioning across the main RW to the N side for refuelling before it was obscured from view as it drew aft. Since it had not been seen beforehand, it was presumed to be departing from the A/D. The Board was briefed that subsequent discussions with the Sea King pilot had revealed that on previous flights he had attempted to establish communications with Dunsfold RADIO, but two-way RT had proved somewhat erratic, the pilot suggesting that the operator might be using a hand-held VHF radio. Even though communication might be difficult, and it was accepted that the test flight was an intensive task, helicopter pilot Members opined that better airmanship was always to call on the RT when operating in the immediate vicinity of an A/D, otherwise remain clear of the cct area, as is required by the 'Rules of the Air'. The HQ JHC Member said that it was normal practice for test flights from Boscombe Down to obtain an ATS and other pilot Members agreed that the acquisition of a service, perhaps even a radar service from Farnborough, would be a useful adjunct to the crews' visual scan on high workload test flights. Controller Members recognised that Farnborough LARS would not be able to offer much of a radar service at the altitudes reported here, but in this locale they could probably provide a more useful ATS than Goodwood INFORMATION; Gatwick was suggested as another helpful ATSU who might afford a service. Regarding the actual encounter, the recorded radar data clearly shows the A109 passing to starboard and no less than 200ft below the Sea King whilst approaching Dunsfold A/D. The A109 was there to be seen forward of the beam from a range of 1nm the radar recording reveals and broadly in the Sea King pilot's field of view from that point. Therefore, the Board concluded that the other part of the Cause was, effectively, a non-sighting by the Sea King crew.

Some perceived that this was a Risk bearing Airprox because both ac were flying towards the same point on converging tracks at close quarters, both pilots being unaware of the other helicopter it would seem. Any separation that did exist was thus fortuitous. However, it was evident from the radar data that the A109 was always below the Sea King before it commenced final descent to land on the A/D, and at the point of minimum horizontal separation as the Sea King turned overhead the recorded Mode C, albeit unverified, indicated it was 500ft above the A109, not the 100ft perceived by the A/G operator. This convinced other Members that any Risk had been effectively removed. Although the Board was content to assess the Cause of this Airprox, further discussion then ensued as to whether there was sufficient evidence available to enable the Members to assess the Risk of collision. Moreover, it is not within the Board's remit to consider the safety implications of any conflict with a vehicle that might have been using the RW when the A109 landed. Following a wide ranging debate, Members concluded that without an account from the A109 pilot there was insufficient information available to reach a meaningful conclusion on the inherent Risk.

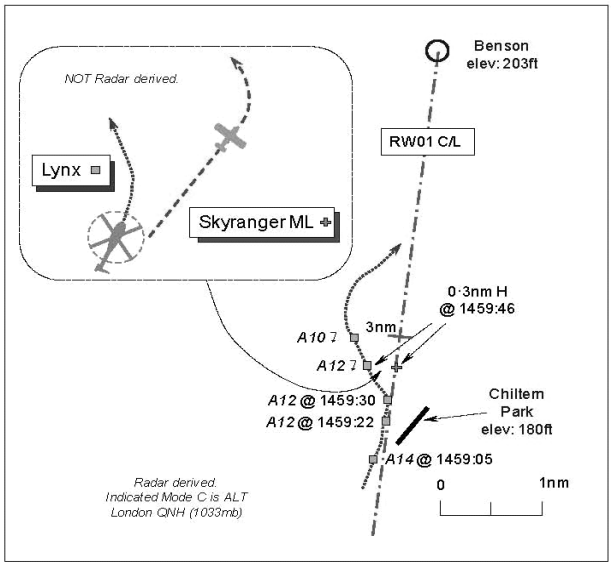
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Effectively a non-sighting by the Sea King crew and probably a non-sighting by the A109 pilot.

Degree of Risk: D.

AIRPROX REPORT NO 2011051

Date/Time:	2 June 2011 1459Z	
Position:	5133N 00106W (3½nm S of Benson - elev 203ft)	
Airspace:	Benson MATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Lynx AH Mk7	Skyranger ML
Operator:	HQ JHC	Civ Pte
Alt/FL:	900ft ↓	400ft
	QFE (1027mb)	QFE
Weather:	VMC CLBC	VMC CAVOK
Visibility:	25km	10km
Reported Separation:		
	NR	NR
Recorded Separation:		
	Not recorded	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE WESTLAND LYNX AH Mk7 PILOT reports flying a training sortie from Odiham and was conducting an SRA at Benson to RW01RHC in VMC. He was in receipt of a TS from Benson TALKDOWN (TD) on 277·675MHz. A squawk of A3617 was selected with Mode C; neither Mode S nor TCAS is fitted.

Established on the centre-line at 100kt, heading 020° whilst approaching 900ft QFE (1027mb) in the descent under terminal guidance, a small civilian ac – the Skyranger Microlight (ML) that had been spotted from about 4nm Final – was seen to line up on a private strip [Chiltern Park] about 3nm S of the A/D. He saw the ML roll and take off and, as he was visual with it at this point, it was not a problem. As it lifted off, the TD controller called traffic in their 1 o'clock, slow moving; the ML then executed a L turn which would have brought it into conflict with them, but at the same time the controller issued a 40° avoiding action L turn. He saw the ML pass behind with a 'medium' Risk but did not report the separation. The SRA was completed and after returning to base he contacted Benson ATC and discussed the incident with the controller.

His helicopter had a grey/green camouflage scheme; ac lighting was not specified.

THE SKYRANGER 912S MICROLIGHT PILOT reports he was departing from Chiltern Park aerodrome for a local VFR flight. His ML is coloured red and white and the strobe lights were on. Their normal procedure is to telephone Benson ATC to inform them of their operational status prior to any take-off from Chiltern Park, but because of a misunderstanding, Benson had not been informed of their active status.

After take-off from RW04 at Chiltern Park, he turned L onto the crosswind leg of a standard LH cct at 70mph, ascending to an intermediate height of about 400ft QFE. Soon after take-off he was contacted on the radio by the Chiltern Park aerodrome manager, who advised him that he had passed close to a helicopter on final approach to Benson. The Manager wanted to ascertain if he had contacted Benson to advise them of their active status, but he had to acknowledge that he had not done so and immediately radioed Benson ZONE on 120·9MHz to apologise for the omission.

The Lynx helicopter had turned away from its original path before he had turned onto the downwind leg, and, being camouflaged, was not seen. The Downwind leg of RW04/22 at Chiltern Park runs close to the FAT for Benson's RW01, about 3·5nm from the touchdown point of RW01. Military helicopters are known to approach Benson at low-level, often below Chiltern Park's cct height of 700ft, and, on occasion, after Chiltern Park has notified Benson as being 'active'.

Due to an increase in incidents involving military ac recently, the current arrangements with Benson, which are detailed in a LOA, are being reviewed. Changes have been proposed to the Chiltern Park cct pattern to deconflict traffic and other measures are under consideration by Chiltern Park management, for discussion with Benson in the near future.

He suggests he shall now call Benson ZONE on the RT- or TOWER if ZONE is closed - at the holding point to request information on current traffic movements before returning to the Chiltern Park frequency, as is required by the Chiltern Park Flying Orders.

THE BENSON TALKDOWN CONTROLLER (TD) reports he was conducting a SRA to RW 01RH for the Lynx AH Mk7. The meteorological conditions were good - sfc wind 040°/8kt, 25km visibility and FEW cloud at 3800ft. As the ac was approaching the 4nm point he noticed a primary radar return that had just 'painted' to the E of the centreline at the 3½nm point. Immediately, he called the radar return to the Lynx pilot as, in his judgement, it indicated that the primary return could be an ac climbing out of Chiltern Park, situated to the S of Benson A/D. The Lynx pilot did not call visual at that point; in the controller's view, as the unknown ac turned straight towards the Lynx on the centreline at the 3½nm point, there was a definite risk of collision. Avoiding action was given to the Lynx pilot of a L turn onto a heading of 330° to ensure that the risk of collision would be avoided. The Lynx pilot then called visual with the unknown ac and he was then able to continue with the SRA and complete the approach.

THE BENSON SUPERVISOR (SUP) reports that all positions in the ACR were reasonably busy with APP/DIR bandboxed. Whilst facilitating an internal pre-note between APP and ZONE he observed a 'non-squawker' relatively close to the A3617 Benson squawk which he knew to be the Lynx conducting an SRA. He immediately moved to a position behind TD who was conducting the SRA to increase his own situational awareness and quickly ascertained that the Lynx pilot had not reported visual with the non-squawker and observed it taking controller initiated avoiding action to maintain separation. The Lynx was then easily vectored back towards the centre-line and a clearance obtained at 3nm.

Praising TD for his actions, he then followed the non-squawker on ZONE's display whilst trying to ascertain if Chiltern Park had called active at any point. Shortly thereafter a VDF trace was observed passing through the non-squawker; the pilot identified himself with the Skyranger ML's registration having just climbed out of Chiltern Park without 'activating' the airfield IAW local agreements. The ZONE controller acknowledged an apology from the ML pilot and reminded him of the necessity to call. A few minutes after this, the ATC assistant in the VCR relayed a message that Chiltern Park was now 'active' and the person that had called in had apologised for how close the Skyranger ML got to the Lynx, something he had observed from the ground.

HQ 1GP BM SM reports that this Airprox occurred between a Lynx conducting an SRA at Benson in receipt of a TS from Benson TALKDOWN (TD) and a ML departing Chiltern Park airfield VFR.

This Airprox does not appear on the LATCC (Mil) radar recording, although the Lynx is visible throughout the incident sequence. [UKAB Note (1): A primary radar contact appears on the Heathrow Radar recording at 1459:46, 0·3nm E of the Lynx which may or may not be the reported Skyranger ML. At this point the Lynx is indicating 1200ft London QNH (1033mb), which broadly equates to 1020ft Benson QFE (1027mb) - about 1040ft above Chiltern Park aerodrome's elevation of 180ft.]

TD was manned by a relatively inexperienced first tourist controller who had been awarded their SRA endorsement that morning. The controller states that as the Lynx "was approaching the 4nm point I noticed a primary radar return with no height information that painted just to the east of the centre-line at the 3½nm point." At 1459:04, TD passed TI to the Lynx stating, *"…traffic right 1 o'clock 1 mile manoeuvring, no height information"*, which was not acknowledged by the Lynx pilot.

TD then goes on to state that in their opinion, as the ML turned into confliction with the Lynx, there was a definite risk of collision and, at 1459:20, instructed the Lynx crew, *"avoiding action, turn left immediately heading 3-4-0 degrees, traffic right 1 o'clock 1 mile crossing right - left no height."* At 1459:31 the Lynx pilot reported visual, with the avoiding action turn becoming evident on the radar replay at 1459:33.

Neither pilot provided an estimate of the minimum separation, with the ML pilot stating that they had not been visual with the Lynx until after the CPA.

JSP 552 405.135.20 provides regulation for the separation and avoidance of other contacts whilst providing a PAR. It specifies that irrespective of ATS, when a collision risk is apparent in both elements of the PAR display involving an un-notified radar contact:

'advice on suitable action for collision avoidance together with information on conflicting traffic [is to be given].'

There is no comparable regulation contained within JSP 552 405.125 which pertains to the conduct of an SRA.

In this instance TD provided relevant and accurate TI to the Lynx pilot and, when the controller perceived a risk of collision to exist, provided deconfliction advice to the Lynx pilot. Although the Lynx pilot was visual with the ML throughout the incident sequence, TD fulfilled their perceived duty of care by offering deconfliction advice.

In terms of the regulatory difference between the provision of a PAR and a SRA, the absence of comparable regulation, whether consciously or unconsciously, caused TD to apply an incorrect regulation. In this instance, this transfer of training had a positive outcome; however, a different set of contextual conditions or a different interpretation of the regulations may have produced a different, negative outcome. Following a procedure which has not been designed for the specific situation could have unforeseeable and undesirable results, with deficiencies or differences in regulation or procedure being identified as causal or contributory factors in many air accidents and incidents.

Consequently a recommendation has been made to the MAA Op Gp – ATM Division – relating to a review of JSP 552 405.135.20 and JSP 552 405.125 and the provision of additional guidance; a reply is awaited.

HQ JHC comments that despite the fact that there is an absence of regulation for an apparent collision risk whilst on an SRA, when the controller passed relevant TI to the Lynx, it is disappointing that it was not acknowledged by the Lynx pilot. Whilst the avoiding action was successful, it is not considered good airmanship for a pilot to be visual with an aircraft of concern but not relay this information to the controller, although it is acknowledged that the final stages of an instrument approach creates a high workload in the cockpit. It is probable that the Lynx pilot would have taken avoiding action himself at the same point should the controller not have given avoiding action advice so promptly.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the Benson RT frequency, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

The Board noted the recommendations made by HQ 1GP BM SM to the MAA Op Gp – ATM Division – relating to a review of JSP 552 and the provision of additional guidance for SRA controllers. The CAA SRG Strategy and Standards Advisor considered there was sufficient guidance for controllers about collision avoidance action when providing a TS or DS within CAP774, which details air traffic services outside CAS. However, controller Members opined that at military A/Ds the Talkdown controller might not, in some cases, also be validated on Radar Director or Radar Approach and agreed that a review of the guidance applicable to Talkdown controllers conducting SRAs would be worthwhile, which the MAA Advisor confirmed was being undertaken.

Notwithstanding any lack of official advice, the Board commended the Benson TALKDOWN controller for his swift appreciation of the situation and appropriate reaction to the conflict through the transmission of avoiding action to the Lynx crew, in this instance all the more so because of the controller's inexperience. Nevertheless, it was apparent from the Lynx pilot's report that in the prevailing good weather he had spotted the Skyranger just before it took off and watched it turn L downwind. This was before the controller spotted the aeroplane on radar himself and issued the avoiding action L turn away from the Skyranger, which was promptly complied with by the Lynx crew.

The Skyranger pilot's frank admission that he had not notified Benson ATC that he would be flying at Chiltern Park, as is normal procedure in accordance with their LoA, was plainly a significant omission. This denied Benson ATC any prior warning that might have been taken into account during the Lynx's approach. The absence of prior notification was to some a significant factor, and discussed at length in terms of airmanship; one Member suggested that the Skyranger pilot took off into conflict with the Lynx. However, the Skyranger pilot's omission did

not finally figure in the Board's determination of the Cause of the Airprox. Within the MATZ, where specific rules apply to military pilots, but outside the ATZ, where Rule 45 of the Rules of the Air applies within, it is all Class G airspace where the VFR entreat civilian pilots to 'see and avoid' other ac. There is no national requirement for civilian flights to be in communication with Benson ATC within the MATZ, albeit that good airmanship dictates close observance of the guidance within the UK AIP relating to MATZ crossings. It is, therefore, not a 'known traffic environment' and under the TS afforded to the Lynx crew no stipulated deconfliction minima apply. Clearly, observance of the LoA with Benson ATC engenders a safe and harmonious working relationship between these two closely located facilities and good airmanship necessitates compliance. However, the Board concluded the fundamental Cause of this Airprox was a conflict in Class G airspace resolved by the Talkdown Controller.

The Skyranger pilot had not spotted the Lynx, either before take-off or during his cct, and was only aware of the conflict from the A/D Manager's RT call. This was not a warning of the helicopters approach it would seem and occurred after the event. Members warned against alarming or distracting pilots in the air and it was far better to talk about it on the ground rather than provoke concern whilst airborne. Conversely, the Lynx pilot had the aeroplane in view throughout until it drew astern. Prompted by the controllers avoiding action, the Lynx was steered away from it and then back onto the SRA with little difficulty the controller reported and the Lynx crew could have taken more robust action if need be. The Board concluded, therefore, that no Risk of a collision had existed in these circumstances.

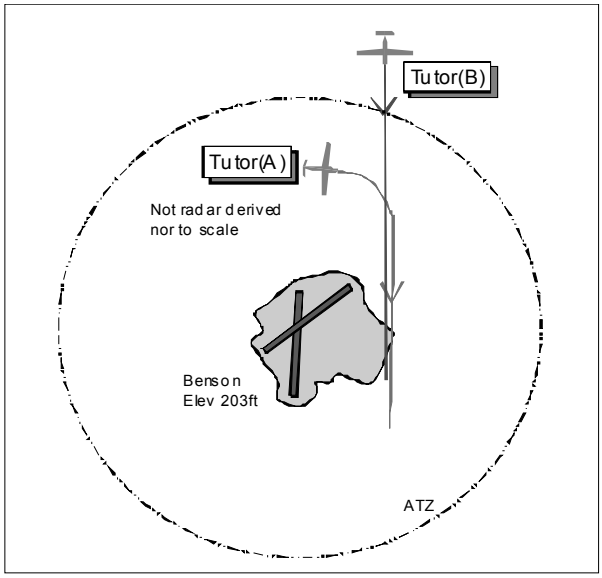
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Conflict in Class G airspace resolved by the Talkdown Controller.

Degree of Risk: C.

AIRPROX REPORT NO 2011052

Date/Time:	2 Jun 2011 1322Z (Saturday)	
Position:	5137N 00105W (0·5nm ESE Benson - elev 203ft)	
Airspace:	ATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Tutor(A)	Tutor(B)
Operator:	HQ Air (Trg)	HQ Air (Trg)
Alt/FL:	800ft (QFE)	850ft↓ (QFE)
Weather:	VMC CLBC	VMC CLBC
Visibility:	10km	10km
Reported Separation:	100ft V/150ft H	50ft V/75m H
Recorded Separation:	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE TUTOR(A) PILOT reports flying a solo cct consolidation exercise at Benson, VFR and in communication with Benson Tower on 127·15MHz; the ac's transponder was switched off. The visibility was 10km below cloud in VMC and the ac was coloured white with HISLs and nav lights switched on. He was late making a downwind call on RW01 because when he was ready, about a third of the way down the RW, he was unable to call owing to other traffic communicating with ATC. Heading 190° at 800ft QFE and 80kt he made a routine lookout to the R, by now he was two-thirds of the way down the RW, he noticed another Tutor, Tutor(B), about 100ft higher and 150ft away

in his 4 o'clock. He believed that both he and the Tutor(B)'s pilot saw each other at the same time because the other Tutor initially broke R as its pilot called ATC before then conducting a LH orbit. During this period he maintained straight and level flight and watched to see what Tutor(B) was doing. Once Tutor(B) was clear he was able to call "downwind" and was cleared for a touch and go after another Tutor, Tutor(C) that was already on final. He assessed the risk as high.

THE TUTOR(B) PILOT reports flying a dual sortie from Benson VFR and in communication with Benson Tower on 127·15MHz, squawking 3611 with Modes S and C, he thought. The visibility was 10km below cloud in VMC and the ac was coloured white with HISLs and nav lights switched on. He was recovering to the visual cct RW01 RH from the N at 2000ft and 110kt. He called Tower about 3nm N of Benson and requested a high downwind join (for noise abatement) which was approved. The frequency was busy initially and it took him a short while before he could make the call so it may have been a bit closer. On reaching the visual cct the only ac he saw was a helicopter hovering over the RW on final approach. Another AEF Tutor flight, Tutor(C), then called long final for a straight-in approach which was approved. Very shortly afterwards he called high downwind, abeam the upwind threshold at 2000ft and a little wider than normal, and was told by Tower "one ahead". He asked Tower if that was the straight-in approach traffic on long final and was told affirmative. He commenced a gentle idle power descent on the downwind leg heading 190° at 80kt. At this point no mention had been made by ATC of any other cct traffic and no other calls were heard to indicate that there were any other ac present in the visual cct. He had the Traffic Advisory System (TAS) on and there were no contacts showing apart from the 2 ac he already knew about. As he descended downwind his main attention was therefore in the direction of the aerodrome and towards the approach area to try and make visual contact with Tutor(C) in order to turn final, positioning at a correct distance behind it. Approaching 800ft at 80kt and just before the abeam point with the RW threshold his cadet alerted him to an ac on his (L) side and out to the front (in his blind spot- 11 o'clock slightly low). He immediately manoeuvred his ac to make visual contact and saw Tutor(A) in very close proximity, 75m ahead, slightly to the L and 50ft below. He turned hard L and made an S turn to fit in behind Tutor(A). As he did this ATC asked if it was his ac breaking L, and he responded that he was positioning behind another Tutor he hadn't known was there. This was greeted by silence from ATC followed by the solo student in Tutor(A) calling "late downwind" and the student was told to go-around. He continued downwind normally and landed after Tutor(C). Later on during a conversation, Tutor(C) pilot told him that he also had no idea that a Tutor flown by a solo student was in the cct downwind when the incident occurred. He assessed the risk as medium.

UKAB Note (1): Tutor(B)'s SSR disappears as the ac enters the ATZ 2nm NNE of Benson before the ac fades from primary whilst in the downwind leg, passing 0·5nm E of the aerodrome.

THE BENSON TOWER CONTROLLER reports that at the time of the incident Tower was bandboxed with Ground owing to a brief lull in traffic. The instructor for the solo student in Tutor(A) was observing his performance from the VCR. The cct rapidly became busy with station-based helicopter departures, fixed-wing arrivals and the Helimed on scramble. Tutor(A) flight elected to go around from an approach and climbed on the deadside. Tutor(B) flight called to join declaring it would be a high and wide downwind join and was informed of the 2 ac in the cct [Tutor(A) and helicopter departing]. A further Tutor flight, Tutor(C), called to join through initials, requesting a straight-in approach which was approved. Tutor(B) flight called wide downwind and was advised of 1 ahead (Tutor(C) on a straight-in approach) as he believed Tutor(B) to be the 1st Tutor downwind. After descending downwind Tutor(B) pilot became visual with another Tutor in close proximity, which was identified as Tutor(A), and conducted an orbit. Tutor(B) pilot was asked if he was in the Tutor which had conducted the orbit so as to establish the new order of the Tutors downwind. Tutor(B) pilot was then told there were now 2 ac ahead; both Tutor(A) and Tutor(B) completed their ccts safely.

HQ 1GP BM SM reports that this Airprox occurred downwind in the visual cct at RAF Benson between 2 Tutors. Tutor(A) was flown by a student established within the cct, with Tutor(B) flown by a QFI recovering from a high, wide downwind position, following an air experience flight.

Given the height at which the Airprox occurred, no radar replay was available; consequently, the investigation has been based upon the reports of those involved and a transcript of the audio-tapes.

All stated heights are based on the RAF Benson QFE of 1027mb published at the time of the incident.

The relatively inexperienced ADC reported that he had been operating in the GRD position for approximately 70min prior to giving a trainee ADC and instructor a break "due to a brief lull in traffic." He then operated in the

bandboxed TWR and GRD position for approximately 20min prior to the occurrence. The trainee's instructor had also been scheduled to conduct a standardisation check on the subject ADC later in the week but took the opportunity of the increasing traffic load to conduct the ADC's check. On the DFSOR, the Supervisor had assessed the ADC's workload as medium to low; however, the Supervisor was not present within the VCR during the incident sequence and the controller has subsequently stated that he would assess their workload as having been medium to high. The ADC reported the Wx as being unlimited visibility in nil weather and FEW cloud at 3800ft.

At 1319:06, Tutor(B) pilot called to join the visual cct and was informed that there were 2 ac in the cct – one was Tutor(A) and the other a Rotary Wing ac departing the airfield. Tutor(B) pilot then stated that he was positioning for a "*high wide downwind join*" which was acknowledged by TWR. There is no recognised procedure at RAF Benson for a "high wide downwind join"; the light ac visual cct is at 800ft.

At the time of the Airprox, regulation and guidance for the conduct of visual joins was contained in JSP 552.320.105.4, which has since been carried forward into MAA RA 3020 and associated MAA MATM Chapter 20 Para 11. These documents state that the 'NATO standard visual aerodrome cct and landing patterns '…are to be implemented, except for the authorised single-Service procedures' and that 'clearance from ATC for the aircraft to enter the pattern **should** include items of essential information regarding the circuit direction, runway in use and number and position of all aircraft ahead which have not touched down.' That said, there are no single-Service variations contained within either JSP 552.320.105 or MAA RA 3020 and associated MAA MATM Chapter 20 Para 11. Moreover, the only UK variation to the NATO procedure that is germane to the current investigation is that the 'downwind call is required to be made when abeam the upwind threshold of the RW in use.' No variation is listed for the operation of an oval cct. Whilst the NATO cct pattern at Figure 1 is predicated on a rectangular cct, rather than the oval cct in common use by the UK military, the information relating to downwind join ground tracks and the ATM aspects appear to be able to be carried across to UK mil ATM procedure. However, based upon a quick straw-poll, current mil ATM practice sees controllers pass position information to ac joining through Initial, rather than all ac conducting a visual join.

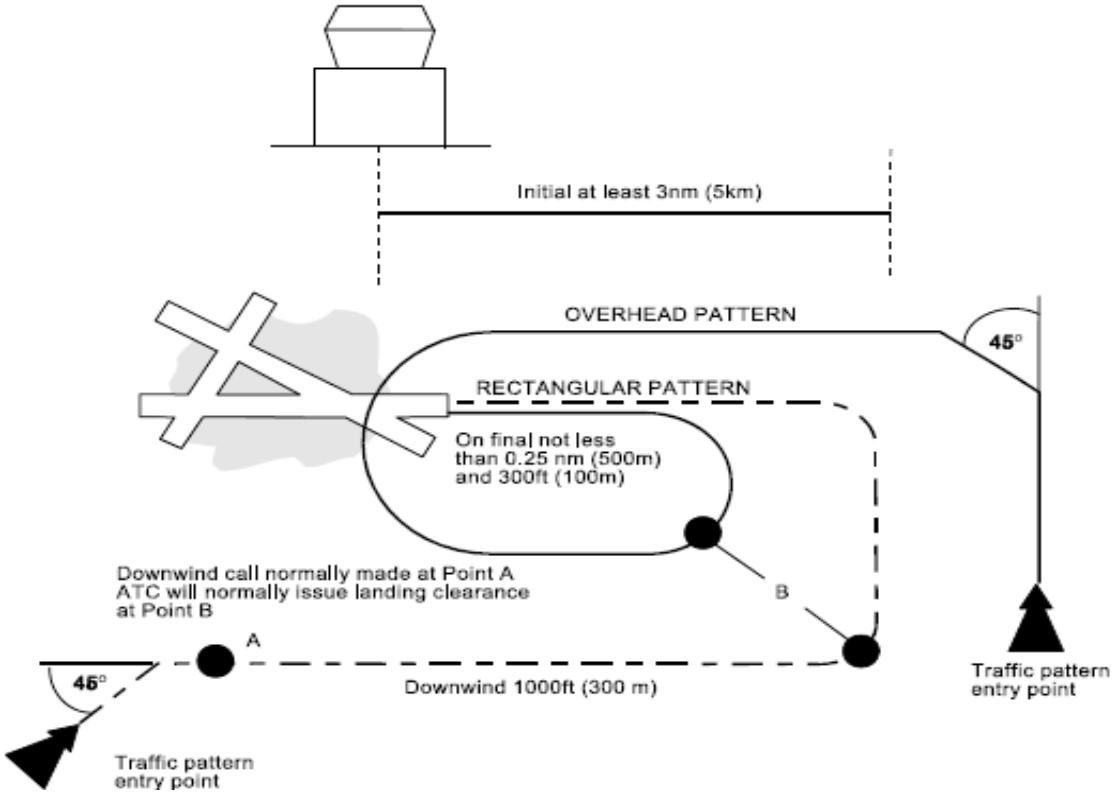


Figure 1: NATO Standard VFR Traffic Landing Pattern – Fixed Wing

At 1319:22 the departing Rotary Wing ac left the frequency. At 1319:29, a third, unrelated Tutor flight, Tutor(C), called to join and at 1320:28 declared his intention to make a straight-in approach to land. Thirty-seven seconds later at 1321:05, Tutor(B) flight reported being, "abeam the upwind threshold at 2000ft and a little wider than normal" and transmitted, "*high downwind full stop*." This was acknowledged by TWR who replied that there was "*one ahead*" of Tutor(B). Tutor(B)'s pilot then requested clarification as to whether the "*one ahead*" was Tutor(C), which was confirmed by TWR. At this point, TWR was speaking to 4-speaking units; 3 Tutors operating in the visual cct and one air ambulance on start for a scramble departure. It was also at around this point that Tutor(B) commenced their gentle idle descent from 2000ft to cct height of 800ft. The ADC later stated that he observed Tutor(B) descending on the downwind leg with what appeared to be a relatively "*high rate of descent for a Tutor*." The pilot of Tutor(B) reported that as he descended downwind, his "main attention was...in the direction of the airfield and towards the approach area to try to make visual contact with" Tutor(C).

Tutor(A) pilot reported that, at the point when he would routinely report downwind, he was unable to make the transmission due to frequency congestion. This is borne out by the transcript with the only breaks in the R/T being between 1320:02 to 1320:28 and 1321:15 to 1321:24. Whilst it has not been possible to determine where Tutor(A) was in the cct between these times, based on Tutor(B) pilot's transmissions and subsequent events, it is reasonable to suggest that Tutor(A) was crosswind between 1320:02 and 1320:28 and downwind between 1321:15 and 1321:24.

The ADC later stated that from the point when Tutor(B) called downwind neither he nor the QFI for the pilot of Tutor(A), nor the controller conducting the standardisation check, nor the TWR assistant were able to sight Tutor(A) as a result of background cloud and the Tutor's colour scheme.

At 1321:37, Tutor(A) pilot reported late downwind with TWR replying that there are 2 ac ahead of them; these being Tutor(B) and Tutor(C). At 1321:58 TWR asked Tutor(B) flight whether they were conducting an orbit, which accorded roughly with the pilot's report of their actions following the CPA. Moreover, the pilot of Tutor(B) reported that they first became visual with Tutor(A) "just before the abeam point with the runway threshold" as they approached cct height and that Tutor(A) was in their "visual blind spot: eleven o'clock, slightly low."

Tutor(A)'s pilot reported that their SSR transponder was turned off. Tutor(B)'s pilot reported that both their transponder and TAS were turned on and that there were "no contacts showing apart from the 2 that I knew about."

DSATCO RAF Benson has stated that the Tutors' colour scheme makes them difficult to sight and track whilst within the visual cct. Moreover, SATCO RAF Benson has stated that it is impossible to utilise the Hi-Brite VRD to provide information on the position of Tutors within the visual cct because they do not paint satisfactorily on primary radar. Whilst there has been discussion at RAF Benson about mandating that Tutor ac squawk SSR Mode 3A and C whilst within the visual cct, to both aid controllers in sighting the ac and to facilitate the operation of the Tutor's TAS, this has not yet been implemented.

