UK AIRPROX BOARD

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Analysis of Airprox in UK Airspace

Report Number 24
January 2010 – June 2010

Twenty-Fourth Report by the UK Airprox Board:

‘Analysis of Airprox in UK Airspace’

(January 2010 to June 2010)

produced jointly for

The Chairman
Civil Aviation Authority

and the

Chief of the Air Staff,
Royal Air Force

FOREWORD

This report contains the details of 79 Airprox occurrences reported to the UK Airprox Board (UKAB) from January to June 2010 (inclusive). The purpose of the UKAB is to assess Airprox occurrences in the interests of enhancing Flight Safety. Communicating the lessons identified is part of the UKAB's role and this Report is part of that communications effort. Anyone with an interest in promoting Flight Safety may use or reproduce the contents of the Report as they wish. The Report is also available on CD and on our website at **www.airproxboard.org.uk**.

There is always a need for caution when analysing Airprox data over short periods because of the small number of events. The 79 Airprox in the first 6 months of 2010 was an increase of 19 over the same period in 2009 – an increase of over 30%. However, the total in 2009 was abnormally low and the 2010 figures are close to the previous 5-year average for the same months. That said, there was a small but welcome fall in the number and percentage of Risk Bearing Airprox when compared to the previous 5-year averages. Table 1 shows the details.

Risk Category	2005	2006	2007	2008	2009	2010	2005-2009 Average
A	13	4	3	5	2	5	5
B	26	20	21	21	23	17	22
C	53	54	51	57	33	53	50
D	0	0	0	4	2	4	1
Totals:	92	78	75	87	60	79	78
Risk Bearing %	42%	31%	32%	30%	42%	28%	35%

Table 1.

The Report shows that the causes of Airprox remain predominantly late sightings and non-sightings of aircraft by pilots. The majority of these occur in Class G (uncontrolled) airspace where pilots have the responsibility to see and avoid other aircraft. March 2010 saw the first anniversary of the introduction of revised Air Traffic Services Outside Controlled Airspace (ATSOCAS) and work is in hand to determine the impact of ATSOCAS on the incidence of Airprox. Given the small number of Airprox each year and the range of services comprising ATSOCAS, it may not be possible to draw reliable conclusions until more time has elapsed and any trends are more clearly defined. However, it is already clear that, notwithstanding the very considerable efforts to publicise the new ATSOCAS, some pilots do not fully understand the provisions and limitations of each of the constituent services. If this Report could serve as a prompt to all pilots who use Class G airspace to refresh themselves on the details of ATSOCAS and their responsibilities, it will have made an important contribution to Flight Safety.

Ian Dugmore
Director, UKAB

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

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

On pages 6 to 11 this 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. Please note that 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

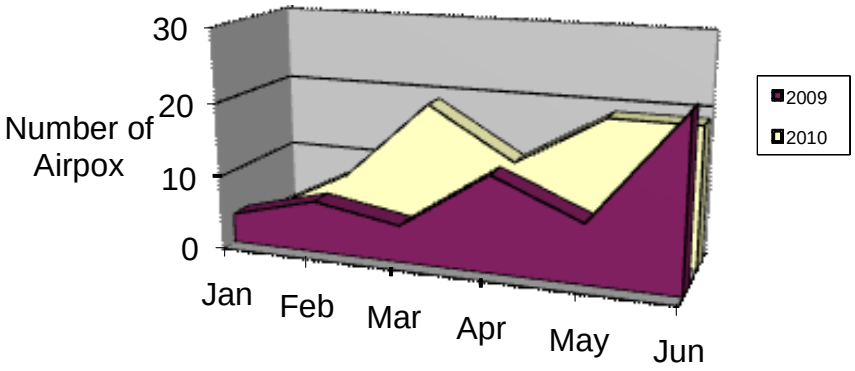
A key UKAB objective is to communicate effectively the lessons identified from Airprox events. Bi-annual 'hardcopy' Reports continue to be the primary means of communication, supported by presentations at flight safety meetings, cd-roms and the Internet. The UKAB Internet website is updated at least 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 2009 AND 2010

The distribution of Airprox in 2010 (Figure 1) reflects the severe winter conditions experienced in January and February, and the effects of the volcanic ash in April.

Figure 1. Monthly Comparison



Breaking the figures down into 2 main user groups (Civil and Military) we can compare the number of Airprox occurring between the groups as shown in Tables 2 and 3, and graphically in Figures 2 and 3.

2009	Jan	Feb	Mar	Apr	May	Jun	Totals
Mil~Mil	1	3	2	2	0	7	15
Civ~Mil	1	1	0	3	2	6	13
Civ~Civ	2	3	3	8	6	7	29
Other	0	0	0	0	0	3	3
Totals	4	7	5	13	8	23	60

Table 2

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 3

Figure 2.
User Group Mix Jan - Jun 2009

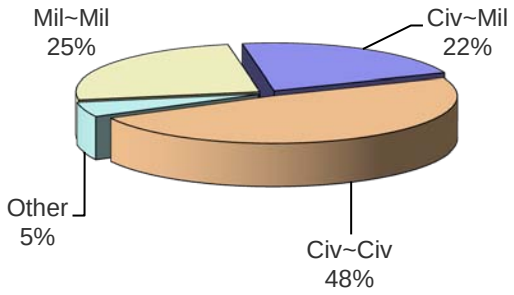
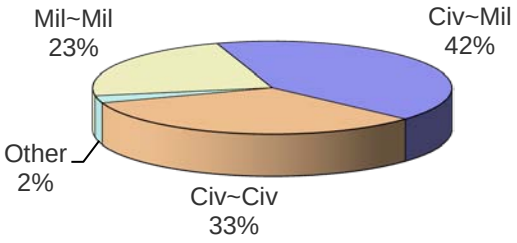


Figure 3.
User Group Mix Jan - Jun 2010



The main difference between the periods is the increase in Civil-Military Airprox from March 2010 onwards. This size of the increase is exaggerated by the abnormally low total in 2009; the same period in 2008 saw 19 Civil-Military Airprox. Nevertheless the trend is upwards.

Mix details (Jan-Jun)	2009	2010
CAT v CAT	6	2
CAT v GA	5	4
GA v GA	18	20
CAT v Mil	3	9
GA v Mil	10	24
Mil v Mil	15	18
CAT v Unknown	0	2
GA v Unknown	1	0
Mil v Unknown	2	0
Total	60	79

Table 4.

Further analysis of the figures (Table 4) shows that the increase in Civil-Military Airprox includes increases in both Military v CAT and Military v GA Airprox. Of note, none of the Military v CAT Airprox was assessed to be risk bearing and just 4 of them occurred in Glass G (uncontrolled) airspace. Conversely the majority of Military v GA occurrences occurred in Class G Airspace. Of the 24 Military v GA Airprox, 19 were reported by the military pilots involved, 11 involved military helicopters and 4 involved civilian gliders that could not be traced.

AIRSPACE

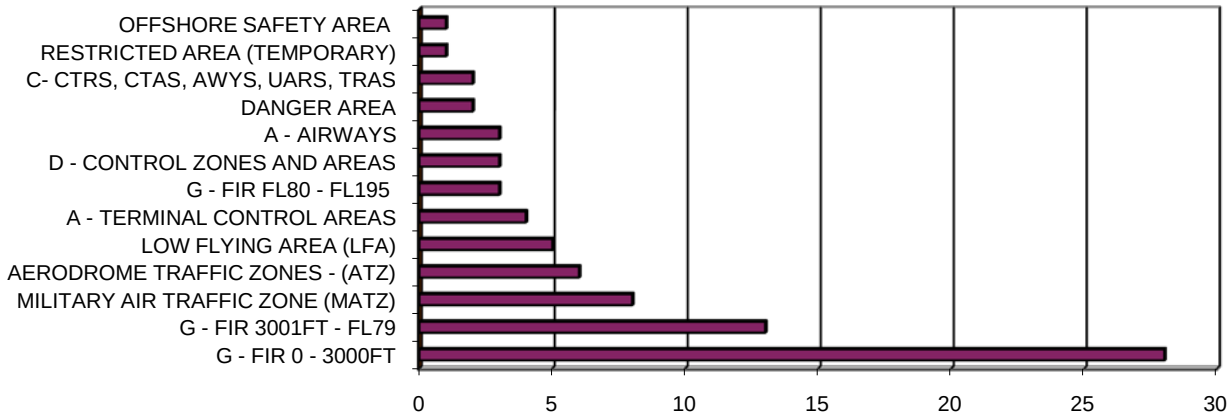


Figure 4. Airprox/Airspace Distribution Jan - Jun 2010

Figure 4 shows the distribution of Airprox in the different classes of UK Airspace. The distribution is similar to previous years with the exception of a marked increase in Airprox occurring in Military Air Traffic Zones (MATZ). There was only one Airprox in a MATZ in the corresponding period of 2009, compared with 8 during this period. Of these 8, half were Military v Military Airprox and half involved Military ac encountering light ac or gliders. Three of the 4 Airprox with light ac/gliders in a MATZ occurred in circumstances in which the civilian ac was not in radio contact with the relevant ATSU.

COMMERCIAL AIR TRANSPORT (CAT)

Tables 5 & 6 show that the incidence of Airprox involving at least one CAT ac was broadly similar to 2009. This represents a downward trend since the number in 2009 was less than half that of the previous year. The most pleasing aspect of the figures for 2010 however, is that there were no risk bearing Airprox involving CAT ac.

2009	Jan	Feb	Mar	Apr	May	Jun	Totals
Risk A	0	0	0	0	0	0	0
Risk B	0	0	0	0	1	0	1
Risk C	1	2	1	4	3	2	13
Risk D	0	0	0	0	0	0	0
Totals	1	2	1	4	4	2	14

Table 5

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
Totals	1	2	5	3	3	3	17

Table 6

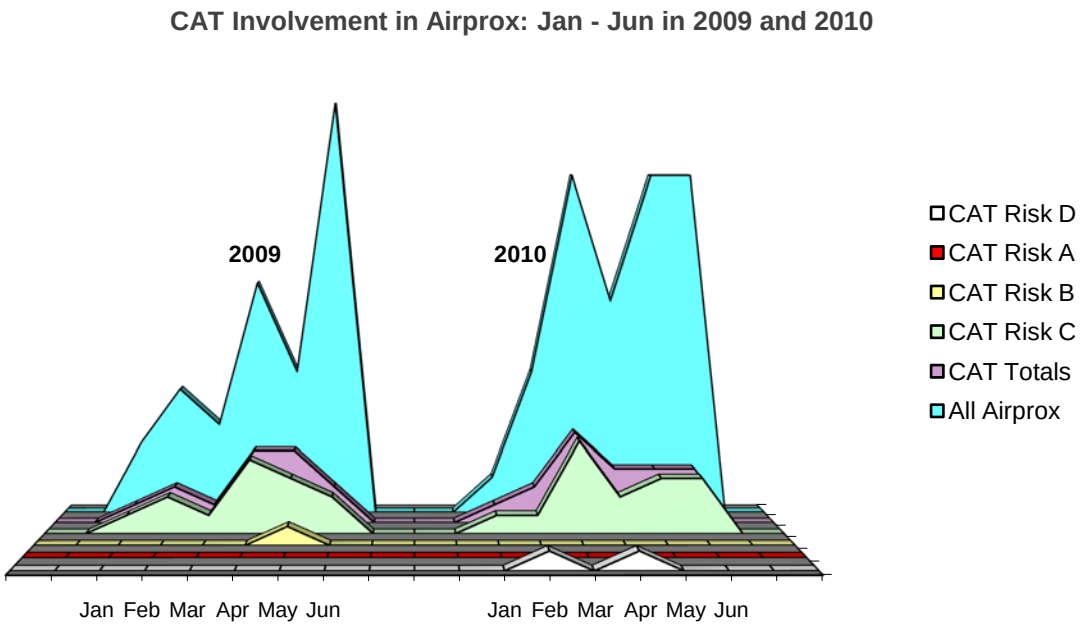


Figure 5. Figure 6.

Figures 5 & 6 show the distribution of CAT Airprox throughout the period for 2009 and 2010. As expected, this reflects the effect of traffic levels during the severe winter in 2010 and the impact of the ash clouds from the Icelandic volcano.

Turning to the causes, it should be noted that Airprox may have more than one cause; therefore the total number of causes exceeds the number of Airprox. Table 7 lists those

Ser.	Cause	Totals	Attributed to.
1	CONTROLLED AIRSPACE CONFLICT IN VMC	3	OTHER
2	FIR CONFLICT	3	OTHER
3	PENETRATION OF CAS/ATZ WITHOUT CLEARANCE	3	PILOT
4	DID NOT SEPARATE/POOR JUDGEMENT	2	CONTROLLER
5	CLIMBED/DESCENDED THROUGH ASSIGNED LEVEL	2	PILOT
6	INADEQUATE AVOIDING ACTION / FLEW TOO CLOSE	2	PILOT

Table 7.

causes that were attributed more than once to Airprox involving CAT ac. Of these, only Serial 1: "Controlled Airspace Conflict in VMC" is an addition to the list from 2009. Of these 3 Airprox, 2 were encounters at altitude between airliners and untraced aircraft/objects and one was an unauthorised entry into the London TMA. The latter Airprox was also listed under Serial 3; the other 2 Airprox in this category (Serial 3) involved a light ac entering controlled airspace when instructed to hold clear and a (foreign) military aircraft infringing an airway. This Airprox resulted in a formal safety recommendation concerning RT terminology; the airliner crew did not use the correct TCAS terminology and the controller was uncertain whether they were responding to a TCAS RA.

GENERAL AVIATION

Tables 8 and 9 show the distribution of risk bearing events for Airprox involving at least one GA ac between Jan and Jun in 2009 and 2010 respectively. Figures 7 and 8 show this distribution

graphically. Once again, the effects of the winter weather and volcanic ash can be seen, in addition to the overall increase from 34 to 44 from 2009 to 2010.

2009	Jan	Feb	Mar	Apr	May	Jun	Totals
Risk A	0	0	0	0	0	1	1
Risk B	1	0	0	5	2	3	11
Risk C	1	2	2	4	2	10	21
Risk D	0	0	0	0	1	0	1
Totals	2	2	2	9	5	14	34

Table 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
Totals	2	5	10	4	8	15	44

Table 9.

GA Involvement in Airprox: January - June in 2009 and 2010

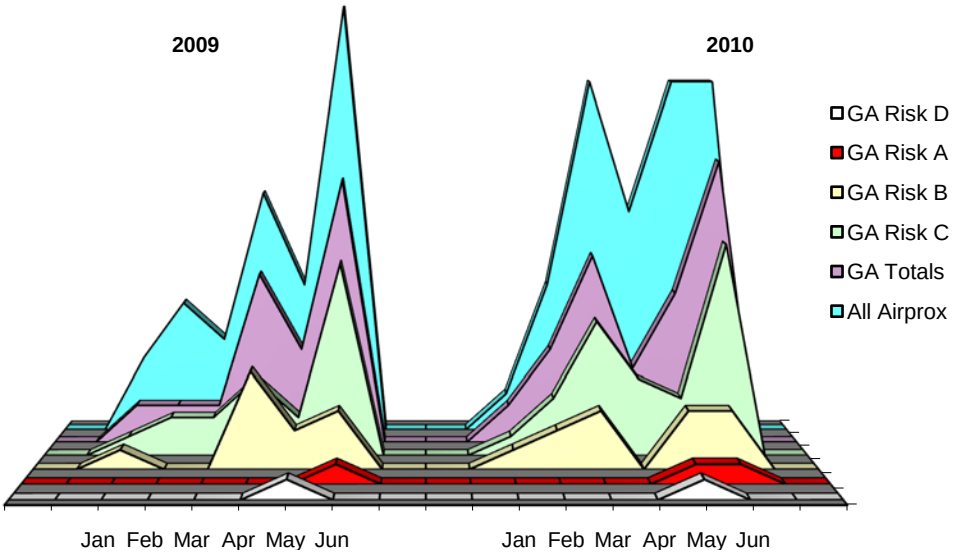


Figure 7. Figure 8.

There were a wide variety of Causes ascribed to Airprox involving GA ac. Those that appeared more than once are listed in Table 10. The list is similar to 2009 with one significant addition. Flying too close to, or over gliding or para-drop sites resulted in 5 Airprox between Jan and Jun 2010, of which 3 were assessed to be risk bearing. These were the risks of collision with a glider/tug. The UKAB does not assess the probability or risks associated with colliding with the launch cable but in 2 of the Airprox the reported ac flew across the gliding site below the maximum height of the cable.

Ser.	Cause	Totals
1	DID NOT SEE CONFLICTING TRAFFIC	17
2	LATE SIGHTING OF CONFLICTING TRAFFIC	11
3	FIR CONFLICT	10
4	INADEQUATE AVOIDING ACTION / FLEW TOO CLOSE	8
5	FAILURE TO PASS OR LATE PASSING OF TRAFFIC INFO	5
6	FLYING CLOSE TO/OVER GLIDER OR PARA DROP SITE	5
7	PENETRATION OF CAS/ATZ WITHOUT CLEARANCE	5
8	CONTROLLED AIRSPACE CONFLICT IN VMC	2
9	DID NOT ADHERE TO PRESCRIBED PROCEDURES (PILOT)	2

Table 10.

MILITARY AVIATION

The comparative distribution of Airprox involving at least one military aircraft is shown in Tables 11 & 12 for 2009 &2010 respectively. The data is reproduced graphically in Figures 9 & 10. While there is an increase in the total number of Airprox involving military ac, there was a reduction in the number that were assessed to be risk-bearing. It is considered that the overall increase can be partly attributed to an increased willingness to report occurrences that previously may have gone unreported.

2009	Jan	Feb	Mar	Apr	May	Jun	Totals
Risk A	0	0	0	1	0	1	2
Risk B	1	3	2	1	1	7	15
Risk C	1	1	0	3	1	6	12
Risk D	0	0	0	0	0	1	1
Totals	2	4	2	5	2	15	30

Table 11.

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
Totals	0	4	13	10	11	13	51

Table 12.

Military Involvement in Airprox: January - June in 2009 and 2010

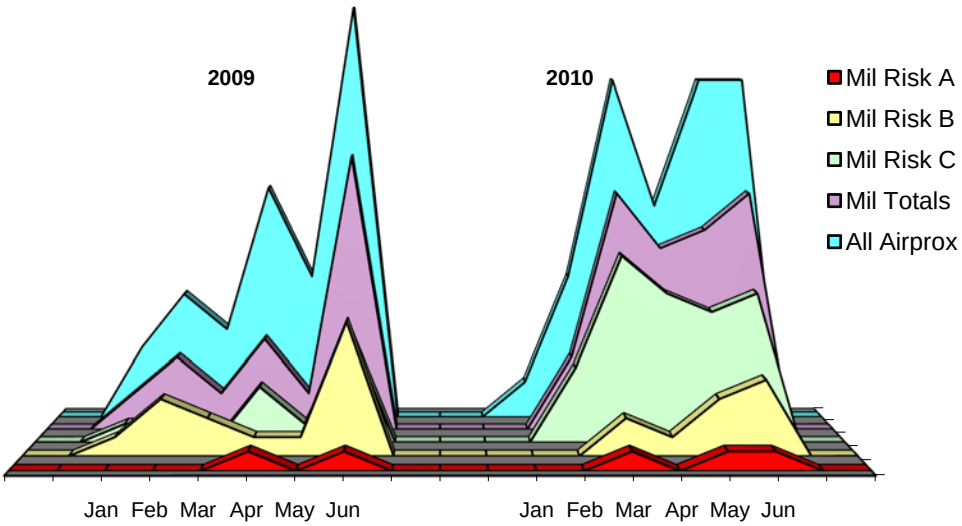


Figure 9. Figure 10.

Examining the causes of these Airprox, the 3 most commonly assigned causes are the same as last year, see Table 13. All of the Risk Category A Airprox and the majority of the Risk Category B involved late or non-sightings, reflecting the nature of military flying training and the congested airspace in which some of this training takes place.

Ser.	Cause	Totals
1	DID NOT SEE CONFLICTING TRAFFIC	20
2	LATE SIGHTING OF CONFLICTING TRAFFIC	16
3	FIR CONFLICT	9
4	INADEQUATE AVOIDING ACTION / FLEW TOO CLOSE	9
5	DID NOT PASS OR LATE PASSING OF TRAFFIC INFO	6
6	CONFLICT IN OTHER TYPE OF AIRSPACE	3
7	PENETRATION OF CAS/ATZ WITHOUT CLEARANCE	2
8	DID NOT ADHERE TO PRESCRIBED PROCEDURES	2
9	CLIMBED/DESCENDED THROUGH ASSIGNED LEVEL	2
10	INAPPROPRIATE ATC INSTRUCTIONS, USE OF INVALID FL	2
11	MISLEADING/AMBIGUOUS TRAFFIC INFORMATION	2
12	SIGHTING REPORT	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 updates 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.

2008-44 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.

UPDATE 23 March 2011: The CAA's Directorate of Airspace Policy has reviewed the relevant UK AIP pages. A minor discrepancy between the turn point described in the Noise Preferential Route and that specified in the SID has been detected and will be corrected. Additionally, the CAA intends to clarify the diagram for the London Gatwick Southampton SID as it appears in the UK AIP. There are ongoing discussions between the CAA and the air traffic service provider regarding these amendments, however it is anticipated that the revisions will be included in AIRAC 7/2011 (effective 30 June 2011).

STATUS – ACCEPTED – OPEN

2009-76 5 Jul 09 involving a PA28 and an ASK21 GLIDER 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.

ACTION**:**

(i) With Air Westward Ltd + Devon & Somerset Gliding Club.

(ii) With CAA – Head of SDU

INTERIM UPDATE AT 10 Mar 2011

Dunkeswell Aerodrome and the Operator of North Hill Gliding Site have jointly developed a LoA, which has been reviewed by the CAA. Advice on improvements to this LoA has been given by

the CAA, but to date the Operators have not implemented the advice given on two aspects of the LoA - inclusion in the AIP of a diagram showing the division of the ATZ and subsequent review of the LoA to ensure that it continues to fulfil its function.

STATUS – Open

2009-119 25 Sep 09 involving a DG500 and a HAWK PAIR Risk A

RECOMMENDATIONS:

(i) That the MoD and BGA jointly consider the promulgation of more information about gliding operations from sites that conduct ridge or mountain wave soaring, for the information of military crews.

(ii) That the MoD and the BGA should consider formulating notifying arrangements with the aim of forewarning military crews when gliding clubs are conducting ridge or mountain wave soaring.

UPDATE:

The MOD has introduced the Gliding Wave NOTAM system in conjunction with the British Gliding Association (BGA) for pre warning, when practicable, larger glider wave soaring and gliding competition events. The system also has the capacity to publish additional information as provided by BGA. It must be appreciated that a large amount of smaller local wave and ridge soaring activities take place in UK 7 days a week and potentially at short notice which this system will not be able to cover. Glider pilots are encouraged strongly to make their aircraft as conspicuous as practicable and pass as much information as possible regarding gliding activity by radio or telephone to ATC units that may be affected.

STATUS – Closed

2009-130 8 Oct 09 involving a B206 and a VANS RV8 Risk C

RECOMMENDATION:

The Aerodrome Operator should ensure that the Shoreham Aerodrome AIP entry regarding helicopter operations is reviewed.