There are 3 distinct aspects to this incident which require assessment: the actions and decision making of the pilot of Tutor(B); the actions of the ADC and regulation regarding the provision of TI whilst in the cct.

At the time that Tutor(B) joined the cct at 1319:06, he was correctly advised that there were 2 ac in the visual cct and, based upon his report and the transcript, was aware of Tutor(C) when he reported downwind. The purpose of the RT transmissions made by all speaking units operating within a visual cct environment is to maintain situational awareness. On the basis that the pilot of Tutor(B) stated that he was not aware of Tutor(A), it appears reasonable to suggest that he had not assimilated the cct state information given to him. This caused Tutor(B) to descend into the cct, without being visual with all known traffic, specifically Tutor(A). Moreover, his decision to join high downwind warrants further attention.

Based upon the report of the pilot of Tutor(B) and the transcript (loss of 1200ft in 53sec between 1321:05 and 1321:58), Tutor(B) averaged an approximate ROD of 1300fpm from abeam the upwind threshold to abeam the RW threshold, which does not seem to accord with the reported "gentle idle descent." This is supported by the statement made by the ADC about the Tutor's ROD. During this descent, the pilot of Tutor(B) focussed his attention towards the airfield, arguably to maintain the correct lateral spacing for their height relative to the airfield, and towards the approach area to facilitate their sequencing behind Tutor(C). Whilst his incorrect mental picture of the cct state will have lulled him into solely focussing his visual scan in these areas, this focus specifically excluded the area beneath the ac, which is contrary to the CFS taught procedure for the visual scan whilst

descending. Furthermore, the purpose of a downwind join is to facilitate the expeditious recovery of an ac, whilst simplifying the task of sequencing into the cct. Routinely, an ac joining downwind would be expected to be at cct height by a position abeam the crosswind position, thereby simplifying the pilot's visual acquisition task. In this case by joining 1200ft above cct height, the pilot of Tutor(B) was increasing the difficulty of his task to visually acquire the other cct traffic and reducing the possibility of being able to safely integrate himself into the cct.

The key ATM aspect to this Airprox is the transmission made by TWR at 1321:08 to Tutor(B) flight that there was 1 ac ahead of them, confirmed by TWR at 1321:12 as being Tutor(C). ADCs are trained to utilise eyesight to maintain track of all ac within the visual cct and to reinforce this using a "pin board." In this case, the ADC has stated that whilst he was utilising a visual scan to acquire and track the ac, his ability to do this was compromised by the Wx conditions and the Tutor's colour scheme. "Best-practice" might suggest that the Hi-Brite VRD could have been utilised to assess the position of Tutor(A) at the time that Tutor(B) flight called downwind; however, the ADC was unable to do this as the Tutor does not paint consistently on primary radar. Moreover, it is also reasonable to argue that the ADC should have expected that Tutor(B) flight would sequence itself with the existing visual cct traffic, given that he was aware of the number of ac within the cct.

This Airprox has highlighted that the provision of more specific cct TI to the pilot of Tutor(B), on the positions of all ac operating within the cct, may have facilitated his integration and thus mitigated against this Airprox. However, the details of regulation pertaining to this are not well known nor, seemingly, practised within the mil ATM community. Moreover, the examples given in CAP413 of phraseology to be used for visual joins only include guidance for joins through the O/H and initials, with only the latter example providing cct position information.

In conclusion, the pilot of Tutor(B) flew a join which compromised his ability to sequence his ac with the existing cct pattern, having not assimilated the cct state information passed to him which, as a result, reduced the separation between his ac and that of Tutor(A) significantly. Moreover, the ATM related safety barrier was compromised by the ADC's inability to sight Tutor(A) and to identify it on the Hi-Brite VRD.

RECOMMENDATION

BM SM has requested that MAA review the regulation regarding the provision of TI to ac joining the visual cct.

OUTCOME

RAF Benson has instigated a requirement for Tutor ac operating within the RAF Benson visual cct to squawk on SSR.

HQ AIR (TRG) comments that whilst there is a paucity of regulation of cct procedures within the MRP and ANO, there is much sensible guidance within the Take-off, Circuit, Approach and Landing chapter of the Airmanship section of AP 3456 (Vol 5-2-1-2 pages 6-8). This states:

"To reduce congestion and the risk of collision, aircraft should enter the airfield circuit in a planned and systematic manner. To achieve this, a standard circuit procedure is taught."

Circuit joining procedures detailed in the AP aim to allow ac to join 'without causing any disturbance to other circuit traffic' but they are not totally prescriptive. In this case the standard joining procedures were not followed, but the plan to join "wide" downwind should still have been safe had it been flown sufficiently wide to remain clear of any potential cct traffic. The AP goes on to emphasise the importance of lookout during any join, but it is also made clear that the standard joins are designed to facilitate good lookout, which remains the primary means of avoiding collisions in the visual cct.

The execution of Tutor(B)'s non-standard plan did not provide enough separation to allow an effective lookout to be carried out. Equally, the solo student in Tutor(A) does not appear to have assimilated Tutor(B)'s intentions or his potential as a threat; indeed, he is likely to have been approaching from high and behind. Events conspired to create a false impression for Tutor(B) pilot of the position of the cct traffic, thus removing another potential means of avoiding this incident. The inability of the controllers and supervisors in the tower to see both ac removed another mitigation, as did the lack of a timely downwind call from Tutor(A) flight, and the lack of consistency over the use of IFF and TAS. In the sure knowledge that these safety measures are not infallible, emphasis on lookout at all stages, in order to discharge pilots' responsibilities for avoiding collisions, must be emphasised. The use of

standard joining procedures can only aid lookout but Airfield Operators are also free to be more directive about joining procedures in their station flying order books (and AIP entries) if they so wish.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

Tutor(B) crew had requested to join 'high and wide' downwind and was told by ATC of 2 ac in the cct: Tutor(A) and a helicopter departing. Had the pilot of Tutor(B) positioned the ac high and wide this would had allowed the crew to see other ac that were in the visual cct during their descent. However, the radar recording revealed Tutor(B) tracking just 0·5nm E of the aerodrome before fading O/H the normal Tutor cct. The Tutor(B) crew did not assimilate the cct state information as they reported seeing the helicopter but did not mention the other ac, Tutor(A), 'in' the cct. After calling 'downwind', the ADC passed inaccurate TI to Tutor(B) crew advising that there was *"one ahead",* Tutor(C) flight that had, shortly before, declared its intention to join for a straight-in approach. ADC was cognisant of Tutor(A) being in the cct but could not see it when Tutor(B) crew called *"downwind",* so he had moved Tutor(B) up the sequence order. Meanwhile Tutor(A) pilot had been unable to make his call downwind, owing to frequency congestion, and had not assimilated Tutor(B)'s presence or intentions from the RT exchanges. Military Members agreed that when Tutor(B) flight called for join, the ADC should have given it specific TI on the position of cct traffic to help build the pilot's SA. Tutor(B) crew was unaware of Tutor(A)'s position but was responsible for integrating safely into the cct. Members agreed that Tutor(B) crew had not discharged their responsibilities and their non-standard join placed Tutor(B) into conflict with Tutor(A) causing the Airprox.

Turning to risk, Tutor(A) pilot only saw Tutor(B) when late downwind, immediately prior to making his position report, as it was behind his ac in his 4 o'clock. Tutor(B) student saw Tutor(A) and alerted his instructor to its presence, in their 11 o'clock low. Tutor(B) instructor manoeuvred his ac and after visually acquiring Tutor(A), he turned sharply L to pass behind it before following it in the cct to land. The Board agreed that this sighting and subsequent robust avoiding action taken by Tutor(B) flight had been enough to prevent the ac colliding; however, the 2 Tutors had passed in such close proximity that safety had not been assured.

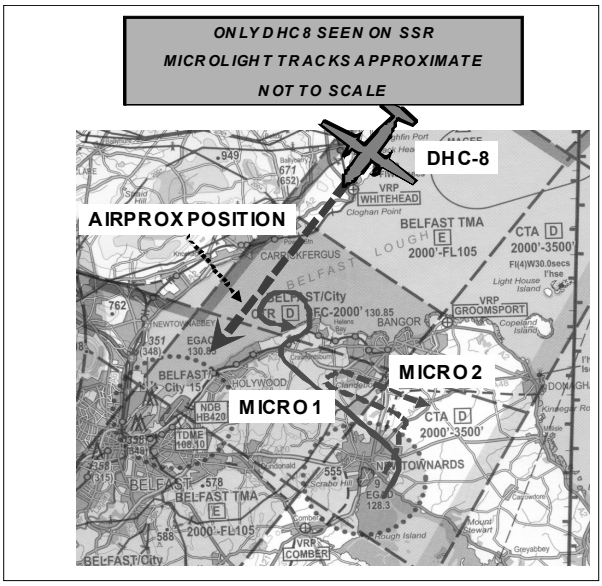
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: In the absence of specific TI, Tutor(B) crew conducted a non-standard join and did not integrate safely into the cct pattern.

Degree of Risk: B.

AIRPROX REPORT NO 2011053

Date/Time:	6 June 2011 1046Z	
Position:	5441N 00549W (Belfast City 5nm final RW22 - elev 15ft)	
Airspace:	Belfast City CTR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	DHC-8	A22 Microlight
Operator:	CAT	Civ Pte
Alt/FL:	1500ft	800ft
	(QNH 1006mb)	(QFE NK)
Weather:	NK CLBC	VMC CLBC
Visibility:	30km	20km
Reported Separation:		
	0ft V/0.5nm H	0ft V/1.5nm
Recorded Separation:		
	NR V/0.5nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE DHC-8 PILOT reports that while heading 220° at 160kt, descending through 1500ft alt under IFR and Radar Control, on the final approach to Belfast City Airport, an Airprox occurred against a small red coloured microlight that was believed to have infringed CAS. While establishing on to the ILS RW22 a series of confused RT transmissions were heard between 2 microlights and Belfast Radar; one microlight initially stated he was O/H TRN (Turnberry, Ayrshire, Scotland), and after checking this the radar controller told the first microlight to contact Scottish Information for a service.

The microlight queried this and it became clear very quickly that he had just departed Newtownards [6.5nm ESE Belfast City] and had routed generally N putting it in possible confliction with them. The controller realised this and told the microlight to leave CAS immediately and to turn E. This did not seem to be understood by the microlight pilot and confusion ensued. The crew was looking out for the traffic as his position appeared to be a possible threat. A small red high-winged ac was seen at an estimated range of ½-1nm in their 9 o'clock position flying towards them at the same level. The captain (PF) monitored the ac whilst continuing the approach because avoiding action was seen to be taken by the microlight and it was seen to pass behind them removing any risk of collision.

A decision was made to delay the setting of 'Flap 35' because the microlight would pass close behind them and would be subject to wake turbulence; 'Flap 35' was subsequently selected, the approach remained stable, and a safe landing followed.

THE A22 MICROLIGHT PILOT (Micro 1) reports that he filed a VFR Flight Plan on-line at Newtownards for 2xac (himself and another microlight Micro 2) routeing Newtownards - Fair Head – Turnberry -Rossall Field (Near Lancaster). It was agreed Micro 2 would depart first and would contact Belfast to request transit clearance.

Their ac had SSR and elementary Mode S and strobes fitted.

Once airborne the pilot in Micro 2 requested a transit clearance for the 2 microlights and requested Belfast to activate their flight plan that had been filed with Swanwick. Belfast City ATC requested their ultimate destination and Micro 2 pilot replied, 'Rossall Field, Lancashire'. ATC then requested clarification and they again replied 'Rossall Field, Lancashire then onward to Otherton airfield, Staffordshire'. ATC Belfast City then asked, "why are you requesting clearance through Belfast airspace if you are heading for Staffordshire" and they explained at length that both ac were routeing N to coast-out of Northern Ireland at Fair Head and route via Mull of Kintyre then Turnberry before turning S for initial landing site at Rossall Field.

Belfast ATC then attempted to route the other microlight across Belfast Loch via VRP-Whitehead, the microlight reported that he was unfamiliar with the area and they followed an RT exchange to identify various reporting points [VRPs] on the map.

Belfast City ATC was concerned he had incoming traffic and requested that they expedite their crossing of Belfast Loch but Micro 2 pilot replied that his max speed is 80kt and he was eventually routed via VRP-Whitehead to VRP-Larne.

At no time had ATC requested identification or the location of the second ac in the stream included in the initial transit clearance request (Micro 1). He (the second and the reported ac) was about 1nm behind Micro 2 at take-off and decided to slow down to 60kt and initiate a LH rectangular holding pattern at VRP-Groomsport [the boundary of CAS 9.5nm ENE of the Airport and 5nm SE of the CL for RW22] pending clarification of his transit clearance.

His ac was equipped with a standard GPS and a NATS Aware GPS and was at all times cognisant of his position and was visual with the inbound traffic over 1.5nm away – the visibility being excellent. Belfast City ATC requested the other microlight (Micro 2) to turn E but there was no reply so ATC again requested the [other] ac to turn E and Micro 2 pilot reported that both his GPS and compass indicated that he was already heading E.

It was at that point that he suspected that ATC were looking at him [Micro 1] on their radar but were addressing the other microlight [2] who had already routed across the zone to the N.

He, the reported pilot, then stated on the RT *"Micro 2 C/S…. South East of your zone I suspect it is this aircraft you can see on your screen and not Micro 1 C/S…."*.

ATC Belfast City responded with "Micro 1 C/S…. turn immediately East" which he did, although at the time of instruction he was already turning W in the aforementioned LH rectangular holding pattern.

Belfast City ATC then issued a unique squawk code for the transponder and asked why the reported pilot had not turned immediately E when requested – the reality was that the first 2 requests were given to the wrong ac, after ac verification ATC confusion was confirmed.

He felt that he fully had complied with ATC directions and can only reiterate that at all times he was cognisant of position and visual with the inbound ac but considered it expedient just to apologise to ATC on the RT rather than have a debate on the RT.

It was subsequently explained to ATC that the reported pilot was the second microlight (Micro 1) of the original transit clearance request and that the other ac (Micro 2) was designated for RT with Belfast City, but since no recognition of his ac or verification of his position was requested by ATC, he had not followed the leading Microlight (Micro 2) across the zone and had remained clear to the SE but ATC responded by stating that they would be filing an Airprox.

He then routed E – N – W to rejoin the original lead ac N of VRP-Larne, reporting going en-route when requested.

He assessed the risk as being none.

ATSI reports that the Airprox occurred at 1045:50, 4nm NE of Belfast City Airport and within the Belfast City Control Zone, Class D airspace between a DHC-8-Q400 (DHC-8) inbound IFR and an A22 Foxbat Microlight (Micro 1) that was one of two Microlight ac (Micro 1 & Micro 2) believed to have visited Newtownards Airfield as part of the airfield's 50th anniversary celebration 'Fly in' held between 3rd and 5th June 2011.

The microlight pilots planned to route from Newtownards to Fair Head, situated on the N coast of Northern Ireland, across the Irish Sea via the Mull of Kintyre and Turnberry, then S to Rossall Field, which lies to the S of Morecambe Bay. Belfast City ATSU provided details of the guidance given to pilots by Newtownards Airfield, which stated:

'**North** – route Larne towards Whitehead VRP to cross Belfast Lough to remain East of Groomsport VRP. Transit clearance may be given at 1500ft alt or below due to inbound ILS traffic for RW22 at Belfast City. Ensure RT contact is established with Belfast City Approach 130.850 before reaching Larne.'

'All aircraft are recommended to contact Belfast Approach 130.850, if there are several aircraft in close formation nominate one aircraft to do the RT with all the relevant details.'

Newtownards is situated 6.5nm ESE of Belfast City and a direct track to Fair Head would cross the RW22 final approach at a range of 5.25nm.

CAA ATSI had access to RTF recordings together with controller and pilot written reports. Radar recordings were available from the Belfast City 10cm radar and the NATS (BEL) 23cm radar. None of the radar sources initially showed any primary or SSR return for either microlight during the period of the Airprox. The Belfast City Radar recordings did not show any primary returns of the microlights due to an incorrect configuration of the recording equipment during installation.

As a result of a local investigation by the radar and display manufacturers, the radar recording showing the primary radar returns was retrieved in early October and became available to CAA ATSI. This report has been updated to reflect the radar analysis of the data available.

METAR EGAC 061020Z 25008KT 200V290 9999 FEW024 SCT037 12/05 Q1006=

Belfast City ATSU reported that the duty instructor at Newtownards spoke to one of the microlight pilots prior to their departure, stressing the requirement to contact Belfast City ATC, with two suggested routeing options:

via Groomsport (6.5nm north-northeast of Newtownards) to Whitehead or

via the Belfast City overhead.

At 1037:14, the inbound DHC-8 was transferred to Belfast City Radar and the pilot reported descending to FL100 on heading 205° with information 'Hotel'. The Belfast controller instructed the DHC-8 to descend to an alt of 6000ft on QNH 1006. The DHC-8 was turned onto a heading of 300° and advised to expect vectoring for ILS RW22, number 3 in traffic with no delay; it was then instructed to stop the turn on a heading of 290°.

The Micro 1 pilot's report indicated that, 'It is agreed that Micro 2 departs first and will operate the R/T with Belfast to request transit clearance'.

At 1039:01, Micro 2 called, *"Belfast Micro 2 C/S".* The Belfast controller asked Micro 2 to standby and gave the DHC-8 further descent to 4000ft. Micro 2 pilot was then asked to pass message and advised, *"Micro 2 C/S is a flight of two microlights erm we're coasting out at er Fairhery erm Fair Head request transit through your zone please";* the controller asked Micro 2 to report destination and the pilot replied, *"Destination is Turnberry er sorry we're coasting in at Turnberry our final destination is erm Marn Farm".* The controller asked Micro 2 to standby and transmitted to two other ac establishing on the ILS for RW22.

At 1039:01, the radar recording shows the inbound DHC-8, 22.9nm NE of Belfast City, passing FL083 in the descent and also shows two primary contacts, 2nm apart to the E and SE respectively of Newtownards airfield.

[Note: From the data available, ATSI beleived that Micro 2 was the lead ac and was the more N'ly contact].

At 1040:42 the controller asked Micro 2, *"Micro 2 C/S sorry just confirm you're coasting in at Turnberry"* and the Micro 2 pilot reported, *"Yeah we're coasting in at Turnberry final destination is Rossall Farm sorry and er we have erm a flightplan would you be able to activate that please".* The controller responded, *"Micro 2 C/S I'm wh – can you give me a precise location on your destination not fam familiar with that";* Micro 2 pilot asked the controller to standby.

At 1040:31, the controller instructed the DHC-8, *"DHC-8 C/S descend to altitude two thousand feet when established on the localiser descend on the glidepath";* this was acknowledged by the pilot. The radar recording shows the DHC-8, 19.5nm NE of the airfield, with the two primary contacts, 7.5nm E of the airfield tracking NW and 2nm apart.

At 1040:47, the Micro 2 pilot confirmed the final destination as Rossall Field a private field 15nm NE of Blackpool. The controller replied, *"Micro 2 C/S if your coasting in at Turnberry and heading to Blackpool you shouldn't really*

be speaking to me if you contact er freecall Scottish Information on one one niner decimal eight seven five or you can contact Prestwick Approach one two niner decimal four five"; the pilot replied, *"Thank you I'd just though we'd erm er we'd give you you a call er transitting your zone to Fair point".*

At 1040:59, radar recording shows Micro 2 fade from radar at a position 2nm E of Micro 1 which is observed to continue tracking NW.

At 1042:20 the controller asked Micro 2, *"er just confirm you are at Turnberry going to Blackpool and wish to transit the Belfast City Zone"* and the Micro 2 pilot responded, *"er sorry erm I've erm I'll say again I've departed Newtownards and we are coasting out at erm Fair Head and er and request a transit of your zone."*

At 1042:23, radar recording shows a primary contact (Micro 1) has entered the Belfast City CTR CAS at a position 2nm NNW of Newtownards and 5nm E of Belfast City.

The controller issued a zone transit clearance, *"(Micro 2)C/S cleared to transit not above two thousand feet VFR QNH one zero zero six and is that you about two miles north of er Newtownards".* Micro 2 pilot confirmed the position and the controller requested a readback of the clearance which the pilot gave as, *"not above er two thousand feet one zero zero six".* At 1043:07, the controller asked Micro 2 pilot if he was familiar with Bangor [on the S coastline of Belfast Lough]; the pilot confirmed *"Yes"* and the controller responded, "*Micro 2 C/S route to hold there is inbound traffic for RW two two remain well east of final approach"* and the pilot replied, *"Routeing Bangor er remain well east thank you Micro 2 C/S".*

At 1044:00, Micro 1 pilot called Belfast Radar and the controller replied, *"Last station calling standby".* The controller then transmitted to Micro 2, *"Micro 2 C/S I think I have you just east of the field by about three miles I need you to turn eastbound please your heading straight to the final approach"* and the pilot replied with his callsign. Shortly after the controller again transmitted to Micro 2, *"Micro 2 C/S I need you to turn immediately eastbound."* The Micro 2 pilot responded, *"er to the east Micro 2 C/S"*.

At 1044:10, the radar recording shows a primary contact, 4nm ENE of the airfield tracking WNW (Micro 1).

At 1044:30, the controller advised the DHC-8 pilot, *"and DH8 C/S traffic information are two microlights believed to be just east of final approach at three miles ????turning eastbound not above two thousand feet VFR";* this was acknowledged by the pilot.

At 1044:45, the radar recording shows the DHC-8 , 6.5nm from touchdown passing 2000ft, with Micro 1 in its half past eleven position at a range of 3.7nm crossing from L to R. The DHC-8 was then transferred to TWR.

MATS Part 1, Section 2, Page 1, states that for IFR and VFR flights within Class D controlled airspace:

Aircraft requirements: ATC clearance before entry. Comply with ATC instructions.

Minimum Service by ATC unit: Pass traffic information to IFR flights on VFR flights and give traffic avoidance advice if requested.

The DHC-8 pilot did not report the microlights in sight and did not request avoiding action and the controller transferred the ac to TWR before the conflict was resolved.

At 1044:50, the controller advised, *"Micro 2 C/S I need you to turn eastbound you're showing nor-believed to be showing northbound now"* but the pilot reported a compass and GPS heading of E. Three sec later the radar recording shows Micro 1, 3.3nm NE of the airfield, making a right turn onto N and Micro 2 reappears, 4.8nm ENE of the airfield tracking E, which correlates with the pilot's earlier call indicating a compass and GPS heading of E.

At 1045:16, Micro 1 transmitted, *"Belfast City Micro 1 C/S I think that's us you have ???? northbound".* The controller responded, *"Micro 1 C/S pass your message and er can you leave controlled airspace please eastbound".* The pilot replied, "*We've just left Newtownards and wish to coast down to Fair Head and request transit transit across your airspace please".* The controller transmitted, *"Micro 1 C/S you're believed to be heading towards the final approach can you turn eastbound immediately*". Radar recording shows Micro 1 tracking northeast 2nm S of the DHC-8 .

At 1045:30, radar recording shows Micro 1 turning left onto a NW track, towards the DHC-8 .

At 1045:50, radar recording shows the two ac passing abeam. The DHC-8 is on a 4nm final indicating an alt of 1300ft, with Micro 1 in the DHC-8's 9 o'clock position at a range of 0.5nm. As the DHC-8 passes abeam, Micro 1 makes a L turn.

The report from the DHC-8 pilot indicated that the Micro 1 seemed to be taking avoiding action, passing behind. The DHC-8 pilot decided to delay the 35° flap setting in order to reduce the wake turbulence.

At 1046:25, the controller transmitted, *"Micro 1 C/S route eastbound immediately QNH one zero zero six"* and the Micro 1 pilot replied, *"Eastbound one zero zero six thank you".* The controller did not specify a direction of turn and radar recording shows Micro 1 turn L onto an E'ly track. (Micro 2 was shown 3nm N of Newtownards continuing to track E.)

In the subsequent transmissions the pilot of Micro 1 confirmed that the two ac had departed Newtownards together and thought that Micro 2 was obtaining the clearance for both ac. When the controller asked why, when Micro 2 was asked to leave the zone Ebound, Micro 1 had continued Nbound, Micro 1 pilot apologised and said that he had become disorientated.

At 1049:59, the Belfast City radar recording shows Micro 1, 8.25nm ENE of Belfast City airport tracking E.

At 1051:39, the NATS (BEL) radar source shows a 7000 squawk appear, on a bearing 082° from Belfast at a range of 9.6nm. This correlates with the track and bearing of the primary return shown on the Belast City radar; Mode S identified the ac callsign as that of Micro 1.

At 1052:08, the NATS (BEL) radar recording shows the SSR code of Micro 1 change to 4250 (a code allocated by Belfast City). The ac is observed to cross the coast and then turn to track N over the Irish Sea. The SSR code did not appear on the Belfast City radar recording.

The initial call from the microlight formation was not in the approved format and caused confusion and misunderstanding; CAP413, Chapter 3, Page 8, states:

'When instructed by the ATS Unit to 'Pass Your Message', the reply should contain the following information, whenever possible in the order specified:

Aircraft Callsign / Type

Departure Point and Destination

Present Position

Level

Additional details / Intention (e.g. Flight Rules, Next route point)

Micro 2 pilot called coasting out at Fair Head requesting transit through the zone. The pilot then confirmed destination as Turnberry and apologised stating that they were coasting in at Turnberry with final destination as Marn Farm.

After the initial misunderstanding, the controller issued a clearance to transit the zone and the pilot of Micro 2 confirmed his position was 2nm N of Newtownards Airfield. CAA ATSI considered that the controller, mistakenly believed that the single primary contact showing at the time the clearance was issued, represented the flight of two microlights operating in formation. The UK AIP page (4 Jun 09) ENR 1-1-4-11, states:

Civilian Formation Flights - ATC Procedures General

ATC will consider formations to be a single unit for separation purposes provided that:

The formation elements are contained within 1nm laterally and longitudinally, and at the same level. Within Class F and G Airspace and subject to ATC approval, these limits may be increased to 3 nm and/or up to 1000ft vertically.

The formation, although operating outside the parameters above, has NSF approval.

The formation leader is responsible for ensuring safe separation between ac comprising the formation.

In making initial contact with the ATC unit, the formation leader shall clearly state the number of ac in the formation.

Where a flight plan is required, the identification of the formation leader and the number of ac in the formation must be shown.

All ATC instructions and clearances will be addressed to the leader.

The contact displayed on radar was in fact Micro 1 and ATSI estimated that Micro 2 was 2nm further to the E (not showing on radar). Micro 1 pilot's written report indicated that the ac was equipped with SSR; however, neither ac displayed an SSR code.

The ATC clearance to transit controlled airspace did not specify a routeing but the controller subsequently instructed Micro 2 to hold at Bangor with information about the ILS traffic. Micro 2 acknowledged this instruction and reported *'routeing Bangor to remain well east'.* The controller had an expectation that both ac would route to hold at Bangor. MATS Part1, Section 3, Chapter 4, Page 1, Paragraph 3.3 states:

'Routeing instructions may be issued which will reduce or eliminate points of conflict with other flights, such as final approach tracks and circuit areas, with a consequent reduction in the workload associated with passing extensive traffic information. VRPs may be established to assist in the definition of frequently utilised routes and the avoidance of instrument approach and departure tracks. Where controllers require VFR ac to hold at a specific point pending further clearance, this is to be explicitly stated to the pilot.'

The Micro 1 pilot's report indicated that the two Microlights were not in close formation, but that Micro 1 pilot had expected Micro 2 to obtain the transit clearance on behalf of both ac. The pilot's report states: 'It was subsequently explained to ATC that Micro 1 was the second microlight ac of the original transit clearance and that Micro 2 was designated for R/T with Belfast City, but with no recognition or verfication of position sought from ATC, Micro 1 did not follow Micro 2 across the zone and had remained in the southeast area'.

The controller passed TI to the DHC-8 pilot, in the belief that the two microlights were 3nm E of the approach and turning onto an E'ly track. At that point the DHC-8 was transferred to the TWR. However the primary contact was not following the controller's instruction to turn E and continued N. CAA ATSI considered that it would have been appropriate for the controller to have retained the DHC-8 on frequency until the conflict was resolved and also in the event that avoiding action was considered necessary or was requested by the DHC-8 pilot.

Micro 1 attempted to contact ATC but the controller was not aware of the significance of the callsign, instructing the ac to standby. It was only when Micro 1 pilot identified himself as the conflicting ac and Micro 2 reappeared on the radar tracking E, that the controller recognised the situation and instructed Micro 1 to turn immediately onto E.

At 1051:39, Micro 1 was identified using Mode S SSR at a position that correlated with the last recorded position of the primary radar return of the aircraft involved in the Airprox (Micro 1). The SSR label appeared on the NATS (BEL) radar after the incident.

The microlight pilots did not follow the guidance specified in the UK AIP, or provided by Newtownards, for formation flights. Micro 2 pilot's initial call indicated a 'flight of two microlights', however, Micro 1 pilot's written report indicated that he had not followed Micro 2 in formation. The two ac were not operating in formation and Micro 1 entered the zone separately, without a clearance, and into confliction with the DHC-8 on the ILS.

The following were considered to be contributory factors:

The microlight pilots did not follow the routeing guidance provided by Newtownards and ATC did not specify a routeing in the transit clearance. However, Micro 2 was asked to hold at Bangor and the controller had an expectation that both ac would comply.

The pilot of Micro 2 did not update ATC that he was no longer in formation with Micro 1.

It is considered that, the controller mistakenly believed that the single primary contact seen on radar 2nm N of Newtownards was Micro 2, and the formation of two microlights. This proved to be incorrect.

It is considered that, the controller's early transfer of the DHC-8 to the TWR frequency, before the conflict had been resolved, precluded any form of avoiding action being given by radar controller or requested by the DHC-8 pilot. (The pilot could have requested such action from the TWR.)

The non-standard format of the RT phraseology used by the microlight pilots, delayed the issue of a clearance and led to a misunderstanding about their current position, i.e. coasting out on the northern coast of Ireland, or coasting in at the Scottish coast, when in fact they had just departed Newtownards.

Recommendations:

CAA ATSI recommends that the Belfast City ATSU review procedures and phraseology for the transit of formation VFR ac, with a view to obtaining the full details of the ac concerned, with specific mention of the routeing and term 'formation' as part of the clearance provided.

CAA ATSI recommends that the ATSU include this scenario in their unusual emergency (TRUCE) training programme, with elements covering, ac not identified, not displayed on radar, lost ac, tactical and avoiding action considerations.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar photographs and recordings, reports from the air traffic controller involved and reports from the appropriate ATC authority.

Members were informed that the terminology Microlight (Micro) 1 and Micro 2 did not reflect their positions in the flight; it was clear that Micro 2 was, in effect, the flight leader as he got airborne first and it was always intended that he should conduct the RT on behalf of both ac. There was apparently no intention that the ac should fly as a close formation as such, rather that Micro 1 would follow Micro 2. That said, Micro 2's description of the aircraft as a "flight of 2" may have lead the controller to believe that the ac were in a much closer trail than was the case and his misunderstanding would have been more difficult to resolve due to the intermittent radar returns from the microlights in the absence of request to squawk. Furthermore, the Microlights did not remain within 1nm of each other (as required by the UK AIP – see Part A), and therefore did not meet the requirements of a formation (this was exacerbated by Micro 1 slowing down to 60kt).

The Board was also informed by the Secretariat that both ac could be described as being red (as per the DHC-8 pilot's report).

Although in some ways a straightforward encounter with little risk attached, the Board found it difficult to analyse with any degree of certainty, due to apparently conflicting and incomplete information. The radar photograph timed at 1045:42 (circulated to Members) showed clearly that one of the two Microlights entered the CTR and flew to point just off the coast, ½nm E of the final approach to RW22, just as the DHC-8 on the ILS was passing; that being the case Members agreed that there was no risk of collision.

It was much less clear which Microlight was involved and whether or not that specific ac had been cleared to enter the CTR.

Although a confirmatory report from Newtownards was not available, the Board accepted that Micro 2 got airborne first and its pilot had intended to inform Belfast of the position of both ac, their intentions and request a clearance to fly through the CTR. It was clear (from the transcript) that the flight had intended to transit the CTR despite the

advisory routeing (outside the CTR) given by the 'fly-in' organisers. Members agreed, however, that despite any other factors such as 'shortest sea transit' it is wise not to fly close to the boundaries of CAS or through the final approach track of busy airfields as this can (as this case demonstrated) present controllers with difficult and challenging scenarios.

When conducting unusual or unfamiliar flights it is essential that pilots inform ATC clearly and unambiguously of their ac identity, position and intentions - 'who are you, where are you and what you want to do' otherwise the controller will not be aware of this essential information, will not therefore be in a position to assist/clear you and might formulate an incorrect picture. In this case, although Micro 2 clearly stated that they were a "flight of two" and requested "transit through your zone please" the other essential information i.e. position and intentions was missing, so the controller did not have the 'big picture' and became (unnecessarily) preoccupied with determining the missing bits of information by a prolonged series of (incomplete) questions and answers in a very busy period. Despite the call of "flight of two" the clearance passed by the controller (at 1042:50 on the transcript) appeared to be for one ac only (Micro 2 CS) and did not specify a routeing. When it became apparent to the Controller that this (open ended) clearance might lead to the (unidentified) Micro 2 conflicting with the inbound traffic, he changed it at 1043:20 to "route to Bangor" which is on the E edge of the CTR, rather than Groomsport VRP which is in a similar position but outside the CTR. This was in effect an amendment to the original clearance and although not given strictly in accordance with MATS Pt 1 Sect 1 Chapter 4 Para 7, its intention was understood and read back by Micro 2 pilot and it appeared to Members that he complied with it fully. In mitigation, the controller's primary responsibility at the time was to sequence the inbound traffic; he discharged this responsibility and Members considered that he had been too busy to give the Microlight flight as much attention as he would have liked. Further, it was suggested that the Controller had tried to make the incomplete information he had fit his mistaken mental air picture.

While Micro 2 held to the S of Bangor, Micro 1 had apparently misunderstood the original clearance as being for the both members of the flight, had either not heard or assimilated the amendment to the clearance, and proceeded to enter the CTR (radar photograph at 1042:23) and flown on the intended track towards the coast and the final approach; however, on seeing the inbound ac he had orbited just to the E of the approach before departing to the E as instructed by ATC.

Although observing the (formation) flight planning had been less than ideal, Members considered that this incident had resulted primarily from poor RT in a busy situation, mainly by Micro (2) pilot. Had he been clear about the composition of the flight, their location and intentions Members thought that the Controller would have been much better placed to either integrate them with his traffic plan or suggest a precise routeing to keep them clear of the inbounds.

It was noted that the Microlights had correctly filed a flight plan but Controller Members thought it unlikely that the controller involved would have seen it and, in the absence of a telephone call to ATC to discuss the Microlights' intentions, he would not have had any pre-warning of them.

Pilot Members agreed that the DHC-8 pilot had received good TI leading to him seeing the Microlight. He had displayed good awareness of the situation and, although prepared to do so, had decided that a go-around was not required as the Microlight, although in an undesirable position, was not in conflict and even if it did not change track, would pass well behind.

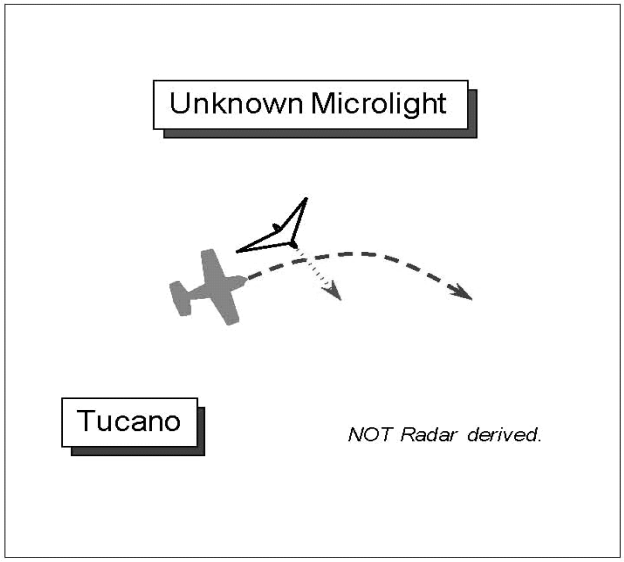
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Microlight (1) pilot did not follow the amended clearance and flew into conflict with the DHC-8 on the final approach.

Degree of Risk: C.

AIRPROX REPORT NO 2011054

Date/Time:	6 Jun 2011 1207Z	
Position:	5406N 00105W (7.5nm E of Linton-on-Ouse)	
Airspace:	Vale of York AIAA (Class: G)	
	Reporting Ac	*Reported Ac*
Type:	Tucano T Mk1	Microlight
Operator:	HQ Air (Trg)	Civ Club
Alt/FL:	2500ft	NR
	RPS (1002mb)	NR
Weather:	VMC CLBC	VMC CLOC
Visibility:	40km	15nm
Reported Separation:		
	200ft V/nil H	Not seen
Recorded Separation:		
	Not recorded	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE SOLO STUDENT TUCANO PILOT's AUTHORISING OFFICER reports his student was flying a solo VFR NAVEX and was in transit to his low-level entry point clear beneath SCT cloud at 3500ft. He was not in receipt of an ATS, having terminated the BS with Linton and was now listening out on the LFS frequency of 278·00MHz. The LFS conspicuity squawk of A7001 was selected with Mode C. TCAS I is fitted, Mode S is not.

Flying level at 2500ft BARNSLEY RPS (1002mb), some 6nm E of Linton-on-Ouse heading 070° at 240kt, whilst conducting his pre-low-level checks he flew into close proximity with up to 6 micro-light (ML) ac. Initial avoiding action against these ac, brought him into further conflict with an additional ac – a white high-wing ML with an 'open structure'. He gained visual contact with this ML at a late stage and it was first seen ½nm away and 50ft above his aeroplane, flying straight and level, crossing from L-R. To avoid the single ML he executed a rapid descent and it passed 200ft directly above his aeroplane with a 'high' Risk of collision.

Before the Airprox occurred – up until about 30secs before the initial avoiding action was taken - he had been under a BS, but no information about these contacts had been passed to him under this service. No TCAS TA's were indicated. No NOTAMs were in force highlighting multiple ac flying in close proximity. The Tucano is coloured black with yellow stripes; the 3 strobes, nav lights and 2 landing lights were all on.

THE LATCC (MIL) RADAR ANALYSIS CELL (RAC) reports that a total of 12 ML sites were contacted in the vicinity of Linton-on-Ouse during tracing action. Each ML site replied promptly, all in a helpful and cooperative manner before the location of the specific ML club was ascertained.

THE MICROLIGHT CLUB reports that 7 flex-wing ML ac departed from Husthwaite ML Site over a 20min period bound for Cromer in VMC. None of the 7 pilots airborne saw the Tucano flown by the solo student pilot or any traffic in the area of the reported Airprox, 6nm E of Linton-on-Ouse.

THE LINTON-ON-OUSE ATC SUPERVISOR (SUP) reports that the Tucano pilot departed Linton-on-Ouse visually under a BS and went 'en-route' once clear of the MATZ. ATC had been aware of a number of primary contacts that had crossed the approach lane to RW21RHC on a SE track. The DEPARTURES (DEPS) controller had not called these contacts to the Tucano pilot as they were not on a 'threatening' heading when he called going enroute.

Subsequently, the Tucano pilot free-called APPROACH to request a TS and stated that a close quarters encounter with a group of ML ac had occurred. The pilot requested to speak with the Duty Aircrew Officer on Stud 10 to report

the incident and then decided to carry on with the sortie and switched to his en-route frequency. The pilot did not indicate at the time that an Airprox would be filed but in a subsequent telephone call later confirmed that he would.

The Linton-on-Ouse ATC Unit Safety Management Officer (USMO) was informed, but the incident had occurred whilst the Tucano was operating autonomously.

SATCO LINTON-ON-OUSE comments that a glider vs Tucano mid-air collision is deemed their No1 Risk at Linton; everyone has been working towards mitigating this risk to as low as reasonably practicable. Every effort is being made through contact with the various gliding and light ac groups in this area. The controller correctly only gave information to the Tucano pilot that was relevant until the time of his departure from the frequency. The controller could not be expected to anticipate any changes of course by both the Tucano pilot and the MLs.

HQ 1GP BM SM reports that this Airprox occurred between a Tucano operating VFR on the low-level common frequency and one of a group of flex-wing MLs operating VFR.

Prior to the Airprox, the Tucano had been in receipt of a BS from Linton DEPS whilst departing to the E, VFR, from Linton's RW21RHC. At 1207:16, the Tucano pilot reported going en-route, which was acknowledged at 1207:19. The SUP states that the Tucano went en-route at the edge of the MATZ, which accords with the radar recording that shows the Tucano exactly 5nm E of Linton-on-Ouse.

Throughout the Airprox sequence, the MLs are not shown on the radar recording. However, the SUP reports that 'ATC were already aware of a number of primary contacts that had crossed the approach lane to RW21RHC on a south-easterly track'. Moreover, the ATSU's investigation found that APP had 'previously called the primary only contacts to another ac who they would affect before they went en-route but due to the heading [of the Tucano] they were not a risk at the time they went en-route. Subsequent to departure from the freq [the Tucano] turned towards the contacts.' DEPS has subsequently stated that he believed that as the Tucano pilot declared his intention to go en-route, he was trying to locate a phone number for Humberside APP in order to handover another flight being provided with a TS. APP has also stated subsequently that after the Tucano went en-route, he questioned DEPS as to whether he had called the primary radar contacts, to which DEPS replied that he believed that they were not a factor.

At 1207:51, the Tucano pilot called APP, which went un-answered. At this point the Tucano is shown 7·5nm E of Linton-on-Ouse and has started a slow turn to the R. At 1208:08 the Tucano student pilot called again about 8.5nm E, reporting that "*they've come across at least half a dozen paragliders on the 0-9-0, range 9 miles, level about….2 thousand feet*." APP replied that they had "*multiple primary contacts there*." At this point, the Tucano has manoeuvred approximately ½nm S of the track that it was following earlier at 1207:51.

The student's authorising officer reports that his student's 'initial avoiding action against visible ac brought him into further conflict with an additional ac. On gaining visual contact with this subsequent ac at a late stage, avoiding action was taken.'

It is this subsequent ac that is the subject of the Airprox report, with the student pilot reporting his first sighting at a range of 0·5nm and 50ft vertical separation. Significantly, none of the ML pilots report seeing the Tucano.

Although not shown on the radar recording, it is likely that the CPA occurred shortly before 1207:51, when the Tucano first called APP. Given the proximity of the CPA to the point where the Tucano switched to the LFS frequency, the fact that DEPS did not pass a warning about the MLs to the Tucano requires closer examination.

The radar replay appears to show that the Tucano maintained its track after leaving DEPS' freq at 1207:16 until 1207:51, the approximate time of the CPA. Further investigation with the ATSU has found that the controllers' perception that the Tucano had 'turned towards the contacts' came about after the initial report was filed. Whilst this turn is not apparent on the radar replay, it may have been apparent on the unit's Watchman SRE display, or it may have been perceived as a result of the representation of the primary only contacts relative to the Tucano. Furthermore, how the primary only contacts were displayed to the controller on the Watchman SRE display and whether they were intermittent or continuous [which is not reflected by the LATCC (Mil) recording] will have had a bearing on DEPS decision making process. Moreover, it is clear from DEPS response to APP about them considering that the primary contacts were not a factor, that DEPS was aware of the primary contacts. It would also be reasonable to suggest that DEPS' attention was distracted while 'heads-in' looking for Humberside's

phone number for what was a higher priority task: provision of a surveillance based ATS to the other ac. Notwithstanding the proximity of the CPA to the point where the Tucano switched en-route, without further evidence it would be irresponsible to create a hindsight-biased argument suggesting that it might have been appropriate for DEPS to pass TI to the Tucano.

Whether in receipt of a BS or having switched en-route, the Tucano pilot's responsibilities to 'see and avoid' other ac whilst operating VFR remained unchanged. Despite the relatively small size and low speed of the MLs, combined with the solo student Tucano pilot's workload as he conducted pre-low level checks, he maintained an effective scan allowing him to visually acquire the MLs and to take appropriate action to remain clear. Furthermore, the student pilot maintained his visual scan, which enabled him to sight the subject ML, albeit late and take further avoiding action.

HQ AIR (TRG) comments that the student pilot took prompt and positive action on sighting the MLs, which can be difficult to see at the best of times. It is not clear that the adoption of a BS would have resulted in TI as the controller did not consider the primary-only contacts to be a factor. The risk of a mid-air collision is a constant hazard in any flying operation, particularly in Class G airspace with ac that are not transponding. RAF Linton rightly consider the risk of collision with a glider, or indeed a ML, to be high and have taken all reasonable measures to reduce the risk. Ultimately, a sound lookout provides the last but also the main line of defence. It is disappointing that no report was generated by the ML pilot involved, who must certainly have been aware of this incident and so is possibly not any of those spoken to by the investigator.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the ATC Unit involved and reports from the appropriate ATC and operating authorities.

It was evident from the SUP's report that Linton-on-Ouse ATC was aware of the presence of a number of contacts displayed on their ASR transiting through the approach to RW21 and to the E of the MATZ. These contacts might well have been the MLs seen by the student Tucano pilot and it was unfortunate that none of the ML pilot's had called to request an ATS or advise of their transit. The Board was most surprised that none of the pilots from the seven MLs saw the Tucano, and the absence of a report from the subject ML pilot had led to an incomplete account of this Airprox. Whilst the ML pilots were flying quite legitimately in Class G airspace, if they were able to communicate on VHF RT, a call to Linton ZONE would have been sound airmanship and might well have prompted a useful warning to the Tucano pilot that would have assisted his SA.

It was not surprising that the small MLs were not shown at all on the available LATCC (Mil) radar recordings and the HQ 1GP report had emphasised that it was not possible to determine what was actually displayed to the DEPS controller at the time as, in general, military terminal ATSUs do not currently have the facility to record their radar data. The HQ 1GP report also suggests that without further evidence it would be irresponsible to create a hindsight-biased argument. However, a pilot Member disagreed with this view and advocated strongly that the Airprox process was based entirely on hindsight and that there were lessons to be learned for the benefit of the aviation community as a whole. Here, it was reported that DEPS had not considered it appropriate to pass a general warning to the Tucano pilot under the BS provided before the pilot switched 'en-route' at the MATZ boundary, but it was only moments later that the pilot encountered the group of MLs. Whereas DEPS might well have been engaged on other tasks, there was a fine balance to be struck over service priorities. It might be that passing a warning to the Tucano pilot could have been more appropriate at that stage and it was evident that APP had felt sufficiently concerned about it to query this with his colleague. Whilst there was no compunction upon the controller to pass TI under a BS, controller Members agreed that if another contact had been plainly displayed to the controller in such a position as to pose a hazard to traffic under service then 'best practice' would be to warn the pilot. This was the MAA's view and it seemed that this Airprox was a good example of where just such a warning would have provided a helpful 'heads-up' to the student pilot.

Even without the benefit of this warning from ATC, the Tucano pilot's lookout scan had later detected the group of MLs, enabling him to steer clear before he encountered the reported ML. However, his authorizing officer's account states that he had seen the subject ML at a late stage ½nm away and 50ft above his aeroplane. Nevertheless, pilot Members noted the Tucano pilot had seen it in sufficient time to assess the situation and enter a rapid descent, passing 200ft clear below it, and thereby resolve the conflict. Therefore, the Board agreed that

this Airprox had resulted from a conflict in Class G airspace resolved by the Tucano pilot. Moreover, the Tucano pilot's robust avoiding action had, in the Board's view, effectively removed any Risk of a collision.

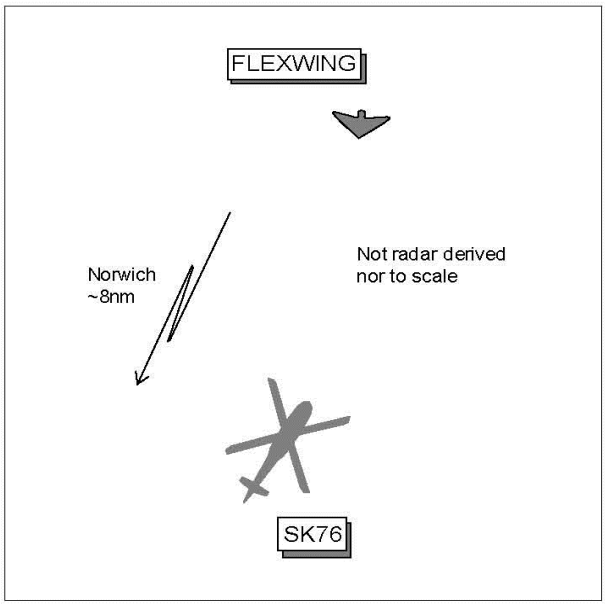
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Conflict in Class G airspace resolved by the Tucano pilot.

Degree of Risk: C.

AIRPROX REPORT NO 2011055

Date/Time:	10 Jun 2011 1453Z	
Position:	5248N 00121E (7·5nm NNE Norwich - elev 117ft)	
Airspace:	LFIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	SK76	Untraced Flexwing M/Light
Operator:	CAT	NK
Alt/FL:	2000ft (RPS 1010mb)	(NK)
Weather:	VMC CLBC	NK
Visibility:	>10km	NK
Reported Separation:	100ft V/200m H	
Recorded Separation:	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE SK76 PILOT reports outbound from Norwich IFR to an offshore platform and in receipt of a TS from Norwich Radar on 119·35MHz, squawking 0245 with Modes S and C; TCAS was not fitted. The visibility was >10km flying 1000ft below cloud in VMC and the helicopter was coloured red, white and blue with HISL, nav and anti-collision lights all switched on. About 3nm W of Bacton heading 036° at 2000ft Yarmouth RPS 1010mb and 140kt they were alerted to a, "contact 12 o'clock 1nm no height information". The traffic was sighted about 1nm ahead at the same level on a converging track from the N. They took avoiding action by executing a hard R turn downward. The traffic, a silver/grey coloured Flexwing M/Light passed about 100ft above and 200m clear to their L before passing about 0·5nm behind without taking any avoiding action and he assessed the risk as high.

THE SK76 COMPANY FLIGHT SAFETY OFFICER comments that, whilst not relevant to this Airprox (M/Light not fitted with a transponder) the Board may wish to be aware that with the completion in May of the EASA STC for the fitment of TCAS II to their company SK92A fleet, work is starting on a similar STC for the SK76 fleet.

RAC MIL reports that despite extensive tracing action the identity of the M/Light remains unknown. Seven Flexwing M/Lights landed at Cromer Airfield between 1354 – 1427Z and no other M/Lights landed after that time.

THE NORWICH RADAR CONTROLLER reports controlling 4 ac providing DS, TS and BS. The SK76 carried out a standard RW27 departure onto an outbound track of 035° and after being transferred to his frequency the flight was identified, placed on a TS and instructed to adjust to altitude 2000ft Yarmouth RPS 1010mb. Having noticed a pop-up intermittent primary only contact close the SK76's intended track TI was passed stating it was in its 12 o'clock range 1nm crossing L to R no height information. The pilot stated that he was looking and later called visual

and that the ac was heading SW. He requested the height of the unknown traffic and was told it was close to the helicopter's altitude. No discernable avoiding action by the pilot of the SK76 was noticed on radar and a short time later the pilot stated that he wished to file an Airprox. The other ac was described as a Flexwing M/Light and it was observed for some time after the incident, appearing to disappear from radar O/H Cromer/Northrepps airfield.

ATSI reports that the Airprox occurred at 1453:20, within Class G airspace and 7·5nm to the NNE of Norwich Airport.

The Airprox was reported by the pilot of an SK76C operating IFR, en-route from Norwich Airport to the 'Loggs'-Offshore Platform, in receipt of a TS.

The other ac was reported as a Flexwing M/Light, which was observed by Norwich radar until the ac faded from radar in the vicinity of Northrepps Aerodrome, which is situated 13nm to the N of Norwich Airport.

The Norwich controller was operating as the Approach Radar Controller, with 4 ac on frequency. The workload was considered as medium and all equipment was reported as serviceable.

CAA ATSI had access to RT and NATS radar recordings, together with written reports from the Norwich Radar controller and the SK76 pilot. The Flexwing M/Light was untraced and did not show on the radar recording.

METAR EGSH 101450Z 19009KT 140V240 9999 FEW028 15/05 Q1013 NOSIG=

The SK76 helicopter departed from Norwich at 1448:00. At 1450:32, the SK76 flight contacted Norwich Radar and reported passing 1500ft on departure. The controller replied*, "(SK76 c/s) good afternoon identified Traffic Service climb to altitude two thousand feet on the Yarmouth one zero one zero."* This was acknowledged corrrectly by the SK76 pilot.

At 1453:02, the radar controller advised, *"(SK76 c/s) intermittent contact at twelve o'clock one mile left right slow moving no height."* The radar recording shows the SK76, 7·2nm NNE of Norwich Airport indicating FL021. The M/Light is not shown on the radar recording. The SK76 pilot replied, *"....looking"* and, *"(SK76 c/s) visual one microlight."* The Radar controller then asked, *"Roger thanks is he below you."* The pilot reported, *"er he's just about level (S76 c/s) and heading southwest."*

At 1453:26, radar recording shows the SK76, indicating FL020 and then at 1453:46, shows the SK76 make a R turn of about 5°.

Shortly afterwards the SK76 pilot reported the incident as an Airmiss [Airprox] and described the other aircraft as a Flexwing M/Light.

At 1455:26, the SK76 flight was transferred to Anglia Radar on 125·275MHz.

The SK76 flight was in receipt of a TS. The Radar controller observed pop up traffic, close to the track of the SK76 and passed TI. The Manual of Air Traffic Services (MATS) Part 1, Section 1, Chapter 11, Page 5, paragraph 4.1.1 and 4.5.1, states:

'A Traffic Service is a surveillance based ATS, where in addition to the provisions of a Basic Service, the controller provides specific surveillance derived traffic information to assist the pilot in avoiding other traffic. Controllers may provide headings and/or levels for the purposes of positioning and/or sequencing; however, the controller is not required to achieve deconfliction minima, and the avoidance of other traffic is ultimately the pilot's responsibility.

The controller shall pass traffic information on relevant traffic, and shall update the traffic information if it continues to constitute a definite hazard, or if requested by the pilot. However, high controller workload and RTF loading may reduce the ability of the controller to pass traffic information, and the timeliness of such information.'

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the SK76 pilot, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC authorities.

Members were disappointed that the Flexwing M/Light could not be traced which left them with only the reporting pilot's viewpoint on the incident. Since the Airprox occurred in Class G airspace, there was equal onus on both pilots to maintain separation from other ac through see and avoid. The SK76 crew had supplemented their lookout with a TS from Norwich ATSU and the controller had done well in quickly passing TI when the pop-up contact from the M/Light appeared on radar. This alerted the SK76 crew to the M/Light's presence and enabled them to see the conflicting traffic almost immediately. It is not known if the M/Light pilot saw the helicopter, although the SK76 crew reported that the M/Light was not seen to take any avoiding action as they passed; however, the SK76 crew took prompt and robust avoiding action which quickly resolved the conflict. On the limited information available, the Board elected to classify this incident as a conflict in Class G airspace where the SK76 crew's actions had effectively removed any risk of collision.

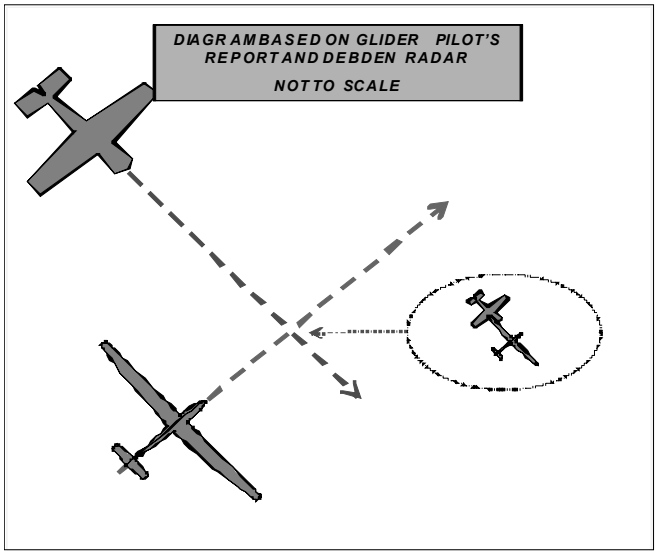
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict with an untraced M/Light in Class G airspace.

Degree of Risk: C.

AIRPROX REPORT NO 2011056

Date/Time:	11 June 2011 1258Z (Saturday)	
Position:	5215N 00057W	(7nm SW Sywell)
Airspace:	London FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Discus Glider	T6 Harvard
Operator:	Civ Club	Civ Trg
Alt/FL:	4300ft	NK
	(QNH 1007mb)	(QNH)
Weather:	VMC CLBC	VMC CLBC
Visibility:	20km	>10km
Reported Separation:		
	20ft V/0m H	Not Seen
Recorded Separation:		
	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE DISCUS 15M GLIDER PILOT reports soaring at 70kt in a white single-seat glider with orange hi-visibility flashes on the wings and fin. He was 7nm SW of Sywell and listening out on a gliding common frequency when he had a close encounter at 4300ft (QNH) with a single-engine GA ac, believed to be low wing or mid-wing configuration, mostly white with some blue and possibly a yellow flash [actually silver with a yellow band]; the registration was not seen. He was not equipped with SSR or TCAS; FLARM was fitted and serviceable but did not indicate any contacts.

While heading 050°, in the cruise between thermals, the other ac appeared from behind and below his L wing tip and passed overhead with no more than 20ft clearance. He was aware only of a very sudden movement in his peripheral vision, a very rapid expansion of the size of the ac and a loud engine noise with Doppler Effect; from first sighting to the ac passing overhead was 1sec or less. He instinctively pushed the stick forward but the other ac had already passed overhead before his glider responded. He was unable to see the direction taken by the ac after the Airprox as he was a little disoriented. After a few minutes consideration he decided to continue with his planned flight which was a cross-country task from Leighton Buzzard/Moreton-in-Marsh/Corby South/Grafham Water/Newport Pagnell/Dunstable.

He assessed the risk as being high and reported the incident to the CFI on landing.

There was a NOTAM in force for aerobatics at Sywell but he was well outside the promulgated area.

THE T6 HARVARD 4 PILOT reports that he submitted a report in response to an Airprox filed against him. He was flying local training flights (one of eight that day) from Sywell, in receipt of a BS from them, in a silver ac with a yellow band but with SSR switched off and no lights fitted; at the time he was in the vicinity of the reported position.

On the day of the incident he saw numerous gliders but none that he considered close enough to generate an Airprox; he suspects, however, that the encounter might have been with one of these. There was one encounter with a white glider, possibly with red markings, which was closer than the rest, however, he had the ac continuously in sight as he crossed in front of it about ½nm away and he did not consider there was a risk of collision.

UKAB Note (1): There are several primary only contacts in the area of the incident; at 1258:44 two primary only contacts, almost certainly the Harvard and the glider, (from radar tracking and Datalogger information) can be seen 0.3nm apart in the reported position; since the glider disappeared from radar as the Harvard continued towards its last seen position the actual CPA cannot be measured. It is assessed that the CPA was most likely on the radar sweep (8 sec) after the glider disappeared from radar.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac and radar recordings.

The Board agreed that this was a straightforward but serious incident. The Gliding Member noted that the glider pilot was aware of the increased activity at Sywell and sensibly avoided the immediate area; due to the nature of the flight however, the Harvard was slightly further away from the field and outside the NOTAMed area. Members accepted that due to the number of flights he flew on that day, the Harvard pilot would not have been able to recall precise details of each flight, critically the ac alt at the incident time [the glider was at 4154ft datalogger]. Although the radar picture was open to interpretation, bearing in mind the vivid description, the diagram and the Datalogger information provided by the glider pilot, Members were satisfied that the geometry of the incident was as portrayed in the diagram above. However, with no alt information regarding the Harvard, Members could not verify the glider pilot's estimate of 20ft. Further, again based solely on the glider pilot's report, Members agreed that the vertical separation had been small and his sighting had been too late for his avoidance to have been effective. Although there was no radar evidence to substantiate the theory, Members though that the ac might have been closing on a line of constant bearing or that the Harvard might have been closing from the 8 or 9 o'clock and its head-on aspect would make it hard for the glider pilot to see.

Members also suggested that the glider might have been slightly below the Harvard and therefore obscured to the pilot by its large nose.