UPDATE: The Shoreham Aerodrome AIP entry relating to Helicopter Operations was amended on 29 Jul 2010

STATUS - Closed

2009-157 11 Dec 09 involving an A340 and a B747 Risk D

RECOMMENDATION:

The CAA requests further information from the aircraft operator.

ACTION: CAA

UPDATE: The CAA accepted the recommendation and contacted the ac operator. The operator responded but was unable to explain fully the sequence of TCAS RA commands generated in the A340. Given the time that has elapsed since the incident and the data already provided by the operator, it is judged that it will not be possible to resolve the issue without disproportionate effort and expense.

STATUS: Closed

2010004 12 Feb 10 involving a DH3 UAV and an AH64 Risk C
2010005 12 Feb 10 involving a DH3 and a Sea King Risk C
2010019 16 Mar 10 involving a BK117 and a Tornado Risk C

RECOMMENDATION

The MoD is recommended to ensure that FACs are instructed in Airprox reporting and investigation procedures.

ACTION:

Air Comd JALO has been tasked to ensure that the syllabus at the Joint FAC Standards and Evaluation Unit (JFACSEU), the organisation that oversees and regulates all UK FAC training and practises, includes a module describing the Airprox reporting and investigation procedures.

STATUS - Closed

2010014 9 Mar 2010 involving an S92A and a Tornado Risk B

RECOMMENDATIONS

1. The MoD is recommended to amend the Low Flying Handbook to provide more comprehensive guidance on SAR training flights.

2. The Maritime Coastguard Agency considers using existing CANP procedures to notify military crews about Coastguard training flights.

ACTION: 1. MAA

2. MCA

UPDATE:

The helicopter operator, on behalf of the MCA, and the MoD have not yet determined a way forward.

STATUS: - Open

2010018 5 Mar 10 involving a B737 and an F15E Risk C

RECOMMENDATIONS

The CAA and MoD are recommended to:

1. Remind pilots to comply with standard phraseology in order to minimise the possibility of misleading controllers about TCAS contacts and reactions.

2. Remind controllers to seek clarification whenever a received transmission is ambiguous.

ACTION: 1 & 2. CAA – Head of SDU & MAA

STATUS: Open

2010053 19 May 10 involving 2 Grob Tutors Risk C

RECOMMENDATION:

It is recommended that outside CAS, where local procedures deem that an ATS may be automatically provided, that controllers state the actual service on the RT as a reminder to pilots of the ATS actually being given.

ACTION: AOBM

UPDATE AT 10 Mar 2011

Subsequent to this Airprox, the ATSU involved elected to change their local procedures so that the ATS provided is stated to pilots on the RT. Broader application by other ATSUs is under consideration at HQ Air Cmd.

STATUS:

Open

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 (U)	Air Traffic Service (Unit)
ATSA	Air Traffic Service Assistant
ATSOCAS	ATSs Outside Controlled Airspace
ATSI	Air Traffic Services Investigations
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
BINA ERS	British Isles/N Atlantic En Route Supplement
BMAA	British Microlight Aircraft Association
BS	Basic Service
c	circa
CC	Colour Code - Aerodrome Weather State
CAA	Civil Aviation Authority
CANP	Civil Air Notification Procedure
CAS	Controlled Airspace
CAT	Clear Air Turbulence
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
CPDLC	Controller-Pilot Data- Link Communication
C/S	Callsign
CTA	Control Area
CTR/CTZ	Control Zone
CWS	Collision Warning System
DA	Decision Altitude
DAATM	Defence Airspace and Air Traffic Management
DAP	Directorate of Airspace Policy CAA
DF	Direction Finding (Finder)
DH	Decision Height
DME	Distance Measuring Equipment
DS	Deconfliction Service
DUA	Dedicated User Area
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
fpm	Feet per Minute
fps	Flight Progress Strip
GAT	General Air Traffic
GCA	Ground Controlled Approach
GCI	Ground Controlled Interception
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
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
IFF	Identification Friend or Foe
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 (Swanwick (Mil))
LoA	Letter of Agreement
LOC	Localizer
LTMA	London TMA
MATS	Manual of Air Traffic Services
MATZ	Military Aerodrome Traffic Zone
mb	Millibars
METAR	Aviation routine weather report
MHz	Megahertz
MOD	Ministry of Defence
MRSA	Mandatory Radar Service Area
MSD	Minimum Separation Distance

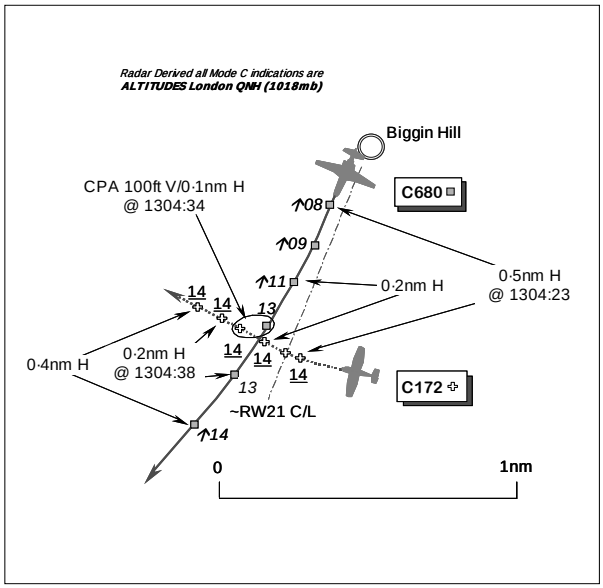
N	North
NATS	National Air Traffic Services
NDB	Non-Directional Beacon
nm	Nautical Miles
NMC	No Mode C
NK	Not Known
NR	Not Recorded
NVG	Night Vision Goggles
OAC	Oceanic Area Control
OACC	Oceanic Area Control Centre
OAT	Operational Air Traffic
O/H	Overhead
OJTI	On-the-Job Training Instructor
OOS	Out of 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
QDM	Magnetic heading (zero wind)
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
RH	Right Hand
RA	Resolution Advisory (TCAS)
RAT	Restricted Area (Temporary)
RCO	Range Control Officer
RH	Right Hand
ROC	Rate of Climb
ROD	Rate of Descent
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)
SACC	Scottish Area Control Centre (Prestwick)
SFL	Selected Flight Level [Mode S]
SID	Standard Instrument Departure
SKC	Sky Clear
SMF	Separation Monitoring Function
SOP	Standard Operating Procedures
SRA	Surveillance Radar Approach
SSR	Secondary Surveillance Radar
STAR	Standard Instrument Arrival Route
STCA	Short Term Conflict Alert
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	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
UNL	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 2010001

AIRPROX REPORT NO 2010001

Date/Time: 17 Jan 2010 1304Z (Sunday)
Position: 5119N 00001E
(Biggin Hill A/D - elev 599ft)

Airspace:	Biggin Hill ATZ	(Class: G)
	Reporting Ac	*Reporting Ac*
Type:	C172	C680
Operator:	Civ Club	Civ Comm
Alt/FL:	1000ft	1000ft
	QFE (999mb)	QNH (1018mb)
Weather:	VMC N/R	VMC N/R
Visibility:	10km	+10km
Reported Separation:		
	<500ftV/<500ftH	100ftV/100mH
Recorded Separation:		
	100ft V @ 0·1nm H [~200yd]	



BOTH PILOTS FILED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE C172 PILOT reports he was conducting a local VFR flight from Biggin Hill and was in receipt of a BS, he thought, from Biggin Hill TOWER (TWR) on 134·8MHz. A squawk of A7047 was selected with Mode C on.

Approaching the Biggin circuit from the deadside, he was instructed by TWR to follow a Robin, which was also approaching to join the RH cct (RHC) for RW21. He was visual with the Robin some distance to his R and slightly ahead so he continued his approach, monitoring the Robin, so that he could join the downwind leg behind it.

As he approached the crosswind leg at the upwind end of RW21 RHC, TWR asked him to report his altitude (sic), as the controller said he looked a little low. He checked his altimeter that was indicating a height of 1000ft with the QFE (999mb) set, reported this to TWR and continued his approach. However, he did notice that the Robin had looked slightly higher than his C172.

When he looked out again he had lost visual contact with the Robin and so concentrated on regaining visual contact. He crossed over the upwind end of RW21 heading 300° at 90kt and heard TWR ask a business jet, which was taking off from RW21, if he was 'visual with the Cessna'. He looked out of his right hand window and saw the jet about 1000ft away climbing rapidly directly towards him (the jet having drifted to the R of the RW21 centreline). The jet pilot shouted 'whoaa' over the RT and banked to port to avoid his C172. There was little he could have done by way of avoiding action, except push full throttle, which he did for a moment or two until it was clear that the jet would pass astern. He estimates the separation was less than 500ft both vertically and horizontally.

It is not clear to him how this incident happened. He was approaching the cct at the correct height and in a standard manner, trying to maintain visual contact with the traffic that he had been instructed to follow. ATC was clearly aware of his position, as they asked him to check his altitude. The jet appeared to be climbing very rapidly, but he did not know if this is standard or if it was climbing more steeply than normal. The jet had drifted to its R and was slightly over the grass to the R of RW21, but he does not think that was a major factor - they would have been too close for comfort even if he had been flying directly on RW heading - he had just passed over the runway.

He would like to know what might have been done differently in order to avoid this incident. He was very shaken by this and it took a great effort to stay calm while he completed his cct and landing.

The only personal factor that he can identify which might have influenced this, is his interpretation of TWR's instruction to follow the Robin into the cct. He wonders if ATC expected him to actually turn to his R and re-position

directly behind the Robin. This would have meant a substantial re-positioning for him and he did not do so - he continued his standard approach to the cct whilst maintaining visual contact with the Robin, intending to position behind him on the downwind leg. This he had done many times before in similar situations. On the other hand, ATC must have been visual with his C172, as they asked him to report his altitude, so they clearly knew exactly where he was. He also had his transponder on, as instructed, so ATC presumably knew his altitude from his Mode C indications anyway. He assessed the Risk as 'high'.

His aeroplane is coloured white and the HISL was on.

THE CESSNA CITATION C680 SOVEREIGN CAPTAIN, the PF, reports departing Biggin Hill for E Midlands on an IFR Flight Plan following the SID from RW21 whilst in receipt of a 'Control Service' from Biggin TWR on 134·8MHz. The assigned code of A5424 was selected with Mode C on; TCAS II is fitted.

After being held for a few mins at the D2 holding point for their departure clearance, TWR instructed him to line-up and issued their clearance to take-off from RW21. No information was given about other possible traffic in their departure clearance or the subsequent take-off clearance. Climbing out at 130-150kt passing about 1000ft they heard TWR say 'have you seen the 172'. In the cockpit he was transitioning from 'pilot handling' to the A/P at this point so he looked up and immediately saw the C172 ahead about 20° to their R and heading away to the R about 200ft higher than his ac. To avoid the C172 he immediately disengaged the A/P and levelled-off as he flew 100ft below and 100m astern of the C172 with a 'low-medium' Risk. Once clear, he rejoined the SID. Neither a TA nor an RA was enunciated by TCAS.

Upon landing at E Midlands he telephoned Biggin ATC and asked why they had cleared him to take-off IFR with the C172 crossing their 'departure', to be told the C172 was not where TWR asked the pilot to be.

His ac has a white and blue livery and all the lighting was on, including the HISL and landing lamp.

THE BIGGIN HILL AERODROME CONTROLLER (ADC) reports that the departing C680 came into confliction with the C172 that was joining from the deadside for RW21. The C172 pilot was asked on two occasions to check his height/altitude as it appeared to be lower than normal. The pilot replied on both occasions that he was at the correct level whereas the Aerodrome Traffic Monitor (ATM) indicated that the C172 was 200ft below the normal cct level. The departing C680 crew were airborne extremely quickly upon receipt of their take-off clearance and proceeded to adopt a very high ROC on departure. It was predicted that the C172 would have passed overhead the runway to the W by the time the C680 had got airborne. However the expeditious departure of the C680 placed it in potential confliction with the C172.

ATSI reports that this Airprox occurred within the Class G airspace of the Biggin Hill ATZ, which is the airspace bounded by a circle radius 2·5nm centred on RW03/21, from the surface to 2000ft above the aerodrome elevation of 599ft. Both flights were receiving an Aerodrome Control Service, with the Aerodrome and Approach functions being split at the time. The ADC was operating as mentor to an experienced trainee, who was shortly to take his Certificate of Competence in Aerodrome and Approach Control at Biggin Hill. All the RT transmissions from TOWER leading up to the incident [but not afterwards] were made by the trainee. The Mentor described his workload as low-medium in the period leading up to the Airprox. Biggin Hill ATC is not equipped to provide any surveillance [radar] services. It is, however, equipped with an ATM in the VCR, which displays radar data provided by LTC Swanwick.

The Biggin Hill 1250UTC METAR was: 280/11kt 240v310; 9999; SCT020; 08/03; Q 1018.

The outbound IFR C680 pilot was cleared to taxi for a RW21 departure at 1254. About 3 minutes later, the ADC issued the flight's departure clearance *"Brookmans Park 2 departure with a right turn at 1 mile inbound Delta Echo Tango climb to altitude 2 thousand 4 hundred feet squawk 5-4-2-4"*. The pilot read back the clearance correctly. The UK AIP, at AD 2-EGKB-1-9, states the Standard Departure Routes. Departures to the N are designated Brookmans Park 2 (BPK 2), the route being DETLING-BPK. A note to the routes states, 'Departures from Runway 21, follow Noise Abatement Procedure turning right to pass overhead BIG VOR at 2400ft ALT'. The Noise Preferential Route (NPR) applicable to the C680 flight is: 'As soon as practicable turn right to make good a track of 220°MAG. At 1.0 DME BIG commence right turn to the BIG VOR/DME or establish on track at 2400ft ALT. Remain within 4 DME BIG.' BIG VOR is situated at the centre of the airport, to the E of RW21/03.

AIRPROX REPORT No 2010001

At 1257:29, when the C680 crew was receiving its departure clearance on the TOWER frequency, -- the C172 pilot established communication with Biggin Hill APPROACH (APP) to request his rejoining instructions. The pilot reported *"overhead Sevenoaks at 2 thousand 1 hundred feet on 1-0-1-8* [QNH] *request rejoin instructions and Basic Service please"*. APP replied *"Basic Service you have with me report with 3 miles to run deadside join for 2-1 right hand circuit the 2-1 Threshold QFE 9-9-9 millibars squawk 7-0-4-7"* - A7047 is the LTC THAMES RADAR Biggin Hill SSR conspicuity code. The threshold QFE is issued as the threshold elevation for RW21 is 517ft – the A/D elevation being 599ft. The C172 pilot read back the pressure and clearance correctly confirming that he would report at 3nm. The radar recording, timed at 1257:30, shows the C172, squawking A7000 at 2100ft ALT Mode C, 8·9nm ESE of Biggin Hill airport. Shortly afterwards, TI was passed about an inbound Robin ac, whose pilot had last reported abeam the Brands Hatch area at 2200ft. The C172 pilot later reported sighting the Robin and was instructed to follow it; at 1300:58 the C172 was transferred to the TOWER frequency. The radar photograph, timed at 1301:00, shows the C172, now squawking A7047 as instructed, 4·2nm ESE of the airport at an altitude of 1500ft. The Robin it is following, is to its NW.

At 1258:30, the C680 crew requested their departure clearance to be read again. The ADC complied this time adding *"overhead"* after *"the right turn at 1 mile".* The pilot read back *"I've got that..Brookmans Park 2..after departure right turn overhead and then Detling climbing 2 Thousand 4 Hundred feet…"*. The C680 pilot reported ready for departure at holding point D2 at 1259:20 and was informed that a departure release was awaited from THAMES RADAR. Just over 2 min later the C680 was instructed to taxi to D1.

The C172 pilot contacted TWR at 1302:04 reporting, *"..with you 2 point 7 miles DME we..have the..traffic in sight ahead of us and following it in",* whereupon TWR instructed the pilot to, *"continue to join following the traffic ahead"*. At 1302:55, the C680 crew was cleared, *"right turn 1 mile report overhead clear to take off 2-1 surface wind 2-8-0 degrees 1-0 knots"*. The radar photograph, for this time, shows the Robin ac just passing overhead the centre of the airport. The C172 at an altitude of 1400ft, is 1·8nm SE of the airport, tracking W. The ADC later explained that he had been discussing the traffic situation between the subject ac with his trainee prior to the C680's take-off clearance being issued. He confirmed that both he and his trainee were aware of the position of the C172, both visually and on the ATM. It was calculated that the C172 pilot would have passed overhead the threshold of RW03 and been clear of the RW21 climb-out, before the C680 crew had taken off. Consequently, it was not considered necessary to pass TI about the C172 to the C680 or vice versa.

The UK AIP describes the Biggin Hill cct procedures as:

'Aircraft joining or re-joining the circuit for landing are to fly across the upwind end of the runway in use at 1000ft QFE at 90° to the runway heading, a left turn or right turn (as appropriate) should be made onto the downwind leg'.

Additionally, 'Circuit heights are 1000ft QFE (1600 ft QNH) at all times'.

The ADC mentor commented later that he had observed that the C172 was slightly lower than expected. This was confirmed on the ATM, where the Mode C of the C172 pilot displayed an altitude of 1400ft, rather than 1600ft as expected. Accordingly, the pilot was asked to, *"check your level you should be a thousand feet on the Q-F-E 9-9-9"*. The pilot immediately confirmed he was complying with the level instructions at 1303:50: "[C/S] *at 1 thousand feet on 9-9-9 millibars"*.

The mentor remarked that he and the trainee observed that the C680 commenced rolling quickly and became airborne earlier than expected about half way down the runway. He added that it then appeared to climb quite steeply. Concerned about the relative positions of the subject ac, the C680 crew was asked, "[C/S] *do you have the Cessna in sight*". The mentor said that as he was about to issue a warning to the C680 crew, the trainee transmitted the information. He commented that the information message was shorter than ideal but in the circumstances, due to the close proximity of the traffic, there was no time to pass a full traffic information call. He believed that the C680 was passing about 600/700ft at about the time the information message was initiated. In any case, both the mentor and trainee believed that the pilot of the C680, by now, would have seen the C172. The C680 crew responded, *"negative* [C/S] *oh affirm* [C/S]*"* [before uttering *"whooaa"* at 1304:30 and then asking, *"what were you doing there sir?*"]. The mentor then commented on the frequency that the C172 should have been at 1600ft on the QNH and the pilot of the C680 stated *"he came straight through our departure"*. The C172 pilot reported, *"just turning downwind at 1 thousand feet on 9-9-9 millibars continuing approach as instructed*". The mentor commented that, despite being operational at Biggin Hill for a number of years, he had not experienced the type of departure carried out by the C680 crew.

[UKAB Note (1): The radar recording of the incident shows that when the C172 was crossing through the climb out at the upwind end of RW21 (RW03 threshold), its Mode C indicated 1400ft London QNH (1018mb) with the preceding and succeeding radar returns indicating that the C172 was maintaining a constant altitude. Just before the C172 crossed the C680's 12 o'clock at 0·2nm, the latter indicates an altitude of 1100ft Mode C – some 300ft below the C172. The next sweep, which reveals that the 2 ac have passed each other, shows they are 0·1nm apart, with the C680 indicating 1300ft and the C172 at 1400ft Mode C.]

The UK AIP Biggin Hill entry also states, under the title of 'Circuit Procedures' that: 'Aircraft taking off, 'going around' or making 'touch and go' landings are to remain at or below 500ft QFE until the upwind end of the runway in use has been passed, when a left or right turn (as appropriate) should be initiated'. Apparently, this procedure is generally only used for training flights and would not have applied to the departure of the C680. Local ATC management report that the information printed in the AIP has been reviewed (see below). Some years ago, there was a restriction, which limited departing jets to an altitude of 1100ft and a speed of 180kts. This restriction was considered unsuitable and removed.

The MATS Part 1, Section 2, Chapter 1, Page 1, states the responsibilities of Aerodrome Control:

'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: aircraft flying in, and in the vicinity of, the ATZ'.

Accordingly, TWR should have passed appropriate instructions/information to the pilots of the subject ac that would have assisted in preventing any confliction between the two ac. On this occasion, neither pilot was informed about the details of the other flight. If, for example, the C680 crew had been informed about the presence of the C172 prior to departure, it would have allowed them to take appropriate action to avoid the C172. Although the trainee had cleared the C680 crew for take off, the mentor was responsible for the operating position. However, a number of unexpected factors caused the situation to develop. Namely, the C680 crew rolled quicker than anticipated, which meant that it arrived in the vicinity of the upwind end of RW21 before the C172 pilot had cleared the climb-out path. Additionally, the C680 crew rotated earlier than predicted and this was followed by a higher than anticipated ROC.

As a result of this Airprox, a Biggin Hill Supplementary Operating Instruction (SI 01/2010) was issued on 20th January. This states: 'With immediate effect, specific traffic information shall be provided to departing jet and other high performance ac prior to being issued with a take-off clearance with joining ac at or within 3nm approaching from the dead side to that runway - after this specific traffic information has been acknowledged a take-off clearance may be issued'. Additionally, 'A new warning highlighting to departing pilots of the potential for a confliction was sent for publication in the Biggin Hill AIP entry and published in line with the routine AIRAC cycle (25 Mar 2010).

The publication of Biggin Hill SI 01/2010, addresses the type of situation, which occurred on this occasion and should help to prevent it happening in the future.

UKAB Note (2): The UK AIP at AD 2 EGKB AD 2.20 - Local Traffic Regulations - now includes at Para 4 a warning:

'Pilots of departing aircraft are warned of the presence of other aircraft joining the visual circuit from the 'Deadside'. The joining aircraft will fly across the upwind [end] of the runway in use at altitude 1599ft (1000ft aal) at 90° to the runway heading before turning left/right onto the downwind leg. Pilots of high performance fast climbing aircraft should be particularly alert.'

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 controller involved and reports from the appropriate ATC authority.

The Board agreed that the C172 pilot had followed the joining instructions given and had done all that was asked of him by TWR, albeit he was concentrating on re-establishing visual contact with the Robin as he was crossing into the live side from the dead side. Whilst it was evident from the radar recording that the C172's unverified Mode C indicated his ac was at 1400ft London QNH (1018mb) and apparently 200ft low on the preceding cct ac, this

was within the allowable tolerance even for verified Mode C. Although TWR might rightly question it, ADCs should not be basing any form of separation within the visual cct on the ac's indicated altitude. It was not feasible to determine independently his exact height in the cct apart from what was displayed by Mode C; the C172 pilot had reported that his altimeter was showing his ac to be at the right height with the correct QFE set, but it seems from his own account and the ADC's visual observation that he might well have been a little low compared to other cct ac. However, if the ADC Mentor had been at all concerned he should have warned the departing C680 pilots before he issued a take-off clearance. An experienced controller Member did not believe that the C172's height was intrinsic to the Airprox; the operation of the visual cct relied upon traffic information from ATC to pilots joining the cct or about to depart so that they could integrate into the cct correctly, coupled with appropriate control instructions. However, it was clear to Members that TWR had not passed any traffic information to these two pilots about each other's ac.