Whatever the reason, the ac had come very close to one another, neither pilot had seen the opposing ac in time to take effective avoiding action, despite the glider pilot's last second and instinctive bunt, and the separation had been by good fortune. Since there was no corroborating information, the Board had only the glider pilot's vivid description and estimate of 20ft to inform their decision; although Members agreed that the separation would probably have been slightly larger, they also agreed that there had been an actual risk of collision.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A non-sighting by the Harvard pilot and effectively a non-sighting by the Discus pilot.

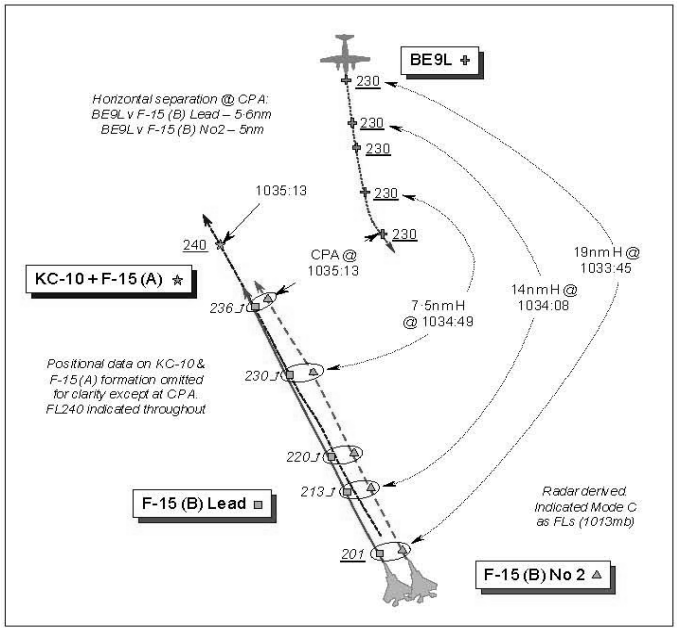
Degree of Risk: A.

AIRPROX REPORT No 2011057

AIRPROX REPORT NO 2011057

Date/Time: 4 Jun 2011 1035Z (Saturday)
Position: 5545N 00213W (10nm S of ST ABBS VOR)
Airspace: Scottish FIR (Class: C)

	Reporting Ac	*Reported Ac*
Type:	BE9L	F-15E x2
Operator:	Civ Exec	Foreign Mil
Alt/FL:	FL230	FL210↑
Weather:	VMC CLAC	NR
Visibility:	50km	NR
Reported Separation:	1000ft V/5nm H	NR
Recorded Separation:	BE9L v F-15 (B) Lead: 600ft V/5·6nm H BE9L v F-15 (B) No2: N/K V/5nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE BEECH BE90L (BE9L) PILOT reports he was in transit from Wick to Oxford/Kidlington IFR and in receipt of a RCS from Scottish CONTROL. The assigned squawk was selected; Mode S and TCAS are fitted. The ac is coloured silver and blue; the HISLs were on.

Approaching a position 50nm S of Wick, heading 175° on track for TILNI at 270kt, maintaining a level cruise at FL230, the controller passed TI about a tanker and escort, advising that they were 1000ft below his level and co-ordinated against his ac. About 1min later he became visual with the grey KC-10 tanker and military fast-jets 5nm away; ATC then called 'avoiding action, turn left immediately 50°', with which he complied. The controller advised that 2 military jets had climbed and were levelling at FL232. No TCAS RA was received. Subsequently, he was recleared direct to TILNI. He assessed the Risk as 'low'.

THE LEADER OF F-15E (B) FLIGHT [F-15 (B)] provided a narrative stating he was the lead pilot of a flight of 2 F-15E ac supporting the deployment of a formation of 6 F-15Es (F-15 (A) formation) to Pacific Air Command (PACOM). The KC-10 tanker launched from Mildenhall for the transatlantic flight plan and his F-15 (B) flight launched at the same time from Lakenheath with F-15 (A) formation. They all proceeded N on the notified routeing as they joined. The KC-10, F-15 (A) formation and his F-15 (B) flight were all MARSA [Military Accepts Responsibility for Separation of Aircraft]. His two-ship F-15 (B) flight was 2nm behind the 6-ship F-15 (A) formation as the latter flew up to and joined with the tanker for refuelling operations. The KC-10 crew worked many of the radio communications for the package as they were the lead ac. At no time did F-15 (B) flight ever fly above the levels the formation had been cleared to; the KC-10 being higher than F-15 (A) formation, which was higher than his F-15 (B) flight that was trailing the formation.

Unaware of flying through any altitude/level restrictions provided by ATC, their flight path was cleared visually and with their onboard radar, deconflicting from F-15 (A) formation with whom they were visual. They contacted all ATC agencies in sequence with the KC-10 and F-15 (A) formation, abiding by all ATC instructions as they understood them. He had asked the other flight members and no one recalls hearing any instructions or deconfliction warnings provided by ATC for a level-off at FL210. The only issue that he was aware of that caused discussion with ATC was when the No5 of F-15 (A) formation had to return to Lakenheath because of an ac malfunction. The pilot of No5 turned onto a reverse routeing as he contacted ATC for a separate clearance as a single ship. At this point, ATC issued some instructions regarding other traffic in the area.

SCOTTISH AREA CENTRE PRESTWICK TAY SECTOR CONTROLLER (TAY SC) reports that the BE9L crew had been warned about military traffic that had been co-ordinated against him that would pass by in 5 min. The pilot had reported visual contact with multiple ac before the incident. He had initiated co-ordination with ScATCC (Mil) as the BE9L was inside CAS but 'off-route' under a RCS. The initial co-ordination agreement was against military traffic at FL240, but then a further request from ScATCC (Mil) was made for co-ordination against F-15 (B) flight. As the agreement was getting complicated he agreed that the BE9L would maintain FL230 and that ScATCC (Mil) could take 1000ft separation on Mode C, above or below the BE9L with F-15 (B) flight, until the subject ac had passed.

A handover of the TAY Sector had commenced just before the incident and it was the relief controller that noticed that F-15 (B) flight had climbed into conflict with the BE9L.

Because of the close proximity of the military formation it was difficult to read the SSR data block level information. The BE9L crew was given a 'standard' avoiding action turn to the L until all the ac had passed.

THE ScATCC (MIL) CONTROLLER reports he was the ATCO-on-watch, working 7 separate units consisting of a tanker and chicks proceeding northbound on a Coronet East task, a formation of 3 F-15s in the Vale of York [F-15 (C) formation], as well several civil ac. The lead Coronet ac was a KC-10 with F-15 (A) formation followed by 2 further F-15 ac – F-15 (B) flight – as a separate element in a 10nm trail attempting to join. Passing Newcastle, the KC-10 and F-15 (A) formation were level at FL240 with the trailing F-15 (B) flight level at FL200. TAY SC was working the BE9L level at FL230 and co-ordination was agreed that he could maintain 1000ft vertical separation with his Coronet formation ac on Mode C, above or below TAY's BE9L. F-15 (B) flight leader then requested a climb to FL240 to rendezvous with the Coronet formation; he was instructed to climb to FL210 initially, to maintain the co-ordination agreement against the civil BE9L. The controller then received complicated multiple requests from several speaking units [elements of F-15 (C) formation], whereupon he observed F-15 (B) flight had climbed through their assigned level of FL210. At this point F-15 (B) flight and the BE9L were separated laterally by about 5·7nm, diverging and 500ft vertically above the BE9L. He immediately informed the duty ATCO i/c of what had occurred.

THE ScATCC (MIL) ATCO I/C reports he was informed by the ATCO-on-watch that F-15 (B) flight had climbed above their assigned level, breaking the co-ordination agreement with the SAC TAY SC. Approaching the SAC Civil Watch Manager who was aware of the incident, they immediately reviewed the radar replay to ensure that minimum separation was not lost during the occurrence. The recording shows that at no point was the minimum prescribed horizontal separation of 5nm eroded. He was aware that the controller was working particularly hard throughout the period, with multiple fast-jet ac and GAT in a quite complex air picture. Earlier, he had refused traffic as the Unit was working to maximum capacity.

UKAB Note (1): AUS issued an ALTRV (altitude reservation) for Coronet East 095/4 (11-05-0556) – a refuelling task - which was transmitted to ScATCC (Mil) on 2 Jun. The message granted Non-Deviating Status (NDS) above FL245 to the KC-10 tanker and F-15 (A) formation from specified co-ordinates within the Scottish UIR from FL240-260 inclusive. MARSA applied within all Coronet East ac. Furthermore it was emphasised that 'ACFT MUST OBTAIN ATC CLEARANCE PRIOR TO ANY ALTITUDE CHANGES…'.

BM SAFETY MANAGEMENT reports that this Airprox occurred 45nm NW of Newcastle between a pair of F15s - F-15 (B) flight - part of a Coronet East Atlantic transit in receipt of a RCS from ScATCC (Mil), with the BE9L en-route to Oxford in receipt of a RCS from ScACC TAY Sector.

The Airprox occurred at the weekend when ScATCC (Mil) operate with a reduced watch of 3 controllers, including 1 who undertakes the Distress and Diversion (D & D North) role. The ScATCC (Mil) controller's workload and task difficulty was assessed as 'high' with 4 speaking units comprising: the Coronet East mixed formation at FL240, comprising a KC-10 and F-15 (A) Formation with F-15 (B) flight in trail at FL200 closing the Coronet; a formation of 3xF15s - F-15 (C) formation - conducting general handling in Class G airspace 17nm SE of Newcastle and an un-related civil ac joining the en-route structure at NEW at FL240. The Coronet formation was NOTAM'd as being in receipt of Non-Deviating Status above FL245; however, neither the ScATCC (Mil) nor LATCC (Mil) controllers were aware of the Coronet formation until approximately 2 hours prior to the incident. The Unit's investigation established that the Unit received the Coronet ALTRV notification message, but could not establish why it had not been highlighted to the personnel on shift on the morning of the incident. At the time of the incident, the ScATCC (Mil) controller had been on console for 35 mins and was controlling all ac being worked by the Unit. Moreover,

the 4 speaking units were being controlled on 3 separate frequencies, although from the transcript none appear to have been cross-coupled. Consequently, throughout the incident sequence, the transcript is confused with numerous simultaneous transmissions. The Unit's guidance on task load - the number of speaking units under an ATS – rather than workload, which is a function of task load, task complexity, time scale for task completion and the individual's psycho physiological state, is that controllers should not work more than 3 speaking units concurrently. There are occasions when controllers can work more or less traffic, dependent upon the situation. For example a fourth ac that was a relatively un-complicated transit, or working less traffic when presented with a more complex situation.

At 1033:00, the unrelated civil ac joining at NEW was transferred to ScACC as GAT. At this point the Coronet formation was 47nm NW of NEW and F-15 (C) formation was 20nm SE of NEW. At 1033:11, F-15 (B) flight lead stated to the ScATCC (Mil) controller his intention to join the Coronet, "*ScATCC (Mil)* [F-15 (B) flight C/S] *on victor, let me just clarify…*[C/S No2] *is 5 miles in trail and will be joining with* [KC10 C/S]. The controller replied *"negative, you are coordinated with civil traffic north of you by 20 miles maintaining flight level 2 hundred (sic)*". However, the BE9L was actually coordinated maintaining FL230. Immediately following this transmission about the coordinated traffic from the ScATCC (Mil) controller, F-15 (B) flight leader requested a climb to FL210: "*ScATCC (Mil)* [F-15 (B) flight C/S] *copy, we are MARSA* [KC10 & F-15 (A) *formation C/Ss] and if able we would like to climb to 2-1-0, this is for a trans Atlantic passing* [sic] *we need to do when refuelling"*. At 1033:45 the controller instructed, "[F-15 (B) flight C/S] *roger, climb FL210"*; this instruction was not acknowledged by F-15 (B) flight leader, although the radar replay shows that the flight entered a relatively slow climb at 1033:52. There are no other transmissions on the RT transcript that might have obscured the flight leader's acknowledgement of this instruction, or that might have precluded the ScATCC (Mil) controller challenging F-15 (B) flight leader over his lack of an acknowledgement.

At the time of the occurrence the regulation within JSP 552 relating to the conduct of formation join-ups, including MARSA was at para 235.165. This regulation has been carried across to MAA RA 3011 and MMATM Chapter 11 Paras 43 to 49. JSP 552 235.165.5a states that when conducting formation join-ups in VMC, the formation leader is responsible for MARSA from the point when the joining ac is cleared to climb visually and join the formation. As the lead pilot of F-15 (B) flight stated that they 'cleared their flight path visually,' the join was completed in VMC. Moreover, based upon the regulation contained within JSP 552 235.165 and the fact that the ac were in Class C airspace, MARSA did not apply between F15 (B) flight and the Coronet as they were both separate elements.

The F-15 (B) flight leader pilot reported that:

'At no time did F-15 (B) flight ever fly above the levels the formation had been cleared to…no [flight Member] recalls hearing any instructions or deconfliction warnings provided by ATC for a level-off at FL210.'

At 1034:04, F-15 (C) formation commenced a lengthy RT exchange with the ScATCC (Mil) controller, stating their intention to split into 2 speaking units; one unit transiting S to the Wash ATA and one remaining in place 20nm SE of NEW. At this point, F-15 (C) formation was 79nm S of the Coronet formation. This prompted the controller to request that F-15 (C) formation change to an en-route frequency due to a, *"lot of…military traffic proceeding north-west bound"*, a clear reference to the Coronet. This conversation between the ScATCC (Mil) controller and F-15 (C) formation finished at 1035:05; during this period, at 1034:08, F-15 (B) flight climbed through FL213. At the point that the 'level-bust' occurs, the BE9L is 14·7nm NNE of F-15 (B) flight level at FL230.

The ScATCC (Mil) ATCO i/c stated that as the ScATCC (Mil) controller became busy, he took up position next to the controller in a PLANNER role. During the incident sequence, the ATCO i/c was monitoring traffic as it approached the ScATCC (Mil) area of responsibility in an effort to manage the Unit's traffic flow and was taking the landline calls into the unit.

At 1035:03, the avoiding action turn issued by TAY SC to the BE9L becomes apparent on the radar replay with 6nm lateral separation shown and F-15 (B) flight climbing through FL234. The CPA occurred 10sec later at 1035:13, [5·6nm lateral separation is evident against the leader with 600ft of vertical separation indicated on Mode C and 5nm lateral separation shown against the No2]. Just afterwards at 1035:24, the ScATCC (Mil) controller asked F-15 (B) flight leader to, *"confirm your altitude"* which suggests that this is the point when the controller realised that the level-bust had taken place.

It is clear that F-15 (B) flight climbed above their assigned level of FL210, thereby breaking the coordination agreement between ScATCC (Mil) and ScACC TAY SC. Although the instruction to climb to FL210 was clear, F-15 (B) flight leader did not acknowledge this instruction. Moreover, it has not been possible to determine whether the flight leader mis-heard the instruction or whether they suffered a cognitive failure, where their desire to join the Coronet formation intruded on their response execution such that they omitted to level-off at FL210.

Routinely, it would be reasonable to expect the ScATCC (Mil) controller to detect the level-bust, which occurred about 45sec prior to TAY SC issuing the avoiding action turn. The ScATCC (Mil) controller received no read back of the climb instruction from F-15 (B) flight leader, but having passed that instruction under a RCS, the controller could reasonably have assumed that the flight leader would follow that instruction. Nevertheless, controllers are required to receive read backs of level instructions and the fact that this was not challenged by the controller can be considered to be a causal factor in this occurrence. Unfortunately, the ScATCC (Mil) controller's attention was diverted by a lengthy RT exchange with F-15 (C) formation some 79nm SE of the Coronet group.

Whilst the geographic dispersion of the traffic and the task load faced by the ScATCC (Mil) controller was within their capacity and the bounds of the Unit's task-load guidance, the workload generated by the disparate tasks and their timing, divided the controller's attention such that he was unable to continuously monitor F-15 (B) flight. Although 'good practice' might suggest that controllers should be alive to the potential for a benign situation to quickly become complex, there is a degree of hindsight bias associated with this view and, moreover, it defies the basic human instinct to attempt to continue to manage a situation. Whilst the ScATCC (Mil) control team on duty were notified of the Coronet later than might be considered ideal, this cannot be considered causal nor contributory to the occurrence, given that the overall taskload was within the team's capacity. Furthermore, the Unit's task load at the time of the occurrence meant that the ScATCC (Mil) ATCO i/c, having not taken an active role in terms of controlling, was unable to directly monitor events on the controller's frequencies, thereby removing an additional ATM-related safety barrier.

It has not been possible to assess whether the understanding of USAF crews of UK formation join-up procedures and the impact of USAF tanker procedures, specifically the boom operator's actions, affected the outcome of this occurrence.

Subsequent to the investigation of this Airprox HQ 1 Gp BM SM requested that OC ScATCC (Mil) review the Unit's task-load orders to ensure that they provide appropriate guidance for ATM personnel. This review has been concluded and OC ScATCC (Mil) is content that the Unit's task-load orders are fit for purpose. The Unit considers the problem lay with the application of those orders by the controlling staff on duty. Consequently, all Unit personnel have been re-briefed with respect to their responsibilities for managing the Unit's traffic loading outside core operating hours.

ATSI reports that the BE9L crew called the TAY Sector at 1011:40. The flight was maintaining FL230, 15nm NW of Aberdeen, and was instructed to route direct to TILNI. At 1023 the ScATCC (Mil) controller called the TAY Sector requesting co-ordination on a formation C/S KC-10 [with F-15 (A) formation] against other GAT. The formation was climbing through FL193, 47nm S of Newcastle. All the ac within the formation were at the same level and within 1nm of each other. The Mode S SFL on one of the formation was reporting FL240.

CAP493 Manual of Air Traffic Service Part 1, Section 1 Chapter 4 paragraph 15 states:

'Formations are to be considered as a single unit for separation/deconfliction purposes provided that the formation remains within the parameters shown [*below*]:

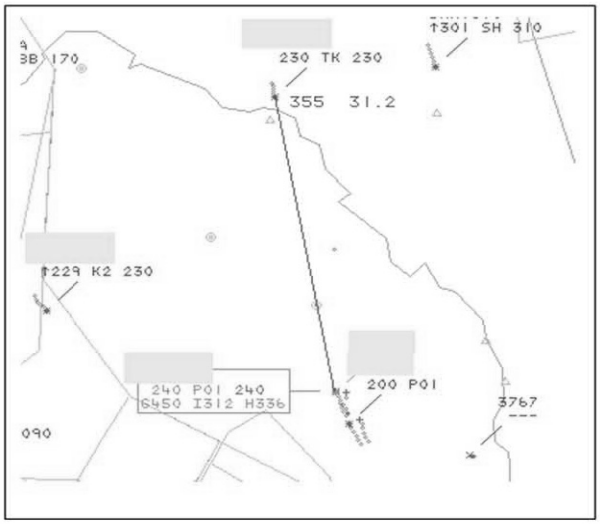
Class C Airspace: 1nm laterally and longitudinally and at the same level; …'

Some 11nm S of this formation was another formation pair - F-15 (B) flight. Within this pair, flying parallel tracks, the westerly ac was transponding and reporting Mode C of FL174, climbing. During the co-ordination at 1023, the ScATCC (Mil) Controller did not mention F-15 (B) flight to the S.

At 1026:20 the TAY controller called Scottish Military for further co-ordination on the first formation - KC-10 and F-15 (A) formation. The TAY controller identified the BE9L to the ScATCC (Mil) controller. The BE9L was 17nm NW of NEXUS and the KC-10 and F-15 (A) formation was 90nm S of NEXUS. The KC-10 and F-15 (A) formation was activating high-level STCA on the TAY controller's situation display. A third formation, 21nm SE of the first

formation, was also activating high-level STCA on the situation display. The formation pair (F-15 (B) flight) was not activating any alerts and one of the pair was not transponding. Therefore this pair displayed normally on the TAY controller's display.

The TAY SC requested, "*Co-ordination against the* [BE9L C/S] *then, not above 2 3 and you're not below 2 4 is that correct?"* The Scottish Military controller read back the co-ordination request and the conversation ended with the TAY SC stating, "*that's co-ordinated*". At 1028:40, TAY SC passed TI to the BE9L pilots, "*traffic information about 4 or 5 minutes you may see … an American fighter and a D C 10 they'll be a thousand feet above you*." The KC-10 and F-15 (A) formation was now overhead Newcastle and 75nm ahead of the BE9L. The formation was now maintaining FL240. The BE9L crew asked if the traffic would be on the aircraft's left-hand side, to which the controller replied, "*no … they're in your 12 o'clock at the moment…its reciprocal*". Scottish (Mil) telephoned the TAY Sector at 1032:29 and requested the TAY SC identify another two F-15s, "[F-15 (B) flight C/S] *southeast of the* [KC-10 and F-15 (A) formation C/S]". F-15 (B) flight had now decreased its distance behind the KC-10 and F-15 (A) formation to 3.4nm. The BE9L was 31nm N of the KC-10 and F-15 (A) formation.



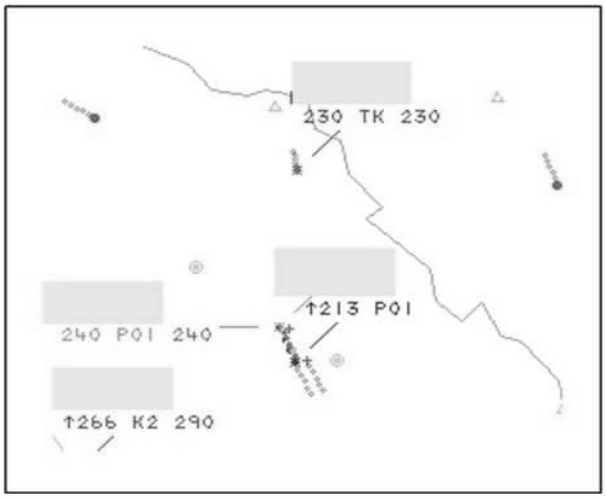
(PC MRT 1032:27)

The TAY controller identified F-15 (B) flight and the ScATCC (Mil) controller stated, "they're not above flight level 200 against your [BE9L C/S]...". The TAY controller replied, "[BE9L C/S] will stay at flight level 2-3-0 you can go 1 thousand feet below or 1 thousand feet above". The conversation was then terminated by the ScATCC (Mil) controller, "Brilliant thank you very much".

MATS Part 1 Section 1 Chapter 10 paragraph 3 states:

'3.1 When requesting co-ordination, a controller shall: …

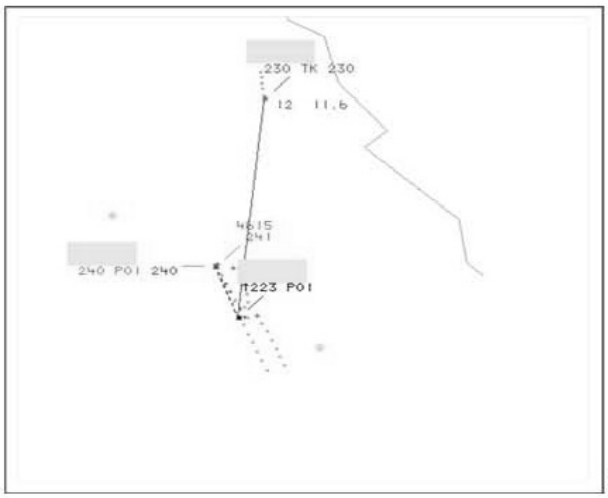
propose a course of action upon which agreement is requested and obtain a clear decision on that proposal. To ensure clarity and avoid misunderstandings, before terminating the call, parties shall explicitly state the action required of their aircraft to achieve the agreed course of action … A response that does not reaffirm the details of the agreement, such as "Roger", is not acceptable.'



(PC MTRT 1034:10)

At 1033:52 the Mode C of F-15 (B) flight leader indicated that the transponding ac had commenced a climb from FL200 and was now passing FL203; at 1034:08 it was indicating Mode C of FL213, climbing, STCA then activated between F-15 (B) flight and the KC-10 and F-15 (A) formation ahead

At 1034:15 the BE9L reported, "*visual with that group of traffic now*". TAY SC replied, "*That's correct there's some below you and some above you they're all co-ordinated against you and you're just maintaining flight level 2-3-0*". The KC-10 and F-15 (A) formation was maintaining FL240 in the BE9L's 1 o'clock range 11nm on a track to pass down the BE9L's right-hand side. F-15 (B) flight was 2.9nm behind the first formation and was now climbing through FL216.



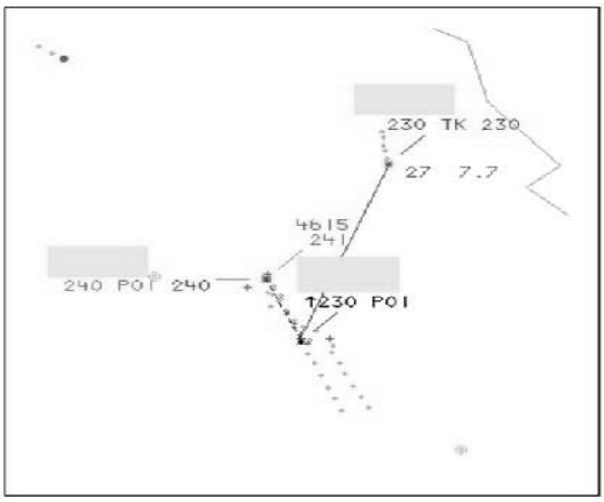
(PC MRT 1034:25)

At 1034:49, F-15 (B) flight leader's Mode C indicated the ac were at the same level as the BE9L, still in the BE9L's 1 o'clock, range 7.7nm. The aircraft were about 45nm N of Newcastle at FL230 in Class C controlled airspace.

At 1034:51 the TAY controller updated the traffic information to the BE9L, to which the BE9L pilot replied, "*okay … we got two visual ????? at the back of the pack that look a bit higher."*

At 1034:25 the Mode C of F-15 (B) flight indicated that they were still climbing and passing through FL223. They were in the BE9L's 1 o'clock range 11.6nm on a track to pass down the BE9L's right-hand side.

At 1034:35, TAY SC instructed the BE9L pilot, "[C/S] *sorry avoiding action turn left immediately 50 degrees";* this was read back by the BE9L pilot. TAY SC informed the BE9L pilot that, "*one of those tracks he's now just climbing through your level*." The second formation's Mode C was now indicating FL225.



(PC MRT 1034:49)

Minimum separation between F-15 (B) flight and the BE9L occurred at 1035:13 with 5nm between the nearest aircraft and 600ft indicated against the leader's Mode C. Subsequently, F-15 (B) flight levelled at FL239 behind the leading formation. At 1035:39, TAY SC informed the BE9L pilot that his ac was now clear of the traffic and instructed the flight to resume its own navigation.

The BE9L was southbound maintaining FL230. The KC-10 and F-15 (A) formation was maintaining FL240 followed by F-15 (B) flight climbing through FL230. Separation was maintained between the BE9L and nearest aircraft of F-15 (B) flight: minimum distance was 5nm and 600ft, where 5nm or 1000ft was required.

The co-ordination undertaken between the TAY SC and ScATCC (Mil) with respect to F-15 (B) flight was not completed with an explicit statement of the action required. TAY SC offered a co-ordination solution of "[BE9L C/S] *will stay at flight level 2-3-0 you can go 1 thousand feet below or 1 thousand feet above*". The TAY SC had no indication therefore of the exact instruction which may have been relayed to the F-15 (B) flight pilots.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilot of the BE9L and the leader of F-15 (B) Flight, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and the appropriate ATC authorities, together with comment from the relevant Command.

There were some significant subsidiary issues within this occurrence. However, it was evident to the Board that the BE9L crew's part in this Airprox was restricted to compliance with TAY SC's avoiding action. These instructions ensured that the stipulated horizontal separation was maintained against F-15 (B) flight as they climbed up toward the KC10 and F-15 (A) 'combine'.

The HQ 3AF Advisor reaffirmed F-15 (B) flight leader's belief that his flight had not been instructed to level-off at FL210. However, he acknowledged that the BM Safety Management report had revealed that the lead pilot was mistaken. This climb was contrary to the co-ordination agreements struck between the ScATCC (Mil) controller

and TAY SC which, if complied with, would have ensured a minimum of 1000ft vertical separation between the KC-10 and F-15 (A) combine above the BE9L, maintaining a level cruise at FL240 and 1000ft on Mode C against F-15 (B) flight. These agreements ensured that the ScATCC (Mil) controller had the necessary tactical flexibility to manoeuvre the ac under his control safely and had resulted in TI being passed to F-15 (B) flight about the BE9L when it was 20nm away. However, the ScATCC (Mil) controller erroneously reported that the BE9L was at FL200 – the same level as F15 (B) flight at that point. Members understood why the leader of F-15 (B) flight would have been keen to climb above traffic reported to be flying at the same level, the BE9L, which he may have perceived as an impediment to his eventual join with the KC-10 and F-15 (A) combine. His request to climb to FL210 seemed to indicate an understandable degree of urgency to climb clear above the BE9L's reported level. He would have perceived that there was then no other traffic to delay his join with the KC10 and F-15 (A) formation cruising at FL240, hence his comment "....*we are MARSA* [with KC10 & F-15 (A) *formation C/Ss] and if able we would like to climb to 2-1-0...".* Whilst noting that the ALTRV message only included reference to the KC10 & F-15 (A) formation, not F-15 (B) flight, the latter were in effect the 'airborne spares' for F-15 (A) formation. In Class C CAS under a RCS and co-ordinated against the BE9L, the Board recognised that MARSA could only ever be stipulated between military ac involved in the Coronet East tanker trail. With F-15 (B) flight below the levels of the stipulated ALTRV, the mandatory instructions of the ScATCC (Mil) controller held sway, so the controller would have seen no reason at that stage not to accede to F-15 (B) leader's request to climb his flight 1000ft to FL210. The controller's immediate reply at 1033:45, "[F-15 (B) flight C/S] *roger, climb FL210"* was clear and unambiguous. However, the RT transcript revealed that there was no response from F-15 (B) flight and the controller did not challenge the absence of a read-back. This was a salutary lesson a pilot Member observed; if pursued at the time this would have forestalled the occurrence. In the event the subsequent climb revealed that the leader believed, incorrectly, that his flight had been permitted to climb to join with the KC10 and F-15 (A) combine at FL240. The Board was briefed that the controller was under significant pressure at this stage and it was evident that he was very busy indeed controlling this complex scenario, with a wide split, necessitating a diverse scan over a large displayed range on his radar. Members noted it was at this point that his attention was critically diverted by the activities of F-15 (C) formation to the SE and did not spot F-15 (B) flight's excursion above their assigned level. Controller Members opined that the use of the three frequencies simultaneously by the one controller was not good practice, albeit indicative of the Unit's limited control capacity at the time, since RT transmissions could easily be missed. This level of military activity was unusual on a Saturday morning and the issue of the controller's workload had already been addressed by the Unit as reported by BM Safety Management. As it was F-15 (B) flight had already climbed through FL210 by the time the ScATCC (Mil) controller realised what had occurred. Nonetheless, F-15 (B) flight's climb through FL213 occurred when the BE9L was 14nm away and if he had spotted it at the time it could have been countered. The Board concluded that that this Airprox had been caused when F-15 (B) flight climbed above its cleared level.

One Member perceived that because stipulated separation had been maintained this event was so benign that it was misleading to consider it as an Airprox; it should not be classified as an Airprox event simply because avoiding action had been issued. However, this was a solitary view; other Members agreed that this was not a risk-bearing Airprox, but contended that normal procedures had not been complied with and therefore it should be categorised accordingly. Controller Members opined that whilst avoiding action is not a normal occurrence in CAS, the BE9L crew had complied promptly with TAY SC's avoiding action L turn ensuring separation of 5nm was maintained. Moreover, the BE9L crew had sighted the military jets. These factors convinced the overwhelming majority of the Members that no Risk of a collision had existed.

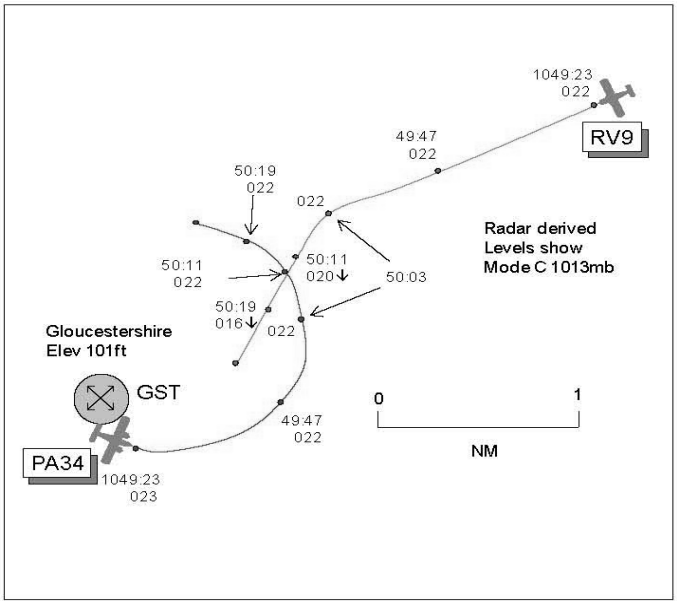
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: F-15 (B) flight climbed above its cleared level.

Degree of Risk: C.

AIRPROX REPORT NO 2011058

Date/Time:	2 Jun 2011 1050Z	
Position:	5154N 00209W (1·25nm NE Gloucestershire - elev 101ft)	
Airspace:	LFIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Vans RV9	PA34
Operator:	Civ Pte	Civ Trg
Alt/FL:	2700ft (QNH 1034mb)	↓2800ft (QNH 1034mb)
Weather:	VMC CLBC	IMC IICL
Visibility:	15nm	10km
Reported Separation:	Nil V/NR H	Not seen
Recorded Separation:	>200ft V/<0·1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE VANS RV9 PILOT reports flying VFR en-route to Perranporth via Gloucestershire and in receipt of BS from Gloster Approach on 128·55MHz, squawking 7000 with Modes S and C. The visibility was 15-20km flying 500ft below cloud in VMC and the ac was coloured red with strobe lights switched on. His planned route was via the O/Hs of Gloucestershire, Colerne, Frome and Newquay and, having previously worked Brize under BS and been told that Little Rissington was active, he had routed well to the N and then towards Gloucestershire. He called Gloucester Approach and informed them that it was his intention to route via the O/H at 2700ft QNH1034mb. When well inside the ATZ, he thought, he turned L onto heading 191° towards Colerne at 130kt and, when abeam, his passenger spotted an ac 0·5nm away in their 11 o'clock heading towards them, appearing to be at the same height. He banked sharply to the L and also descended, recovering at 2200ft before turning back onto track and climbing back to 2700ft. After recovering his composure he informed ATC of the Airprox and was told the other ac was a PA34 carrying out an IFR procedure; he queried the relevance of this information. He subsequently changed to Filton but when abeam Yeovilton he encountered low cloud so elected to return to Enstone routeing via Kemble. He assessed the risk as medium to high.

THE PA34 PILOT reports flying a dual IFR training flight from Oxford for an IR and in receipt of a PS from Gloster Approach on 128·55MHz, squawking 7000 with Modes S and C. The visibility was 10km when clear of cloud but they were IMC occasionally in and out of cloud. They had flown an ILS at Birmingham and were then carrying out a practice diversion to Gloucestershire, intending to fly an NDB hold followed by an approach to go-around and then a visual cct to touch and go before departing. As well as the student flying P1 in the LH seat there was another student in the rear acting as an observer. En–route to Gloucestershire on a S'ly track, they were cruising at FL40 and the ATIS information 'India' gave RW09 LH in use with surface wind 040/07kt, visibility 10km, cloud few 3000, temperatures 20/12 and QNH 1034mb. Gloster Approach cleared them to the GST at FL40 and instructed them to report entering the hold, which they did. The hold entry and at least one hold were performed before he advised the student on the outbound leg of the hold to report ready for the NDB procedure. Approach cleared them for the NDB approach for RW09 and asked them to report beacon outbound. Having acknowledged this, the student set 1034mb on altimeter No1 and cross-checked the same setting on altimeter No2 and this now made their altitude approximately 4600ft. This was then followed by a gentle descent being initiated to 2800ft at 120kt on the inbound turn and inbound leg of the hold. He was unable to say exactly what altitude they were at upon beacon passage but it was not below 2800ft and he believed they were still in the descent towards 2800ft. A call was made of "beacon outbound" and Approach asked them to report base turn complete. Shortly after this while in the outbound turn for the alternate procedure he heard another ac's pilot informing Approach that a twin-engine ac had passed over the top of his ac by about 400-500ft, he thought. He believed Approach replied that he only had a Seneca (meaning them) going beacon outbound for the NDB approach but it was at FL040; the other pilot replied

that he wasn't instrument rated and did not understand what the controller meant by beacon outbound etc. They continued with their approach as published without further incident and completed the detail as planned before returning to Oxford. On the return to Oxford, Approach advised that the other ac's pilot had filed an Airprox, which he acknowledged. At FL040 they were in and out of few/scattered cloud and the same conditions prevailed whilst in the descent to 2800ft. At the platform altitude of 2200ft they were clear of cloud for the remainder of the flight at Gloucestershire. At no time did he or the students see the other ac. Upon being cleared for the NDB 09 approach the controller did not instruct them to remain at FL040 until beacon outbound nor was any reference made to traffic overflying the airfield.

THE GLOUCESTERSHIRE APPROACH CONTROLLER reports the RV9 pilot contacted him at 1047 and passed all his details requesting a BS routeing via the O/H from the E and then SW bound at altitude 2400ft, he thought. The PA34 flight was in the GST hold at FL040 ready for an approach under a PS. The PA34 flight was cleared for the NDB/DME approach to RW09 and the pilot called beacon outbound at 1049 which allowed the flight to descend to 2800ft. At 1050 the RV9 pilot reported O/H and wishing to file an Airprox due to the location and relative position of the PA34; its crew was informed of the RV9 pilot's intentions.

ATSI reports that the Airprox occurred in Class G airspace at 1050:16UTC, 1·25nm to the NE of Gloucestershire Airport at an altitude of 2800ft. This position is outside the Gloucestershire ATZ, which extends to a height of 2000ft above aerodrome level (elevation=101ft) and bounded by a circle 2nm radius centred on the mid-point of RW09/27.

The PA34 was inbound IFR from Oxford on a training flight and was planning to hold at the GST NDB, which is situated on the airfield, followed by a procedural NDB/DME approach to RW09. The NDB(L)/DME Instrument Approach Chart specifies an altitude at the IAF of 2800ft and also specifies that ac will normally hold not lower than 4000ft or the equivalent FL.

The Vans RV9 was operating on a VFR flight from Enstone to Perranporth, routeing via Gloucester, Colerne, Frome and Newquay.

The Gloucestershire controller was providing an Approach PS (Gloster Approach) without the aid of surveillance equipment. The ATSU is equipped with a primary radar system only, (without SSR). The availability of radar is subject to manning and utilised to expedite the procedural environment. The radar would not have displayed traffic in the O/H.

CAA ATSI had access to the RT recording and recorded area surveillance provided by NATS Swanwick, together with written reports from the controller and 2 pilots.

METAR EGBJ 021050Z 02003KT 9999 FEW035 21/11 Q1034=

At 1035:05, the PA34 flight established contact with Gloster Approach maintaining FL040 and requesting a PS. The Approach controller agreed a PS and cleared the PA34 flight to the GST at FL040 with no delay for an NDB/DME approach for RW09, to report taking up the hold. This was acknowledged correctly by the PA34 pilot.

At 1039:21, the PA34 pilot reported taking up the hold at FL040 (converts to an altitude of 4567ft on QNH 1034 with 1mb equal to 27ft). The controller instructed the PA34 pilot to report ready for the approach.

At 1045:16, the PA34 pilot reported, *"(PA34 c/s) ready for the N D B zero nine approach"* and the controller replied, *"(PA34 c/s) cleared N D B D M E approach Runway zero nine Q N H one zero three four report beacon outbound."* The PA34 pilot acknowledged, *"Cleared er N D B er zero nine approach Q N H one zero three four wilco (PA34 c/s).*"

At 1046:32 the radar recording shows the PA34 in the descent passing FL038, 3·6nm WNW of the GST and commencing a L turn towards the beacon. The PA34 pilot's written report indicated that once cleared for the NDB approach and instructed to report beacon outbound, the pilot had selected QNH 1034 and started a slow descent to 2800ft on the inbound turn and inbound leg of the hold.

Later on the controller had indicated an expectation that the PA34 would maintain FL040 until beacon outbound. The controller was asked why the PA34 had not been given a restriction such as 'maintain FL040 until crossing

the beacon outbound'. The controller responded that normally, had there been an outbound, such a restriction would have been given. With no reason to restrict, the controller had cleared the PA34 for the procedure, but had not considered that the pilot may have elected to descend to the published level for the procedure of 2800ft.

At 1045:58, the RV9 pilot established contact with Gloster Approach. The controller had just initiated a non-operational telephone call (regarding a shift the following day) and instructed the flight to standby. The radar recording shows the RV9 at a position, 10·4nm to the NE of the airfield.

At 1046:58, the controller asked the previous station calling to pass message and the RV9 pilot advised, *"er (RV9 c/s) is an R V nine A from Enstone to Perranporth routeing via your overhead and Colerne request a Basic Service er currently three miles to the northeast of your airfield."* The radar recording shows the RV9, 8·4nm to the NE of the airfield.

At 1047:20 the controller ended the telephone conversation and responded to the RV9 flight, *"(RV9 c/s) sorry er I was on the landline could you er say again your point of departure and destination*." The RV9 pilot replied, *"er Enstone Perranporth (RV9 c/s)*."

At 1047:32, the controller responded, *"(RV9 c/s) Basic Service Gloster Q N H one zero three four,*" which was acknowledged correctly.

The controller indicated that he had not heard the RV9 pilot's full message and was unsure if the RV9 was routeing to Perranporth E of the airfield or via the O/H. At 1047:43, the controller asked, *"(RV9 c/s) are you routeing via my overhead"* and the pilot replied, *"Affirm."* The controller asked the RV9 pilot to report O/H. The radar recording shows the RV9, 6·7nm to the NE of the airfield, with the PA34 2·8nm WSW of the airfield.

The controller's written report indicated that he had considered the RV9 was at 2400ft and the PA34 at FL040. The controller acknowledged that the RV9 had not stated a level, neither had the controller requested the level (the RV9 reported at 2400ft after the incident). The controller was asked if he had considered passing TI to the PA34 (under a PS), on the RV9 operating VFR via the O/H. The controller indicated that he hadn't fully assimilated the position of the RV9 and had considered that the PA34 was shortly to go beacon outbound to the W at FL040.

At 1049:28, the PA34 pilot reported beacon outbound and the controller responded, *"(PA34 c/s) report base turn complete.*" The radar recording shows the PA34 has crossed the GST, on an ESE'ly track, indicating FL023 (converts to an altitude of 2867ft). The RV9 was 3NM NE of the airfield tracking SW towards the O/H indicating FL022 (converts to an altitude of 2767ft).

From 1049:38 until 1050:16, the controller was occupied in a two-way transmission with a PA28 inbound to the airfield.

[UKAB Note (1): At 1050:03 the radar recording shows both ac indicating FL022 (2767ft) with the PA34 turning L through a N'ly heading in the RV9's 10 o'clock range 0·6nm and crossing from L to R. The next sweep 8sec later at 1050:11 shows the PA34 crossing through the RV9's 12 o'clock range 0·1nm, the RV9 now tracking 210° and indicating a descent through FL020 (2567ft QNH). The CPA occurs immediately afterwards as the next sweep at 1050:19 shows the ac now diverging, the PA34 turning through heading 290° with the RV9 0·4nm to its S descending through FL016 (2167ft QNH). It is estimated that separation at the CPA was >200ft vertically and <0·1nm horizontally as the RV9 passes just behind and below the PA34.]

At 1050:25, the RV9 pilot reported, *"er Gloster approach (RV9 c/s) would like to report an a Airprox with a twin."* The RV9 pilot advised, *"er (RV9 c/s) was overhead or just about overhead your field a twin was coming in from the southeast at my height I er reduced to reduced height to avoid*."

The controller acknowledged, *"(RV9 c/s) roger that's er believed to be a Seneca traffic in the Golf Sierra Tango just called me beacon outbound in the instrument procedure for Runway zero nine."* The RV9 pilot acknowledged with, *"Roger"* and the controller added, *"and er that aircraft was last reported flight level four zero but will be descending with the procedure*." The RV9 pilot replied, *"I'm not er I M C qualified so I'm not quite sure what that means (RV9 c/s)."* The controller requested the level of the RV9 and the pilot responded, *"er currently two thousand four hundred on a bearing of one eight two degrees.*"

Both ac continued without further incident.

The controller was asked what might have prevented the incident. The controller acknowledged that TI should have been passed to the PA34 and a level requested from the RV9 pilot.

As a result of the Airprox the ATSU unit investigation report was made available to Gloster controllers, together with reference to the MATS Part 1 guidance regarding the potential for non-operational conversations to distract controllers from their primary task of providing a safe air traffic service.

The controller initiated a non-operational telephone call just before the RV9 called at a range of 10·4nm from the airfield. This resulted in a distraction and delay in receiving the RV9 pilot's message. The full details and intentions of the RV9 were missed. The controller did not fully assimilate the details and was initially confused about the position of the RV9. The Manual of Air Traffic Services (MATS), Part 1, Appendix E, Page 2, Paragraph 2, states:

'Non-operational and other conversations have the potential to distract a controller from their primary task of providing a safe air traffic service. Examples include telephone conversations with external agencies, such as airline representatives, and discussions between controllers conducted on the telephone, intercom or, in some cases, face to face, following an unplanned traffic situation.

Non-operational conversations must not be permitted to interfere with a controller's operational duties. Procedures at units should ensure that non-urgent telephone calls from external agencies could be accommodated without prejudicing the controller's primary task.'

The RV9 pilot did not report his level and the controller did not recognise the significance of the RV9's routeing and the potential for conflict with the PA34.

Whilst in the holding pattern, the PA34 was cleared for the procedure without any restriction. The pilot did not report leaving FL040, nor did the controller request a leaving report. The phraseology used by the controller was ambiguous and did not convey the controller's intention, which was for the PA34 to maintain FL040 until beacon outbound. However, the pilot having been cleared for the procedure without restriction, descended to the published level for the procedure (2800ft) prior to going beacon outbound. MATS Pt1, Appendix E, Page 2, states:

'Radiotelephony provides the means by which pilots and ground personnel communicate with each other. Used properly, the information and instructions transmitted are of vital importance in assisting in the safe and expeditious operation of aircraft. However, the use of non-standard procedures and phraseology can cause misunderstanding. Incidents and accidents have occurred in which a contributing factor has been the misunderstanding caused by the use of non-standard phraseology. The importance of using correct and precise standard phraseology cannot be over-emphasised.'

The controller was not aware that the RV9 was approaching the O/H at 2800ft and, also not aware that the PA34 was descending to 2800ft to go beacon outbound. This resulted in the 2 ac coming into close proximity at a similar level without the provision of any TI or warning that would have aided the pilot's situational awareness.

The PA34 was IFR and in receipt of a PS. CAP774 UK Flight Information Services, Chapter 4, Page 5, states:

'A Procedural Service is an ATS where, in addition to the provisions of a Basic Service, the controller provides restrictions, instructions, and approach clearances, which if complied with, shall achieve deconfliction minima against other aircraft participating in the Procedural Service. Neither traffic information nor deconfliction advice can be passed with respect to unknown traffic.

The controller shall provide traffic information, if it is considered that a confliction may exist, on aircraft being provided with a Basic Service and those where traffic information has been passed by another ATS unit; however, there is no requirement for deconfliction advice to be passed, and the pilot is wholly responsible for collision avoidance. The controller may, subject to workload, also provide traffic information on other aircraft participating in the Procedural Service, in order to improve the pilot's situational awareness.'

Both flights were operating within Class G airspace. CAP774, Chapter 1, Page1, Paragraph 2, states:

'Within Class F and G airspace, regardless of the service being provided, pilots are ultimately responsible for collision avoidance and terrain clearance, and they should consider service provision to be constrained by the unpredictable nature of this environment. The Class F and G airspace environment is typified by the following:

• It is not mandatory for a pilot to be in receipt of an ATS; this generates an unknown traffic environment;

• Controller/FISO workload cannot be predicted;

• Pilots may make sudden manoeuvres, even when in receipt of an ATS.'

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC authorities.

Although this Airprox occurred in Class G airspace where both crews were responsible for maintaining their own separation from other traffic through see and avoid, it was clear to Members that there were opportunities to break the chain of events leading up to the Airprox. Once APP had cleared the PA34 flight for the procedure, without applying a level restriction, the crew were entitled to descend to the initial approach altitude of 2800ft QNH. Pilot Members thought that good practice would have been for the PA34 pilot to have called when commencing descent and this would most likely have broken the chain at this early stage. However the crew was not asked to report leaving FL40 and the controller incorrectly thought the flight would maintain FL40 until going 'beacon outbound'. The RV9 pilot should have volunteered his cruising altitude when invited by the controller to pass his message. However, it was clear that the controller did not assimilate the RV9 pilot's intentions while distracted by his non-operational telephone call, and did not ask for the flight's cruising level (it could have been cruising at FL40). In the absence of this information and having confirmed that the RV9 pilot intended to route via the O/H, the controller should have identified the potential for a confliction and passed TI to the PA34 pilot in accordance with CAP774: this was another opportunity lost. Controller Members agreed that the passing of generic TI to the RV9 flight about another ac routeing through the O/H would have been 'good controllership'; it would have given the RV9 the pilot SA on the potential confliction and could have broken the chain. An experienced pilot Member stated that although the PA34 flight was IFR training, this incident was a timely reminder of the crew's need to continue exercising a good lookout for unknown traffic. Also, the PA34 crew's SA would have been improved if they had heard and assimilated the RT exchanges between ATC and the RV9 pilot. As it was, the PA34 flight was descending in IMC through cloud to 2800ft, its crew unaware of the approaching RV9 which passed unsighted during their 'belly-up' turn onto the outbound leg. Similarly, the RV9 pilot was unaware of the PA34's presence; the only clue from the RT would have been the PA34 pilot's call of 'beacon outbound' and this required the pilot to have knowledge of the IF procedures in use at the time. In the event, the RV9 pilot turned on track towards Colerne just before the O/H and saw the PA34 0·5nm away; the Board agreed that his prompt and robust avoiding action had resolved this conflict and removed the risk of collision.

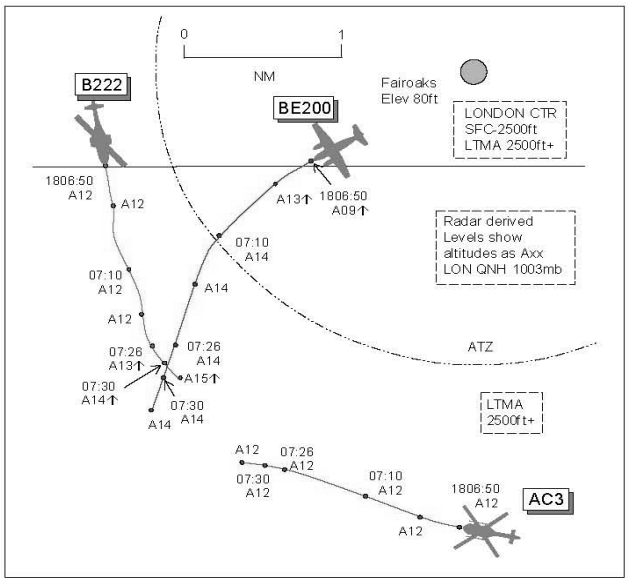
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: In the absence of TI, a conflict in Class G airspace resolved by the RV9 pilot.

Degree of Risk: C.

AIRPROX REPORT NO 2011059

Date/Time:	18 Jun 2011 1807Z (Saturday)	
Position:	5119N 00037W (3nm SW Fairoaks)	
Airspace:	LFIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	B222	BE200
Operator:	Civ Comm	Civ Pte
Alt/FL:	↑2400ft (QNH 1001mb)	1400ft (QNH)
Weather:	VMC CLBC	VMC CLBC
Visibility:	>40km	>10km
Reported Separation:	Nil V/60m H	Nil V/600m H
Recorded Separation:	<100ft V/<0·1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE B222 PILOT reports departing Ascot via the Heathrow CTR 'W End Free-lane' for a private site near Sevenoaks, VFR under a BS from Farnborough E on 123·225MHz, squawking with Mode C. The visibility was >40km flying 2000ft below cloud in VMC and the helicopter was coloured blue with nav and anti-collision lights switched on. The Free-lane exits abeam the W edge of the Fairoaks ATZ at 1200ft amsl. Farnborough gave him TI on a helicopter at about 11 o'clock same level with which he was visual. He requested a climb to 2400ft to which Farnborough had no objection. Heading 170° at 100kt he commenced the climb and also started a L turn towards OCK. When passing through 1700ft, he thought, a faster ac, a white coloured low-wing twin-prop type, passed him at the same level about 60m away but also climbing in a 10° nose up attitude and in an approximately 20° L turn. He saw the other ac too late to take avoiding action but he rolled 'wings level'. He was flying from the RH seat and the other ac was not seen earlier owing to its relative position. He assessed the risk as high.

THE B222 CHIEF PILOT commented that this is a very busy area of airspace on Ascot days with helicopters streaming out of the Heathrow CTR through Fairoaks climb-out and Farnborough approach. He believed it would be prudent for flights departing Fairoaks to call before getting airborne/leaving the ATZ and that the frequency used should be common to the Ascot and Fairoaks departures to ensure awareness by all flights of potential conflictions. Currently Ascot departures on the 'W End Free-lane' use Farnborough E 123·225MHz yet Fairoaks departures tend to use W on 125·25MHz as does most other traffic in the area.

THE BE200 PILOT reports flying solo on departure from Fairoaks VFR and in receipt of a BS from Farnborough on 134·35MHz, squawking 7000 with Modes S and C; TCAS was fitted. The visibility was>10km flying 2000ft below cloud in VMC and the ac was coloured white with anti-collision and strobe lights switched on. Having departed Fairoaks iaw the 'out of hours' procedure after watching 2 helicopters pass N to S through the 'Bagshot Gap' and changing to Farnborough Radar, he was informed of 2 converging helicopters. One was to the S which was easily seen as he was turning L onto heading 170° at 160kt and 1 other to the N which he could not see. At that point a TCAS 'traffic' audio warning was heard on the N contact and he made an effort to look out to his R over the higher wing. It was then he caught sight of a blue/white Bell 222 or 430 type helicopter about 1000m away climbing through his level of 1400ft QNH. He increased his L bank to turn inside the track of the helicopter despite its ROC taking it above his ac. His L turn was already moving his ac's vector away from the contact but it was tightened to increase separation, estimating they passed with 600m separation. He assessed the risk as low.

UKAB Note (1): The BE200 pilot was contacted by the UKAB Secretariat to clarify the reported separation distances, TCAS actions and Ascot procedures. The pilot stated that 600m minimum separation was based on a snapshot at the initial sighting as he had eased his L turn to look for the helicopter and when sighted he had lost sight of it when he tightened the turn to avoid. He did not see the B222 turn towards his ac and did not regain

visual contact with it after his turn. The TCAS TA was generated after he first saw the B222 and tightened his turn and he did not recall any vertical commands on the PFD as he was heads-out flying the tight avoiding turn. He was aware of the Ascot W end Free-Lane' procedures and has watched the 2 previous helicopters exit the Heathrow CTR before departing.

THE FARNBOROUGH LARS W CONTROLLER reports the BE200 flight called him on departure from Fairoaks and looking at the position he noticed a 7000 squawk, fairly fast moving, heading towards a 4777 squawk that was W'bound. He immediately passed TI to the BE200, which was not yet identified, as, "Traffic believed to be you has traffic similar level 1 mile SW." He continued to pass TI and issued a squawk until the BE200 pilot reported visual with the helicopter. He also tried to alert LARS N/E but N/E was intensely busy. There was little or no time to effect any type of avoiding action advice and it was unpractical due to Ascot departing traffic.

THE FARNBOROUGH LARS E CONTROLLER reports working N and E bandboxed when the B222 flight called on frequency. It was just leaving the London CTR via the 'West End Free-lane' routeing from Ascot to Sevenoaks. There were about 3 helicopters leaving and 1 joining the CTR at the time, all just to the SW of Fairoaks. Although they were all on a BS he called generic TI. Just after this LARS W pointed out another 7000 squawk, which was just appearing from the middle of these known contacts, indicating 1400ft, a similar level to the helicopters. As it had already passed, tracking SW, he did not call this traffic. Shortly afterwards, the B222 pilot asked if he had seen this traffic and he replied that he had only just seen it after LARS W had pointed it out. He apologised for the lack of TI but said that it had departed Fairoaks on LARS W frequency.

ATSI reports that the Airprox occurred at 1807:27, within Class G airspace and 6·5nm to the NE of Farnborough Airport and 2·8nm to the SW of Fairoaks Airport during the period of Royal Ascot week. (Saturday)

For the period of Royal Ascot week a NOTAM B0793/11 was issued promulgating the temporary Ascot ATZ, valid:14th to the 18th June 2011. Associated with this special event, a TOI was issued by Swanwick LTC, who have operational responsibility for the London CTR. The TOI contained procedures for the 'Ascot delegated airspace' within the CTR. Participating helicopter operators were provided with a comprehensive briefing on associated operational procedures.

As part of these arrangements, helicopter departures routeing via the designated 'West End Free-lane,' were required to maintain an altitude of 1200ft on a squawk 4776 and contact Farnborough Radar on 123·225MHz (LARS E). The planned movement of the participating helicopters was to the SE and consequently LARS E was designated as the controlling frequency. This would also reduce the traffic loading of the LARS W controller.

The Airprox was reported by the pilot of a Bell 222 (B222) helicopter, on a VFR flight from Ascot to Sevenoaks in Kent. The B222 was squawking 5023 and in receipt of a BS from LARS E.

The second ac, was a Beech 200 (BE200), which had just departed Fairoaks (promulgated as AFIS Mon-Sat 0700-1700, ATZ coincident with AFIS or A/G hrs), in accordance with the Fairoaks 'out of hours' procedures. The BE200 was squawking 7000, on a VFR flight to Dunsfold and had just contacted the LARS W controller. The pilot's written report indicated that the pilot had called Farnborough Approach on frequency 134·35MHz which was combined with Farnborough LARS W (125.25MHz). It is not clear if the BE200 pilot was aware of the Ascot 'Westend Free-lane' route and procedures. No AIC is promulgated for this event.

The Fairoaks Aerodrome Manual, Appendix E, 'out of hours', terms and conditions, note 4 states:

'For traffic information and Lower Airspace Radar Service call Farnborough Radar 125·250MHz as soon as possible, normally available 0800-2000 (local).' (LARS W)

Fanborough controllers were operating in bandboxed mode. One controller was working LARS W and Approach Radar in combined mode. The second controller was working LARS N and LARS E combined. Traffic levels were assessed as medium and there were no reported unserviceabilities.

METAR EGLF 181750Z 26017G29KT 9999 SCT039CB 16/08 Q1003=

AIRPROX REPORT No 2011059

Prior to the incident 2 helicopters had departed the Ascot designated 'West End Free-lane' ahead of the B222, working LARS E. In addition an opposite direction helicopter (Ascot inbound) [AC3], was approaching from the SE and also working LARS E.

At 1804:55, the B222 flight established contact with LARS E reporting, *"(B222 c/s) four double seven six off Ascot for Sevenoaks and request Basic."* The LARS E controller allocated a squawk 5023, passed the QNH 1003 and agreed a BS.

At 1806:24 the radar recording, viewed at short range, shows the BE200 just airborne from Fairoaks indicating an altitude of 100ft and displaying a 7000 squawk.

At 1806:45, the BE200 flight established contact with LARS W and reported, *"Farnborough radar good evening again er (BE200 c/s) airborne from Fairoaks to Dunsfold VFR."* The LARS W controller replied, *"(BE200 c/s) roger Basic Service Q N H one zero zero three keep a look out there's a helicopter (B222) just believed to be to the west of you by half a mile at twelve hundred feet possibly turning westbound also helicopter (Ascot inbound)[AC3] a mile south of you twelve hundred feet turning northbound."* There was no response from the pilot of the BE200 and the LARS W controller repeated the warning about traffic in the vicinity [1807:10], *"(BE200 c/s) caution a helicopter rotary indicating one thousand two hundred feet believed to be in front of you less than quarter of a mile."* The BE20 pilot replied, *"er looking and seen."* The LARS W controller responded, *"(BE200 c/s) roger squawk zero four three four when you can Basic Service QNH one zero zero three."* This was acknowledged by the BE200 pilot.