The controller had cited the departing C680's quick take-off and very high ROC when airborne, and this Airprox was a salutary example of the difficulties that can ensue when ac of widely contrasting performance operate in the same aerodrome cct. One Member, himself a Citation pilot, believed it was incumbent on pilots of high-performance business jet ac to exercise extreme care when operating in a mixed traffic environment and take due regard of slower piston ac types operating in the cct, but pilots needed to be told about them first in order to avoid them. The operation of business jets such as the C680 from GA A/Ds such as Biggin Hill was commonplace and controllers should be well aware of their slick high performance characteristics; not only does this incident provide a reminder that they needed to be treated with care, but it highlights an issue that will be exacerbated by the introduction of Very Light Jets, many of which have even better take-off/climb performance. Notwithstanding whether the C680's take-off was more expeditious than ususal or the climb steeper, and the RoC shown by the radar recording did not seem unduly excessive, with an ac about to cross the climb-out there was a potential for a conflict. In the Board's unanimous view the ADC should have ensured that TI was passed about the C172 to the C680 crew before their take-off clearance was issued. The Board discussed whether this was an unconscious omission by the trainee that had not been detected by the Mentor. However, it appeared from the ADC's report that it was a misjudgement since they both expected that the C172 would have passed overhead the runway to the W by the time the C680 was airborne. CAT pilot Members also believed that neither of the pilots would have been able to gain SA solely from the RT transmissions and needed TI to highlight the presence of this traffic to them. With TI issued before the take–off clearance, the C680 crew could have judged for themselves whether it was safe to take-off at that point. In concluding the Cause, the Board agreed that this Airprox had resulted because the ADC cleared the C680 for take off without giving appropriate TI and it flew into conflict with the C172 joining the circuit.

Turning to the inherent Risk, the C680 crew were clearly surprised and unprepared when the C172 was first sighted during the climb-out after the trainee ADC's short warning. From the C680 flight deck it seems the C172 was already through the ac's 12 o'clock and drawing to starboard when first seen. Nonetheless it was clear from the radar recording that the C680 PF had also levelled-off to avoid it. He reports passing 100m astern at the CPA, about half of that recorded, but at about 200yd still too close for comfort. The C172 pilot in his slower piston aeroplane was undoubtedly in a vulnerable position and there was little he could do to get out of the way of the fast twin-jet as it climbed up towards him, subsequently passing astern and a little below. Thus despite neither pilot being aware of the other ac before the Airprox occurred, the final geometry and prompt avoiding action taken by the C680 pilot was enough in the Board's view to remove the actual Risk of a collision. Nonetheless, Members agreed unanimously that the safety of these two ac had been compromised.

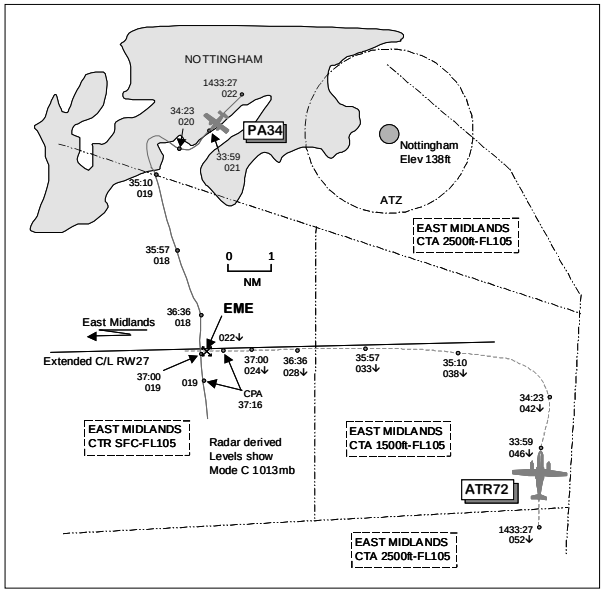
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The ADC cleared the C680 for take off without giving appropriate TI and it flew into conflict with the C172 joining the circuit.

Degree of Risk: B.

AIRPROX REPORT NO 2010002

Date/Time:	30 Jan 2010 1437Z (Saturday)	
Position:	5250N 00111W (5nm FIN APP East Midlands - elev 306ft)	
Airspace:	CTR	(Class: D)
	Reporting Ac	*Reported Ac*
Type:	ATR72	PA34
Operator:	CAT	Civ Comm
Alt/FL:	2000ft↓ (QNH 1001mb)	1500ft (QNH)
Weather:	VMC NR	VMC CAVOK
Visibility:	>10km	>10km
Reported Separation:	800ft V/1nm H	500ft V/1·5nm H
Recorded Separation:	300ft V/0·8nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE ATR72 PILOT reports inbound to East Midlands (EMA) IFR and in communication with East Midlands Approach on 134·175MHz, squawking with Modes S and C. On intercepting the LOC at 160kt for RW27 about 5 ac were identified ahead on TCAS; all were low level. In particular 1 light ac was clearly instructed by ATC not to enter CAS; however, this flight did not obey the instruction and entered EMA CAS heading N to S approaching the RW extended C/L. At about 1500ft, this ac was seen on TCAS to be 800ft below them and within 1nm, passing through their projected track from R to L. They were about to initiate a go-around when they became visual with the other ac, which passed close down their LHS. They continued their approach and advised ATC that they had visual contact and would be filing an ASR. The controller then contacted the other ac's pilot to remind him he had been instructed not to enter CAS. No TCAS alerts were received and he assessed the risk as medium.

THE PA34 PILOT reports flying a local sortie from Nottingham VFR and in communication with EMA Approach on 134·175MHz, squawking 7000 with Mode C. From O/H Nottingham City centre and on the N boundary of the EMA CTR he requested a zone transit on track to Birmingham. The controller replied *'...remain clear and standby'* which he acknowledged. He began tracking W'bound along the top of the CTR and shortly afterwards he was told by EMA Radar *'PA34 c/s head S'*. He replied *'please confirm heading 180° PA34 c/s'* to which the controller replied *'heading 180°'*. He took up heading 180° at 140kt and 1500ft QNH, expecting a clearance and confirmation of 'radar control' on entering the CTR. Although he became concerned crossing the Zone boundary that this had not been confirmed properly, the frequency was very busy. Shortly after this he became aware of a high-wing twin-engine ac [ATR72], on what appeared to be an approach path, high in his 10 o'clock about 2nm away. He was then able to contact EMA Approach and request confirmation of his routeing and position; the controller replied with an instruction to squawk 4553. Meanwhile he passed about 1·5nm ahead of, and 500ft below, the ATR72 whilst maintaining visual separation. Once his squawk had appeared on radar the controller asked him what was the instruction that had been passed to him. He replied that it had been, initially, to remain clear, which he had acknowledged, and subsequently to route S, which he had also asked to be confirmed and was told 180°. The controller replied *'...but you are not where I thought you were'*. He was then instructed to continue S to exit the zone whereupon he resumed his own navigation to Birmingham. He assessed the risk of collision as low.

In hindsight he felt the lessons learnt were: - The EMA controller should have positively identified his ac before routeing his flight S into the zone and he should have obtained unequivocal confirmation from ATC that he was cleared into the zone before entering.

THE EAST MIDLANDS RADAR CONTROLLER reports the ATR72 was being vectored for the ILS RW27. The PA34 flight called him on a photo-survey looking to transit from Nottingham to the Birmingham area and was told to remain outside CAS. The ATR72 established and was transferred to Tower frequency. The PA34 flight was

requested to track S'bound not above altitude 1500ft but still with no clearance issued. On issuing a squawk code (4553) the PA34 was seen to have assumed a transit clearance and had proceeded through the CTR directly S to the EME NDB and then S'bound, passing close to, although visual with, the ATR72.

ATSI reports that the East Midlands Radar Controller had been in position for approximately 55min before the Airprox occurred. The Radar positions were bandboxed, although another controller was available in the Approach Room if it had been considered necessary to open the Radar 2 position. The workload was described as steady and manageable at the time of the Airprox.

The ATR72, inbound to East Midlands on an IFR flight, established communication with Approach Control at 1425. The ac was 41nm SSE of the airport, routeing to VELAG and descending to FL80. It was instructed to leave VELAG heading 005°, for radar vectors to the ILS RW27. Further descent was issued as the ATR72 approached the airport i.e. to FL70 at 1429, with a range check of 28nm, altitude 4000ft at 1431, on base leg 24nm from touchdown and 3000ft at 1432. By now it was 14nm SE of the airport.

Just after 1433:30, the PA34 flight contacted East Midlands Approach. The controller was aware of its details as ATC had been pre-warned i.e. a photographic detail over Pride Park at Derby and Keyworth (just south of Nottingham Tollerton airfield). An fps had been prepared for the flight, showing it departing from Blackpool and landing at Nottingham Tollerton. The pilot reported *"PA34 c/s is a P A Thirty Four out of Nottingham we're on a photographic flight routeing to the Aston Villa and Birmingham city sites currently overhead Notting- er Nottingham City itself One Thousand Eight Hundred feet on the QNH of One Zero Zero [sic] millibars request zone transit on track"*. The QNH was not stated fully or, subsequently, read back when issued by the controller. At the time, the ac was 8·2nm NE of the airport tracking SW'ly indicating FL022 (altitude 1840ft QNH 1001mb), below the East Midlands CTA, where the base is 2500ft. The controller replied *"PA34 c/s remain outside for the moment just standby come back to you shortly"*. The pilot responded, *"Remaining clear"*. The boundary of the CTR was approximately 2·7nm ahead of the aircraft.

At 1434, straight after the PA34 pilot had replied, the ATR72 flight, still on L base, was instructed to turn L heading 270° *"...direct onto the Localiser report Localiser established"*. The controller then asked the pilot of the PA34 if he was still going to carry out his detail, as expected, at Derby. He confirmed that it had been cancelled and he was proceeding to Aston Villa, and then returning to Nottingham. The controller responded, at 1434:25, *"PA34 c/s roger erm track southbound initially not above altitude One Thousand Five Hundred feet remaining VFR QNH One Zero Zero One do have traffic just joined the ILS"*. The pilot read back *"Er tracking southbound er initially er please say again the height restriction PA34 c/s".* This was confirmed as not above 1500ft and the pilot acknowledged it correctly. The radar recording, timed at the moment the PA34 is told to track S'bound, shows the ac approximately 6nm NE of the airport, still squawking 7000, in a R turn away from the boundary of the CTR, in accordance with its instruction to remain outside (CAS). Thereafter, it commences a L turn and enters the CTR, 5·4nm NE of the airport, at 1435:10 indicating FL019 (1540ft QNH).

Prior to transferring the ATR72 to the Tower frequency, the Radar Controller passed details about a helicopter at 1500ft followed by a light ac at not above 2000ft, which were routeing N'bound through final approach. The pilot reported established for RW27 and confirmed he was looking for the traffic on the L. He was instructed to continue the approach and contact the Tower frequency. Over the next minute, the Radar Controller dealt with transmissions from 4 light ac. During this time the radar recordings show the PA34 tracking SSE through the CTR, its projected track indicating it would cross the RW 27 approach at 5nm. At 1436:36, the pilot of the PA34 asked *"And PA34 c/s please confirm you do want us to route south I can see the er traffic on ILS"*. The controller, still believing that the PA34 was routeing E of the CTR, looked in that vicinity on the radar display. Not observing a likely return, he instructed the flight to squawk an East Midlands code 4553. At the time the PA34 was approaching the RW27 approach path at FL018 (1440ft QNH), 4·6nm E of the airport. The ATR72 was on final approach at 6·7nm at FL028, 1000ft above, and 2·4nm distant from, the PA34. By the time the Radar Controller established the position of the PA34, the subject ac had passed each other. The radar timed at 1437:00 shows the PA34 now squawking 4553 just S of the approach path at FL019, 1·1nm ahead of the ATR72 at FL024, and 500ft lower. Whilst the Radar Controller was, subsequently, querying with the pilot of the PA34 the clearance issued, the ADC reported on the intercom he was still not in contact with the ATR72. When the ATR72 was then instructed to contact the Tower frequency, the pilot commented that he might have to file an ASR on that. He later reported that he had not transferred to the Tower frequency earlier, as he had become aware of traffic approaching from the R on his TCAS display and was looking for visual contact. The discussions with the pilot of the PA34 then continued, with him explaining his belief that the instruction to route S was a clearance to enter the CTR.

[UKAB Note (1): The CPA occurs at 1437:16 as the PA34, at FL019 on a S'ly track, diverges from the ATR72, which is 0·8nm to its NE tracking on the extended C/L RW27, descending through FL022.]

The controller believed that the PA34 was in the vicinity of Nottingham Tollerton airfield and not near the City, when it was instructed to track S'bound (albeit that the pilot had reported over the City). There were a number of 7000 squawks in the vicinity of the airfield, at the time. A S'ly track from Nottingham Tollerton would have resulted in the ac tracking E of the CTR, at the base level of the CTA, clear of the ATR72. Consequently, it would have been prudent to identify the PA34 before the instruction was issued. It is understandable why the pilot of the PA34 believed he had received permission to enter the CTR, despite not receiving a standard joining clearance. The Radar Controller did not register the progress of the PA34 within the CTR, as he was busy dealing with other traffic. It is possible that if the radar positions had been split, resulting in the ATR72 being transferred to the Radar 2 position, then the Radar 1 Controller might have had more time to monitor the course of the PA34, or the Radar 2 Controller might have observed the confliction and taken appropriate action.

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 understand the APR's mindset in endeavouring to route the PA34 S'bound to the E of the CTR and under the CTA. However, he apparently did not assimilate the pilot's position report of being over the City centre and not where he thought it was i.e. E of the City close to Nottingham Tollerton airfield. Although he had issued the instruction to remain clear of CAS he subsequently issued a control instruction for the pilot to head S, which the pilot queried, and this was confirmed. The PA34 pilot was aware that he had not been issued with a positive clearance to enter CAS but Members could understand why he believed that the APR's instruction to vector S constituted permission. The CAA Flt Ops Advisor emphasised that, notwithstanding any other instructions or communications, pilots should always remain clear of CAS unless and until the terminology "cleared to enter" is used. Controller Members agreed that the PA34 should have been identified before issuing the heading instruction; in not doing so the APR had issued a heading to an ac that was unidentified, which had placed the ac into conflict with the ATR72 and this had caused the Airprox.

The Board also noted that the frequency was busy when the PA34 was tracking through the CTR, which probably denied the PA34 pilot an earlier opportunity to query the entry clearance. However, the pilot alerted the APR to the situation after he saw the ATR72 in his 10 o'clock high but by the time the APR had issued a squawk code and then realised where the PA34 was the ac were passing each other. Meanwhile the PA34 pilot maintained visual separation against the airliner, he estimated passing 1·5nm ahead and 500ft below it. The ATR72 crew had seen the PA34 closing from the R and had monitored its progress on TCAS (without any TA/RA) before seeing it pass 1nm ahead and below. The radar recording shows the PA34 crossing just over 1nm ahead and 500ft below, the CPA occurring as the ac diverge. These visual sightings allowed the Board to conclude that any risk of collision had been effectively removed.

PART C: ASSESSMENT OF CAUSE AND RISK

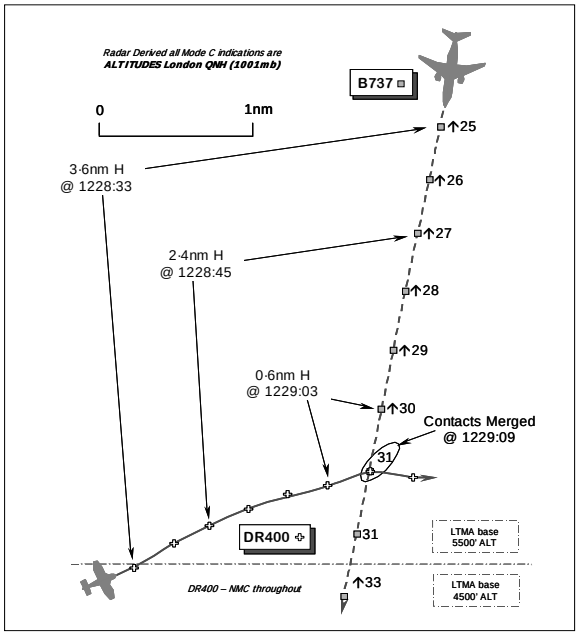
Cause: The APR vectored the unidentified PA34 into conflict with the ATR72.

Degree of Risk: C.

AIRPROX REPORT No 2010003

AIRPROX REPORT NO 2010003

Date/Time:	5 Feb 2010 1229Z	
Position:	5207N 00006E (6nm SW Cambridge - elev 47ft)	
Airspace:	London FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	B737-300	DR400
Operator:	CAT	Civ Pte
Alt/FL:	3000ft↑	N/K
	QNH (1001mb)	N/K
Weather:	NR	VMC CLOC
Visibility:	>10km	20km
Reported Separation:		
	300-500ftV/nil H	300ft V/Nil H
Recorded Separation:		
	Contacts merged	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE B737-300 PILOT reports he was outbound from Cambridge to join CAS to the S [at BARKWAY- BKY]. Stansted Intermediate DIRECTOR (SS INT) [situated at LTC] had just cleared them to join CAS in the climb to FL80. Subsequently, climbing through 3500ft, to the SW of Cambridge heading 200° at 250kt, the controller advised them of a primary contact in their 1 o'clock position tracking from R – L with no height readout. There was no traffic of any sort displayed on their TCAS, but a light ac was acquired visually by the 1st Officer PF about 1nm away to starboard. To avoid the other ac, the AP was disconnected and the climb stopped/reduced as the light ac passed an estimated 300-500ft vertically directly above them with a 'high' Risk of a collision. They advised ATC of the separation, then resumed the climb and turned onto a radar heading of W.

He commended the controller for advising them about this primary contact. In the absence of any warning from TCAS to alert them, it was this TI that enabled them to acquire the light ac visually and avoid it.

UKAB Note (1): The Cambridge weather was reported to be: Surface wind 220°/9kt; Vis >10km nil weather; Cloud FEW at 1400ft.

THE DR400 PILOT reports he had departed from Membury and was in transit to Crowfield. The aeroplane has a white and green colour-scheme and the HISLs were on. He was not in communication with any ATSU; the SSR transponder, including Mode C, was switched off.

Flying VFR with no cloud in the vicinity and an in-flight visibility of 20km, about 3-4nm SSW of Cambridge heading 090° (he did not recall the altitude or speed), the B737 was sighted at least 2nm away climbing gently outbound from Cambridge. The B737's climb angle was such that it was always going to pass beneath his ac. The B737 made no sudden attitude changes and passed 300ft underneath his ac with no Risk of a collision. After the B737 passed its ROC increased, but in his opinion, the B737 pilot saw him well in advance and decided his own distance to pass underneath his DR400.

THE LTC STANSTED INTERMEDIATE DIRECTOR (SS INT) reports 1 month after the event, that the B737 crew was given an airways join on track BKY after departing Cambridge. Climbing initially to 2400ft ALT, when the B737 crew called on frequency the flight was identified and placed under a TS outside CAS. He then co-ordinated the CAS join with TMA N and subsequently climbed the B737 to FL80 with a clearance to enter CAS on track BKY. Whilst in the climb a primary only contact was observed in the vicinity of Duxford. He believed that the primary contact would possibly be in the B737's path but he did not wish to issue an avoiding action vector outside CAS

as he did not know the intentions of the other ac. The B737 crew was left under their own navigation and he called TI as appropriate. The B737 pilot reported visual and advised that he had seen an ac less than 500ft above. Therefore, he thought at the time that the primary was at around 5000ft ALT.

ATSI reports that the Airprox was reported by the B737 pilot whilst in contact with the LTC Stansted Intermediate Director (SS INT) and occurred about 6nm SW of Cambridge aerodrome at an altitude of 3100ft. Departing Cambridge for Coventry on an initial clearance to *"BARKWAY* (BKY) *2400 feet",* the B737 was first shown on the Stansted 10cm radar, in use by the SS INT controller, at 1227:23 and was observed passing a reported altitude of 800ft. At 1228:00, the pilot of the B737 called on the SS INT frequency, 120·625MHz, on track BKY at an altitude of 2400ft. The indicated Mode C altitude of the B737 was 2500ft London QNH; SS INT instructed the B737 crew to squawk ident and gave a further climb to an altitude of 3000ft.

After SS INT co-ordinated a CAS joining clearance with TC North and identified the B737 3nm SW of Cambridge, at 1228:34, the controller instructed the B737 crew that they were clear to, "..*climb now flight level 8-0 clear to enter controlled airspace"*. The flight was placed under a TS and the clearance and ATS were correctly read-back by the B737 pilot. At 1228:49, SS INT passed TI on, "..*a primary only contact…observed just right of your 12 o'clock passing right to left across you now 1 mile ahead no height information believed to be low level'*. The radar recording shows the primary contact of the DR400 1·7nm SW of the B737. At 1229:09, the two contacts merged within Class G airspace at a position 210°(M) Cambridge airport 6·2nm, the B737 indicating an altitude of 3100ft London QNH (1001mb).

The pilot of the B737 reported to the SS INT controller that the traffic had passed overhead his ac, *"..and we're just passing underneath now no height readout…we estimate about less than 5 hundred foot separation".* After confirming this, the SS INT controller informed the pilot: "[that traffic] *now observed to have passed behind you had no height information*". After passing underneath the DR400 the climb rate of the B737 increased, the flight entered CAS, turned westerly and switched en-route without further incident.

This Airprox occurred wholly within Class G, uncontrolled airspace. After departure, the B737 was correctly identified, given a joining clearance and placed under an appropriate service.

In accordance with CAP493 Section 1 Chapter 11 paragraph 4.1.1 & 4.5.1, under a TS:

'… the controller provides specific surveillance derived traffic information to assist the pilot in avoiding other traffic… the controller is not required to achieve deconfliction minima, and the avoidance of other traffic is ultimately the pilot's responsibility.'

Traffic is normally considered to be relevant when, in the judgement of the controller, the conflicting ac's observed flight profile indicates that it will pass within 3nm…of the aircraft in receipt of the Traffic Service.

The B737 crew was therefore given appropriate and timely TI immediately after identification. Although the controller perceived [incorrectly] that the primary only contact was at low-level, the provision of TI was such that the B737 pilot was able to visually acquire the DR400 light ac and adjust the B737's climb rate accordingly.

There are considered to be no implications for ATC resulting from this Airprox.

UKAB Note (1): The Debden Radar recording shows the B737 departing from Cambridge setting course for BKY. At 1228:33, the B737 climbs through an altitude of 2500ft London QNH (1001mb) tracking 190° with the DR400 shown as a primary contact only at R 1 o'clock at a range of 3·6nm, flying in a broadly ENE'ly direction but in a slight R turn. The DR400 closes to a range of 2·4nm at 1228:45, moments before SS INT passed TI, as the B737 climbs through 2700ft London QNH. The DR400 maintains a constant relative bearing in the B737's 1 o'clock and at 1229:03, the range has closed to 0·6nm and the B737 is shown climbing steadily though 3000ft London QNH. The contacts merge at a position 1·8nm NW of Duxford at 1229:09, where the base of the LTMA is 5500ft amsl - about 0·6nm N of the step in Class A CAS down to the lower limit of 4500ft amsl. The B737 indicates 3100ft London QNH – still in Class G airspace – at the CPA and maintains this altitude until clear to the S of the DR400. The DR400 pilot's report that the B737 was 300ft below his aeroplane at the closest point would suggest that he was flying at an altitude of about 3400ft QNH. Thereafter, the DR400 draws astern flying easterly as the B737 climbs and subsequently enters CAS.

AIRPROX REPORT No 2010003

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 and a report from the appropriate ATC authority.

Although the DR400 pilot did not recall his transit altitude at the time of the Airprox, it was plain that he was legitimately flying in Class G airspace beneath the lower limit of the LTMA. In this busy 'see and avoid' environment, the DR400 pilot had spotted the B737 climbing out from Cambridge at a range of at least 2nm and assessed that the B737's climb was such that it would pass beneath him. Whereas the DR400 pilot might have perceived that his small aeroplane had been seen well in advance, this was evidently not the case – perhaps understandably so given the relatives sizes and more restricted view from the airliner's flight deck. In the confined airspace below the LTMA it should have been apparent to the DR400 pilot that the B737 would be climbing higher to enter CAS – as was the case here – and its rate of climb would not necessarily remain constant. Therefore the old 'see and avoid' maxim applied: presume that other pilots are unaware of your presence until there is evidence to the contrary. Notwithstanding that the Rules of the Air might require the B737 crew to give way in this situation, it would have been wiser to turn the more nimble DR400 out of the way and afford the B737 some lateral separation, especially with the potential for significant wake turbulence from the larger airliner.

Members were disappointed that, although the DR400 was equipped with a SSR transponder, the Mode A & C were switched off thereby preventing ATC from including specific altitude readouts in the TI provided to the B737, and negating the benefit of the B737's TCAS. The Board recognised that in Class G airspace, the operation of the transponder was not mandatory. Nevertheless, National procedures [UK AIP ENR 1-6-2] recommend that 'pilots operate an SSR transponder with pressure-altitude reporting enabled in order to facilitate detection of their aircraft by collision avoidance systems and ATC radar'. The safety benefits of TCAS as an aid to collision avoidance are almost universally recognised, and it would be far better airmanship to fly with the Mode A General Conspicuity Code [7000] selected and Mode C on, especially beneath the LTMA. As it was with the DR400's SSR switched off, the B737's TCAS was rendered blind to the presence of the DR400 and the B737 crew were reliant on ATC to supplement their own lookout. The Board agreed that a Contributory Factor to this Airprox was that the DR400's SSR was switched off, thereby preventing earlier conflict resolution advice from TCAS.

The B737 crew acquired the small aeroplane visually about 1nm away, the pilot reported, with the assistance of TI from SS INT and avoided it by reducing their RoC. Whereas the controller estimated the traffic to be 1nm away when the TI was transmitted, the ATSI report shows it was in fact 1·7nm away and this slightly earlier warning was clearly instrumental in allowing the B737 crew to sight the small DR400 in time. Passing above the small aeroplane might have resulted in some significant wake turbulence, so it was fortunate that the DR400 was spotted in time by the B737 crew for them to stop their climb and pass beneath it. Thus this conflict had been detected and action taken to prevent the situation becoming more serious, but it was unfortunate that the B737 crew was unable to provide any lateral clearance against the DR400 in case the pilot had not seen them and suddenly commenced a descent. Without Mode C data from the DR400 the exact vertical separation could not be determined independently however both pilots' estimates were broadly in agreement: the B737 pilot with perhaps the better view beneath reporting the DR400 was 300-500ft above, whilst the latter's pilot stated that the separation was at the lower limit of the B737 pilot's estimate. The Board concluded unanimously that this Airprox had been the result of a conflict that had been resolved by the B737 crew. Furthermore, the visual sighting by both pilots, coupled with the reported vertical separation convinced the Members that there was no Risk of a collision.

PART C: ASSESSMENT OF CAUSE AND RISK

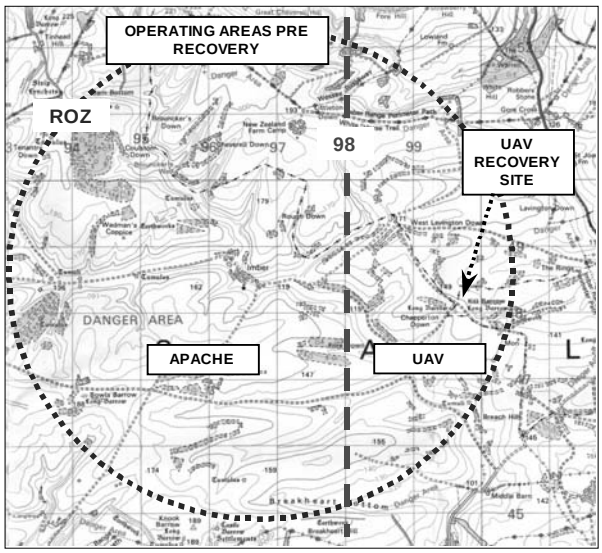
Cause: Conflict resolved by the B737 crew.

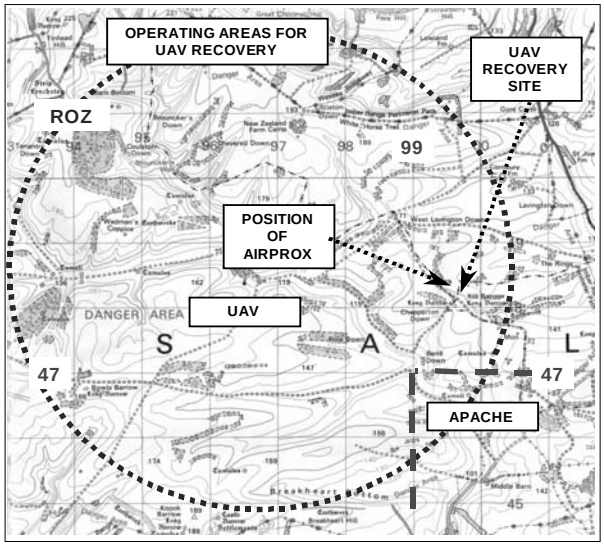
Degree of Risk: C.

Contributory Factors: DR400's Mode C switched off preventing earlier conflict resolution by TCAS.

AIRPROX REPORT NO 2010004

Date/Time:	12 Feb 2010 0940Z	
Position:	5113N 00200W	(SPTA - elev 488ft)
Airspace:	SPTA DA	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	DH3 UAV	AH64
Operator:	Army (RA)	HQ AAC
Alt/FL:	300ft agl	850ft
	(NK)	(RPS)
Weather:	VMC CLBC	VMC N/K
Visibility:	10km	4km
Reported Separation:		
	0ft V/300m H	N/K
Recorded Separation:		
	Not Recorded	





PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE DH3 UAV PILOT reports that he was operating a small, non-SSR or TCAS equipped UAV in an exercise ROZ [Restricted Operating Zone], 2nm in radius from 0-1500ft amsl centred on 5114N 00203W (see diagram). Meanwhile an Apache was cleared to operate in the ROZ and was being deconflicted geographically by the Tactical Air Control Party (TACP). He understood that the Apache was cleared to operate W of the 98E 'line' and his UAV was to operate to the E.

The Tactical Commander (TAC) informed the TACP that the DH3 needed to recover due to low battery endurance, and it was planned to recover to a point at ST 997481 (see diagram); he also informed the TACP that a new de-confliction plan would have to be implemented. They agreed that the Apache would have to operate E of the 99E and S of the 47N and informed its pilot. The TACP asked the Apache pilot to confirm when he was S of the 47N deconfliction line; he replied that he was already to the S and they passed this on to the DH3 TAC.

The TAC then cleared the DH3 into the recovery pattern.

The Apache then moved to the N and the DH3 FSO (Flight Safety Officer) reported to TAC that it was breaching the deconfliction line. The TACP again asked the Apache pilot to confirm that he was S of the 47N, and he verified

that he was. At this point the Apache was identified by the DH3 FSO to be at Grid ST 995479 [just under 1km N of the line and very close to the DH3 recovery point] at about 300ft agl (radar verified with Salisbury Air Ops). At this time the DH3 was in its landing pattern at 300ft agl, 300m from the Apache and on a collision course with it. The DH3 FSO instructed the UAV operator to initiate an immediate orbit to prevent collision and it was then commanded to fly to the NW, away from the Apache.

The Exercise Commander instructed the FAC to inform the Apache pilot to leave the ROZ asap and informed Salisbury Air Ops of the incident; he assessed the risk of collision as being high.

THE APACHE PILOT reports that he was flying an exercise sortie and was tasked to escort a Chinook into a Landing Zone for a simulated casualty extraction. They initially checked in with the TACP for clearance to enter the ROZ but were asked to contact another agency for subsequent tasking. They were told that a UAV was operating inside the ROZ and that it would be landed so that they could have sole use of the ROZ due to the low cloud-base. They then transferred back to the TACP to cover the pickup. About 5min later they again checked in with the TACP and were cleared into the ROZ but given holds [restrictions] of Northings and Eastings while the operators tried to land the UAV. Initially they were given an AMSL alt to fly but when he asked for the pressure setting he was told they "weren't working pressures" so they climbed to the max height they could and still maintain separation from the cloud; this was about 600-700ft agl and he assumed that the UAV was flying not above 500ft agl. They were held for approx 10min by the TACP while they tried to land the UAV and were then given clearance to route along a particular Easting where they would have freedom of movement to move closer to the landing zone.

It was at this point they were called up by the Commander who was based in Salisbury Air Ops and told to vacate the ROZ and call them on return to their base.

He did not see the DH3 at any time but was quite content that the TACP was keeping them laterally de-conflicted and that his height would have put him well above the UAV as it had entered it's landing profile.

UKAB Note (1): A ROZ is defined in AJP 3.3.5(A) as:

'Restricted Operating Zone (ROZ). A ROZ is established in order to reserve airspace for specific activities in which the operations of one or more airspace users is restricted (e.g. refuelling orbits, terminal approach holding areas, landing/drop zones, etc.).

a. A pre-planned ROZ will be published in the ACP [Airspace Co-ordination Plan].

b. Requests for activation of ROZs are to be made to the parent/affiliated ACC.

c. Activated ROZs will be published in the ACO.

d. Unless defined in ACPs promulgation of such zones should include:

(1) Vertical and horizontal dimensions.

(2) Use.

(3) Times of activation.

(4) Controlling authority and frequencies (if applicable).

(5) Restrictions for other airspace users, e.g., WCS.'

UKAB Note (2): By delegation from the ASOC, the FAC controls a ROZ in that they approve ac entry/exit and can restrict air operations to deconflict ac therein by time or geographical sub-division. As with all Class G airspace, however, see and avoid is the principal means of collision avoidance (even for UAVs) unless the airspace is ceded exclusively to a single ac. In this case, the ROZ was established for UAV Ops but a high priority task requiring ROZ penetration took place during the period of a UAV flight.

UKAB Note (3): This incident took place during the final work-up exercise before the participating units deployed to an operational theatre. It was therefore specifically designed to be representative and challenging with some unorthodox situations.

The DH3 Aircraft Operating Authority (AOA) comments that the DH3 UAV report above contains the details of the Airprox from the operator's perspective. The AOA is content that the operators carried out their duties in accordance with the policy and direction laid down in JSP 550 and the 1 Arty Bde Flying Order Book. The Safety Team grounded the DH3 until they were assured that the risk had been removed. This was done by contacting all the parties concerned and educating other air users on UAVs.

AOA Note: UAVs are unable to operate using the principle of 'see and avoid'. To ensure an appropriate layer of safety, in line with JSP 550 Reg 307 and 320 a 'layered safety' approach must be used for collision avoidance, which is equivalent to a manned ac. Therefore, all UAVs are flown in segregated airspace, which is achieved by operating the UAV within a ROZ - it is vital that airspace issues are coordinated and that the UAV is allocated sufficient space to manoeuvre safely. Segregation/ deconfliction from other ac when conducting non-operational flying on established ranges is the responsibility of the FAC.

HQ JHC comments that the original deconfliction plan between the Apache and the UAV would appear to have been sensible. The Apache pilot's primary focus would have been on the Chinook it was escorting, although the report does not make clear where it was to land.

The amendment to the deconfliction plan makes little sense, as the FAC would be restricting the AH to operate in less than ½ a square kilometre within the ROZ. It would have been far simpler to either keep the Apache to the W, or push the Apache to the S, but without the Chinook LS details, it is difficult to say why the FAC made this decision. Clearly, the operation of multiple ac within a small piece of airspace needs careful thought to produce a simple but workable deconfliction plan. By overcomplicating the plan, it would appear that some element of it was misunderstood, bringing the Apache and the UAV into conflict. It is vital that clear and unambiguous clearances must be given within a ROZ. The early action by the UAV operators safely resolved this conflict.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac and reports from the appropriate operating authorities.

Airprox Incidents 2010004 and 2010005 are very similar, both involving the same UAV, operating from the same location, on the same day, albeit involving different reported ac; that being the case the Board considered both incidents simultaneously, the generic discussion here applies equally to Airprox 2010005.

Seconded Advisors briefed the Board comprehensively on UAV and FAC procedures.

The Board accepted that the FAC was not available to provide a report as he was deployed overseas. The Board noted that, as the first incident the Board had considered involving Army operated UAVs, the Secretariat were breaking new ground while conducting the investigation and many lessons were learned that should ensure that more comprehensive information is made available in the future. It was agreed that, since the majority of battlefield comms are not recorded, and, in the likely absence of radar recordings due to the low altitudes involved, it was essential in future to collect reports from everyone who might contribute to the investigation. The JFACSU advisor informed the Board that Airprox reporting and investigation was not currently part of the training syllabus for FACs; the Board agreed that this should be addressed.

In the absence of RT recordings or corroboration from the FAC, Board Members were unable to determine with any confidence why the incident occurred. At face value it appeared that the Apache pilot did not comply with the restrictions placed on his movement by the FAC.

Members were informed by the Army Helicopter Member that although he was not totally familiar with the Apache, he was aware that a comprehensive Avionics suite which is capable of displaying 'holds' and 'no go' areas to the crew. That being the case he thought that the crew must have misunderstood the FAC's instructions. Without more visibility of the exercise scenario and constraints, the Board could not understand why the Apache had been constrained to such a small area of the ROZ. One Member suggested that the Apache crew might have

misunderstood and 'inverted' the holds and remained to the N and W of the grid lines rather than the S and E as intended. Another Member suggested that the FAC might have been relatively inexperienced, but no information was available to support this theory.

Members were also briefed that due to its method of control, it takes a finite time to place the UAV in an avoidance manoeuvre when it is in the landing pattern; in order to ensure safe separation, it is therefore most important that the landing pattern circuit area (about 1km in diameter) is totally free of other ac. All involved are aware of this and appropriate safety measures have been devised to ensure that this should be the case. In this incident although the primary safety measure was breached when the Apache entered the UAV landing area, this encroachment was spotted quickly and the backup measures implemented by the UAV crew ensured that there was no risk that the ac would have collided.

PART C: ASSESSMENT OF CAUSE AND RISK

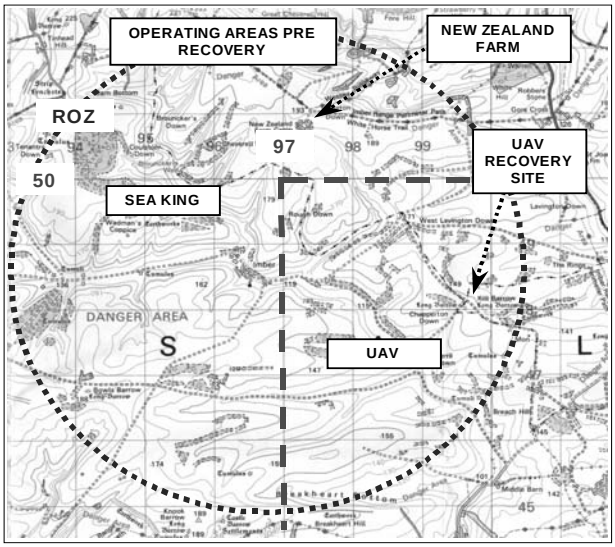
Cause: Conflict in a ROZ resolved by the UAV operator.

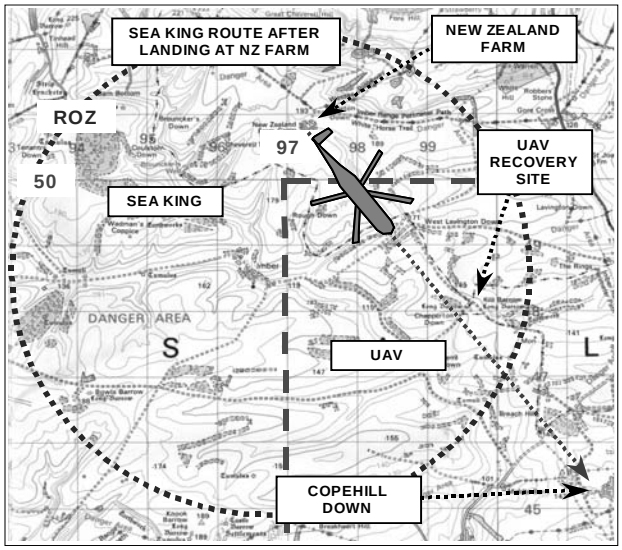
Degree of Risk: C.

Recommendation: The MoD ensures that FACs are instructed in Airprox reporting and investigation procedures.

AIRPROX REPORT NO 2010005

Date/Time:	12 Feb 2010 1235Z	
Position:	5114N 00201W	(SPTA - elev 488ft)
Airspace:	SPTA DA	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	DH3 UAV	Sea King
Operator:	Army (RA)	HQ JHC
Alt/FL:	300ft (agl)	Not above 100ft (agl)
Weather:	VMC CLBC	VMC CLBC
Visibility:	10km	9999
Reported Separation:	0ft V/300m H	Not Seen
Recorded Separation:	NR	





PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE DH3 MUAV PILOT reports that he was operating a small, non-SSR or TCAS equipped UAV in an exercise ROZ, 2nm in radius from 0-1500ft amsl centred on 5114N 00203W (see Diagram). Meanwhile a Sea King was cleared to operate in the ROZ and was being deconflicted geographically from the UAV by the Tactical Air Control Party (TACP).

DH3 Tactical Commander (TAC) informed the TACP that they needed to recover the UAV to position ST 997481 and confirmed that the Sea King was within its cleared area. The Sea King was inbound to New Zealand Farm Forward Operating Base (FOB), so the TACP recleared the UAV to operate in the SE corner of the ROZ, E of the 97E line and S of the 50N line. After confirming the position of the UAV, the TACP cleared the Sea King to enter the ROZ and directed it to route to the FOB from the North; the Sea King then landed at the FOB.

After taking off from the FOB a short time later the Sea King routed direct from the FOB to Copehill Down (2nm SSE of the landing site) at low level. This routeing took them through the airspace reserved for the DH3.

At this point the DH3 was turning left and descending, 300m out in its final landing pattern, flying at 32kt, when the Flight Safety Officer (FSO) saw the Sea King approaching 700m away. He carried out the immediate action drill,

sending the UAV into an emergency orbit away from the flight path of the Sea King. The helicopter came within 300m of the UAV with both ac at the same alt. This was a very close encounter and had the FSO not reacted so quickly a mid air collision could have occurred. Since the Sea King was flying so low it was not seen by the air sentries and gave the Detachment little time to react; it was also too low for RT contact with the TACP.

The Officer Commending the exercise investigated the incident and it was found that a breakdown in communications between the Sea King and the JTAC (Joint Tactical Air Commander) lead to it flying through UAV segregated airspace.

THE SEA KING PILOT reports that he submitted a report at the time but it could not be traced. He was contacted 3 months after the event (when deployed) and passed a verbal report to his squadron who forwarded it to the UKAB.

Whilst conducting troop drills as part of a pre-deployment exercise in the SPTA as a singleton he was tasked to a landing site at New Zealand Farm. They contacted the exercise Airspace Manager who informed them that a ROZ was active due to Desert Hawk UAV activity. Good 2-way comms were subsequently established with the appropriate TACP who positively cleared them into the ROZ from the N to the LS and then to depart to the SE not above 100ft. About 5min after they departed the ROZ, the Airspace Manager contacted them on the radio questioning their clearance into the ROZ and they explained the clearance as they understood it.

On completion of their tasking they returned to the Ops Centre to find out there had been an Airprox reported between them and a UAV.

None of the crew saw the UAV at any point.

He reported the weather as being: OVC010, 9999, not strong wind, time approx 1400.

UKAB Note (1): A ROZ is defined in AJP 3.3.5(A) as:

'Restricted Operating Zone (ROZ). A ROZ is established in order to reserve airspace for specific activities in which the operations of one or more airspace users is restricted (e.g. refuelling orbits, terminal approach holding areas, landing/drop zones, etc.).

a. A pre-planned ROZ will be published in the ACP [Airspace Co-ordination Plan].

b. Requests for activation of ROZs are to be made to the parent/affiliated ACC.

c. Activated ROZs will be published in the ACO.

d. Unless defined in ACPs promulgation of such zones should include:

(1) Vertical and horizontal dimensions.

(2) Use.

(3) Times of activation.

(4) Controlling authority and frequencies (if applicable).

(5) Restrictions for other airspace users, e.g., WCS.'

UKAB Note (2): By delegation from the ASOC, the TACP controls a ROZ in that they approve ac entry/exit and can restrict air operations to deconflict ac therein by time or geographical sub-division. As with all Class G airspace, however, see and avoid is the principal means of collision avoidance (even for UAVs) unless the airspace is ceded exclusively to a single ac. In this case, the ROZ was established for UAV Ops but a high priority task requiring ROZ penetration took place during the period of a UAV flight.

UKAB Note (3): This incident took place during the final work-up exercise before the participating units deployed to an operational theatre. It was therefore specifically designed to be representative and challenging with some unorthodox situations.

The DH3 Aircraft Operating Authority (AOA) comments that the DH3 MUAV report above contains the details of the AIRPROX from the operator's perspective. The AOA is content that the operators carried out their duties in accordance with the policy and direction laid down in JSP 550 and the 1 Arty Bde Flying Order Book. The Safety Team grounded the DH3 until they were assured that the risk had been removed. This was done by contacting all the parties concerned and educating other air users on MUAVs.

AOA Note: UAVs are unable to operate using the principle of 'see and avoid'. To ensure an appropriate layer of safety, in line with JSP 550 Reg 307 and 320 a 'layered safety' approach must be used for collision avoidance, which is equivalent to a manned ac. Therefore, all UAVs are flown in segregated airspace, which is achieved by operating the UAV within a ROZ - it is vital that airspace issues are coordinated and that the UAV is allocated sufficient space to manoeuvre safely. Segregation/deconfliction from other ac when conducting non-operational flying on established ranges is the responsibility of the FAC.

HQ JHC comments that the safe operation within ROZs depends on a well-conceived deconfliction plan that is understood and then implemented by the airspace users. In this case, it would appear that the Sea King crew understood that they had been cleared to fly the route that they followed, but this put them in direct conflict with the DH3. Without a statement from the TACP it is impossible to know if this clearance had been given. The size of the DH3 makes it very difficult to see, and it was undoubtedly the prompt actions of the UAV operator that allowed this conflict to be resolved. The challenging nature of this pre-deployment exercise is deliberate, as it is designed to get both TACPs and the airspace users familiar with high pressure and fast moving scenarios. However, some simple good airmanship, such as a blind call from the Sea King crew that they were lifting from the LS and routing to the SE may well have allowed the TACP to intervene to prevent this incident. The necessity for unambiguous and timely clearances is vitally important when de-conflicting UAVs as firstly, they are difficult to see and secondly, the tactical nature of the task means that radio contact is difficult and air sentries are of limited use.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac and the appropriate operating authorities.