The LARS W controller's written report, indicated that he tried to warn the LARS E controller about the 7000 squawk (believed to be the BE200), but reported that the LARS E controller was 'intensely busy.'

At 1806:50, radar recording shows a number of ac in the vicinity of Fairoaks with a S'bound overflight at FL096 directly overhead the BE200 with labels overlapping and garbling. A short range expanded view of the radar recording shows the B222 passing 2·3nm SW of Fairoaks, indicating an altitude of 1200ft, with the BE200 in the B222 helicopters 10 o'clock position at a range of 1·2nm, indicating 900ft. The Ascot inbound helicopter [AC3] is shown 3·2nm to the S of Fairoaks tracking W, indicating 1200ft and displaying a LARS E squawk 5020.

At 1806:50, the LARS E controller advised the B222 pilot*, "(incomplete c/s) there's traffic (Ascot inbound) er southeast by three miles turning northbound into west end rotary same level has you in sight."* The B222 pilot responded, *"I think that's for (B222 c/s) visual*."

At 1807:10, the LARS E controller gave approval for the B222 helicopter to climb to 2400ft. Radar recording shows the B222 indicating an altitude of 1200ft, converging with the BE200 at a range of 0·6nm. The BE200 is indicating an altitude of 1400ft.

The written report from the LARS E controller indicated that, 'the LARS W controller pointed out the 7000 squawk (BE200) which was just appearing from the middle of the known contacts, indicating 1400ft – a similar level to the helicopters' and 'as it had already passed tracking southwest the controller did not call the traffic'.

[UKAB Note (2): The CPA occurs between 2 sweeps of the recorded radar. At 1807:26 the B222, which is turning L through 160°, is climbing through altitude 1300ft QNH 0·1nm W of the BE200 which is also turning slowly L through heading 200°, level at 1400ft QNH. The next sweep shows the BE200, still at 1400ft, 0·1nm to the S of the B222, having passed just ahead of it, which is climbing through 1400ft QNH. The CPA is estimated to be <100ft V and <0·1nm H.]

At 1808:05, the LARS W controller confirmed the BE200's altitude as 1400ft on QNH 1003 and the ac type as a Beech Kingair.

At 1810:30, the B222 pilot reported that the twin prop looked as though it had come out of Fairoaks and had got a little bit adjacent. The pilot indicated to the LARS E controller that he would call later to discuss the incident.

NATS reported that there had been no previous incidents of this kind associated with the Royal Ascot week. They regarded this as a one-off event that should not reflect on the previous 3 years of developing the event procedures. It was thought that the pilot departing Fairoaks was unaware of the Ascot procedures.

As a result of a recent meeting between the Ascot event stakeholders, a number of measures have been proposed for the 2012 event:

The Ascot organisers will promulgate an AIC.

Farnborough will issue a comprehensive NOTAM.

Flight safety awareness of the event will be publicised.

Fairoaks will provide a pilot briefing, with a requirement that 'out of hours' movements will be required to telephone Farnborough, prior to departure

It is not clear if the BE200 pilot was aware of the 'West End Free-lane' and associated arrangements for Ascot departures. No AIC was issued and the NOTAM only referred to the Ascot Temporary ATZ. The designated Ascot airspace lies within the London CTR and was applicable to approved helicopter operators. However, the additional activity generated outside the CTR was likely to impact upon GA pilots flying in the adjacent airspace.

Ascot helicopters movements were working LARS E and by default Fairoaks out of hours departures would contact LARS W. It was likely that this situation was not foreseen and had not occurred in the past.

The LARS W controller received a call from the BE200 flight, which probably prompted the controller's early detection of the conflict. However, the LARS E controller was reported as being very busy. This together with complex radar picture and the garbling of the radar labels prevented the detection of the 7000 squawk as the BE200 departed.

The incident occurred 1min after the BE200 became airborne, within Class G airspace. Both flights were in receipt of a BS, with reported good flight visibility (>40km). CAP 774, UK Flight Information Services, states:

'Within Class F and G airspace, regardless of the service being provided, pilots are ultimately responsible for collision avoidance and terrain clearance, and they should consider service provision to be constrained by the unpredictable nature of this environment.'

'A Basic Service is an ATS provided for the purpose of giving advice and information useful for the safe and efficient conduct of flights. This may include weather information, changes of serviceability of facilities, conditions at aerodromes, general airspace activity information, and any other information likely to affect safety. The avoidance of other traffic is solely the pilot's responsibility.'

'Pilots should not expect any form of traffic information from a controller, as there is no such obligation placed on the controller under a Basic Service outside an Aerodrome Traffic Zone (ATZ), and the pilot remains responsible for collision avoidance at all times. However, on initial contact the controller may provide traffic information in general terms to assist with the pilot's situational awareness. This will not normally be updated by the controller unless the situation has changed markedly, or the pilot requests an update. A controller with access to surveillance derived information shall avoid the routine provision of traffic information on specific aircraft, and a pilot who considers that he requires such a regular flow of specific traffic information shall request a Traffic Service. However, if a controller considers that a definite risk of collision exists, a warning may be issued to the pilot.'

The Airprox occurred when the two flights operating VFR in Class G airspace and in receipt of a BS, came into conflict.

Under a BS there is no obligation placed upon the controller to provide TI. However, if a controller considers that a definite risk of collision exists, a warning may be issued to the pilot. The LARS W controller was able to pass a warning to the BE200 flight, but the LARS E controller did not detect the departure from Fairoaks and was unable to pass a warning.

A number of factors were considered to have contributed to the cause of the Airprox:

The workload of LARS E and the garbling of the radar labels delayed the controller becoming aware of the Fairoaks departure. The Airprox occurred within 1min of the BE200 becoming airborne and the BE200 pilot called on a different frequency to the helicopters exiting the Ascot delegated area.

There were no additional arrangements to brief pilots departing from Fairoaks in accordance with 'out of hours' procedures.

There was no AIC or NOTAM promulgating the arrangements for traffic entering and leaving the Ascot designated area, which would have increased the awareness of GA pilots operating in the adjacent area.

CAA ATSI is content that the proposals made for the 2012 event will address the safety issues highlighted by this Airprox.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

The NATS Advisor informed Members that in previous years LARS W had been delegated to work traffic entering/ leaving via the 'W End Free-lane'. The task was moved to LARS E to reduce the traffic loading on the LARS W frequency, which is usually the busiest LARS position at Farnborough. It appears that both the B222 and BE200 crews were going about their business with both flights establishing a BS from Farnborough. SA could have been enhanced had they been on the same frequency but the crews were responsible for maintaining their own separation from other ac through see and avoid. The BE200 pilot had seen the 2 previous 'W End Free-lane' departures but did not see the B222 following behind. LARS E had not noticed the BE200 depart Fairoaks owing to multiple radar tracks and label garbling and was too busy to accept LARS W's warning. From the radar recording it was clear that there was an opportunity for both crews to see each other's ac for some time prior to the Airprox, the BE200 converging from the B222's L and the B222 converging from the BE200's 1 o'clock. Both crews cited cross-cockpit visibility deficiencies owing to their seating positions; while these were factors, they should be mitigated by moving the ac's heading and/or by moving one's head. The B222 had right of way under the RoA regulations but these rules rely on crews sighting a potential confliction beforehand. The B222 pilot saw the BE200 too late to take avoiding action as it passed in front, he estimated by 60m, as he was climbing and turning L; Members agreed that this had effectively been a non-sighting, and a part cause of the Airprox. LARS W had done well in seeing the confliction and issuing a warning to the BE200 flight which enabled the pilot to see the B222 close-by. However, the BE200 pilot then lost sight of the helicopter whilst tightening his avoiding action turn, unaware of or misjudging the helicopter's flightpath and close proximity; Members agreed his avoiding action had been ineffective and was the other part cause. These elements together with the recorded minimum separation were enough to persuade the Board that an actual risk of collision existed during this incident.

Whilst understanding the rationale for spreading the workload at Farnborough between LARS W and E, the Board acknowledged the intended proposals for next year, and the commitment by the NATS Advisor to ensure they are implemented, which will hopefully militate against this situation occurring again.

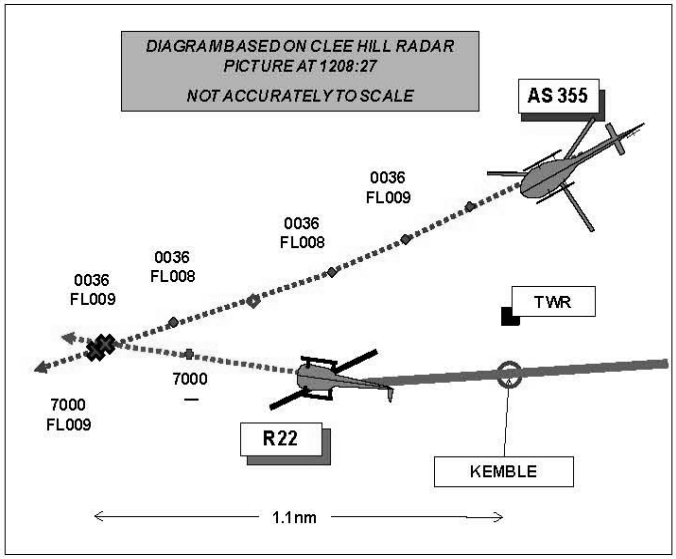
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Effectively a non-sighting by the B222 crew and ineffective avoiding action by the BE200 pilot.

Degree of Risk: A.

AIRPROX REPORT NO 2011060

Date/Time:	23 Jun 2011 1208Z	
Position:	5140N 00206W (1nm W of Kemble - elev 433ft)	
Airspace:	Kemble ATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	AS355	R22
Operator:	Civ Comm	Civ Pte
Alt/FL:	700ft (N/K)	800ft QNH (1014mb)
Weather:	VMC CLBC	VMC CLBC
Visibility:	>10km	999
Reported Separation:	30ft V/0ft H	80ft V/100ft H
Recorded Separation:	0 V/ <0.1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE AS355 PILOT reports that he was flying a pipeline inspection flight in a burgundy coloured helicopter, squawking 0036 (pipeline inspections) with Modes C and S and in receipt of a FIS from Kemble TWR; PCAS was carried but did not indicate any traffic. They were on a pipeline survey and had finished one pipeline at South Cerney and were heading 270° at 120kt, at 700ft on QFE 1001mb, [the QNH was 1016mb] positioning to the start the next inspection. He had called Kemble for transit through the cct 1.5nm to the N and maintained contact with ATC, passing his intention to ATC to transit to the N across the extended centre line of the RW crossing it at 3nm.

He was aware that there was a Robinson R22 leaving the cct and that the other cct traffic was aware of their position.

The first sighting of the conflicting ac was when the observer, seated in the front LHS, saw the conflicting traffic in their 9 o'clock below their ac and passing beneath; he shouted 'climb'. The pilot saw the ac's rotor blades in the chin bubble by his feet on the R of the ac and last saw the conflicting ac at 5 o'clock about 150ft away a split second later. He climbed the ac immediately the traffic was called by the observer. The other ac was approaching from below and behind them, in their blind spot and they would have been in theirs.

He informed Kemble TWR of the Airprox and assessed the risk as being high.

THE R22 PILOT reports flying a private flight from Kemble in a white ac with lights on, at the time in contact with Kemble ATC and squawking 7000 with Mode C. He was cleared for take-off from RW26 (grass) and, while in the climb at about 800ft (QNH) heading 260° at 60kt and 1nm W of the airfield, they were overflown by a dark coloured (possibly black or blue) AS350 or AS355. The ac was not sighted during the taxi or take-off from RW26 (grass). From the radio traffic the airfield appeared to be busy, however, no TI was passed by ATC nor were any calls heard from the other ac approaching or overflying the airfield.

The first sighting of the other ac was when it had already overflown them, as it was flying in a SW'ly direction.

He was not able to take any avoiding action as the other ac had already passed him and he assessed the risk as being high.

Although not required to do so, he opined that it would have been good practice for ATC to pass TI about an ac overflying the airfield at 1000ft. It also would have been good practice by the pilot of the over flying ac to make an 'over head the field call'.

He believes this incident brings into question why the other ac was allowed to overfly the airfield at such a low height which would bring it into possible conflict with other traffic and why the pilot elected to do so.

ATSI reports that the Airprox occurred at 1208:26, within the Kemble ATZ, which consists of a circle, radius 2nm, centred on RW08/26 and extending to 2000ft aal (436ft).

The Airprox was reported by the pilot of an Aerospatiale AS355 helicopter operating on a pipeline patrol and squawking 0036 and the other ac was a Robinson R22 helicopter departing from Kemble for a VFR flight to Blackbushe.

A FISO service is provided at Kemble. The FISO reported traffic levels as moderate with RW26 (hard and grass) in use.

ATSI had access to RTF and radar recordings and reports from both pilots. The FISO initially thought that the Airprox had occurred to the W and outside the Kemble ATZ.

The weather for Lyneham was:

METAR EGDL 231150Z 23010KT 9999 VCSH SCT028 BKN050 12/10 Q1016 BLU NOSIG=

At 1158:35, the R22 helicopter called for engine start for a flight to Blackbushe, departing to the SW and the FISO approved the start, *"(R22)C/S start approved Runway two six lefthand circuit the QNH one zero one six*."

At 1202:04 the R22 reported ready for departure, requesting a departure direct to the SW.

One sec later at 1204:05 the AS355 established two way communication with Kemble and advised*, "afternoon sir (AS355)C/S a twin squirrel two onboard out of Dunkeswell for Halfpenny Green we at er South Cerney a thousand feet on one zero one five er looking route through overhead if we can er westbound";* South Cerney is 4.5nm E of Kemble. (Dunkeswell is 64nm SW of Kemble and Halfpenny Green is 51nm N of Kemble.)

The AS355 pilot was passed the QFE 1001mb and reported at a height of 600ft. The FISO replied*, "(AS355)C/S roger have one aircraft turning downwind one aircraft in the two six lefthand circuit report entering the zone"* and the pilot responded*, "Copy the traffic and wilco (AS355)C/S".*

An ac operating at Babdown Farm, situated 5nm SW of Kemble, was passed TI, *"C/S...one helicopter to transit south to north six hundred feet Kemble QFE".* The FISO could not recall why this had been passed but added that he had not heard the AS355 report at South Cerney, but remembers being aware that the AS355 was routeing through the ATZ on a W'ly track. The FISO indicated that pipeline helicopters frequently operate in the area but the route through the airfield was unusual.

At 1206:27, the R22 pilot was asked to report lined up RW26-grass.

At 1206:48, the AS355 reported*, "(AS355)C/S approaching the ATZ boundary to the er northnortheast and our present track should er take us through the extended centreline about a mile out to the west"* and the FISO replied*, "(AS355)C/S roger that's copied report west abeam"* and the pilot acknowledged.

The FISO reported that the AS355 was not in sight, but he believed it to be about 2nm NNE and would pass NW of the airfield before crossing the extended centreline of RW26. He added that the R22 had requested a direct route to the SW and he thought that the two helicopters would be on diverging tracks.

At 1207:03, the FISO advised the R22, *"Helicopter (R22)C/S take off and depart your discretion surface wind two nine zero degrees eight knots"* and the R22 pilot replied, *"and depart my discretion helicopter (R22)C/S*".

The radar recording shows the AS355 to be 1.3nm NE of the ARP at 1207:10 tracking W and indicating FL008 (converting to 476ft on QFE 1001 with 1mb equal to 27ft); at 1207:53 it is 0.5nm NW of the ARP tracking SW.

At 1207:20 a Bulldog ac reported lining up RW26-hard and the FISO responded, *"(Bulldog)C/S..the helicopter ahead is departing to the southwest with that in mind take off at your discretion surface wind two nine zero degrees eight knots".*

The Kemble Tower FISO control desk faces S. The FISO reported that he had not sighted the AS355 and was talking to and observing other ac manoeuvring on the airfiled; he thought that it might have passed close to the overhead and been above the roofline. The FISO indicated that he had only visually aquired the AS355 as it approached a position NW abeam the RW08 'numbers'. The R22 was not in sight at that point and he thought that it had departed to the SW.

At 1208:02, the Bulldog was still on the RW and the FISO advised, *"(Bulldog)C/S just caution one erm twin squirrel in the overhead north side to depart to the southwest",* the pilot acknowledged and elected to hold for a second.

At 1208:29, the radar recording shows the AS355, 1.2nm W of the ARP and the AS355 was then indicating FL009 (576ft on QFE 1001mb); the R22 was not showing on radar at that point. [Note: this is the position of the Airprox but the diagram above shows the preceeding radar sweep].

At 1208:41 the radar recording shows the AS355, 1.5nm W of the ARP indicating FL010 (676ft on QFE 1001mb), with the R22 tracking WNW, in the AS355's half past four position at a range of 0.2nm; the two ac have crossed and are then diverging.

At interview the FISO indicated that he had lost sight of the R22 which must have routed WNW rather than directly to the SW.

1209:20 the AS355 pilot called Kemble and asked if the R22 had them in sight; there was no immediate response so the AS355 pilot added*, "er Kemble er (AS355)C/S I think we'll er need to report that as an Airprox er we'll give you a call later on but it was a white R twenty two out of the field";* this was acknowledged by the FISO.

At 1211:05 the AS355 pilot reported clear to the W and changing to the en-route frequency, but asked if the R22 was on frequency. The FISO asked the R22 pilot if the AS355 had been sighted on departure and he replied, *"er when he crossed over top of us we did er (R22)C/S.*"

The FISO recognised that TI should have been passed and would have aided the situational awareness of both pilots. He was asked if he had considered asking the AS355 to route N of the ATZ but he indicated that he was only able to pass TI and suggesting a routeing did not guarantee a pilot's compliance.

It is not clear why another ac was passed TI about the helicopter routeing S to N at 600ft; it is considered that the FISO may initially have misunderstood the route from Dunkeswell to Halfpenny Green.

When the AS355 reported approaching the NNE boundary, the FISO thought the AS355 was about 2nm NNE. He indicated that he was aware of the intended route, W through the ATZ and across the RW26 extended centreline at 1nm so the pilot was asked to report W abeam. The FISO thought that the AS355 would transit NW abeam the airfield and the R22 would depart directly to the SW with diverging tracks.

The R22 pilot had requested a route direct to the SW and this may have caused the FISO to believe that it would lift and immediately take up a SW'ly track.

It is considered that the intended track of the AS355, crossing 1nm W of the airfield, had the potential to bring the two helicopters into close proximity and would have justified the passing of updated TI.

The AS355 pilot was advised about the cct traffic but not the departures. He could have heard the R22's departure calls, but it is not clear why the pilot did not aquire visual contact.

The FISO did not pass TI to either the AS355 or R22 helicopters that would have aided the pilots' SA and assisted them in obtaining an early visual sighting of each other. The Manual of Flight Information Services, CAP410 Part B, Chapter 1, Page 1, Paragraph 2.1, states:

'The FISO has the following specific responsibilities:

issuing information to ac flying in the aerodrome traffic zone to assist the pilots in preventing collisions.'

Both ac were operating within the ATZ and were in receipt of a service from the FISO. CAP774, Chapter 1, Page1, Paragraph 2, states:

'Within Class F and G airspace, regardless of the service being provided, pilots are ultimately responsible for collision avoidance and terrain clearance, and they should consider service provision to be constrained by the unpredictable nature of this environment. The Class F and G airspace environment is typified by the following:

It is not mandatory for a pilot to be in receipt of an ATS; this generates an unknown traffic environment;

Controller/FISO workload cannot be predicted;

Pilots may make sudden manoeuvres, even when in receipt of an ATS.'

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar recordings and a report from the appropriate ATC authority.

The Board considered the parts played by the two pilots and the FISO in turn.

Members agreed that the AS355 pilot should have planned to, and given, the busy aerodrome at Kemble a wider berth; since he was in transit between two pipeline inspections, doing so would not have adversely affected his flight profile. Notwithstanding that the FISO did not provide him with TI regarding the R22 taking off, the AS355 pilot should have been alert to the possibility ac departing the visual circuit area. Further, even if he did not avoid the aerodrome completely, Members considered that flying through the departure lane at about the same height as ac in it, to be ill advised as it can, and in this case did, lead to unnecessarily close encounters. Although the R22 was well below him, Members thought that the AS355 pilot should have manoeuvred his ac to make the RW visible.

The R22 pilot was also not passed TI regarding the AS355 and was not aware of its presence until the ac came in close proximity less than 1min after he took off. Although the pilot was aware that the circuit was busy, he did not (perhaps could not) see the AS355 which approached from his 5 o'clock and well above.

Both pilots however, had made the appropriate RT calls on the same frequency and despite that TI was not passed to either, Members thought that both should have been aware of the presence and location of each other from the (background) RT traffic.

The FISO, Members thought, had not fully appreciated the intended routeing of the AS355 which in any case had been slightly closer to the airfield than he initially stated. Although technically accurate, the AS355's first transmission to the FISO could have given a better description of his intended routeing from his location reported as South Cerney. The FISO, it seemed, had anticipated that it would be far enough away from the airfield and the departure lane not to pose a problem. Further he had apparently anticipated the R44 would turn immediately onto a SW track rather than going straight ahead then slightly right to clear the cct then turn SW (in accordance with the noise abatement departure procedures published in Pooleys Flight Guide). It was clear to Members that, although both pilots were operating in the visual circuit area under the 'see and avoid' principle, had TI been passed to either or both, that might have prompted them to be aware of, and specifically look for, the opposing ac; Members agreed that this had been part of the cause of the incident.

In actuality however, neither pilot saw the opposing ac in time to take any avoidance. Further, although the actual CPA was between sweeps, the radar recording verified that the separation was very small; that being the case, Members agreed unanimously that there had been an actual risk of collision.

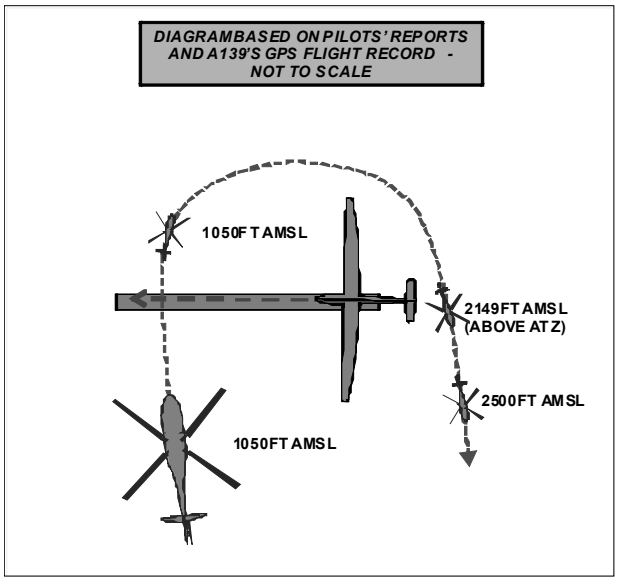
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: In the absence of TI, effectively non-sightings by the pilots of both ac.

Degree of Risk: A.

AIRPROX REPORT NO 2011061

Date/Time:	19 Jun 2011 1355Z (Sunday)	
Position:	5101N 00238W (RNAS Yeovilton - elev 75ft)	
Airspace:	ATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	SZD-50 Glider	AW139
Operator:	Civ Club	NK
Alt/FL:	500ft	NK
	(QFE NK)	NK
Weather:	VMC CLBC	VMC CLBC
Visibility:	>5nm	10km
Reported Separation:		
	500ft V/0.5nm H	NK
Recorded Separation:		
	Est 800ft V/NR H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PUCHACZ GLIDER PILOT reports flying the second of two check flights for the handling pilot in a white glider listening out on the [unmanned] TWR VHF frequency [120.8]. The ac was launched by wire auto-tow from RW27 and they were in the initial climb at about 300ft and 55kt when the instructor aborted the launch to simulate a launch failure/cable break. As the handling pilot lowered the nose of the glider a red and white helicopter was seen in their 11 o'clock position heading slightly towards them, crossing from L to R. The instructor took control and commenced a descent to land straight ahead. The helicopter maintained its height of about 1500ft and turned about 030° left crossing ahead of them before turning R on the N side of airfield over the technical site. Thereafter, the helicopter turned R and flew away from the airfield to the SE.

Glider control on the ground reported that they saw the helicopter enter the circuit area from the SW crossing over the threshold of RW09 before turning R to the N of the airfield and R again and depart to the SE.

He thought that the other ac was an AW139, possibly Coastguard.

He discussed the incident on the ground and the CFI reported it to Commander Flying, assessing the risk to be Medium.

THE AW139 PILOT reports that they were scrambled by ARCC Kinloss and were en–route from Portland to the site of a helicopter crash S of Glastonbury, heading 344° at 157 kt, squawking 0023 with Modes C and S; TCAS was fitted.

They made a blind call on Yeovilton Radar frequency 127.35 transiting the airfield S to N but no response from any other station was heard. No ac were seen in the vicinity although there was TCAS activity to the N of Yeovilton, presumably in the vicinity of the helicopter crash site, caused by other rescue helicopters at the scene.

Prior to arrival at Glastonbury, they were stood down to return to base as other helicopter rescue assets were already at the scene so he reversed course to RTB.

They provided information from their 'Skytrac' system showing altitude track and speed heading towards Glastonbury and return to Portland. At the time of the reported incident, (1355) the A139 was tracking 166° at 3199ft in the climb to FL55 on their return to Portland in good VMC conditions.

If this was an accurate time then the pilot recalls discussing a TCAS return with the crew and asking that they maintain a good lookout; however, there was no relative height information associated with it and with clear skies above and broken cloud below it was not considered a threat.

UKAB Note (1): Yeovilton is promulgated in the UKAIP ENR 2-2-2-5 as an ATZ (Government Aerodrome 2.5nm up to 2075ft amsl) and is active H24. The ANO, RoA 45 (1), (2) and (3) require that:

'If the aerodrome has an air traffic control unit the commander shall obtain the permission of the air traffic control unit to enable the flight to be conducted safely within the zone'.

UKAB Note (2): Yeovilton is promulgated in the UKAIP ENR 5-5-1-7 as a glider launch site (winch ground tow and tug aircraft/motor glider) HJ listed up to 2000ft aal (2075ft).

UKAB Note (3): The recording of their flight data helpfully provided by the A139 crew shows the helicopter turning right to RTB almost over Yeovilton airfield at 1352 and commence a slow climb from 1000ft amsl to FL55. This correlates with the respective pilots' description of events but the incident is not shown on the radar recordings.

HQ NAVY COMMAND at the time of this Airprox the ATC Tower at RNAS Yeovilton was closed and unmanned, although the airfield is often open for operational flying during periods over a weekend. Yeovilton has an active Gliding Club which takes every opportunity to conduct glider flying whilst the airfield is closed and has been doing so for many years. Yeovilton Gliding Club Orders dictate that they must listen out on the ATC Tower frequency in order to deconflict their activity with station flying and that of the Yeovilton Flying Club (civil registered light aircraft) which also operates whilst the airfield is closed. Glider control is not required in local orders to monitor the LARS frequency (127.35) and would anticipate any ac wishing to penetrate the ATZ to call on the Tower frequency.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, radar recordings, and the A139 route data log.

The Gliding Member pointed out that it was very fortunate that the glider instructor had decided that the flight should consist of a simulated cable break drill early in the launch sequence from a low height, requiring a landing straight ahead. Since this was the case, the glider was separated vertically from the A139 by about 800ft which increased as the helicopter climbed immediately after it was stood down from SAROPS, just to the N of Yeovilton. Notwithstanding this however, Yeovilton is a published and well-known glider launching site and flying across the RW below max cable height is, in normal circumstances, very hazardous for both gliders and 'infringers'. That the A139 flew through the ATZ without clearance, at that stage still deploying to the crash site, was considered less significant by Members than flying over the promulgated and active ground launching glider site, which needlessly placed his ac and therefore his important mission at risk.

Members observed that the purpose of an ATZ is to offer some protection to [fixed wing and rotary] ac operating therein; is not meant to be 'barrier' to other ac and there should be some means of allowing safe penetration by transiting ac. Further, glider sites are not offered ATZ status but are notified in the UKAIP as hazards. It was noted Yeovilton was correctly promulgated in the AIP as a Glider Launch Site but, in common with many other military airfields promulgated as active 'H24', there is no means of allowing ac to transit the ATZ when ATC is closed. Several Members considered this unsatisfactory and unnecessarily restrictive particularly for HEMS/SAR/Police etc. Members also considered that this probably warranted a formal safety recommendation but since the situation was so complex the Board charged the Director with discussing the problem with the appropriate military and civil agencies with a view to agreeing a resolution; the Director agreed, and undertook to report back to the Board. Further, a Member familiar with emergency helicopter operations observed that, since it is not annotated on charts, there is no quick and easy means of determining whether an ATZ is H24 or not.

[Post Meeting Note: This information is published in the Military En-Route Supplement - 'the Red Book' which is available to non military aviators.]

Members observed that there is a common misapprehension, even among some professional pilots, that if there is no response to a call to ATC requesting an ATZ penetration, that they can then fly through the ATZ assuming it to be closed; while this is correct for a MATZ it is not the case for the embedded ATZ which must be avoided if no clearance to enter is obtained. In this case despite that it would have added a few track miles to his otherwise direct flight, Members agreed that the A139 should have avoided the ATZ and by doing so he would also have avoided the glider launch site.

Members observed that had the A139 pilot called on the TWR frequency, which is monitored by glider control, the gliding activity would have been notified to him; however, current procedures for MATZ crossings are that pilots call on the Radar frequency (as printed on VFR charts) and that is what the A139 pilot did.

When considering the degree of risk Members noted that, although potentially serious, in the event there had been more than adequate vertical separation and therefore in their view, no risk of collision.

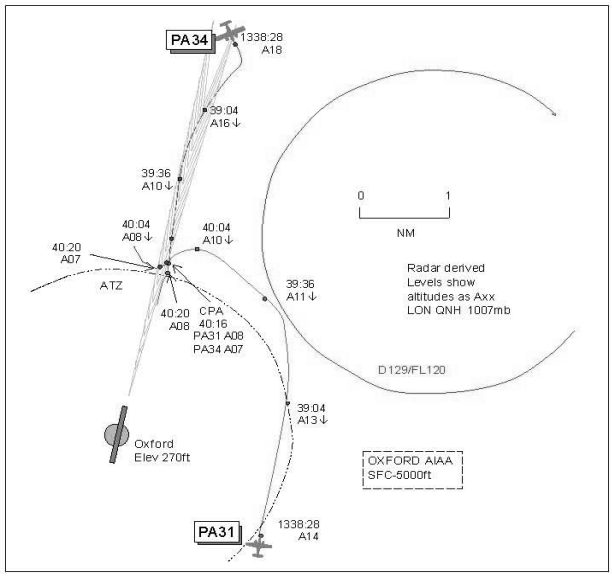
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The A139 pilot entered the ATZ without permission and flew through a notified and active glider site below the promulgated height of the launch cable.