Since this incident was very similar to Airprox 2010004 and was considered by the Board in parallel with it, the generic issues are discussed in that report are not repeated here.

This incident was different from 2010004 in that the Sea King crew appear to have understood from the FAC that they should depart to the SE the New Zealand farm landing site and continue directly to Copehill Down. This routeing took them close to the UAV landing site, of which they were unaware, and in the absence of a report from FAC or RT recordings it was not possible for the Board to determine why they had apparently not been deconflicted laterally from the landing area by the FAC.

As in Airprox 2010004, the second line of defence of the safety procedures had ensured that the Sea King was seen in time for the UAV operator to take effective avoidance and remove any risk of the ac colliding.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Conflict in a ROZ resolved by the UAV operator.

Degree of Risk: C.

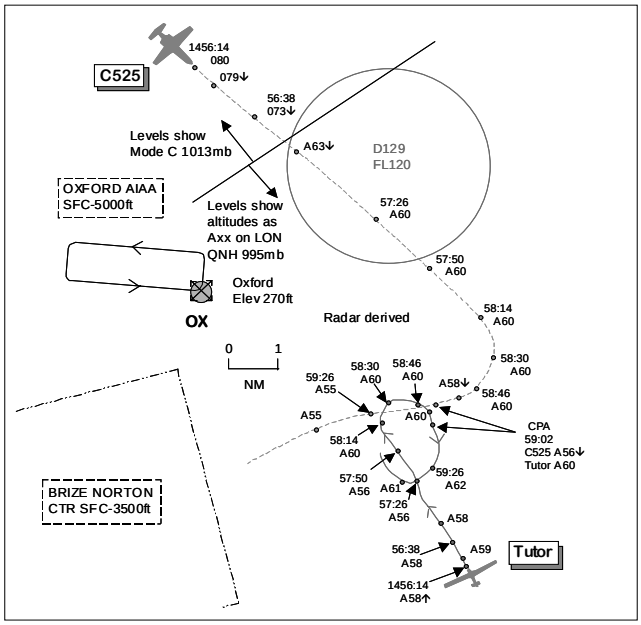
Recommendation: (See Airprox 2010004)

AIRPROX REPORT No 2010006

AIRPROX REPORT NO 2010006

Date/Time: 19 Feb 2010 1459Z
Position: 5148N 00112W
(5nm SE Oxford - elev 270ft)
Airspace: Oxford AIAA (Class: G)

	Reporting Ac	*Reported Ac*
Type:	C525	Grob Tutor
Operator:	Civ Pte	HQ AIR (TRG)
Alt/FL:	FL65	2000-7000ft (RPS)
Weather:	VMC CLAC	VMC CLOC
Visibility:		
Reported Separation:	Nil V/0·5nm H	Not seen
Recorded Separation:	400ft V/0·4nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE C525 PILOT reports flying solo inbound to Oxford IFR routeing from PEPUL [33nm NW OX] on a very late handover to Oxford ATC from London when only 5nm from the OX NDB, descending to FL65. After an introductory call to Oxford he was already at the OX and he requested further instructions. ATC told him to either orbit or join the hold at FL65 and he elected to join the hold. He turned R and entered the hold and almost immediately TCAS commanded a 'dive'. He saw the traffic, a single-engine ac, flying amongst the cloud tops and heading straight towards him. He initiated a rapid dive and immediately entered cloud becoming fully IMC, estimating the CPA as 0·5nm at the same level. He informed ATC of their actions and was cautioned on other traffic in the hold at FL35. He stopped descent at FL55, he thought [actually FL60], and the other traffic in the hold was identified on the TCAS screen. Meanwhile a new target entered the hold area from the NE heading directly towards them, which led to a second TCAS RA 'descend'; he turned sharp L to avoid the traffic. He descended to FL35 and by now his ac was S of the hold. He informed ATC who told him the Wx was clearer to the NW and recommended further descent in this area. After turning onto a NW'ly heading he found a 'wall' of ac targets, so many that despite a TCAS range of 5nm he was unable to read many of their heights owing to 1 target covering the altitude numbers of others. He turned W to try and find a gap in the traffic and a way through. Eventually he headed N in clear air and descended to 2000ft QNH. He then realised that after flying at FL35 he had entered the Brize CTR by descent whilst looking for a way N. He later rang Brize Supervisor to apologise and he also spoke to Oxford ATC who was unaware of the conflicting traffic. At no time was his IFR status officially cancelled. He considered that his ac was at great risk on several occasions and the situation of a protected environment whilst IFR and IMC should be considered.

THE GROB TUTOR PILOT reports that as the Airprox was not immediately reported it was difficult to remember the exact details of each of the 9 local sorties flown that day from Benson. The visibility was good to excellent, >10km, with scattered cumulus cloud, which limited full horizon scanning. The sorties were flown around the Oxford area, then towards Oakley disused airfield and as far E as Stokenchurch mast with each 30min flight profile varied to avoid area of poor Wx; altitude varied from 2000ft to 7000ft RPS. Benson gave a good TS throughout, albeit limited to SSR only; radio communications were good. At the reported time he remembered a variety of traffic calls from Benson and he was underflown by a light twin-engine ac but a good 1000ft below. This was the only contact of concern, as other traffic calls were either opening and reducing as a factor or he turned to create an opening vector.

THE OXFORD APPROACH CONTROLLER reports the C525 was pre-noted to the OX NDB and was given an acceptance level of FL65. The C525 crew's first call was 'passing through the OX' after a late handover from London. The crew then apparently had a TCAS alert and also requested a visual join. The flight was told to route back to the OX at FL65 whilst the visual join was coordinated. The crew replied that they were now at FL60 as

they had descended in response to a TCAS alert, which was against unknown traffic not working Approach. They were told that they would probably receive another TCAS alert against inbound traffic at FL55, which they were already aware of. The pilot then proceeded to descend further, infringing the Brize CTR, and eventually ended up continuing descent to the NW to position for a visual crosswind join for RW01 RH cct.

ATSI reports that the Airprox occurred in Class G airspace 5nm SE of Oxford Airport. Oxford Approach were providing a PS on frequency 125·325MHz without information derived from any surveillance system. Approach aids are situated on the airfield and include VDF, the OX(L) NDB together with an ILS/DME - RWY19. Oxford approach were utililising the NDB(L)/DME 100 deg hold and approach with RWY01 in use.

The C525 was an IFR flight inbound from Edinburgh, prenoted by London TC and given an acceptance level of FL65 at the OX NDB. Three other ac were inbound below the C525. The first was descending in the NDB procedure, the second passing FL45 in the descent to altitude 3500ft approaching from the NE and the third ac was to the SE climbing VFR and cleared to route to the OX NDB on reaching FL55.

A Wx report for Oxford was not available, however a METAR for RAF Benson is provided: METAR EGUB 191450Z 9999 SCT032 05/M02 Q0994 BLU NOSIG=

MATS Pt1, Section 1, Chapter 11, Page 10, Para 6.1.1 comments that *'Pilots flying in the vicinity of aerodromes, ATS routes, or navigational aids where it is known that a Procedural Service is provided, are strongly encouraged to attempt to establish RTF contact with the notified ATS provider.'*

At 1456:14, after a late transfer by London, the C525 flight called Oxford Approach, *"Good afternoon C525 c/s Citation with golf just approaching the Oxford XRAY descending flight level six five."* Oxford replied, *"C525 c/s good afternoon er you will have to enter the hold IFR flight level six five I've got two IFR er inbounds er below you and IFR traffic also departing"*. At 1456:35 the C525 pilot requests, *"Any chance we can go visual madam and do er a right hand join for runway one zero"* (Note: RW01 is in use). ATC replied, *"Yeah that shouldn't be a problem but just bear with me though."* After asking and receiving confirmation on the number of POB, at 1457:25 ATC transmits, *"C525 c/s roger for your er visual join did you say you want to position right base for runway er zero one"*; the C525 pilot replies, *"whichever suits you madam"*. ATC then replies, *"Okay just er let me coordinate with the tower controller and see what's acceptable for him".* The C525 pilot reponds with, *"Okay ma'am just bear in mind we're now passed Oxford Xray er Oscar Xray"*. At 1457:47 ATC reply, *"C525 c/s roger if you wish to orbit in the er Oscar Xray hold flight level six five until er I can arrange er a visual join for you that's fine by me",* to which the C525 pilot replies, *"Okay wilco thanks C525 c/s"*.

About 1min later at 1458:48 the C525 pilot reports, *"Oxford er C525 c/s is taking avoiding action TCAS report same altitude..(*unintelligible word)..*aircraft",* but did not specify the nature of avoiding action or whether this was as a result of a TCAS RA. ATC respond, *"C525 c/s roger I I've got no reported traffic at flight level six five and no means of er finding out what the traffic is at the moment"*. The C525 pilot responds (1459:04) with, *"That's copy we just avoided it we're now clear",* and shortly after at 1459:28, *"Oxford er C525 c/s is maintaining flight level six zero passing through the hold."* ATC respond with *"Roger your level was flight level six five and maintain level six five*". The C525 pilot replies, *"But madam I have a TA TCAS above me at flight level six five"*. At 1459:42 ATC passes essential TI, *"Okay and chances are then you'll get one below you flight level five five I've got traffic routeing to the Oscar Xray flight level five five".* The C525 pilot replies, *" I have a TCAS on that madam I am clear of that traffic",* and ATC acknowledge.

About 1min later at 1500:55 the controller suggested to the C525, *"C525 c/s are you able to depart the overhead to the northwest of the airfield and then er descend through cloud looks quite scattered over".* The C525 pilot replied, *"Wilco madam we'll turn around now over to the northwest er where we're heading now we're actually west and clear of the hold"*. ATC then request *"C525 c/s roger and tu over to the northwest if you're able to de descend VFR and then you can make either a crosswind or downwind join for zero one".* The C525 pilot agrees, *"co madam thank you C525 c/s heading northwest".*

The C525 flight was provided with additional TI on the traffic holding at A3500ft and a PA34 departing the cct into the local area. The C525 pilot reported sighting other traffic in the area 1500ft below him, that was not believed to be working Oxford approach, and additionally that his ac was clear of the holding pattern. [Traffic was working Brize E'bound in the approach pattern at altitude 2800ft in the CTR] At 1503:00 the Brize controller advised Oxford that the C525 has infinged the Brize Norton CTR (SFC to 3500ft) as it descended and commenced a R turn

towards Oxford. About 2min later at 1505:05 the C525 pilot confirmed VFR and visual with the airfield. The C525 joined a RH visual circuit RW01 and landed at 1509.

At the time of the Airprox the C525 was operating in Class G airspace and in receipt of a PS. The Controller was not aware of the unknown traffic in the vicinity at FL65, nor was the controller immediately aware that the C525 had descended to FL60 as a result of the avoiding action. This resulted in a loss of separation with the traffic below at FL55 and essential TI was passed. The controller did not have access to a surveillance system; however, the C525 pilot reported that TCAS indicated that the ac was clear of the traffic at FL55. The Controller asked the pilot if he was able to route to the NW of the airfield and descend through scattered cloud. Although not a factor in the Airprox, the controller then asked the pilot to descend VFR, effectively cancelling the IFR flight plan. Obtaining the pilots agreement to descend maintaining own separation and VMC would have better met the requirements of MATS Pt1.

MATS Pt1, Section 1, Chapter 11, Page 10, Para 6.1.1 – Procedural Service.

'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'.

MATS Pt1, Section 1, Chapter 11, Page 11, Para 6.5.1- Traffic Information.

'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. Under a Procedural Service, the controller has no ability to pass traffic information on any aircraft that he is not in communication with, unless he has been passed traffic information by another ATS unit.'

MATS Pt1, Section 1, Chapter 11, Page 11, Para 6.6.1- Deconfliction.

'A controller shall provide deconfliction instructions by allocating levels, radials, tracks, and time restrictions, or use pilot position reports, aimed at achieving a planned deconfliction minima from other aircraft to which the controller is providing a Procedural Service in Class F/G airspace. The deconfliction minima are: - 1000ft vertically or 500ft vertically where levels are allocated in accordance with the quadrantal rule (or otherwise when subject to CAA approval) or those lateral and longitudinal criteria listed in Section 1 Chapter 3 as lateral and longitudinal separation standards.'

MATS Pt1, Section 1, Chapter 3, Page 2, Para 4 – Essential Traffic Information.

'Essential traffic is traffic which is separated for any period by less than the specified standard separation. It is normally passed in situations when ATS surveillance systems are not available. Essential traffic information passed to an aircraft shall include: -a) Direction of flight of conflicting aircraft; b) Type of conflicting aircraft; c) Cruising level of conflicting aircraft and ETA for the reporting point, or for aircraft passing through the level of another with less than the normal separation; the ETA for the reporting point nearest to where the aircraft will cross levels; and d) Any alternative clearance.'

MATS Pt1, Section 1, Chapter 2, Page 5, Para 7.1 – Cancellation of IFR Plan.

'Change from IFR flight to VFR flight shall only be acceptable when the pilot uses the expression "cancelling my IFR flight". Pilots must not be invited to cancel, but if there is any doubt about a pilot's intentions he may be asked if he wishes to cancel his IFR flight plan.'

MATS Pt1, Section 1, Chapter 3, Page 3, Para 5.5 - VMC Climb and Descent

'To avoid excessive delays to traffic when ATS surveillance systems are not available, controllers may authorise an aircraft to climb or descend in VMC provided: a) essential traffic information is given; b) the pilot of the aircraft

climbing or descending agrees to maintain his own separation from other aircraft; c) It is during the hours of daylight; d) the aircraft is flying in visual meteorological conditions; e) the manoeuvre is restricted to Class D, E, F and G airspace at or below FL100; and f) the aircraft is not in CAS-T'.

HQ AIR ATM SAFETY MANAGEMENT reports that the C525 was operating in the vicinity of Oxford Kidlington Airfield at FL65 in Class G airspace. The Tutor from RAF Benson, was operating VFR between Benson, Oxford and Oakley disused airfield, in Class G airspace in receipt of a TS from Benson APP on 376·650Mhz.

Benson APP was providing services to traffic general handling to the W of Benson as well as approach services to station based ac. At the time of the incident the controller reported a medium workload with 4 speaking units on frequency. The Tutor pilot called on frequency at 1457:25 and a TS was applied (type of service is notified by GND prior to departure). Although the tape transcript showed numerous calls to the other ac on frequency, the only TI passed to the Tutor occurred at 1500:04, after the incident has happened. Due to the late notification of the Airprox the controller submitted an AIR (C) report 3 months after the event and, as such, detail was scant. After speaking to the controller to gain further information he reported *"from listening to the recordings I can ascertain that at the time of the incident, I was giving traffic information to the rotary on frequency and traffic info was not given on the ac in question to the Tutor until after the event."* This view is substantiated by the radar replay, which shows at 1458:30, the Tutor turning towards the C525. At the same time APP was passing RPSs to the Tutor, then to AC3, a rotary on frequency also under TS. At 1458:36 APP's attention turned to AC3 and TI was passed at 1458:52 as *"AC3 c/s traffic north east one mile similar direction indicating two hundred feet below".* Radar replay shows CPA at 1459:02 at 0·4nm. During conversation with the controller, it was ascertained APP had focussed attention on AC3 and had not seen the Tutor turn towards the C525 and into confliction.

Although detail was lacking from reports submitted, due to the time taken in notifying the ATS provider, the facts involved in the incident were easily determined. Benson ATC Watchman radar had been unserviceable for a number of months and they were providing limited services with SSR only. This restriction increases controller's workload and reduces the service being discharged. Both ac were operating serviceable SSR Mode 3A and both were within secondary radar coverage of Benson ATC. APP had 4 ac on frequency and workload was reported as medium. It is evident that the controller had become focused on a rotary ac close to the Benson area shortly before the incident, which reduced SA. The controller stated no recollection of the incident or the Tutor being in confliction with another ac, which indicated that APP was not monitoring the Tutor immediately prior to, or after the incident. Although the pilot was responsible for separation from other traffic under the rules of a TS, Benson APP did not provide adequate TI in order for the pilot to take timely action to avoid confliction. HQ AIR ATM believes this lack of timely and accurate TI, as a result of increased workload and reduced SA, was a contributing factor in this Airprox. The increase in workload and reduction of service at Benson has been recognised and the TS required by Tutor ac is currently being provided by RAF Brize Norton.

Recommendations. RAF Brize Norton will continue to provide TS to Tutor ac until RAF Benson recovers its Watchman radar. RAF Brize Norton has a long standing LoA with Oxford Kidlington ATC (LOA No4 which states "*Brize Norton ATC will notify Oxford ATC of aircraft under their control which intend to transit within 2nm of Oxford ATZ at or below flight level 80*", which recognises the IFR procedural hold which operates above Oxford ATZ. It is a recommendation that, once RAF Benson recommences radar services to station based Tutor ac, they should investigate a similar agreement.

HQ AIR (TRG) comments that unfortunately as the Tutor pilot was not informed until sometime after the event he could not remember the Airprox details and therefore this HQ has nothing to add. However, the limited radar service provided by Benson ATC due to unserviceable equipment has been identified as undesirable and RAF Brize Norton will continue to provide a TS service for Tutor aircraft operations until Benson's Watchman radar is repaired.

UKAB Note (1): The OX NDB (L)/DME 100° hold is a LH 1min racetrack inbound QDM 100.

UKAB Note (2): The Clee Hill radar recording at 1456:14, the time of the initial call by the C525 flight to Oxford ATC, shows the C525 5nm N of OX tracking 135° at FL80 with FL65 set in the Mode S SFL, whilst the Tutor is 7·8nm SE of Oxford tracking 330° indicating altitude 5800ft LON QNH 995mb. Eight seconds later the C525 is seen to commence a descent as the Tutor levels at 5900ft. The C525 then passes 3·4nm NE abeam OX still tracking 135° levelling at altitude 6000ft (FL65). At 1458:14 when the C525 is 5·5nm E of OX, it commences a R turn towards the Tutor, which is 2·7nm to its SW and is also starting a R turn, both ac indicating 6000ft. Just over

30sec later at 1458:46, just before the C525 pilot informs ATC of his TCAS avoiding action, the C525 is turning through heading 250° at 6000ft with the Tutor in its 1 o'clock range 1·2nm turning through 130° and about to pass ahead at the same level. Eight seconds later as the C525 steadies on a track of 260° its TCAS descent is seen through altitude 5800ft whilst the Tutor is tracking 170° in its 1130 position range 0·7nm level at 6000ft. The CPA occurs on the next sweep at 1459:02; the Tutor is 0·4nm S of and 400ft above the C525, which is descending through altitude 5600ft. Although the C525 pilot reported another ac entering the area from the NE causing another TCAS RA, the only traffic seen on the radar recording to the NE is a slow climbing Oxford departure tracking S. However the C525 pilot's reported avoidance L turn is seen to coincide with the Tutor turning R towards the N and descending slightly, shortly after the first TCAS encounter; STCA is triggered by both events.

UKAB Note (3): The C525 pilot was contacted (5 months post incident) to discuss elements of the incident found during the investigation. The pilot stated that he had previously been on a radar heading but was released late from London to Oxford and had been concerned that he had to be level at FL65 by the OX so he had continued SE'ly before turning towards the NDB, although he could not explain why it had taken a further 1min after levelling before commencing the turn. The ac was equipped with a fully electronic integrated avionics and LCD display system with moving map and electronic flight information including proprietary aviation charting. He explained that using the electronic Oxford IFR Terminal Approach Chart, the Danger Area was not displayed so he was unaware of his ac passing through D129.

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 operating and ATC authorities.

In the procedural environment at Oxford ATC the ATS provided by APP was dependent wholly on accurate and timely position reports and estimates. It was apparent, after correlating the RT transcript with the radar recording, that the C525 pilot had not reported his position accurately to Oxford APP. When the C525 pilot reported passing the OX the ac was in fact 3·4nm NE abeam on a SE'ly track level at FL65. Similarly, immediately post Airprox he had reported level at FL60 and passing through the hold when the radar shows the ac more than 5nm to the SE of the NDB. Members agreed that the exchange of information between ATC and pilots should accurately reflect the situation, enabling both parties to keep their SA updated. That said, the PS given by APP had provided the C525 pilot with positive instructions and information to facilitate his safe arrival into the NDB hold and to assist him to build his mental picture of the traffic situation. APP had several ac below the C525 that were being provided with vertical separation from each other but as the C525 was at the top holding stack level there would have been a lengthy delay before it could have commenced an approach after stepping down in the hold as lower levels became vacated. It appeared from the RT call made by the C525 pilot, after initial contact, that his mental model was to position his ac for a visual approach to RW01. However this could only be actioned after APP had coordinated with ADC, which led to the C525 flight only being assigned FL65 for some time whilst the pilot positioned his ac towards the Oxford. Members agreed that the C525 pilot should have queried the controller's request for him to descend VFR post Airprox, as it was the pilot's responsibility to cancel his IFR plan. Although a visual approach can be flown under IFR, the requirements of MATS Part 1, detailed in the ATSI report, need to have been fulfilled.

Some Members believed that had the C525 pilot flown direct to the OX from the N, his ac would not have been in the same area as the Tutor and the Airprox would probably not have occurred. This view was not shared by the majority who, cognisant that a direct route would normally be flown to an NDB before taking up the hold, agreed that the C525 pilot's actions of delaying his turn towards the OX were acceptable and had not affected the ATC aspects of the situation. However, unbeknown to APP, the Tutor was manoeuvring in the area to the SE of Oxford. The Tutor was in receipt of a TS from Benson and, although both subject ac were squawking, the controller did not see the potential confliction between them. Ultimately, although the Tutor pilot might have expected to be informed about the approaching C525, he was responsible for his own separation from other traffic. He reported flying clear of cloud but the cumulus cloud structure had limited full horizon scanning. This may explain why he did not see the C525 out to his R when he commenced his R turn, which then placed his ac belly up to the approaching Citation. Similarly, although the C525 flight was IFR and being afforded separation from other IFR flights under a PS, within this Class G airspace its pilot was also responsible for his own separation from other VFR and non-participating traffic. The C525 pilot had turned R, when his ac was E of the OX, towards the manoeuvring Tutor. TCAS had generated an RA, owing to the Tutor's conflicting flightpath, and he had then seen

the Tutor ahead and followed the 'descend' guidance, which led to the flight becoming IMC. Although the Tutor pilot did not see the C525, Members believed that both pilots had discharged their responsibilities to best of their abilities in the circumstances that pertained and that this Airprox had been a conflict in Class G airspace which had been resolved by the C525 pilot whose prompt and robust actions had been effective in removing any risk of collision.

Members expressed concern about the C525 flying through an active Danger Area D129 (H24). A Danger Area Information Service is available from Brize Norton but in the absence of updated information it should be assumed that the Danger Area is active up to its promulgated maximum height.

Post Meeting Note: The flight database company were contacted for clarification of aviation information that could be displayed on the EFIS on the C525. Terminal Charts are displayed statically on a MFD and the Oxford NDB (L)/DME 100 procedure does show D129 but the Brize CTR is not depicted. The moving map display does include Danger Areas and CAS boundaries.

Members could not account for the C525's second RA event. The radar recording does not show any traffic approaching the area from the NE that could have generated a TCAS warning. The recording does show the C525's avoidance L turn reported by the pilot, to the SE of the OX, shortly after the first TCAS RA/Airprox when the Tutor turns R onto a NW'ly track towards the C525 and descends slightly. The activation of STCA on both the Airprox incident and this second event, immediately before the avoidance L turn, suggests that it was the Tutor that triggered the second RA. However, this does not align with the C525 pilot's recollections of the geometry as he had turned L because of the TCAS RA target was to the NE i.e. his R.