Degree of Risk: C.

AIRPROX REPORT NO 2011062

Date/Time:	22 Jun 2011 1340Z	
Position:	5152N 00118W (2nm FIN APP RW19 Oxford - elev 270ft)	
Airspace:	Oxford AIAA/ATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	PA31	PA34
Operator:	Civ Comm	Civ Trg
Alt/FL:	800ft↓	↓
	QNH 1006mb	QNH 1006mb
Weather:	VMC CLBC	VMC CLBC
Visibility:	>10km	>10km
Reported Separation:		
	50ft V/1-200ft H	100ft V/50m H
Recorded Separation:		
	100ft V/0·1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PA31 PILOT reports inbound to Oxford IFR and in communication with Oxford Tower on 133·425MHz, squawking with Modes S and C. He had previously spoken with, and obtained a service from, Approach in the CPT area and he positioned for a LH downwind join. He was told there was no other cct traffic. He reported downwind, he thought, and was requested to report final for RW19. Once he had turned final descending through 1000ft QNH at 120kt he heard Tower request the position of another ac; at this point he was 2·9nm DME I-OXF. The other ac's pilot replied 2DME and so realising a potential conflict he immediately called, "PA31 c/s also at 2 DME" although at this point he was 2·3DME. He could see no other ac ahead or to the sides so he broke slightly to the L of the extended C/L and then he could see a PA34 below his starboard wing by approximately 50ft and

100-200ft away. He had not heard the PA34 flight call at the IFR reporting point of 4DME. He assessed the risk as high.

THE PA34 PILOT reports flying a dual local training sortie from Oxford VFR and in communication with Oxford Tower 133·425MHz squawking with Modes S and C. Heading 194° at 105kt and 2 DME RW19 Tower called his attention to a PA31 that was on final ahead. The I/F screens were obscuring his view of the ac but on leaning forward he saw the PA31 about 50m ahead and slightly to the L and 100ft above. He immediately turned R and, when clear, climbed away to reposition onto final. He assessed the risk as low.

THE OXFORD ADC reports the PA31 was inbound IFR on a downwind join and when the pilot 'checked in' on frequency he was informed that there was no cct traffic and was instructed to report final No 1. The PA34 was operating VFR whilst conducting an NDB approach to RW19 and after the pilot reported base turn complete with Approach the flight was instructed to contact Tower. The pilot 'checked in' with a very brief c/s call and was instructed to report 4 DME (SOP) and was informed that they were No 2 to a PA31 downwind that was a hospital flight. The PA31 was observed halfway through the base turn and he had still not received a call from the PA34 flight so he picked up the binoculars to check its position whilst eliciting a range check. The PA34 pilot reported at 2 DME as the PA31 pilot also reported 2 DME; at this time the PA34 was seen pulling up sharply to the R and turning away from the PA31; both ac had been in extremely close proximity. Traffic levels were light with 4 speaking units and several ground units making frequent calls on a discrete frequency. Oxford is technologically challenged as they operate without an ATM and rely on 'Mk1 eyeball' and accurate pilot's reports in order to sequence ac. It is becoming increasingly prevalent for students to not make such essential safety calls and the burden of separation is being placed upon the skill and wits of the controller on duty. The 4 DME call is an essential safety call to facilitate the safe integration of cct and approach traffic and if omitted by the student it should be made by the instructor.

ATSI reports that the Airprox occurred at 1340:11, within Class G airspace, 2·3nm to the NNE of Oxford Airport and just outside the Oxford ATZ. The Oxford ATZ extends to a height of 2000ft above aerodrome level and is bounded by a circle 2nm radius centred on the mid-point of RW19.

The PA31 was a hospital CAT B, IFR flight, inbound to Oxford from Jersey. The radar recording shows the PA31 passing Compton (CPT) at an altitude of 1900ft below CAS. It is not clear if the PA31 had cancelled IFR earlier en-route.

The PA34 was a local training flight conducting an NDB approach and operating in accordance with VFR.

Oxford were providing split positions for Aerodrome (Tower) and Approach control, without the aid of surveillance equipment. The Tower controller reported workload as light with no distractions.

CAA ATSI had access to RT and radar recordings, together with written reports from the 2 pilots and 2 controllers.

The weather for Oxford was not available, however the weather for Brize Norton was provided: METAR EGVN 221250Z 24010G20KT 9999 BKN028 SCT220 19/09 Q1006 BLU NOSIG=

The PA34 flight was under VFR at 3500ft, in receipt of a BS and holding at the OX-NDB, prior to commencing an NDB approach for RW19. At 1330:07, the PA34 flight was cleared by Oxford Approach for the NDB approach and asked to report beacon outbound.

At 1332:00, the PA31 flight established contact with Oxford Approach requesting a BS and a visual join. The Approach controller passed the QNH 1006 and the PA31 pilot reported 19nm to the SSE of Oxford requesting a join downwind LH for RW19.

At 1332:25, Approach replied, *"(PA31 c/s) that's understood join er visual downwind left hand then for runway one nine traffic is a P A thirtyfour in the Oscar Xray hold three thousand five hundred feet er he's V F R shortly to go outbound for the N D B one nine and Weston on the Green Danger Area one two nine is active to flight level one two zero report the field in sight*." This was acknowledged by the PA31 pilot.

At 1333:22, the PA34 pilot reported beacon outbound and Approach advised, *"(PA34 c/s) report leaving altitude three thousand five hundred feet traffic is a P A thirty one inbound from the south for a downwind join visual."* There was a short period of transmitter modulation, but no audible response from the PA34 pilot.

At 1334:57, the PA34 pilot reported leaving 3500ft and Approach instructed the pilot to report base turn complete. This was acknowledged by the PA34 pilot.

At 1337:18, the PA31 pilot reported 5nm to run and Approach transferred the flight to the Tower frequency 133·425MHz.

At 1337:34, the PA34 reported base turn complete and Approach transferred the flight to the Tower on frequency 133·425MHz.

Both flights were coordinated with the Tower controller, who later stated, that the PA31 strip had been placed in the active bay and the PA34 strip had been cocked out, indicating that the ac had commenced the NDB and would be transferred by APC once 'base turn complete'.

At 1337:38 the PA31 pilot contacted the Tower and the controller replied, *"(PA31 c/s) no circuit traffic report on final number one for landing runway one niner."* The PA31 pilot acknowledged, *"Wilco runway one niner (PA31 c/s)."* The radar recording shows the PA31, 4·2nm SE of the airfield. Later the controller was asked whether he considered that the distance of the PA34, at base turn complete [chart 6·5nm] was probably equidistant with the range of the PA31. The controller indicated that he didn't have radar, the PA34 was still with Approach and the range of the base turn tended to vary considerably with training ac.

The Tower controller was asked whether he had considered asking the PA31 pilot to report either downwind or on L base. The controller indicated that the PA31 was No 1 and considered that the ac was approaching the beginning of the downwind leg. The controller added that because of the position of D129 and from previous experience, he expected that the PA31 would make a short cct pattern.

At 1338:28, the PA34 pilot contacted the Tower, the controller responded, *"(PA34 c/s) tower continue approach runway one nine report at four D M E you will be number two to hospital flight traffic that's er downwind."* The PA34 pilot replied, *"(PA34 c/s)*." The radar recording shows the PA31 commencing the downwind leg.

At 1339:36, the radar recording shows the PA31, at the boundary of D129 and turning onto L base, at a position 2·4nm NE of the airfield. The Tower controller indicated that, as he observed the PA31 turning L base, he had a 'sixth sense feeling' and decided to request a range check.

At 1340:00, the Tower controller asked, *"(PA34 c/s) range check please,"* and the PA34 pilot replied, *"we're two D (PA34 c/s)."* The Tower controller responded, *"visual with the chieftain turning in ahead."* At this point the PA31 pilot transmitted, "*er (PA31)c/s we're two D."* The Tower controller responded, "(*PA34 c/s) break off and join overhead for runway one nine."* There was no response from the PA34 pilot.

At 1340:04, radar recording shows the distance between the 2 ac as 0·3nm. The PA34 is on final approach at an altitude of 800ft and the PA31 is on L base indicating an altitude of 1000ft and turning towards final.

At 1340:16, the radar recording shows the distance between the 2 ac as less than 0·1nm with the ac labels overlapping. The PA34 is indicating an altitude of 700ft and the PA31 is indicating an altitude of 800ft.

At 1340:20, the PA34 breaks off the approach by turning R.

Both flights were in receipt of an Aerodrome Control Service. The Manual of Air Traffic Services Part1, Section 2, Chapter1, Page 1, paragraph 2.1, states:

'Aerodrome Control is responsible for issuing information and instructions to aircraft under its control to achieve a safe, orderly and expeditious flow of air traffic and to assist pilots in preventing collisions between:

a) aircraft flying in, and in the vicinity of, the ATZ;

b) aircraft taking-off and landing'

The controller later indicated, that he had subsequently discussed the incident with the PA34 instructor, who advised that they were not aware of the hospital flight and that a student was being examined and had not reported at 4 DME.

The Approach controller had given the PA34 pilot TI regarding the PA31 and it was noted that there was only a transmitter modulation in response. The Tower controller had advised the PA34 pilot that he was "…number two to hospital flight traffic," instructing the pilot to report at 4 DME. It was noted that on this occasion there was only the c/s as acknowledgement.

The controller indicated that in the busy non-radar, training environment, and busy cct at Oxford, controllers are reliant upon accurate position reports from pilots making an instrument approach, in order to effectively integrate the traffic into the cct. It is not clear why the PA34 pilot did not provide a range check at 4 DME.

On first contact with the Tower, the PA31 pilot was advised that there was no cct traffic. The PA31 pilot was passed TI about the PA34 by the Approach controller and was aware of the PA34. It is likely that the PA31 pilot's situational picture was also reliant upon the PA34 making a call at 4 DME. The PA31 pilot's written report indicated that, "I did not hear the PA34 call at the IFR reporting point at 4 DME."

The integration of traffic into the visual cct is the responsibility of the Aerodrome controller. The PA31 hospital flight, with a clear cct was cleared to final. When the PA34 flight called Tower, the PA31 was in the downwind position. The PA34 pilot was instructed to, "continue approach runway one nine report at four D M E you will be number two to hospital flight traffic that's er downwind." The controller was reliant upon the 4 DME check in order to integrate the arrival into the cct pattern. On this occasion, traffic loading was light however, the possibility of a late or missed call from a pilot, due to heavy RT loading or complex traffic situations, is something that controllers need to safeguard against.

The incident occurred when the PA34 pilot, having been advised about the hospital flight in the circuit, did not report at 4NM DME as instructed by the Tower controller, resulting in the 2 ac coming into close proximity on final approach.

CAA ATSI considered that, in a non-radar environment controllers are reliant upon accurate position reports from pilots. An initial request for the range of the inbound PA34 on first contact with the tower, would have aided the Tower controller's assessment of the situation. Additionally a request for the PA31 to make a standard call downwind or when turning L base may have prompted the controller to re-assess the plan or check the position of the arriving PA34 and would also have served to give the PA34 pilot a situational reminder of the other traffic on frequency.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

Members agreed with the ATSI summary of the incident. In the procedural environment, without radar or ATM, controllers are reliant on accurate pilot reports. The controller had formulated a plan with the CAT B PA31 being made No 1 in the traffic sequence and the PA34 No 2. The PA34 pilot was told to report at 4 DME and position No 2 to the PA31; however, the PA34 pilot did not comply with either of the ATC instructions which Members agreed had caused the Airprox. The 4 DME call was essential to allow the controller to integrate the traffic into cct and Members were surprised that the instructor had not made the call in the absence of the handling pilot, under examination, not carrying out the instruction. That said, it appeared that SA was diminished in the PA34 cockpit as the pilot had continued his approach apparently unaware of the PA31 until it was pointed out by the controller after querying the ac's range approaching 2 DME. Members acknowledged that visibility is diminished when I/F screens are erected but this deficiency should be mitigated by the instructor moving his head frequently during lookout scans. The PA31 pilot was complying with ATC instructions positioning No 1 towards final and, although aware that the PA34 was inbound, he was unaware of its range. Whilst turning through base leg onto final, the pilot's view was degraded as the PA31 was belly-up to the approaching PA34. Both crews only saw each

other's ac as the PA31 was establishing on final approach and were made aware of each other's proximity when the ADC queried the PA34 flight's range. On hearing the PA34 pilot's response, the PA31 manoeuvred to the L revealing the PA34 just 50ft below and 100-200ft to the R of his ac whilst the PA34 instructor visually acquired the PA31 just 100ft above and 50m ahead. These factors led Members to unanimously agree that luck had played a large part in the incident, with both flights having missed each other purely by chance. This left the Board in no doubt that there had been an actual risk of collision during this Airprox.

The CAA SRG Advisor informed the Board that the ATC Procedures Working Group had recently discussed the integration of traffic in the vicinity of aerodromes as an agenda item and that current procedures and guidance are under review.

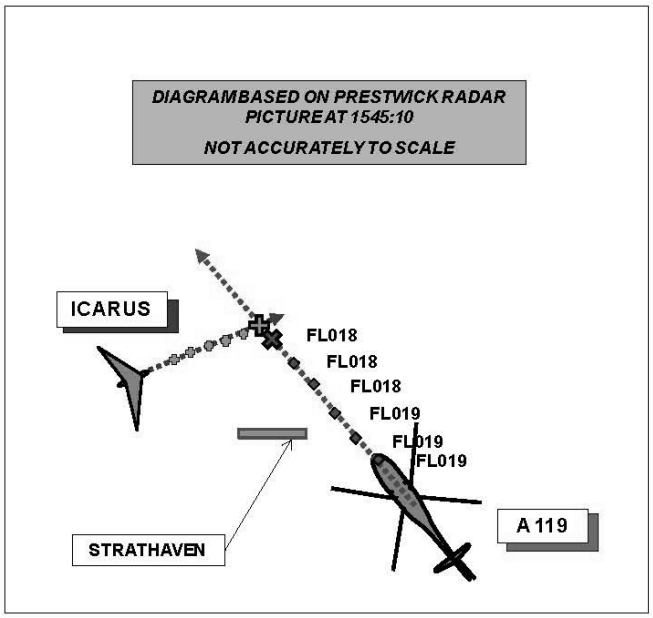
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The PA34 pilot did not comply with ATC instructions.

Degree of Risk: A.

AIRPROX REPORT NO 2011063

Date/Time:	20 Jun 2011 1545Z	
Position:	5541N 00406W (Strathaven RW27 RH cct - elev 847ft)	
Airspace:	Scot FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Ikarus C42	Agusta 119
Operator:	Civ Club	Civ Pte
Alt/FL:	800ft	1968ft
	QFE (NK)	QNH (NK)
Weather:	VMC CAVOK	VMC CAVOK
Visibility:	NR	>10km
Reported Separation:	200ft V/0ft H	350ft V/ 2000-3000m H
Recorded Separation:	NR V/<0.1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE IKARUS C42 PILOT reports that he was instructing a novice pilot on a VFR flight, returning from Bute to Strathaven VFR in an ac with no lights or SSR fitted; he made a radio call on 135.475 (Safety Common) to alert other traffic that he was 2nm to the W of the field and would be joining downwind RH for RW27. He then called downwind for RW27, heading 090° at 70kt and at 800ft QFE. When in the late downwind position, his student alerted him to a white helicopter (registration reported), 350m away in their 2 o'clock position. He assessed a collision to be imminent and took avoiding action by lowering the nose and reducing the power to idle. He saw the helicopter pass immediately overhead, about 200ft above.

He assessed the risk as being high, reporting the incident on landing.

THE AGUSTA 119 PILOT reports that they were on a VFR flight from a private site in North Norfolk to Glasgow in a black and white ac with Modes C, S and TCAS 2 fitted; he was PiC in the RH seat with a co-pilot in the LH seat and the weather was CAVOK.

AIRPROX REPORT No 2011063

About 50nm S of Strathaven they had been working Scottish Information, but when they were 30nm SE of Glasgow Airport heading 314° at 136kt, they were requested to change to Glasgow APR on 119.1. On checking in, the Glasgow controller gave them a squawk and a pressure setting but he cannot recall if they were placed on a TS or BS; however, their instructions were to descend from 3000ft for a VFR Zone entry at VRP East Kilbride, not above 2000ft alt. They commenced a descent to enter the Zone at East Kilbride below 2000ft and they were aware of the Strathaven Microlight Site; however on approaching it, neither he nor his co-pilot saw any activity, they had no published RT frequency to call them and they were still above 2000ft [amsl].

He briefly saw a microlight seeming to appear out of nowhere but with hindsight he thought that it had been either on the downwind leg or it was established on right base in a descent. He estimates that the ac was some 300-350ft below him. They received no warning from ATC of this traffic or any other activity at Strathaven.

He assessed the risk as being medium.

From a later telephone call to the club he understands that they were using RW27 with RH circuits. On further checking he determined that the aerodrome elev is 847ft and their circuit height is 1000ft. He also understands from the club that the ac had no form of transponder, so it would not have been displayed on their TCAS.

He retrieved the flight data from their moving map display and enclosed a copy.

On viewing the route recording he thought that they might just have flown over or near the NE corner of the aerodrome at an alt of 2000ft.

[UKAB Note (1); The route data recorder shows the ac passing 1.6km to the E of the centre of the Airfield (over the W edge of Strathaven town at 1968ft amsl, tracking 314°).

ATSI reports that the Airprox took place in Class G uncontrolled airspace between an Ikarus C42 Microlight (M'light) and an Augusta A119 Koala helicopter (A119).

The M'light was operating in the vicinity of the grass strips at Strathaven after a flight from Bute and was maintaining a watch/broadcasting its intentions on Safetycom, 135.475 MHz (unrecorded). The ac was not in receipt of an ATS. The M'light was not fitted with a transponder.

The A119 had departed from a private site at Binham, Norfolk and was in contact with Glasgow APR on 119.1 MHz in receipt of a BS while inbound VFR. Glasgow ATC was unaware of the Airprox and, having been notified of the incident, filed a unit report with ATSI in retrospect.

ATSI had access to the following in the course of its investigation:

M'light and A119 pilots' reports, recording of frequency 119.1 MHz, recorded area surveillance, CAP493 and the UK AIP.

The METAR for Glasgow was:

EGPF 201550Z 28007KT 240V330 9999 FEW030 SCT040 17/09 Q1009=.

UK AIP ENR 1-1-5-9 (17 Dec 09) states:

'Those Microlight Flying Sites where flying is known to take place are listed at ENR 5.5 and are regarded as aerodromes. Sites are listed primarily as hazards to other airspace users…'

Strathaven is notified as a Microlight site (ENR 5.5) and is annotated on ICAO Aeronautical Charts 1:500,000 and 1:250,000 (AIS, VFR CHARTS). The circuit height (vertical limit, column 2) is not notified in the AIP or on the VFR charts.

A VFR Route Brief (www.ais.org.uk) from EGSH (Norwich) to EGPF (Glasgow), 20 Jun 11 1230-1800Z, VFR FL000 to FL030 does not notify Strathaven activity. NOTAMs published in accordance with ICAO standards are to

cover information of a temporary nature/short term duration. This can include information concerning the presence of hazards to air navigation.

(On 12 Feb 2011 another similar Airprox occurred in the vicinity of Strathaven between a M'light and an AS355 (Airprox 2011011)).

The A119 pilot contacted Glasgow APR 1538:00, a BS was agreed and the A119 was instructed to squawk 2601. The ac was tracking in a NWly direction, at an alt of 2600ft, approximately 32nm SE of Glasgow Airport and 16nm SE of Strathaven.

Under a BS controllers may provide information useful for the safe and efficient conduct of flight. This may include general airspace activity information. The avoidance of traffic is solely the responsibility of pilots.

The Glasgow APR controller instructed the A119 to be not above alt 2000ft within the Zone.

Glasgow ATC previously reported to ATSI that the unit's surveillance does not always show local activity at Strathaven, which is 16.4nm SE of EGPF with an elevation of 847ft. Strathaven is 2.3nm outside the SE corner of the Glasgow CTR (Class D CAS, surface to alt 6000ft). The base of CAS airspace directly above Strathaven is 4500ft amsl (the Scottish TMA Class D).

The preferred radar source for Glasgow APR is their Watchman primary and Glasgow SSR (Brownfield); Kincardine and Lowther Hill are also available as required but it is not known which source the Glasgow APR controller was using at the time of the incident.

There is no requirement for Strathaven to inform Glasgow ATC when they are active and it is standard practice at Glasgow not to provide information on Strathaven activity.

The M'light, crewed by an instructor and trainee, was manoeuvring to join the aerodrome cct pattern downwind RH for RW27; the direction of circuits at Strathaven is to the N. The M'light pilot reported being late-downwind at the time of the incident and that the ac was at 800ft agl.

At 1542:09 the recorded area surveillance (Prestwick Multi Radar Tracking) showed the A119, 6.5nm SE of Strathaven, at an alt of 2100ft while an intermittent slow moving primary return can be seen WSW of Strathaven on a course towards the airfield. By 1544:00 the A119 was 2.3nm SE of Strathaven at alt 2000ft and the primary only return had manoeuvred into a crosswind position for RW27. At 1544:43, the A119 passed abeam the Strathaven RW27 final position at an (Mode C) alt of 1900ft while the primary only return was in a position downwind for RW27 and the ac were 1.5nm apart; by 1545:06 the ac were 0.3nm apart, 0.6nm N of Strathaven and the Mode C of the A119 showed 1800ft. The two radar returns then merged as the A119 continued on its NW track at 1800ft and the primary return continued on a track downwind for RW27 at Strathaven.

The A119 pilot called entering the Glasgow CTR at 1546:27 and shortly thereafter was transferred to the Glasgow TWR. There was no Airprox report given on the APR frequency.

The A119 pilot reported being aware of the Strathaven site and noted there being no published frequency. The two man crew of the A119 reported that they saw no activity in the vicinity of the site until, at the last moment, sighting the M'light as it passed approximately 300 – 350ft below them.

The primary contact observed on the Prestwick MRT was such that its characteristics indicated it to be the reporting M'light i.e. the track flown and the position of the A119 relative to the primary contact.

As the A119 approached the Glasgow Zone boundary, and in order to comply with the ATC requirement of 'not above 2000ft in the zone', the A119 descended.

The cct altitude at Strathaven is 1847ft (847ft elevation plus 1000ft height). The A119 flew less than 1nm to the NE of Strathaven at an alt of 1800ft. The M'light pilot reported being at 800ft agl. Therefore the M'light was at an altitude equivalent of 1647ft (847ft elevation plus 800ft height). By this calculation the vertical distance between the ac may have been less than that reported by both pilots.

AIRPROX REPORT No 2011063

The Airprox occurred when the A119 flew within the vicinity of Strathaven at about circuit height.

The encounter was pre-disposed by several factors:

The location of Strathaven in relation to the Glasgow CTR means that traffic routing inbound from the SE beneath controlled airspace will likely pass-by the vicinity of Strathaven.

The A119 had descended in order to comply with Glasgow ATC's requirement for flight within the Glasgow CTR.

Whilst Strathaven is notified in the UK AIP as a microlight site (and depicted on standard navigational maps), there is no notification of the circuit height used at the aerodrome.

Both ac were flying in uncontrolled airspace where responsibility for collision avoidance rests with the pilots. Glasgow APR had no information to suggest there was flying activity at Strathaven and was not required to provide such information. Surveillance capabilities at Glasgow are not reliable in discerning activity in the vicinity of Strathaven.

RECOMMENDATION: In light of this and the previous Airprox of 12 Feb 2011 the following recommendation is addressed to the Civil Aviation Authority's Aeronautical Information Management Regulation department (DAP):

The CAA should determine whether or not the entry for the Strathaven Microlight Site in the UK AIP should be amended to include details of the vertical limits of activity at the site.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC authorities.

Members observed that this is the second similar Airprox in the last 12 Months (2011011). Further they noted the specific circumstances and location of Strathaven relative to Glasgow and its surrounding CAS make it vulnerable to overflights both by traffic inbound to Glasgow and VFR traffic transiting through the Class G 'corridor' to the E of the CTR. Also its height of 847ft meant that such traffic is often at, or just below, cct height.

It was observed by a GA Member that the A119 crew were aware of Strathaven but its grass RWs surrounded by other areas of grass make the airfield difficult to break out; he observed that the helicopter flew along the edge of the town minimising any noise nuisance but in doing so came close to the airfield boundary and therefore close to the microlight in the cct.

While agreeing that it is good airmanship to give microlight sites a wide berth, Members understood why the A119 had routed to the W rather than to the E of Strathaven airfield and town which would have added a few track miles to his route. Members also observed that the pilot's selection of ATC agencies and types of service selected had been appropriate to the profile of his flight and no other agency was available that would have given a better level of service.

Members discussed at some length whether or not ATC had played any part in the incident. It was agreed that 2000ft amsl was a reasonable alt for VFR traffic to enter the Glasgow CTR and also that routeing the A119 via VRP East Kilbride was also sensible. Members also noted that the controller had no knowledge of the activity at Strathaven either from a warning or from radar information; that being the case Members agreed unanimously that the Glasgow controller had acted entirely appropriately and could not have prevented the incident.

Notwithstanding the issues above, the incident took place in Class G airspace where the respective pilots had an equal and shared responsibility to see and avoid other ac. The Microlight pilot, perhaps because he had been concentrating on instructing his student on his first cct and landing, had seen the helicopter late after his student pointed it out to him. The sighting however, had not been too late for him to take effective avoiding action by lowering the nose, throttling back and descending sufficiently to remove any risk of the ac colliding if the helicopter maintained its flightpath which it did. Although the helicopter pilot 'caught a glimpse' of the microlight this was

altogether too late for him to initiate any avoidance. A combination of these factors, Members agreed, had been the cause of the incident.

In discussing how such incidents could be avoided in the future, Members were unable to determine a practical measure that would work reliably and without significant disadvantages. Controllers thought it impracticable to issue warnings regarding Strathaven as, prior to VFR traffic reporting at a VRP (after passing Strathaven), they would not normally be aware of the ac's precise position, particularly since low level radar coverage is poor in that area. Further, any procedural warning of Strathaven traffic was likely to be inaccurate and out of date; therefore Members agreed that it would not provide meaningful information to the passing pilots. Members also observed that pilots should be aware the cct height at such airfields is normally 800/1000ft agl therefore a warning of the alt of activity on VFR charts was unnecessary and would 'clutter' the chart. It was also observed that different agencies use different criteria for information on VFR charts and databases; one Member familiar with VFR avionics/mapping suggested that the A119 would most likely be using a system on which microlight sites are not displayed.

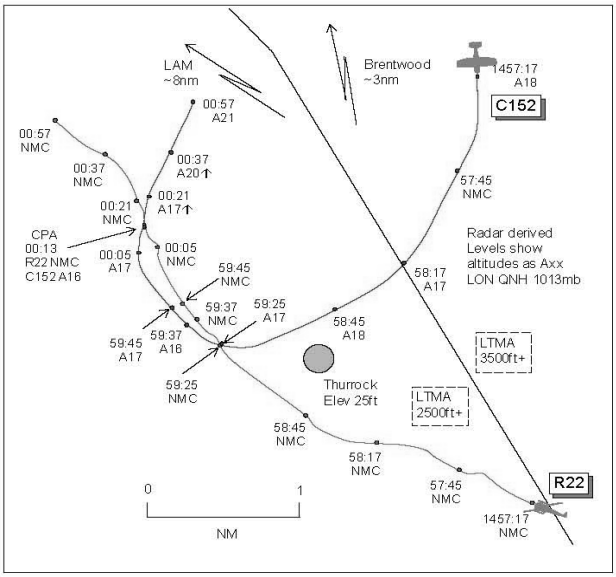
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Effectively a non-sighting by the A119 crew and a late sighting by the Ikarus pilot.

Degree of Risk: C.

AIRPROX REPORT NO 2011064

Date/Time:	19 Jun 2011 1500Z (Sunday)	
Position:	5133N 00020E (1·5nm NW Thurrock)	
Airspace:	LFIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	R22	C152
Operator:	Civ Pte	Civ Trg
Alt/FL:	1200ft	2000ft
	QNH (1013mb)	QNH
Weather:	VMC CLOC	VMC CLOC
Visibility:	>10km	>10km
Reported Separation:		
	350ft	Not seen
Recorded Separation:		
	Radar returns merge	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE R22 PILOT reports en-route to Wycombe Air Park VFR at 80kt and in receipt of a BS from Farnborough LARS N on frequency 132·8MHz, squawking with NMC. The visibility was >10km in VMC and the helicopter was coloured green with strobe lights switched on. The routeing was via DVR towards LAM to remain clear of the London/City CTR. The navigator was a single-engine fixed-wing pilot and together they have made more than 1500hr of flights over 25yr including this trip in both directions a number of times. The GS was slow owing to strong W'ly winds and they were flying at approximately 1200ft on the Chatham RPS as the wind was lighter than at higher altitude. They had just transferred from London Information to Farnborough LARS N and passed Thurrock when a Cessna, travelling roughly in the opposite direction, passed close by on their RHS in level flight with an estimated slant range separation of 500ft. Neither he nor his navigator had seen the Cessna before it appeared close by at about 30° to their direction of travel. Farnborough had not warned them of an ac in the vicinity but there was a changeover of controller just then from a female to male. They did not consider there to be any likelihood

of collision and so did not take avoiding action. A few minutes later, the Cessna then appeared from behind on their LHS in level flight at a closer distance of about 350ft slant range and now travelling in the same direction and overtaking them. The navigator could see the person in the Cessna's RH seat was a man, he thought, of medium build with dark hair wearing a pale yellowish /fawn jumper and was looking into the cockpit diagonally towards the instrument panel. There were 2 on board but the person seated in the LH seat of the Cessna could not be seen and he had not specifically looked at the person when the ac first passed on their RHS. When it had passed it suddenly did a 180° turn to the R towards them and passed directly O/H. He took avoiding action by making a descending turn to the R and assessed the risk as high. The Cessna pilot did not seem to be aware of their presence or to be on the Farnborough frequency. They were concerned as they didn't know whether the Cessna was going to appear again and if so from where. No one seemed to be looking out of the window of the Cessna and the Cessna pilot could hardly have failed to see the R22's yellow and white disc made by the helicopter's blades. The Cessna was coloured white with red markings and its registration was clearly seen. It was either a C150 or C152, which they recognised as they had both learned to fly on that type but it was difficult to distinguish between the 2 models. He reported the incident to Farnborough and gave them the registration; Farnborough asked if he wanted to file an Airprox to which he stated he would.