PART C: ASSESSMENT OF CAUSE AND RISK

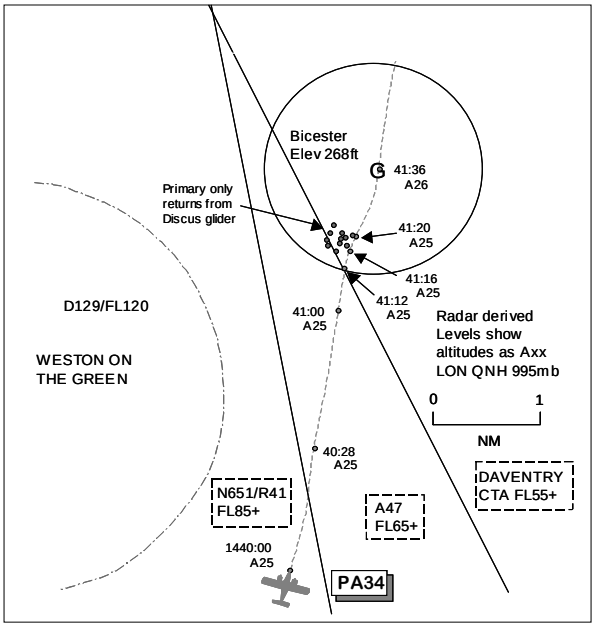
Cause: Conflict in Class G airspace resolved by the C525 pilot using TCAS.

Degree of Risk: C.

AIRPROX REPORT No 2010007

AIRPROX REPORT NO 2010007

Date/Time:	19 Feb 2010 1441Z	
Position:	5154N 00108W (0·75nm SSW Bicester G/S - elev 267ft)	
Airspace:	Oxford AIAA	(Class: G)
	Reporting Ac	*Reporting Ac*
Type:	PA34	Discus B
Operator:	Civ Comm	Civ Club
Alt/FL:	2500ft	2100ft
	(RPS 992mb)	(QFE)
Weather:	VMC CLBC	VMC CLOC
Visibility:	>10km	30km
Reported Separation:		
	Nil V/200m H	Nil V/30-50m H
Recorded Separation:		
	<0·1nm H	



BOTH PILOTS FILED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PA34 PILOT reports flying enroute to Leeds VFR and in receipt of a BS from Brize on 124·275MHz, squawking 3715 with Modes S and C. The visibility was >10km flying 1000ft below cloud in VMC and the ac was coloured white/red/blue with strobe lights switched on. About 2nm E of Bicester Glider Site heading 010° at 145kt and 2500ft RPS 992mb [actually 990mb] she saw a glider, as it banked L from straight and level flight, in her 12 o'clock range 0·5nm at the same level. She disconnected the A/P and turned R to increase separation whilst the glider continued in a steep, near 90° bank, L turn and passed down her LHS by 200m. She assessed the risk as high

THE DISCUS B PILOT reports flying a local soaring flight VFR and in communication with Bicester Launch-point on 129·975MHz. The visibility was 30km in VMC and the ac was coloured white with no lights fitted. After 45min of flight he was turning L in a thermal over the SE corner of Bicester airfield at 2100ft QFE and 60kt. He first saw the twin-engine ac when it was approaching from the S on a collision course about 30-50m away at the same level. He pulled hard in the turn and lowered the nose, the other ac continuing on its course heading N across the airfield where winch launching was taking place. The other ac was silver in colour with red registration letters but it passed too quickly to read the registration. He assessed the risk as high.

BRIZE SATCO reports the PA34 flight called Brize LARS at 1431:07 for a BS when NW of CPT, tracking towards DTY, the pilot reporting at 2500ft on a pressure of 991mb. A squawk of 3715 was given along with the Cotswold QNH of 990mb. No other transmissions were made between LARS and the PA34 pilot until she was told to squawk 7000 and freecall enroute agency (1442:28). During the period of the incident Brize LARS was working at a medium intensity controlling 3 to 4 TS tracks and another BS track. The controller was unaware that any incident had occurred and does not recall whether the vicinity of Bicester appeared busy with gliders whilst the PA34 transited through the area. If gliders were in the vicinity of Bicester producing radar returns, according to JSP 552 when in receipt of a BS, 'The avoidance of other traffic is solely the pilot's responsibility' and therefore the controller was not obliged to call any traffic.

HQ AIR ATM SAFETY MANAGEMENT endorsed the Brize unit (SATCO) report.

UKAB Note (1): The UK AIP at ENR 5-5-1-1 promulgates Bicester as a Glider Launching Site centred 515458N 0010756W active during daylight hours with aerotows and with winch launching up to 3000ft agl, site elevation 267ft amsl.

UKAB Note (2): The Heathrow radar recording at 1440:00 shows the PA34 3·9nm SSW of Bicester Gliding Site, tracking 010° and indicating altitude 2500ft London QNH 995mb with a primary only return, believed to be the subject Discus glider, 3·1nm ahead. Over the course of the next minute the glider return manoeuvres in, what appears to be, a LH orbit about 0·7nm SSW of the Gliding Site whilst the PA34 continues on a steady track. As the PA34 reaches a position 1nm SSW of Bicester at 1441:12 the Discus is 0·2nm ahead. Four seconds later at 1441:16 the PA34 is seen to commence a R turn but the Discus glider has faded from radar before reappearing on the next sweep at 1441:20 in the PA34's 7 o'clock range 0·2nm. By interpolation, the CPA, which occurs during the radar fade period of the Discus, is estimated to be within 0·1nm; the Discus pilot reported flying at 2100ft QFE (2367ft QNH) at the time of the Airprox. Thereafter, the PA34 tracks 030° for a brief period before regaining its 010° track, passing O/H Bicester at 1441:36 indicating 2600ft London QNH 995mb.

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.

From her written report, the PA34 pilot believed she was 2nm E of the gliding site when the incident occurred. By inference, it appeared that she was planning to remain clear of the gliding site, which is clearly marked on the 1:250,000 and 1:500,000 topographical charts, whilst flying VFR. The radar recording shows the PA34 tracking 010° and approaching the gliding site from the S on a steady track at 2500ft LON QNH with the primary return from the glider orbiting ahead, the CPA occurring about 0·75nm SSW of the site. Under a BS from Brize within the Class G airspace of the Oxford AIAA, the PA34 pilot was responsible for maintaining her own separation from other traffic through see and avoid. Similarly the Discus B pilot had an equal responsibility to avoid other traffic although he had right of way. However, Members agreed that the PA34 pilot's chosen flightpath had placed the flight into conflict with the Discus B and this had caused the Airprox.

Turning to risk, the PA34 pilot saw the glider 0·5nm ahead and altered course to the R estimating the glider passed 200m clear on her LHS. The Discus pilot was thermalling L and, after sighting the PA34, albeit late (an estimated 30-50m away), he increased his AOB into a steep L turn with a descent, belly-up to the PA34. Members believed that the actions taken by both parties had been enough to ensure that the ac were not going to collide but the ac passed with separation margins reduced and with safety compromised.

The lesson identified from this encounter is that when flying close to a promulgated site, an encounter with a glider is likely and therefore a wide berth should be given. That said, of more consequence is the far greater potential hazard of an impact with the winch cable if crossing O/H the site below the promulgated maximum height, in this case 3000ft agl (3267ft amsl). Fortunately there was no launch in progress when the PA34 pilot flew O/H Bicester after the Airprox.

PART C: ASSESSMENT OF CAUSE AND RISK

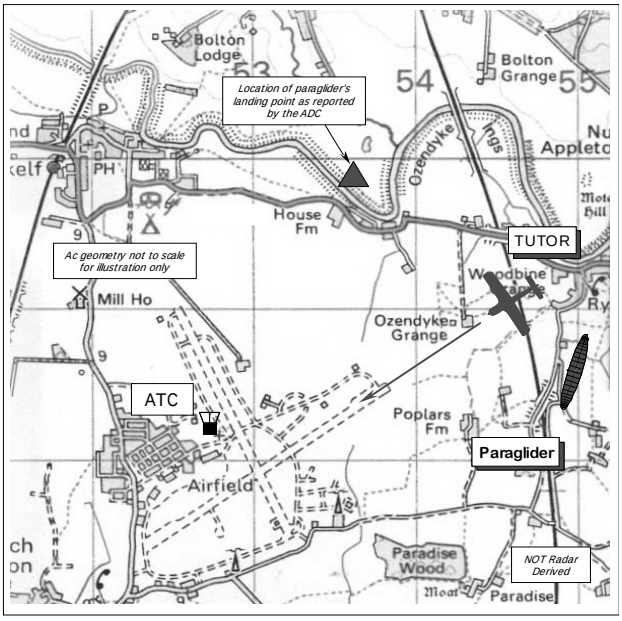
Cause: The PA34 pilot flew into conflict with the Discus B in the vicinity of a notified and active gliding site.

Degree of Risk: B.

AIRPROX REPORT No 2010008

AIRPROX REPORT NO 2010008

Date/Time:	20 Feb 2010 1320Z (Saturday)	
Position:	5350N 00110W (~1nm NE ofChurch Fenton - elev 29ft)	
Airspace:	Church Fenton ATZ (Class: G)	
Reporter:	Church Fenton ATC	
	1st Ac	*2nd Ac*
Type:	Grob Tutor II	Untraced Paramotor
Operator:	HQ Air (Trg)	Civ Pte
Alt/FL:	500ft QFE (995mb)	NR
Weather:	VMC CLOC	NR
Visibility:	>10km	NR
Reported Separation:	100ft V/NK H	NR
Recorded Separation:	Not recorded	



CONTROLLER REPORTED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE CHURCH FENTON AERODROME CONTROLLER (ADC) reports that he was both the ADC and ATCO i/c at the time of the Airprox, which occurred at 1320UTC.

The Grob Tutor pilot called for a visual recovery to RW24 RHC and was passed the airfield details including the cct state, which at the time was clear. When the Grob Tutor pilot called 'high Initials' he looked out and could see no other ac in the vicinity so stated that the cct was clear. The Tutor pilot then called on the Break to land. It was at this point that he spotted a paraglider [subsequently believed to be a paramotor (powered paraglider)] to the E of the RW24 threshold and transmitted a warning to the Tutor pilot. When the Tutor pilot called Final he gave a clearance to land on the runway and broadcast another warning to the pilot that there was a paraglider, at that point, close to short Final. The Grob Tutor pilot reported that he was not visual with the paraglider and initiated a go-around.

Once the Grob was re-established downwind the pilot requested an update on the paraglider, which was about 1nm out crossing the final approach at an estimated height of 500ft. The Grob pilot saw the paramotor, confirmed its height and positioned himself to land keeping well clear of it.

The bright orange paramotor was seen to make an approach and landing at approximately OS GRID 536 398. The nearest buildings to that area are named on the OS Map as a Farm House just adjacent to the B1223 road.

Nothing was seen on radar by the Approach controller - the radar head is situated at Linton-on-Ouse – and on this Saturday afternoon with minimal manning no personnel could be released to drive to the location and attempt to obtain the paramotor pilot's details. The civilian Police were contacted but they were unable to assist and the MoD Police, unfortunately, had no units in the area able to assist.

THE GROB TUTOR 115E PILOT reports he was returning to Church Fenton under VFR and flying in the visual cct to RW24 RHC at 500ft QFE (995mb), whilst in communication with Fenton TOWER on 234·1MHz.

At the start of a finals turn for a full stop landing at 80kt, Tower reported a paraglider in the vicinity of the final approach area. Checking inside the R turn he saw nothing and so initiated a level go-around at 500ft QFE. A paramotor was then seen at a height of about 400ft and he estimated the minimum vertical separation as 100ft; the minimum horizontal separation was not known and he assessed the Risk as 'low'.

His ac has a white colour-scheme and the wing tip HISLs were on. A squawk of A7000 was selected with Mode C; elementary Mode S is fitted.

UKAB Note (1): RAC LATCC (Mil) undertook extensive tracing action but was unable to identify the reported pilot flying what was perceived by the Grob pilot to be a paramotor. Enquiries with the owner of the Farm House and adjacent farmland revealed that he knew nothing of the event as he was out that day; the paramotor pilot seemed to have used his land without his permission. Eleven other aviation facilities in the vicinity and the BHPA were contacted in an effort to identify the reported pilot to no avail. Therefore, the identity of the reported paramotor pilot remains unknown.

UKAB Note (2): The UK AIP at ENR 2-2-2-1 promulgates the Church Fenton ATZ as a circle radius 2nm centred on the longest notified runway 06/24, extending from the surface to 2000ft above the aerodrome elevation of 29ft amsl and active on Saturdays from 0700-2359.

UKAB Note (3): The Church Fenton weather was: RW24 RHC; CC BLU; Surface wind 240°/3kt; Visibility 20km Nil Wx; FEW at 4000ft; QFE 995mb.

HQ AIR BM SAFETY MANAGEMENT reports that the Grob was recovering to Church Fenton for a visual recovery to RW24 RHC and at the time of incident was within the confines of the ATZ. On initial contact with TWR the controller passed airfield information and reported the cct state as clear, having no other ac on frequency within the ATZ at the time. At 1320:44, the Grob pilot reported "..*on the break to land".* TWR responded "[C/S] *roger caution, looks like there's a paraglider just to the east of the threshold.. unknown height*". At 1321:01, the Grob pilot reported finals, full stop, whereupon TWR reiterated TI on the paramotor, "..*caution, there's a paraglider just crossing short finals this time*". TWR called the traffic again because there was no earlier acknowledgment of the TI passed and at 1321:11, the Grob pilot reported "*going around".* Another Grob Tutor pilot was cleared for departure before the subject Grob pilot enquired, "..*can you still see him* [the paramotor]?". At 1321:35 TWR responded "*Affirm, looks like he's actually about on finals passing through 5 hundred feet this time*", to which the Grob pilot reported visual at 1321:41, "*Yeah I've got him, visual now thanks*". Once the Grob pilot was happy with the position of the other aircraft, reported at 1321:44 to be inside the finals point at the same height - 500ft, he called final and was cleared to land at 1322:15.

The Grob came into conflict with an unknown paramotor within the Church Fenton ATZ. The paramotor pilot was not in contact with the ATZ controlling authority and had not advised his intentions prior to flight.

The incident occurred over a weekend within the published hours of activity. The controller was commended not only for spotting the confliction beforehand but passing timely and accurate TI, which assisted the Grob pilot to avoid an unexpected situation with a paramotor, which is very hard to see.

HQ AIR (TRG) comments that it was unfortunate the paramotor pilot could not be traced as it cannot be determined whether he/she was aware of their proximity to the Tutor or visual circuit at Church Fenton. Having spotted the paramotor the ADC provided a good service to the Tutor pilot thereby reducing the risk of an actual collision.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included a report from the Grob Tutor pilot, radar video recordings and reports from the controller involved and the appropriate ATC authority.

It was unfortunate that the paramotor pilot could not be traced since, in the absence of a report from him, the Board recognised that the details of this Airprox were far from complete. Whilst it was feasible the paramotor pilot might have got into difficulty whilst airborne and had to make an emergency landing, Members believed it would have been wise to have contacted Church Fenton ATC afterwards to advise them what had occurred. A radio failure was feasible, but that would not absolve the paramotor pilot from compliance with the Rules of the Air. However, that was all conjecture; the ATZ should be a known traffic environment with all ac operating within it either pre-notified to the ADC or in communication with TOWER on the RT. It was plain to the Board that the paramotor pilot had not contacted the ADC to allow entry into the ATZ beforehand, or called TOWER on RT to obtain permission from the controller, which is contrary to Rule 45 of the Rules of the Air. This Airprox was a reminder to all pilots of what can occur with an unannounced intrusion into the ATZ, and more significantly, through the cct and final

approach area where it might least be expected. Members agreed unanimously that in the absence of any known extenuating circumstance the Cause of this Airprox was that, contrary to Rule 45 of the Rules of the Air, the Paramotor pilot entered the Church Fenton ATZ without permission, resulting in a conflict with the Grob Tutor on final.

The Board noted that despite the ADC's prompt warnings, the Grob Tutor pilot was unable to acquire the paramotor visually when he turned onto final from his first cct and so he wisely elected to initiate a go-around, thereby resolving the conflict. The Board commended the ADC for his alertness, which had clearly been instrumental in preventing a more serious close quarter's situation between the Grob and the paramotor in the final approach area. As might be expected, the paramotor was not shown on radar recordings and so the exact geometry - and in particular the minimum horizontal separation as the Grob executed the go-around - could not be ascertained. However, the Board were satisfied that, prompted by the ADC's warning, the Tutor's go-around had effectively removed any risk of a collision.

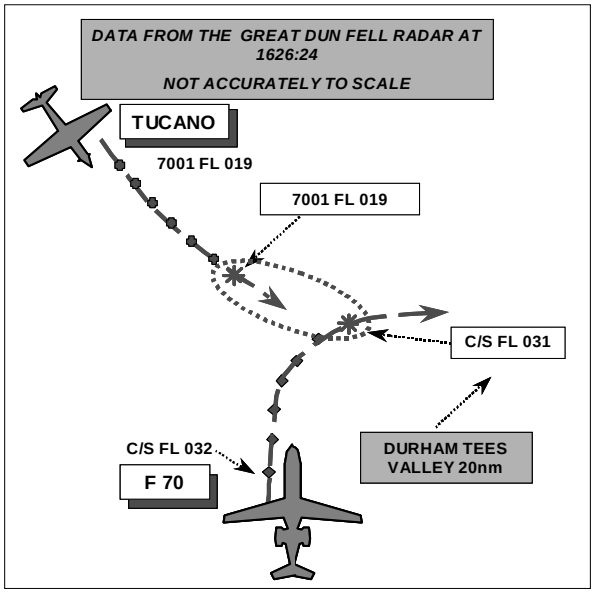
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Contrary to Rule 45 of the Rules of the Air, the Paramotor pilot entered the Church Fenton ATZ without permission, resulting in a conflict with the Grob Tutor on final.

Degree of Risk: C.

AIRPROX REPORT NO 2010009

Date/Time:	4 Mar 2010 1626Z	
Position:	5414N 00148W	(4nm E GASKO)
Airspace:	Scottish FIR	(Class: G)
Reporter:	Durham Radar	
	1st Ac	*2nd Ac*
Type:	FK70	Tucano
Operator:	CAT	HQ AIR (TRG)
Alt/FL:	3500ft	2500ft
	(QNH 1028mb)	(RPS 1026mb)
Weather:	NR	VMC CAVOK
Visibility:	NR	30km
Reported Separation:		
	1200ft V/1nm H	NR
Recorded Separation:		
	1200ft V/2.3nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE DURHAM TEES VALLEY RADAR CONTROLLER reports that at about 1523, he descended an FK70, heading 350° inbound for an ILS approach to RW05, to 3500ft on the QNH of 1028mb. The Supervisor previously noted on radar a 7001 squawk, S of Warcop and NW of GASKO, tracking SE indicating 2500ft so he (the controller) turned the FK70 on to 005° to tighten it up towards the FAT and still achieve separation. Shortly after, the SSR of the ac previously squawking 7001 disappeared but he continued tracking the primary contact until it 'partially faded' from radar about 20nm W of the airfield. The blip then re-appeared 3nm NE of GASKO shortly followed by an SSR return. At that time it was 6nm NE of the FK70, indicating 2500ft, the latter descending through 4500ft for 3500ft. Although the FK70 had already reported visual with the airfield, he called the traffic adding "if not sighted turn right heading 090 degrees". Soon after as the FK70 was passing 4100ft, he requested the pilot to level at the first opportunity and he responded, "level at 3500ft". The turn was made but it was immediately clear to him that separation was being eroded, so he issued an avoiding action turn onto 120° believing the 7001 to be manoeuvring and instructed the FK70 to climb to 4500ft to achieve some extra vertical separation albeit not the full 3000ft. When he saw the 7001 contact pass about 1nm behind the FK70 and 1000ft below, he turned it on to 360° and descended it to 3000ft.

After establishing the FK70 onto the localiser, he observed the 7001 change to a 4576 squawk, which is allocated to RAF Linton-on-Ouse. After being relieved from duty, he telephoned the Supervisor at Linton and established the identity of the Tucano.

After landing, the FK70 pilot telephoned and said they could see the contact on TCAS but not visually and he accepted the explanation of the avoiding action. The controller asked if he would be filing an Airprox report and he said he would not.

Later the Tucano pilot telephoned to say he was operating legitimately in Class G airspace and enquired as to why an Airprox was being filed and he (the controller) explained that it was due to separation being eroded. The Tucano pilot also stated that he was visual with the FK70 continuously and he estimated from his TCAS that they passed 2nm behind the FK70.

THE FK70 PILOT reports that he did not consider the event an Airprox. He was at about 20nm to run to Durham Tees Valley on a radar vector to intercept RW05 localiser, level at 3500ft when ATC gave TI on a pop up contact and a right turn onto heading 090°. He then saw the traffic on his TCAS 1500ft below just as he was told to "turn right heading 120° and climb to 4000ft". The TCAS showed that the traffic had levelled at 2500ft, as they turned away and climbed to 4000ft. He did not see the other ac or receive any TCAS warning but estimated (from TCAS) that its at its closest it was 1200ft below and about 1nm away.

ATC said that they would file an Airprox report and that it was probably a military ac.

THE TUCANO PILOT reports that he was returning from a singleton low-level training sortie, squawking 7001 in a black ac with TCAS 1 fitted. The weather was good and he was heading 120° at 240kt in Class G airspace to the NW of Linton on Ouse having climbed out of the LFS to 2500ft RPS when he saw a large civilian twin jet ac about 2nm ahead and around 1000ft to 2000ft above them. It was heading N and then banked away to the NE and, as they watched it, the range indicated about 1.2nm on the TCAS. They were visual with the ac at all times and he perceived no collision risk at any time.

After he landed he was contacted by the ATC Supervisor at Linton who told him that Durham were filing an Airprox with an ac on recovery. He contacted the Durham Tees Valley Supervisor, who he believed was the controller of the ac at the time and asked why he had been filed against when he was in Class G airspace with significant horizontal and vertical separation. The Supervisor explained that he had the Tucano's squawk on radar and saw that it was level at 2500ft heading towards Linton and then the Squawk was lost. The Supervisor then told him he descended the inbound ac to 3500ft and the Tucano's squawk reappeared causing the FK70 to get a TCAS warning.

ATSI reports that the Airprox occurred at 1626:24, 4nm E of GASKO in Class G airspace below Airway P18. (GASKO is a reporting point on P18 and positioned 25nm to the SW of Durham Tees Valley (DTV) Airport). The base of Class A CAS in the vicinity of GASKO is FL125.

The DTV METAR was: EGNV 1620 33003kt 9999 FEW026 07/M01 Q1028

The FK70 was released to DTV in CAS maintaining FL140 en-route for GASKO and in receipt of a RCS. Durham Radar instructed the FK70 to continue on heading 335° and gave a descent to FL90 for vectors for an ILS approach to RW 05. At 1622:32 he gave further descent to an altitude of 3500ft, QNH 1028mb and, as the FK70 left the base of P18, he advised, "…leaving controlled airspace deconfliction service". The FK70 was then instructed to turn right onto a heading of 350° to provide separation in the descent from known VFR traffic, squawking 7051, that had reported at 4600ft on QNH 1028mb and tracking SE.

Durham Radar then observed an unknown contact squawking 7001, indicating A2500, to the S of Warcop Danger Area and tracking SE. At 1624:30, in order to achieve separation from this unknown traffic and also tighten up the approach, Radar instructed the FK70 to turn right heading 005°. The radar recordings show the unknown contact indicating FL017 (A2100ft), 15nm NW of the FK70 and then subsequently fading from radar. At that point the FK70 pilot reported the field in sight but Radar advised that they will continue to vector the aircraft due to the known VFR traffic at 4600ft, "...just clearing the centreline southbound".

MATS Pt1, Ch 11, Page 8, Para 5.6.3 states that:

'The deconfliction minima against uncoordinated traffic are:

• 5nm laterally (subject to surveillance capability and CAA approval); or

• 3000 ft vertically and, unless the SSR code indicates that the Mode C data has been verified, the surveillance returns, however presented, should not merge.'

At 1625:30 the unknown contact reappeared 7.5nm NW of the FK70, indicating FL016 (A2000) tracking SE and converging so in an attempt to achieve the deconfliction minima the controller passed TI, "…pop up traffic left ten o'clock range seven miles manoeuvring indicating altitude two thousand feet if not sighted turn right heading zero nine zero degrees" and the FK70 pilot responded "er right heading zero nine zero it's not in sight...". Radar then advised, "okay it's now moving slowly southbound at the moment indicating 2300ft stop descent at the earliest possible level". The FK70 pilot reported levelling off at 3500ft and at 1625:47 Radar gave, "Roger avoiding action turn right heading 120 degrees that traffic now northwest of you three miles tracking southbound indicating 2300ft". At that point the radar recording shows the distance between the ac to be 5.6nm. The FK70 was then instructed to climb to an altitude of 4500ft.

At 1626:35 Durham Radar instructed the FK70 pilot to turn left onto N and advised, "Previously called traffic passing behind you by one mile south eastbound indicating two thousand six hundred feet." Radar recordings

show the unknown traffic indicating FL021 (A2500) passing 2.3nm behind the FK70 that had commenced the climb passing FL032 (A3600).

At 1627 the Durham Radar advised the FK70 "…clear of traffic descend to altitude 3000ft". The FK70 is then given vectors for a normal approach to the ILS RWY05.

It was later established that the unknown contact was a Tucano returning to RAF Linton-on-Ouse after a low level sortie.

MATS PT1, Chapter 11, Page 7, Para 5.1.1 states:

'A Deconfliction Service is a surveillance based ATS where, in addition to the provisions of a Basic Service, the controller provides specific surveillance derived traffic information and issues headings and/or levels aimed at achieving planned deconfliction minima, or for positioning and/or sequencing. However, the avoidance of other traffic is ultimately the pilot's responsibility'.

And Para 5.6.5 states:

'High controller workload or RTF loading may reduce the ability of the controller to pass deconfliction advice and the timeliness of such information. Furthermore, unknown aircraft may make unpredictable or high-energy manoeuvres. Consequently, it is recognized that controllers cannot guarantee to achieve these deconfliction minima; however, they shall apply all reasonable endeavours. The pilot shall inform the controller if he elects not to act on the controller's deconfliction advice. The pilot then accepts responsibility for initiating any subsequent collision avoidance against that particular conflicting aircraft. However, the controller is not prevented from passing further information in relation to the conflicting traffic, if in his opinion it continues to constitute a definite hazard'.

HQ AIR (TRG) comments that the crews of the ac involved did not consider this incident an Airprox. This seems to be perceived a loss of separation by the controller but after examination of the facts there was no reduction of safety or increased risk of a collision.

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 neither pilot considered this to be an Airprox, but since the Controller had submitted an Airprox Report, a full investigation was conducted iaw normal procedures.

In providing a DS in Class G airspace, the Durham Radar controller was required to attempt to acheive 5nm/3000ft separation between the inbound FK70 against unknown contacts. It appeared to the Members that he had done this to the best of his ability but the track/alt of the Tucano was such that this was not going to be possible. However, his actions were, in the view of specialist controllers, entirely reasonable and appropriate.

The Board noted that both pilots were aware of and visual with the other ac at an early stage and were content that their flightpaths would not conflict. Both ac were TCAS equipped (the Tucano albeit TCAS1) and neither ac received a TCAS warning. That being the case the Board agreed that there had been no confliction and therefore no associated risk or reduction in normal safety parameters.

PART C: ASSESSMENT OF CAUSE AND RISK

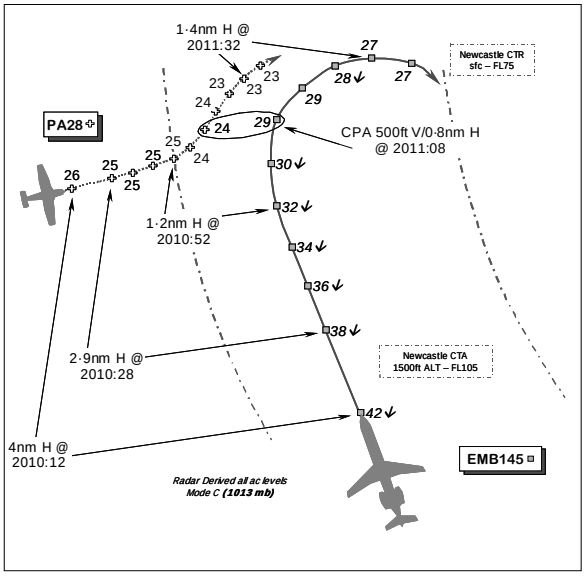
Cause: Controller perceived conflict.

Degree of Risk: C.

AIRPROX REPORT No 2010010

AIRPROX REPORT NO 2010010

Date/Time:	2 Mar 2010 2011Z (Night)	
Position:	5501N 00158W (10nm W of Newcastle- elev 266ft)	
Reporter:	Newcastle APR	
Airspace:	Newcastle CTA	(Class: D)
	1st Ac	*2nd Ac*
Type:	EMB145	PA28A
Operator:	CAT	Civ Trg
Alt/FL:	4000ft↓	3000ft QNH (1018mb)
Weather:	VMC NR	VMC NR
Visibility:	NR	30km
Reported Separation:	Not seen	1000ft V/½nmH
Newcastle APR		700ft V/1nm H
Recorded Separation:	500ft V @ 0·8nm H	



CONTROLLER FILED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE NEWCASTLE APPROACH RADAR CONTROLLER (APR) reports that she was vectoring the EMBRAER145 (EMB145) to the ILS for RW07 from the S under a RCS. Due to survey traffic underneath she was unable to give a standard descent profile, so planned to take the EMB145 through the LLZ to close from the L. Once the EMB145 was clear of this traffic, descent was given to 2200ft QNH (1026mb). Meanwhile a PA28 pilot flying N of Hexham outside CAS asked for a SVFR rejoin, but due to traffic was told to standby. The PA28 was orbiting just to the W of the CTA boundary. Although intending to turn the EMB145 to close the LLZ just as the ac crossed the final approach, she transmitted the instruction to the wrong callsign. At this point the PA28 infringed the CTA boundary without clearance. The EMB145 crew was instructed to stop descent at 3000ft QNH and given a R turn; the PA28 pilot was passed TI and told to make a L turn to keep clear of the EMB145. At this point STCA was triggered but the SSR labels had merged so she was unable to see the respective Mode C indications. Minimum separation was 700ft vertically and 1nm horizontally.

The Newcastle 1950UTC METAR was: 250/02kt; 30km; FEW3500 Temp M01/M03; QNH 1026mb. TYNE RPS: 1021mb.

THE EMB145 PILOT provided a brief account. He reports flying inbound to Newcastle under IFR and in receipt of a RCS from Newcastle APPROACH (APR) on 124·375MHz. A squawk of A5763 was selected with Mode C on.

Whilst in receipt of radar vectors towards a long right hand base leg to RW07 at 210kt, the controller advised of VFR traffic [the PA28] approaching from the NW and issued a R turn to intercept the LLZ RW07 for a normal approach. The other ac was shown on TCAS, but he did not provide an estimate of the minimum separation. The Risk was not assessed.

THE PIPER PA28 PILOT reports he was on a local instructional flight from Newcastle to Bamburgh and return, whilst in receipt of an ATS from Newcastle APP. The assigned squawk was selected with Mode C on.

Flying at an altitude of 3000ft in VMC, he advised APP that he would be routeing around the northern perimeter of the Newcastle CTR/CTA, outside CAS, to Hexham [a VRP situated 257°NEW15nm] and was instructed by ATC to report at Hexham. About 3nm N of Hexham he called APP to report his position, but was instructed to 'standby' so he commenced a rate 1 (3°/sec) LH orbit. He could see a northbound passenger jet [the EMB145] above his

ac, which he had spotted at a range of about 15nm and whose crew had asked the controller if his PA28 was under the control of APP. The controller advised the EMB145's crew that his PA28 was orbiting outside CAS. No avoiding action was taken as he assumed there was sufficient vertical separation and the EMB145 passed about 1000ft above his PA28 and ½nm away to starboard. He assessed the Risk as 'none'. Still flying at 3000ft, he subsequently routed back around the northern edge of the CTR changed to TOWER and then landed at Newcastle.

His ac has a white colour-scheme and the HISL was on.

ATSI reports that the Newcastle Approach Radar positions were combined. Although the controller described the traffic loading as medium at the time of the Airprox, the workload was considered as high, mainly due to the presence of a survey ac in the airspace close to final approach of the runway in use - RW07.

The EMB145 crew established communication with Newcastle APP at 2002, passing FL163 descending to FL90, towards NATEB (Newcastle Airport), within Class G airspace some 10·6nm ENE of Durham Tees Valley Airport. The flight was identified and the pilot was informed that it would be vectoring to the ILS for RW07, under a DS, which was read-back correctly. Subsequently, the aircraft was turned left heading 295° and issued with descent to FL70. The radar recordings show the EMB145, passing FL92, entering CAS (Class D of Airway P18) at 2006:10. The vertical dimensions of the airway in the vicinity, 16nm SSE of the airport, are notified as FL55-FL125. The pilot was not advised he was entering CAS or the ATC service was being changed. The MATS Part 1, Section 1, Chapter 5, Page 1, 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'.

It is not considered that this omission was a causal factor to the Airprox. The aircraft remained within Class D CAS for the remainder of the flight i.e. respectively P18, the Newcastle CTA and CTR. A further change of heading to 310° and descent to an altitude of 5000ft was instructed at 2006:50. By now, the EMB145 was passing FL82 14·3nm S of the airport. The survey ac, referred to earlier was routeing SW from the airport at 3500ft. The controller's plan was to position the EMB145 above this ac and issue further descent when the two ac had passed each other.

At 2007:58, the pilot of the PA28 called the APR reporting *"2 miles north of Hexham request rejoin".* The ac had previously departed from Newcastle squawking A3750 and had routed around the northern boundary of the CTR, retaining the allocated Newcastle code. The APR replied, "[PA28 C/S] *stand by*". The MATS Part 1, E (Attach), Page 2, states the appropriate phraseology:

'Remain outside controlled airspace. Time is (minutes). Expect joining clearance at (time).'

The APR stated that she would normally instruct an aircraft to remain clear of CAS if it was not possible to issue an entry clearance straight away. On this occasion, she did not carry out this action because her intention was to issue a joining clearance soon afterwards. She commented that she just needed a short time to formulate a suitable routeing to ensure that the PA28 would remain separated from the inbound EMB145. In the event, the APR became occupied with other traffic and did not return her attention to the PA28 as intended. The radar photograph, timed at 2007:58, shows the PA28 - squawking A3750 - tracking SW some 13nm W of Newcastle airport indicating 2600ft Mode C (1013mb) [equating to an altitude of about 2990ft QNH (1026mb)].

In view of the survey traffic, which would be crossing the EMB145's track, the APR advised, "[EMB145 C/S] *I do have traffic in your 3 o'clock 2 miles which is affecting your descent I'll take you through the final approach track to close from the left turn right heading..3-4-0 degrees"*. The pilot reported sighting the traffic on TCAS. Once clear of this traffic, the EMB145 crew was instructed, at 2009:42, to descend to 2200ft QNH. The radar recording shows the aircraft 10·5nm SW of the airport at 4700ft (1013mb) [5090ft QNH], within the Newcastle CTA, where the base is 1500ft amsl. The PA28 is shown tracking E, 2nm from the boundary of the same part of the CTA, indicating 2600ft (1013mb) [about 2990ft QNH]. The controller considered that, although the EMB145 would have to be taken through the LLZ to position the ac from the N, it would only be for a short distance and it would not conflict with the PA28. The APR intended to instruct the EMB145 crew to turn onto a closing heading for the ILS, however, at 2010:16, she passed the instruction to another ac, which was tracking S, further to the W. Both aircraft were squawking Newcastle assigned SSR codes that were not callsign converted. Realising her error, the APR

cancelled the clearance with the other ac and at 2010:33, instructed the EMB145 crew to, *"stop descent altitude three thousand feet right heading 1-1-0 degrees report established"*. However, she realised that this was not an appropriate heading to position the EMB145 to final approach and later amended it to heading 160° for a base-leg. Explaining that she had just repeated the instruction issued to the incorrect flight, she realised that the EMB145 would route further through the FAT than originally considered and that the PA28 was entering CAS in its vicinity.

[UKAB Note (1): The radar recording at 2010:28, shows the EMB145 passing through the FAT, descending through 3800ft (1013mb) [about 4190ft QNH], 9·9nm from the airport. The PA28, which was still outside CAS but tracking E, 0·6nm from the CTA boundary, at 2500ft (1013mb) [about 2890ft QNH] and 2·9nm NW of the EMB145.]

The APR assumed, incorrectly, that the pilot of the PA28, expecting the usual clearance to join Special VFR of not above 2500ft ALT, would have descended to that altitude already. Consequently, to achieve at least 500ft vertical separation, she decided to stop the EMB145's descent at 3000ft ALT. She did not notice that the PA28 was at an equivalent altitude of about 2890ft. With hindsight, she realised that she should have instructed the EMB145 to stop its descent as soon as possible. At 2011:00, just after the PA28 crossed the CTA boundary at 2500ft (1013mb) [about 2890ft QNH], the PA28 pilot was advised, *"you may see inbound IFR traffic in your 12 o'clock if you can make a left turn just to keep out the way please he is stopping descent"*. The pilot replied *"wilco"*. The phrase 'avoiding action' was not used to either flight and the pilot of the EMB145 was not informed about the presence of the PA28. The controller commented that the SSR returns of the two ac were overlapping. Although it is possible on the radar display to centre-in to an area at an expanded scale, which would allow the SSR returns to be segregated, she did not carry out that process.

[UKAB Note (2): At 2010:52, the subject ac were on conflicting tracks 1·2nm apart, the EMB145 descending through 3200ft (1013mb) [about 3590ft QNH], 700ft above the PA28 which was crossing the CTA boundary indicating 2500ft (1013mb) [2890ft QNH]. The CPA of 0·8nm occurred at 2011:08, as the EMB145 was turning R indicating 2900ft (1013mb) [about 3290ft QNH), crossing ahead of the PA28 from R – L, which was in a L turn at 2400ft (1013mb) [about 2790ft QNH]. Both ac were within the CTA at the CPA; the EMB145 being just over 1nm from the western CTA boundary. Newcastle ATC has been authorised by the CAA to use 3nm horizontal radar separation.]

The MATS Part 1, Section 1, Chapter 5, Paragraph 13.1.14, states the following guidance:

'Although aircraft operating in controlled airspace are deemed to be separated from unknown aircraft flying in adjoining uncontrolled airspace, controllers should aim to keep the aircraft under their control at least two miles within the boundary. Controllers should be aware of the operation of aircraft in adjacent uncontrolled airspace, particularly if circumstances have made it necessary to vector an aircraft to be less than two miles from the boundary.'

The APR was undoubtedly busy in the period leading up to the Airprox. Another controller was available alongside in the Approach Room and had asked if she required a second radar position to be opened. The APR explained that she had only recently achieved a Certificate of Competence. Whilst training, her mentors had encouraged her not to hand off ac to a second controller, to enable her to practice with more ac on the frequency. She commented that this made her unsure when it was necessary to open another radar position. The RTF recording showed the APR made some uncharacteristic errors in the period, including transmitting an incorrect direction of turn and contacting and responding to incorrect ac. It was reported that another controller had tried to pass advice but the APR did not believe that she had heard his comments, as she was concentrating her attention on resolving the situation. The ATSU have reminded controllers to open the second RADAR position as a matter of course.

A number of factors led to this Airprox. Although the PA28 pilot had not been instructed to remain outside CAS, he did enter the CTA without a clearance. The APR was busy at the time, which meant that she did not return her attention to the PA28 to issue a clearance as intended. This high workload could also explain why she transmitted the turn onto a closing heading, intended for the EMB145 crew, to another flight. Consequently, the EMB145 proceeded further through the LLZ than intended, resulting in a confliction with the PA28, close to the boundary of the Newcastle CTA. It would have been prudent to issue an avoiding action turn and traffic information to the EMB145 crew, which might have led to a speedy resolution of the situation.

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 reports from the appropriate ATC authority.

It was clear from the ATSI report that the APR was working under a high workload, albeit perhaps, self-imposed. It was also apparent that assistance was available from her colleague in the ACR if she had chosen to accept his offer to open up another RADAR position. Whilst experienced controller Members recognised that there are occasions when it is counter-productive to split a position because it could increase the need for co-ordination, if the build up of traffic is recognised early enough then it is good practice to split a Sector before it gets too busy. In hindsight, this would have been worthwhile here, especially when unusual flights such as the survey ac are involved that was evidently an added complication. It had been reported that the APR had only recently achieved a Certificate of Competency, so Members questioned whether she was able to judge accurately when help was needed. Here was a reminder to Supervisors/ATCOs-in-charge to guard against situations where newly validated controllers might, inadvertently, allow themselves to be drawn into a difficult situation when it got very busy. A controller Member suggested that better teamwork would have been for another controller to open up the other position without waiting to be asked; the PA28 might then have been simply free-called across earlier, thereby relieving the APR of this added complication.

When the PA28 pilot requested his rejoin from Hexham although the APR was unable to issue a clearance immediately she did not advise him to 'remain outside controlled airspace', but she did not return to the PA28's situation as intended because her attention became focused on other traffic. Some Members questioned the worth of this phraseology, but at face value, it could have prevented this Airprox. The DAP advisor explained that this expression had been debated at great length and was specifically aimed at GA pilots to reduce the potential for inadvertent infringements of CAS; if the APR had not been so busy it she might well have added this caveat.

A significant factor within this Airprox was the APR inadvertently issuing the turn instruction intended for the EMB145 crew to another flight. In human factors terms, the Board considered that this was a sign of a hard-pressed controller and evidently the precursor to this Airprox. Despite the evident Mode C level of the PA28, the APR stopped off the EM145's descent at a level that did not ensure standard vertical separation above the light ac. The PA28 pilot was evidently a local operator and thus should have been entirely familiar with the Newcastle CAS. Having flown to Hexham VRP and despite not being told to remain clear of CAS, the pilot should have recognised that he should not set course eastbound into the CTA without being given a specific clearance to enter under Special VFR. No matter that a squawk might be issued and flights identified on radar, pilots must be in no doubt that unless a specific clearance has been issued to enter the CTA/CTR using the words "cleared to enter controlled airspace" pilots must not cross the boundary. As it was, the radar recording revealed that the PA28 pilot crossed into the CTA at about 2890ft QNH at 2010:52, where the base is 1500ft ALT, without a clearance and flew eastbound into conflict with the inbound EMB145 inside Class D airspace. Pilot Members were adamant that there was no room for a mistake here - this was a fundamental principle which should be readily understood by every pilot and especially every instructor. Members agreed unanimously that the cause of this Airprox was that the PA28 pilot entered the Class D Newcastle CTA without clearance.

If the PA28 pilot had remained outside CAS, the APR could have deemed separation to exist between the light ac and the EMB145 that was legitimately manoeuvring inside the CTA. When the conflict became apparent to the APR, the controller merely advised the PA28 pilot, *"you may see inbound IFR traffic…if you can make a left turn just to keep out the way please he is stopping descent"*. It was unfortunate that the APR did not use the phrase 'avoiding action' when the respective turn instructions were issued; a controller Member highlighted that this was significant and stressed that controllers must use this phrase when such action was warranted – it can engender a faster response and ensures pilots are appraised of the reason for the turn which, together with TI, can ameliorate a difficult situation more rapidly. The EMB145 pilot, operating IFR, was not overtly concerned at the situation as he turned in onto the LLZ. The PA28 was shown on TCAS, probably as proximate traffic, but with 500ft of vertical separation at a range of 0·8nm turning L away from the airliner, and no RA was reported. Importantly, the PA28 pilot reported that he had been visual with the EMB145 from a range of about 15nm and, despite the eventual separation being less than ideal, it was clear to the Board that no Risk of a collision had existed in these circumstances.

AIRPROX REPORT No 2010010

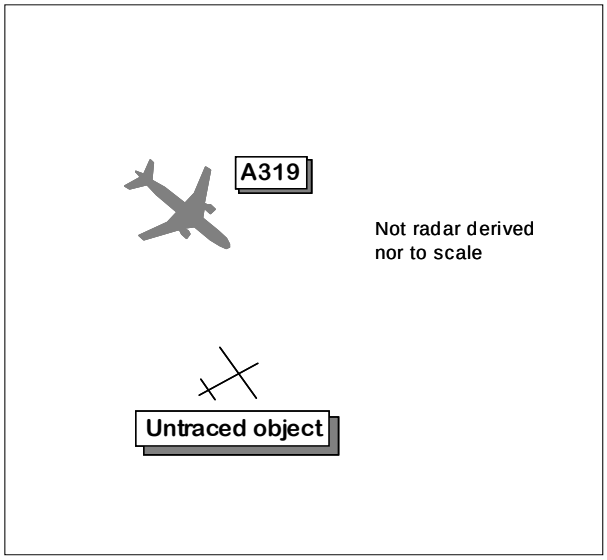
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The PA28 pilot entered the Class D Newcastle CTA without clearance.

Degree of Risk: C.

AIRPROX REPORT NO 2010012

Date/Time:	21 Feb 2010 1633Z (Sunday)	
Position:	5133N 00241W (4nm NW Filton)	
Airspace:	Bristol CTA	(Class: D)
	Reporting Ac	*Reported Ac*
Type:	A319	Untraced object
Operator:	CAT	N/K
Alt/FL:	↓6000ft	
	(QNH 990mb)	(NK)
Weather:	VMC CLOC	NK
Visibility:	10km	NK
Reported Separation:		
	50-100ft V	NK
Recorded Separation:		
	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE A319 PILOT reports inbound to Bristol IFR and receipt of a RCS from Bristol, squawking an assigned code with Modes S and C. Whilst descending to 6000ft on radar heading 140° at 220kt, the FO pointed out an object in their 12 o'clock position at roughly the same level. He, the Capt PF, looked out and saw the object fly under the ac's nose; its level was difficult to judge but he thought it was between 50-100ft below. The FO described the object as ac shaped coloured white with a red stripe, in an apparent bank to its R and he, the Capt, having only seen it for 3-4sec confirmed the colour and shape. The radar controller was asked for any TI or possible contacts but nothing was seen on radar.