THE C152 PILOT reports that she was informed post flight that the ac she was flying at the time was involved in an Airprox. At the time she was conducting a trial lesson flight from Stapleford during which she normally demonstrated pitch/roll and yaw at 2000ft and 90kt. The visibility was >10km in VMC and the ac was coloured white /red with anti-collision light switched on. The usual routeing was to the E of Brentwood and return following the M25 whilst listening out with Stapleford Radio. She did not see the reporting ac.

THE FARNBOROUGH LARS N CONTROLLER reports the sector was busy and he was using the whole of his SSR block allocation owing to traffic intensity. The R22 pilot called when in the vicinity of the Thames at 1200ft and was readable strength 2 improving to strength 3. At about 1500Z when the helicopter was in the vicinity of Thurrock the pilot reported an ac to be flying at dangerous angles close to his helicopter and reported its registration. Later when he requested if the R22 pilot wished to file an Airprox, the pilot acknowledged with an, "affirm, after landing". The R22 was in transit at 1200ft in an area of poor RT coverage at low altitude and the flight was under a BS.

ATSI reports that the Airprox occurred at 1500:13, within Class G airspace, 1·5nm to the NW of Thurrock Airfield, which does not have an ATZ.

The reporting flight was an R22 that was on a VFR flight from Le Touquet to Wycombe, in receipt of a BS from Farnborough LARS N and squawking 5033. The second ac was a C152 on a local VFR training flight operating from Stapleford and in communication with Stapleford Radio.

The Farnborough controller was operating as LARS N and reported the sector being busy with all available SSR codes allocated due to traffic intensity. The controller reported that the R22 helicopter in transit at 1200ft was operating in an area of poor RT coverage.

The weather for London City Airport was:

METAR EGLC 191450Z 28015KT 9999 SCT040 18/07 Q1013 RERA=

The R22 flight contacted Farnborough LARS N at 1450:20. The controller reported the R22 RT as readability 2. The R22 pilot reported routeing from Le Touquet to Wycombe at 1200ft on QNH 1017 and requested a BS. The controller allocated a squawk of 5033 and passed the London QNH 1013. The radar recording shows the R22, 6·9nm SE of Thurrock Airfield with NMC altitude reporting. Shortly afterwards the controller agreed a BS.

At 1457:17 the radar recording shows the R22 positioned 2nm SE of Thurrock and the C152 tracking S, 2·3nm NNE of Thurrock squawking 7000 and indicating an altitude of 1800ft. Shortly afterwards at 1347:45 the C152 turns onto a SW'ly track. The radar recording shows both ac tracking towards Thurrock on converging headings.

The two ac continue to converge with the C152 maintaining an altitude of 1700ft. At 1459:25, the radar recordings shows both ac are in close proximity with labels overlapping at a position 0·7nm W of Thurrock. Shortly afterwards the tracks cross and the C152 turns onto a track which parallels the R22 at a range of approximately 0·1nm.

At 1500:05 the radar recording shows the C152, indicating an altitude of 1700ft, commenced a R turn and at 1500:13 the Airprox occurs when the ac's tracks cross. The radar recording shows the ac labels merge with the C152 indicating an altitude of 1600ft. The R22 pilot's written report indicated that the R22 was at 1200ft on QNH 1013. The tracks then diverge with the C152 tracking N.

At 1500:56, the R22 pilot reports, *"????? Erm flying dangerously just north of Wh- yeah Thurrock airfield erm and er coming extremely close to me from several different angles we have his registration number."* The controller asked for confirmation of the flight calling and the R22 pilot confirmed that the other ac had come into close proximity adding, *"confirm it came from behind and on top of me."* The pilot confirmed his intention to file an Airprox after landing. The controller advised that Stapleford was busy and transferred the flight to the Stapleford frequency.

The Airprox occurred in Class G airspace. The C152 flight was not in receipt of an ATS. The R22 flight was in receipt of a BS in an area of poor RT coverage at 1200ft. The Farnborough LARS N controller was operating a busy sector with high workload and was not aware of the other traffic. CAP 774, UK Flight Information Services, states:

'Within Class F and G airspace, regardless of the service being provided, pilots are ultimately responsible for collision avoidance and terrain clearance, and they should consider service provision to be constrained by the unpredictable nature of this environment.'

'A Basic Service is an ATS provided for the purpose of giving advice and information useful for the safe and efficient conduct of flights. This may include weather information, changes of serviceability of facilities, conditions at aerodromes, general airspace activity information, and any other information likely to affect safety. The avoidance of other traffic is solely the pilot's responsibility.'

'Basic Service relies on the pilot avoiding other traffic, unaided by controllers/FISOs. It is essential that a pilot receiving this service remains alert to the fact that, unlike a Traffic Service and a Deconfliction Service, the provider of a Basic Service is not required to monitor the flight.'

'Pilots should not expect any form of traffic information from a controller, as there is no such obligation placed on the controller under a Basic Service outside an Aerodrome Traffic Zone (ATZ), and the pilot remains responsible for collision avoidance at all times. However, on initial contact the controller may provide traffic information in general terms to assist with the pilot's situational awareness. This will not normally be updated by the controller unless the situation has changed markedly, or the pilot requests an update. A controller with access to surveillance derived information shall avoid the routine provision of traffic information on specific aircraft, and a pilot who considers that he requires such a regular flow of specific traffic information shall request a Traffic Service. However, if a controller considers that a definite risk of collision exists, a warning may be issued to the pilot.'

The Airprox occurred when the 2 flights operating under VFR came into close proximity. The R22 flight was in receipt of a BS from Farnborough LARS N. Under a BS there is no obligation placed upon the controller to provide TI. However, if a controller considers that a definite risk of collision exists, a warning may be issued to the pilot. The LARS N controller was operating on a busy sector with a high workload. The controller was not aware of the C152 and there was no requirement for the controller to monitor the R22 flight.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC authorities.

Since the Airprox occurred in Class G airspace, both pilots had equal responsibility to maintain separation from other ac through see and avoid. Although the R22 flight was under a BS from Farnborough, the controller was busy and did not notice the R22 and C152 converging. There was no requirement for LARS N to monitor the R22 on radar, nor to provide TI. Members agreed that there had been ample opportunity for both crews to see each other as they approached, the C152 flight initially having right of way during its first pass of the R22. However, during any encounter the RoA regulations rely on crews sighting a potential confliction beforehand. On this occasion, the R22 pilot saw the C152 late as it converged from the N and then crossed about 500ft above whilst turning through a W'ly heading; the R22 passed unsighted by the C152 pilot. Thereafter, unbeknown to the R22 pilot, the C152 pilot had unwittingly turned onto a parallel course to his L at close quarters, still unsighted. The

R22 pilot then saw the C152 again, as its pilot unknowingly slowly overtook the helicopter, and became concerned as the C152 pilot was apparently unaware of their presence before the flight executed a R turn to cross just ahead and about 350ft above. The R22 pilot executed a descending turn to the R as he didn't know what further action the C152 pilot was going to take. The radar recording shows the C152's Mode C indicating unverified altitude 1600ft as the ac returns merge. With the R22 pilot reportedly flying at 1200ft, this would corroborate the estimated separation seen by the R22 pilot. Members agreed that the R22 pilot had taken all the necessary precautions and had acted appropriately. Members believed that the R22 pilot was always in the position to take further action if needed and that any risk of collision had been quickly and effectively removed.

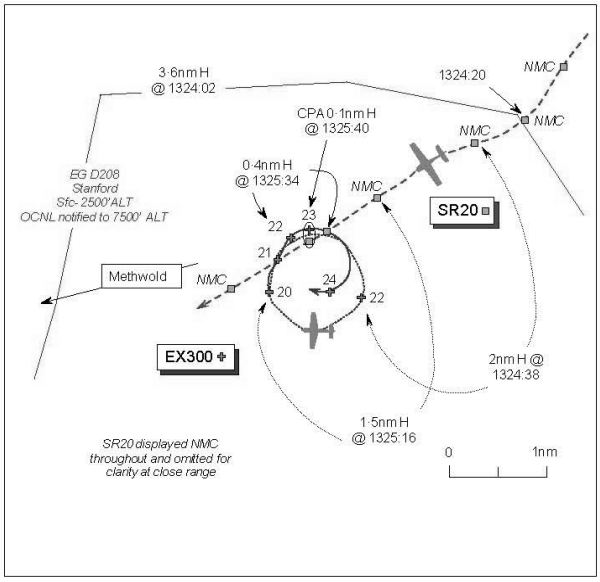
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A non-sighting by the C152 pilot and a late sighting by the R22 pilot.

Degree of Risk: C.

AIRPROX REPORT NO 2011065

Date/Time:	30 Jun 2011 1325Z	
Position:	5232N 00044E (4½nm SW of Watton)	
Airspace:	EGD 208	(Class: -)
	Reporting Ac	*Reported Ac*
Type:	Extra 300 LPS	SR20
Operator:	Civ Comm	Civ Pte
Alt/FL:	2500ft	2200ft
	QNH (1025mb)	QNH
Weather:	VMC CLBC	VMC In Rain
Visibility:	10km	6km
Reported Separation:		
	200ft V/nil H	NR
Recorded Separation:		
	0·1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE EXTRA 300 LPS (EX300) PILOT reports that he was participating in a Close Air Support task within EG D208 (STANTA) which was NOTAM'd from the surface to 17000ft, notifying other airspace users of rotary and fast-jet ac conducting high energy manoeuvres. Their range entry clearance had been issued by the Tactical Operations Cell (TOC), as the Exercise airspace coordination agency, on 136·950MHz. They were not in receipt of an ATS but had retained their assigned Lakenheath squawk prior to entry into D208 to facilitate deconfliction from traffic on recovery to Lakenheath. The exercise procedural deconfliction plan established safe separation between all exercise traffic with no change of altitude block permitted without prior approval from the TOC. Operating VFR in clear air 1000ft clear below cloud and a flight visibility of 10km, he was flying level at 2500ft Lakenheath QNH (1025mb) and had been allocated the block 1500-2500ft QNH to deconflict them from a Sea King operating below an altitude of 500ft and a Hawk operating above 3500ft. There were thunder cells seen 2nm to the N.

With full awareness of all other exercise airspace users he and his camera operator had sufficient confidence to dedicate their attention to the exercise ground activity, to the accepted detriment of lookout. The NOTAM and D208 boundary should have provided sanitised airspace, with TOC deconfliction allocating them ownership of the 1500-2500ft altitude block. Orbiting at 100kt, he thought to the L but actually in a R turn, in a holding pattern during their surveillance task, the other ac, a low-wing single-engine propeller driven aeroplane – the Cirrus SR20 - passed 200ft directly below his ac with a 'high' Risk of collision. No avoiding action was taken as the other ac was

not seen until it was directly underneath and clearing away from his flight path. He opined that, as they had not seen the other ac approach and were manoeuvring constantly within their allocated altitude block, the 200ft vertical separation could have been eroded in fractions of a second and resulted in a collision.

The reported position of the Airprox is accurate as they were surveying a ground position at the time. He added that he was operating under a high workload, integrating with other rotary and fast-jet exercise traffic whilst supporting troops on the ground.

He immediately called Lakenheath to report the incident and asked if the other ac was on frequency and to be identified. At that point Lakenheath ATC had neither radio or radar contact with the other ac so he switched back to the range frequency and completed the task. Upon completion of the mission he contacted Lakenheath ATC again 'on checkout' and was informed that the pilot of the other ac – the SR20 - had called Lakenheath and when questioned about the Airprox claimed he had deconflicted with his EX300 using TCAS. He (the EX300 pilot) informed Lakenheath he would be filing an Airprox and requested any radar tapes be retained.

Summarising the occurrence, the other ac – the SR20 - had entered a permanent Danger Area where there is frequently live firing, in the middle of a NOTAM'd exercise, with airspace between surface and 10000ft allocated to 3 different types of ac. All of those ac were flying unpredictable flight paths with high-energy manoeuvres involving rapid altitude changes through thousands of feet. If the pilot of the other ac thought it safe to enter such airspace (assuming they knew of its existence) then action is needed to prevent the future possibility of a very serious accident.

UKAB Note (1): The UK AIP at ENR 5-1-3-14-1 notifies EG D208 Stanford Danger Area as active for live firing/ bombing/para dropping/demolition and unmanned ac operations, H24, from the sfc to ALT 2500ft and occasional use to ALT 7500ft. Statutory Instruments SI 1970/909 & SI 1975/24 apply. A Danger Area Activity Information Service (DAAIS) is available for D208 from Lakenheath ZONE on 128·90MHz.

UKAB Note (2): AUS originated a NOTAM for this close air support exercise (Pashtun Panther) (H1489/11 which replaced H1301/11) valid from 9 May to 8 Jul 2011 and effective Mon-Fri 0800-2200 UTC. It was specified that fast-jets and helicopters would conduct high-energy manoeuvres within a 5nm radius of 5230N 00044E [2nm S of the Airprox location] (EGD 208), from the surface to FL170. A landline PoC was also specified.

THE CIRRUS SR20 PILOT reports he had departed Old Buckenham VFR, bound for Waterford, Ireland. He included an original CAA VFR 1:500000 chart with his planned route marked, which was a NNW'ly track to overhead Shipdham, thence a WSW'ly track direct Northampton/Sywell, thereby circumnavigating to the N of EG D208 and passing to the S of the Marham MATZ.

A level cruise was established at an altitude of 2200ft at 135kt, whilst in receipt of a BS from London INFORMATION on 124·6MHz. Flying 1000ft clear below cloud with an in-flight visibility of 1600m in rain, he altered course onto a heading of 255° towards Methwold, to avoid Cumulonimbus cloud and heavy rain. The EX300 was not seen.

He opined that after departing Old Buckenham, a better choice might have been to call Marham RADAR on 124·15MHz rather than London INFORMATION. TCAS 1 is fitted with Mode S and a squawk was selected. His ac is white and red; the HISLS were on.

UKAB Note (3): In a subsequent telephone conversation with UKAB staff, the SR20 pilot advised he was not aware of the NOTAM'd close air support exercise or that EG D208 was active.

UKAB Note (4): The Debden Radar recording shows the SR20 crossing the lateral boundary of EG D208 at 1324:20 on a broadly SW'ly course, squawking A1177 (LAC FIS) although NMC is shown throughout. Nevertheless, the pilot reports his transit altitude as 2200ft thereby placing the ac within the regular upper limit of the Danger Area. The EX300 is shown orbiting R within the Danger Area and at 1324:38, is turning through S with the SR20 2nm to the NE. The EX300 continues in the R Turn through N on the next orbit [solid green line on the diagram] indicating 2000ft Mode C (1013mb) with the SR20 at a range of 1.5nm. Climbing slightly to 2200ft Mode C - about 2560ft ALT (1025mb), as the two ac close to a range of 0.4nm, the next sweep shows the CPA of 0.1nm H as the SR20, still indicating NMC and maintaining a steady course, passes marginally to the S of the EX300, the latter indicating 2300ft Mode C – about 2660ft ALT (1025mb).

UKAB Note (5): Subsequent to this Airprox, HQ 3AF helpfully provided a written analysis of the Lakenheath RAPCON ASR recording (it can only be played back in situ and no copies can be made), together with transcripts of the RT communications between Lakenheath RAPCON and both ac after the Airprox had occurred.

Analysis of the recorded Lakenheath RAPCON ASR data by the facility staff reveals that the SR20 was initially observed 2nm W of Old Buckenham A/D climbing through 1000ft ALT Mode C (their Mode C is related to QNH below their TA of 4000ft) on a NW'ly heading, squawking A1177. At 1320, the SR20 was heading to Shipdham, before turning to the SW, apparently to deconflict from a 'precipitation cell'. At the same time the SR20's Mode C readout ceased and was no longer shown, the last Mode C readout indicating 2000ft ALT Mode C. At 1325:40, the primary contacts of the EX300 and the SR20 merge with the former indicating 2600ft ALT and the SR20 with no Mode C. The EX300 was observed in D208 during the entire incident in a right-hand orbit between 2300ft and 2700ft ALT Mode C, squawking A0457. During the remainder of the recording the EX300 continues the orbit in D208 as the SR20 continues enroute to the W then NW.

At 1326:15, some 35 sec after the CPA, the EX300 pilot called RAPCON on 136·5MHz, *"Lakenheath* [EX300 C/S] *we are um still in Delta 2-0-8, we just had a G-A entalope* [sic – more probably *interloper*] *come right through the range fairly close aboard with us, just wondering if they're speaking to you."* After RAPCON instructed the EX300 pilot to squawk IDENT the pilot advised the unknown ac was, *"…now West of our position approximately 1 mile."* RAPCON replied, "[EX300 C/S] *roger…I'm not talking to the aircraft at all..you're radar contact and I didn't even know you were in STANTA range."* At 1326:47, the EX300 pilot advised, *"…copied, we're maintaining your squawk 0-4-5-7 but we're a single box so we're speaking to range frequency. If that aircraft calls up would you..be kind enough to get a trace or callsign and I'll give you a call on the landline",* to which RAPCON agreed prior to the EX300 pilot switching back to the range frequency.

Some 9min after the CPA, at 1334:30, the SR20 pilot called Lakenheath on 124·9MHz. Subsequent to a radio check request from RAPCON, the SR20 pilot replied, *"not so bad thank you Sir uh trying to dodge the showers".* RAPCON advised the SR20 pilot, *"..just be advised you flew through..STANTA Delta 2-0-8, and there is numerous aircraft in there did you see...PA 31* [actually referring to the EX300] *or something like that almost hit you".* The SR20 pilot replied *"Yea I had him on TCAS but eh but there was no uh no conflict."* RAPCON added, *"Roger apparently he thought that you got closer he contacted me on my frequency to let me know and I guess he is going to call up".* Subsequently, the SR20 pilot reported, *"Yes sir well now..gonna intercept the track to..Echo Golf Bravo Kilo* [Northampton/Sywell]", whereupon RAPCON asked for the ac's altitude, to which the SR20 pilot replied at 1335:18, *"altitude is..2 thousand feet on 1-0-2-4."*

HQ 3AF comments that it is hard to understand, given the weather conditions and his intended route, why the SR20 pilot chose to contact London INFORMATION rather than speak to either Marham APPROACH or Lakenheath RAPCON, either of which unit could have prevented him from blundering into an active danger area. TCAS may have given him a warning on this occasion but he should aware that live weapons are not equipped with transponders.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings and reports from the appropriate ATSU and Command.

The Board was briefed on the planned route of the SR20 circumnavigating to the N of EG D208. It was evident, however, that after departing Old Buckenham the SR20 pilot had deviated from his planned route to avoid cumulonimbus cloud and heavy rain, culminating in the ac flying through this permanently active Danger Area. A pilot Member opined that this was disappointing when flying a modern ac with reputedly good navigational displays. The analysis by Lakenheath ATC reveals that the SR20 pilot had set course for Shipdham before turning to the SW, apparently to avoid a 'precipitation cell' shown on the Lakenheath RAPCON ASR recording. Having elected to route around this weather by turning westerly via Methwold, this took the SR20 straight through the exercise within D208. Controller Members suggested the SR20 pilot would have been better advised to have called Lakenheath ATC who offers the DAAIS for D208 or possibly Marham ATC. Both ATSUs could potentially have provided radar assistance to the SR20 pilot; in addition to augmenting his visual lookout scan they would in all probability have forewarned him of the status and activity within D208. At a reported transit altitude of 2200ft, the LAC radar recording revealed that the SR20 pilot entered D208, thereby placing his ac in conflict with the EX300 participating in the close air support exercise within the Danger Area and for which a NOTAM had been

issued notifying other airspace users that fast-jets and helicopters would conduct high-energy manoeuvres within a 5nm radius of the specified co-ordinates up to FL170. Members noted that the SR20 pilot reports he was unaware of the NOTAM or that D208 was active, which was indicative of inadequate pre-flight planning and awareness of the airspace surrounding his track. Members concluded unanimously that this Airprox had resulted because the SR20 pilot flew through a promulgated and active Danger Area and into conflict with the EX300.

It was reported that the EX300 pilot and his cameraman were focusing on their airborne surveillance task when the Airprox occurred and the SR20 flew about 200ft below their ac. That sighting was the first indication they had of any non-exercise ac within D208. Without Mode C from the SR20 the actual vertical separation that pertained could not be ascertained independently and the importance of ensuring that altitude reporting was always selected when the transponder is on was stressed by controller Members. The EX300's indicated Mode C was 2200-2300ft Mode C at the moment the SR20 under flew, equating to an altitude between 2560-2660ft QNH (1025mb), which suggests the EX300 was about 360ft above the SR20's reported 2200ft ALT. Given the tolerances applicable to Mode C of +/- 200ft, this was in general accord with the EX300 pilot's reported separation. The Lakenheath RAPCON RT transcript reveals that the SR20 pilot was aware of the EX300 from his TCAS I, which should also have given an indication of the EX300's relative vertical separation above his ac, but the SR20 pilot did not acquire it visually or take any action to avoid it. Furthermore, he would not know it was orbiting and the azimuth indications of TCAS I devices can be deceptive in such scenarios. The EX300 pilot was unable to take any avoiding action as the SR20 was not seen until it was directly underneath, so neither pilot took any action to avert this close quarters encounter, suggesting to some Members that an actual Risk existed. Other Members contended that with no less than 200ft of vertical separation reported by the EX300 pilot and somewhat more than that apparent from his ac's Mode C indication, the vertical separation was sufficient to avert an actual collision. Following a comprehensive debate, the Board concluded that the safety of the ac involved had been compromised.

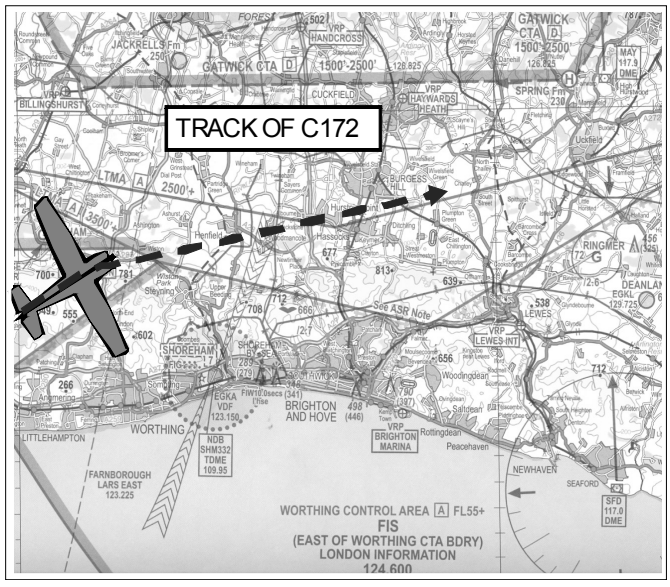
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The SR20 pilot flew through a promulgated and active Danger Area and into conflict with the EX300.

Degree of Risk: B.

AIRPROX REPORT NO 2011070

Date/Time:	26 Jun 2011 1403Z (Sunday)	
Position:	5056N 00018W (8nm N Shoreham)	
Airspace:	Lon FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	C172	Untraced Ac
Operator:	Civ Pte	NK
Alt/FL:	2200ft (NK)	NK
Weather:	VMC NR	NK
Visibility:	30nm	NK
Reported Separation:	20ft V/0ft H	NK
Recorded Separation:	NK	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE C172 PILOT reports flying a red and white ac with all lights switched on, on a VFR private flight from Guernsey to Rochester. He was squawking with Modes C and S, but TCAS was not fitted. He was initially in

contact with Shoreham APP then Farnborough Radar (it was his intention to go back to the Farnborough frequency earlier but Shoreham requested that he stay with them until he was abeam the RW – which he did). He is always cautious in the Shoreham area since it is always busy, so he advised them of his presence and, on being advised of oncoming traffic, decided to give the field more clearance; he advised Shoreham and moved further to the N. It was during this time while he was cruising below 2200ft, heading 085° at 100kt, that he spotted an ac 100yd ahead and 20ft above, coming straight towards him. He instinctively pushed the stick forward and went underneath the ac with only feet to spare. He believed the ac, which apparently did not see him, was also a Cessna. He was shaken for a time and then went back to Farnborough Radar.

UKAB Note (1): On the telephone he described the contact as a shadow.

He acknowledged that his description of the Airprox is brief.

It is now his policy to track even closer to the Gatwick CTA as the area is very congested; this is exacerbated by the direction of the Shoreham RW and the 'tunnelling' of the Gatwick CTA. He has long thought this to be a dangerous area and in his view all ac flying there should have Mode S and be in receipt of a LARS service from Farnborough. He also believes the Mayfield VOR is badly sited for same reason.

He reported the incident initially to the UKAB by telephone several days after the incident assessing the risk as being high.

UKAB Note (2): The reported time of the incident was 1230 UTC. Enquiries revealed that the reporting ac did not depart Guernsey until 1241, and was eventually identified from its elementary Mode S, to the N of Shoreham Airport at 1403.

UKAB Note (3): The recording of the Heathrow 10 and 23cm, the Pease Pottage and the Gatwick 10 cm radars were all viewed; the Gatwick 10 cm provided the best coverage. A further telephone call to the reporting pilot revealed that although he was confused regarding the time of the event, he was certain that the event took place to the N of Shoreham Airport and that something flew directly above him. During the telephone conversation he stated the following: "something definitely cast a shadow over me, and I suppose it could have been a cloud or a bird". The radar recording only showed one track getting very close to him, but this track passed 1200ft directly below his ac at 1403:33 in a position 7nm NW of Shoreham (the C172 was at 2200ft and the ac below was squawking 7000 at 1000ft). At 1404:36 the C172 passed about 1nm N of the last seen position of a disappearing primary only contact about 5nm NW of Shoreham. At 1408:33 the C172 passed about 2nm S of the last seen position of another disappearing primary only contact about 6nm NNE of Shoreham. The C172 then tracks 085°, passing 4.6nm N of Shoreham at 1406:51 and at an alt of 2200ft; it continues roughly on that track until 1411 when the recording ends with the ac positioned 11nm NE of Shoreham at alt of 2400ft. No other primary or secondary contacts can be seen within 5nm of the reporting ac. (See also ATSI report below).

ATSI reports that the Airprox was reported by the pilot of a C172 operating VFR, on a flight from Guernsey to Rochester. The pilot's written report indicated that the Airprox occurred 8nm to the N of Shoreham at 1230 UTC. The second aircraft is unknown.

The Shoreham controller was operating a combined Aerodrome and Approach control position, without the aid of surveillance equipment.

CAA ATSI had access to the RTF and radar recording, together with the C172 pilot's written report. Shoreham ATC was not aware of the reported Airprox.

METAR EGKA 261250 15005KT 9999 3000S VCFG FEW002 18/16 Q1021=

METAR EGKA 261320 15005KT 9999 3000S VCFG FEW002 19/16 Q1021=

METAR EGKA 261350 15005KT 9999 VCFG FEW002 19/16 Q1021=

METAR EGKA 261420 13006KT CAVOK 20/17 Q1020=

The C172 called Shoreham APP at 1353:55. [Note: this is at variance with the time indicated in the pilot's written report]. Radar recordings show the C172, squawking 5022 (Farnborough LARS) at a position 20.4NM SW of Shoreham. The C172 pilot reported at 3000ft descending to 2400ft from Guernsey to Rochester via the Shoreham overhead. The Shoreham controller agreed a BS, passing the QNH of 1021 and TI on VFR traffic passing S of Shoreham Westbound at 2400ft; the pilot acknowledged the TI and reported 'turning inland a bit'.

At 1357:08, the C172 pilot reported an intention to pass 10nm N of Shoreham at 2500ft and advised going back to Farnborough on 123.15MHz but the Shoreham controller reported that this Farnborough frequency was incorrect and requested that the C172 pilot report N of Shoreham, which the pilot agreed.

During the period that the C172 was in receipt of a BS from Shoreham, radar recording shows the C172 passing abeam 3 other aircraft, at 1358, 1403 and 1404 (see below). However none of these was considered to have been the Airprox as described in the C172 pilot's written report.

At 1358:21 radar recording shows the C172 tracking NE, at a position 14nm W of Shoreham, indicating FL023 and passing 1nm NW abeam traffic Westbound indicating FL025. The ac maintain their respective levels.

At 1403:33, radar recording shows the C172, positioned 7.1nm NW of Shoreham and indicating an altitude of 2200ft. Also shown is an ac on a reciprocal track squawking 7000 and indicating an alt of 1000ft; both ac maintain their respective levels.

At 1404:36, radar recording shows the C172, 5.5nm NW of Shoreham, tracking NE, indicating an altitude of 2200ft and passing 1.3nm NW of a primary contact, tracking SW.

At 1406:15, the C172 pilot reported N abeam and the Shoreham controller transferred the ac to Farnborough LARS. Radar recording shows the C172 position as 5nm NNW of Shoreham indicating an alt of 2100ft on an E'ly track.

From the information and data available to CAA ATSI, it was not possible to determine the position or time of the reported Airprox and the second aircraft remains untraced.

The Shoreham controller was not aware that an Airprox had occurred.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the C172 pilot, transcripts of the relevant RT frequencies, radar recordings, reports from the air traffic controller involved and reports from the appropriate ATC authorities.

Members noted the incident took place in an area of very good radar coverage and that there were no contacts, either primary only or SSR, in the vicinity of the C172 at the (corrected) time reported. From track following and Mode S data, the Secretariat was satisfied the track they identified was that of the C172 concerned and that the C172 was in the area at the (corrected) time. Members therefore agreed that the object reported was most likely not a light ac or helicopter. Although they could not be certain, they believed that it had not been a glider due to the confines of the airspace in the area but it was possible that it could have been a microlight, paramotor or some other non-painting ac.

Members were surprised that the C172 pilot did not remain with Farnborough LARS or call Gatwick APR as either would have been able to provide radar derived information if they had the capacity.

Although the Board supported the C172 pilot's decision to report the incident, in this case they had scant information to support their decision making process.

Due to the lack of reliable supporting information, Members were unable to assess the degree of risk or offer a cause more definitive than a possible conflict; they accepted that it might have been an actual conflict but were unable to identify or trace the other ac.

AIRPROX REPORT No 2011070

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A possible encounter in Class G airspace.

Degree of Risk: D.