RAC MIL reports extensive procedural tracing action was carried out but the identity of the object/ac remains unknown. Adjacent glider sites, airfields and private strips were contacted but no ac movements occurred that could be correlated to the incident time and location. AUS were contacted regarding permission notices issued for balloon releases for that geographical area but none were issued.

THE BRISTOL RADAR 1 CONTROLLER reports vectoring the A319 from DOBEM towards RW27. After passing the new Severn Bridge the pilot asked if there were any other ac in their vicinity to which he replied 'negative' and also stating that the ac was close to Filton in case it was a nuisance TCAS response. The pilot then informed him that something had just flown underneath their ac; they were unsure what it was but it was fast moving from S to N and believed to be red/white/blue colour scheme. He told the pilot that nothing was showing on radar, which was confirmed by RAD 2, and that it was CAS, a known traffic environment. The A319 continued the approach normally and landed. The Capt later telephoned and both he and his FO were sure that an object came very close to hitting the underside of their ac. The crew confirmed the colours and that it may have had a red stripe along the side. Much later an inbound flight reported that the 7000ft wind was 250/20kt.

The Bristol METAR shows EGGD1650Z 27005KT 9999 SCT023 04/00 Q990=

BRISTOL WATCH INVESTIGATIONS reports that later RAD 1 viewed the radar recording and on close inspection there was a very faint, irregular, primary-only contact near the A319's track, tracking approximately 070° from the new Severn Bridge area at 15-20kt. The LACC Supervisor was contacted to see if there had been any break-away balloons reported; however, none had been. The local radar recording at 1633:23 shows a pop-up primary only contact in the A319's 12 o'clock range 0·5nm which merged with it 8sec later. At 1633:50 the A319 crew ask if there are any ac in the area and then the primary only contact disappears. The radar return is then intermittent but does move in a NE'ly direction before fading completely at 1639:58. At all times it is only ever a small return and fades rapidly. The conclusion (conjecture) was that it might have been a small metallic balloon that was caught in the ac's lights briefly.

AIRPROX REPORT No 2010012

ATSI reports that the Bristol Radar 1 Controller was vectoring the A319 for RW27. Just after 2min after the pilot had made initial contact, when the ac was close to the new Severn Bridge, he enquired, *"...did you have any traffic right in our vicinity about four or five seconds ago"*. The pilot confirmed it was, *"...dead ahead twelve o'clock"*. Shortly afterwards, the pilot continued *"...just about a minute ago it looked like er a fast moving aircraft er went straight below us er from south to north erm we're not a hundred percent sure because as I say it was moving so quickly"*. The controller responded, *"Okay I know roughly where you called it there's certainly nothing showing on radar at the moment and erm erm it's certainly not speaking to anything and it's our airspace so it's it's sort of known traffic environment so I'm not quite sure what that could have been unless it's a sort of balloon or something"*. The pilot added, *"Erm we reckon it was colour schemed er red and blue er red white and blue and er as I say it was moving er so quick that we couldn't really see it"*. On subsequent inspection of the radar recording, there was a very faint irregular primary contact near the ac's track.

UKAB Note (1): At the time of the incident the A319 is seen approaching Bristol from the N and turning L on to a SE'ly heading, as directed by Bristol ATC, just under 1min before the encounter. At 1633:23, the time the local radar recording shows a pop-up contact ahead, the A319 is 4nm NW of Filton within the Class D airspace of the Bristol CTA base 4000ft, descending through FL71 for its cleared altitude of 6000ft QNH 990mb.

UKAB Note (2): Sunset was 1736Z.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the crew of the A319, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC authorities.

Although the crew reported sighting an ac shaped object, the radar recording did not show any target in the location that could be correlated with an ac type radar return. The primary only return in confliction captured on the Bristol radar was moving in the direction of and at the speed of the reported wind. Had this target been a balloon or possibly a bundle of balloons, it/they would have appeared to the crew to pass them very quickly owing to the high speed differential. Members thought it unlikely for it to have been a glider owing to the high level of the encounter, the Wx conditions at the time and the closeness to sunset. With the tracing action ruling out breakaway balloons, notified balloon releases and no ac identification possible, Members could offer no explanation as to the identity of the reported object. Members reluctantly agreed that, on the limited information available, this encounter would be classified as a conflict within Class D airspace with an untraced object but it was not possible to assess the risk of collision.

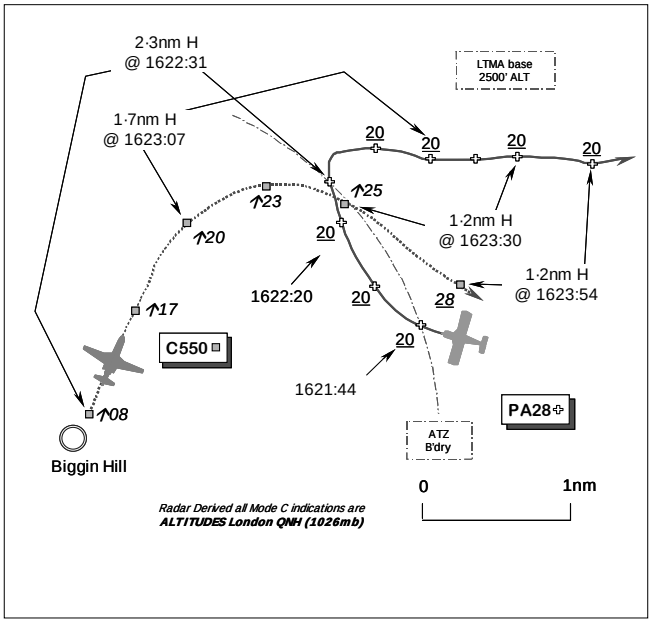
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Conflict in Class D airspace with an untraced object.

Degree of Risk: D.

AIRPROX REPORT NO 2010013

Date/Time:	4 Mar 2010 1623Z	
Position:	5121N 00006E (3nm NE Biggin Hill - elev 599ft)	
Airspace:	FIR/ATZ	(Class: G)
Reporter:	Biggin Hill ATC	
	1st Ac	*2nd Ac*
Type:	PA28	C550B
Operator:	Civ Pte	Civ Comm
Alt/FL:	1800ft amsl	2400ft QNH (1025mb)
Weather:	VMC Haze	VMC NR
Visibility:	3km	10km
Reported Separation:	Not seen	600ft V/2nm H
Recorded Separation:	500ft V @ 1·2nm Min H Nil V @1·7nm H	



CONTROLLER REPORTED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE BIGGIN HILL COMBINED AERODROME AND PROCEDURAL APPROACH CONTROLLER (ADC) reports that he was acting as an On the Job Training Instructor (OJTI) supervising a trainee controller.

At 1619, the IFR C550 was cleared for takeoff from RW03 for a Lydd 2 (LYD 2) Standard Departure Route (SDR). At the same time as the C550 became airborne he noticed an ac squawking A7000 entering the ATZ from the NE, indicating 2000ft Mode C and tracking directly towards the climb-out and the C550. A blind transmission was made to 'the pilot of the ac entering the ATZ to the NE of Biggin Hill', which the PA28 pilot answered. He was then able to confirm using VDF and DME that this was the ac conflicting with the C550. He passed avoiding action to the PA28 pilot based on visual observations from the VCR with specific TI on the departing C550. TI was then passed to the C550 crew about the PA28. The flights then continued en-route.

THE PA28 PILOT reports that he was flying with another pilot on a VFR flight from, and returning to, White Waltham. His aeroplane is coloured white with red and blue stripes. He reports that the in-flight visibility was 3km in haze and he was flying into sun.

Flying at 1800ft ALT, at 90kt, he was not in receipt of an ATS but 'listening out' on the Biggin Hill frequency [129·4MHz] when he realised that they had strayed into the ATZ. He turned N to exit the Zone expeditiously, which was when Biggin ATC contacted them on the RT, asked for his callsign and told them to turn R onto a heading of 090° for collision avoidance. They did so and then routed S to Sevenoaks VRP, as instructed, reported overhead the VRP, then flew W and descended to 1400ft to avoid the Class D Gatwick CTA (1500-2500ft amsl), reporting S abeam Biggin Hill and later Kenley, as requested.

At no time did they see the C550 involved due to the restricted visibility, and the fact that they were looking for Biggin Hill aerodrome. He made the mistake of not talking to Biggin ATC because he was intent on seeing the aerodrome, and by the time he realised from the DME reading that they had strayed into the ATZ, they were concentrating on exiting the Zone. Furthermore, at that time the frequency was fairly busy.

He contacted Biggin Hill ATC after landing to apologise for straying, he thought 0·4nm, into their ATZ, and to explain that on this VFR flight, although he had tuned the Biggin VOR/DME frequencies into the NAV equipment, he had been unable to see Biggin Hill aerodrome because of looking into sun through the late afternoon haze.

AIRPROX REPORT No 2010013

THE CESSNA C550B PILOT reports that he was departing from RW03 at Biggin Hill bound for Nice under IFR. His ac has a white and red livery and the HISLs were on. The assigned squawk was selected with Mode C; Mode S and TCAS are fitted. In receipt of a FIS (sic) from Biggin Hill Approach on 129·4MHz, climbing to 2400ft Biggin QNH (1025mb) in VMC at 170kt on departure from RW03, they noticed on the TCAS an ac 2nm away to the NNE. They never saw the other ac visually whilst looking out for it – only on the TCAS display. The other ac passed 2nm away down their port side some 600ft below his ac. When flying the SDR, the initial turn is at 1nm towards the E, but no TCAS alert occurred at any time. They were flying in VMC at all times.

ATSI reports that Biggin Hill ATC is not equipped to provide any surveillance services. It is, however, supplied with an Aerodrome Traffic Monitor (ATM), fitted in the VCR, which displays surveillance data provided by LTC Swanwick.

The ADC and Approach positions at Biggin Hill were bandboxed and were being operated by a Mentor and a trainee. The C550 crew was issued with its outbound clearance from Biggin Hill, whilst taxying for departure from RW03: *"Lydd 2 departure right turn 1 DME on track Detling squawk 2-2-0-3"*. The SDRs are notified in the UK AIP at AD 2-EGKB-1-9. The LYD 2 departure is for flights to the S via G27 (R803), routeing DET-LYD. Note 2 adds: 'Departures from RW03, after noise abatement, turn right to intercept DET RDL 278° to DET'. The C550 crew was instructed to climb to 2400ft QNH (1025mb). Prior to departure, at 1621, the C550 pilot was informed about traffic to the E that would be crossing overhead the upwind end of the runway at 1600ft. After acknowledging this information, the C550 crew was cleared for take-off, with confirmation of its R turn at 1 DME. The radar recordings show that, at the time, this traffic, which was joining the cct, was about 2·2nm SE of the airport. Additionally, another ac, squawking 7000 - the subject PA28, which had not contacted Biggin Hill, is shown 2·7nm ENE of the airport, tracking W, at an altitude of 2000ft unverified Mode C.

The mentor reported that at the time the C550 was airborne, he noticed, on the ATM, the unknown traffic entering the ATZ from the NE, tracking towards the RW03 climb-out. The Biggin Hill ATZ is defined in the UK AIP, Page AD 2-EGKB-1-5, as a 'Circle radius 2·5nm centred on the longest notified runway (03/21), surface to 2000ft aal. Aerodrome elevation is 599ft. The ADC made a blind transmission at 1622:00 *"The station to the Northeast of Biggin Hill callsign"*. The PA28 pilot responded and was instructed to remain outside the ATZ. After apologising, the PA28 pilot said at about 1622:20 that he was at a range of 2·1nm and would turn further R to head N. The radar recordings show the PA28 in a R turn at 2000ft unverified Mode C London QNH (1026mb), 2·3nm NE of the aerodrome. After checking the VDF and DME, the mentor confirmed he was able to establish visual contact with the PA28. Observing that the PA28 was still tracking towards the RW03 climb-out, the mentor transmitted "[PA28 C/S] *turn right route eastbound avoiding action traffic is a Citation just airborne from runway 0-3 will be routeing eastbound climbing to altitude 2 thousand 4 hundred feet IFR"*. The pilot reported turning and establishing on an easterly heading. TI was then issued to the C550 crew *"traffic information is a light aircraft…approximately 3 and a half miles to the northeast of Biggin Hill tracking eastbound"*. Following co-ordination with LTC, the C550 crew was instructed to climb to an altitude of 3000ft. The pilot read back the climb instruction, adding he was turning R.

[UKAB Note (1): The Heathrow 23cm Radar recording shows the PA28 maintaining 2000ft London QNH (1026mb) unverified Mode C – about 1400ft aal - as it crosses the lateral boundary into the Biggin Hill ATZ. The PA28 continues in a wide R turn maintaining altitude and the C550 is first shown climbing on runway heading passing 800ft Mode C at 1622:31, as the PA28 exits the ATZ to the NE of the aerodrome. The PA28 turns easterly and at 1623:07, is 1·7nm ENE of the C550, which is co-altitude climbing through 2000ft London QNH unverified Mode C having commenced its right turn. The C550 continues to turn inside the track of the PA28. At 1623:30, minimum horizontal separation of 1·2nm is reached, as the tracks of the subject ac start to diverge the C550, passing 2500ft London QNH, enters the Class A London TMA. The PA28 maintains 2000ft throughout within Class G airspace as it clears easterly, horizontal separation increasing after 1623:54.]

Rule 45 of The Rules of the Air Regulations 2007, requires certain conditions to be met for ac wishing to enter an ATZ. Of relevance to this Airprox:

'An aircraft shall not fly, take off or land within the aerodrome traffic zone of an aerodrome unless the commander of the aircraft has complied with (certain) paragraphs'.

This includes:

'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'. Additionally: 'the commander of an aircraft flying within the aerodrome traffic zone of an aerodrome shall: (a) cause a continuous watch to be maintained on the appropriate radio frequency notified for communications at the aerodrome; or (b) if this is not possible, cause a watch to be kept for such instructions as may be issued by visual means; and (c) if the aircraft is fitted with means of communication by radio with the ground, communicate his position and height to the air traffic control unit, the flight information service unit or the air/ground communication service at the aerodrome (as the case may be) on entering the zone and immediately prior to leaving it'.

The MATS Part 1, Section 2, Chapter 1, Paragraph 2, states the responsibilities of Aerodrome Control:

'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 ADC did well to observe and establish the identity of an unknown ac entering the Biggin Hill ATZ [without permission]. In accordance with the responsibilities of Aerodrome Control, he issued instructions to the PA28, intended to resolve a confliction with the outbound C550 and passed the pilot of the latter information about the presence of the other traffic. There is no requirement to separate IFR/VFR traffic in Class G airspace.

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 a report from the controller involved and the ATC authority.

The comprehensive ATSI report had confirmed the essential elements of this Airprox between the C550 Citation departing IFR and the PA28, whose pilot had inadvertently entered the Biggin Hill ATZ whilst in transit under VFR. It was evident to the Board that the mentor had recognised what was happening from observation of the ATM, astutely obtained RT contact with the PA28 pilot who was fortunately monitoring the Biggin Hill Tower frequency and having already realized his error, was already endeavouring to exit the ATZ to the N. The controller was then able to issue further avoiding action instructions by turning the PA28 to the E and thereby ensuring that any conflict between the PA28 and the C550's SDR was expeditiously resolved. This Airprox was, therefore, a good example of the intrinsic benefit of monitoring local frequencies when transiting close to an aerodrome, which subsequently enabled the PA28 pilot to receive a prompt warning about the outbound C550. Controller Members believed that the mentor showed sound appreciation of the developing situation, exercised good judgement and provided a helpful ATS to the C550 flight – an Aerodrome Control and Procedural Approach Service - not a FIS as the C550 pilot thought. Although ATC was not required to effect separation between these IFR and VFR flights, the mentor acted wisely by ensuring the PA28 was turned out of the way promptly and by swiftly passing TI to both flights. It was plain that the PA28 pilot had inadvertently entered the Biggin Hill ATZ without permission, which Members agreed unanimously was the Cause of this Airprox.

Despite neither pilot being in visual contact with the other ac, the PA28 was displayed on the C550's TCAS, apparently as proximate traffic because the C550 pilot reports neither a TA nor an RA. The PA28 pilot's prompt compliance with the mentor's instructions ensured that the two ac were 1·7nm apart when the C550 climbed through the PA28's altitude and although horizontal separation reduced to a minimum of 1·2nm, by that point 500ft of vertical separation had already been achieved as a result of the C550's climb. Moreover, by following the SDR the C550 was always going to turn astern of the PA28 if the latter maintained an eastbound course, which convinced the Board that no Risk of a collision had existed.

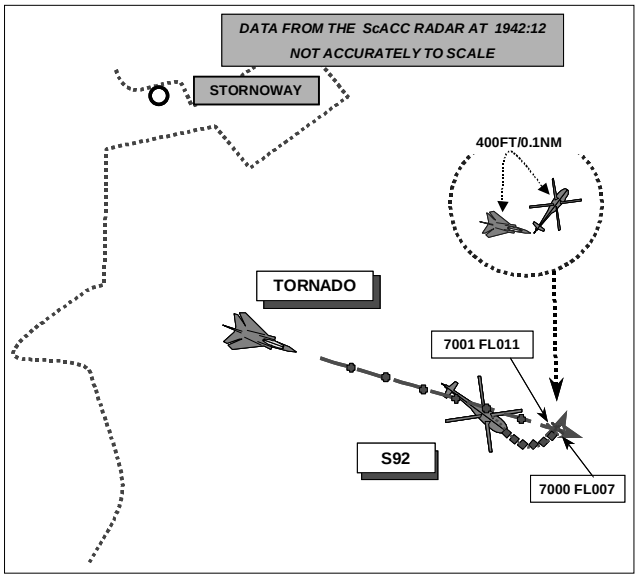
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The PA28 pilot inadvertently entered the Biggin Hill ATZ without permission.

Degree of Risk: C.

AIRPROX REPORT NO 2010014

Date/Time:	9 Mar 2010 1942Z (Night)	
Position:	5804N 00602W (13nm SE Stornoway)	
Airspace:	Scot FIR/LFA 14	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	S92A	Tornado GR4
Operator:	Civ Com	HQ AIR (OPS)
Alt/FL:	1500ft (QNH 1034mb)	1500ft (N/K)
Weather:	VMC CAVOK	VMC CLBC
Visibility:	>10km	N/K
Reported Separation:	150-200ft V/0m H	N/K
Recorded Separation:	400ft V /0.1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE S92A PILOT reports that they departed Stornoway Airport at 1933Z on a SAR training exercise, under IFR, in a TCAS(1) equipped ac, squawking 7000 with Modes C and S; nav lights and upper and lower red and white strobes were switched on. The sortie was planned to work with a surface vessel 23nm to the SE of Stornoway. They climbed to 1500ft on the Stornoway QNH of 1034mb and tracked 140° at 80kt towards the vessel. When they were about 10nm out from Stornoway they cleared from Stornoway APP since it was due to close and advised them that they would continue with Scottish Info on 127.275 as they would be clear of the Stornoway area (If they had been operating in the Stornoway area, they would have remained on Stornoway and transmitted blind calls even when ATC is closed). Prior to calling Scottish, they heard a Tornado on the APP frequency and heard ATC passing the Tornado crew details of their approximate height and position and suggesting that they (the Tornado) call Scottish for further information.

Thinking that at that point the Tornado was changing to 127.275 they checked in on the frequency and requested a BS. Shortly after their call to Scottish, they got a TCAS indication of an ac closing on them from directly astern at the same height (+00 separation). It was closing their position rapidly, so they turned left to try and acquire it visually and descended to 1300ft to achieve vertical separation. They broadcast their intention on 127.275 hoping that the Tornado would be listening. They then received a TCAS aural and visual TA at approx 0.25nm and they saw the Tornado as it flew directly overhead at about 150-200ft above. It appeared to be wings level and possibly climbing but they were not affected by Jet wash. They then observed the Tornado climbing and noted from TCAS that it then routed back around their area 2000ft above them. They reported an Airprox by RT to Scottish and assessed the risk as being high.

THE TORNADO GR4 PILOT reports flying a basic night low level TFR night training sortie in Night LFA 1BE/W, squawking 7001 with Mode C; night area 1BW was an RAF Lossiemouth allocated night flying area. At 1942 when they were about 22nm SE of Stornoway at 1500ft, heading 105° at 420kt, they came close to a Coastguard helicopter in Class G airspace over the sea. The pilot was not wearing NVGs but at the time of the incident the navigator was.

Previously they had called Stornoway ATC for TI and they were warned that a helicopter was operating to the SE of the airfield at “about 1000ft and below” and it had now transferred to Scottish Control on 127.275. Following the TI, the navigator thought he was visual with the traffic to the S of their track and that no confliction existed but as they coasted out he was not 100% certain that he was visual with the helicopter. That being the case and to ensure that there would be a minimum of 500ft vertical separation from the helicopter at “1000ft and below” they climbed to 1500ft Rad Alt. They were level at 1500ft for approximately 2 minutes when the helicopter was seen

just to the right of the nose at their level and a further climb was initiated; they estimated that they cleared it by 500ft vertically.

They then spoke to the Helicopter crew on the Stornoway ATC frequency of 123.5 shortly after the incident and the safety of both ac was confirmed.

On checking after landing, they found that the coastguard helicopter regularly flies training sorties in the area in contact with either Stornoway or ScACC, without issuing a NOTAM and without or informing the military who also use that part of the NLFS extensively, normally flying at 2000ft and below.

He assessed the risk as being high

UKAB Note (1): The published hours of operation of Stornoway are 0700-1945 (Winter). There is a warning of Search and Rescue training from 0700-2100 within 30nm radius surface to 2000ft in the Stornoway entry in the UK Military ERS. There is no warning however in the UK Low Flying Handbook, LFA 14 'Helicopter Activity 1 SAR Over Sea and Coastal Training' or under Night procedures.

ATSI reports that at 1921 Stornoway TWR approved the S92 pilot's request for start-up clearance for a training flight to operate to the SE of the airport. Just over 4min later the subject Tornado contacted the TWR frequency, the pilot reporting, *"This is c/s transmitting blind singleton Tornado G R Four with you passing north of your field by about seven miles in approximately four minutes routeing out towards the west we'll be low level in it's a simulated night attack ????? out in the west side of the island and then en route to the south"*. The ADC replied, *"Station calling Stornoway picked up the last part of the transmission I'll have an aircraft departing to the southeast in approximately three to four minutes"*. The pilot confirmed *"that's copied we'll be to the north of your field and that won't be a factor many thanks and we'll call you when we're going en route"*. The controller advised the aircraft that it would be a BS, although this was not acknowledged. Note: Stornoway is not equipped with any surveillance equipment. The S92 was cleared for take off at 1932.

At 1937, the S92 was advised that there was no known traffic to affect it and was informed that the frequency would be closing in 10min. The pilot then reported changing to the ScACC frequency. Shortly afterwards, the Tornado contacted the TWR frequency, reporting, *"we're currently southwest of you ????? ????? ?????";* TI was reissued about the departing traffic, *"I've just had a Sikorsky Ninetytwo just go off the frequency he was heading out to the southeast and he will be low level about a thousand feet and below"*. Note: No mention of the S92's intended altitude had been stated either in the pre-flight details or on the TWR frequency. The controller subsequently explained that the S92 normally operated at that alt and he had given the Tornado the information 'to give them a rough idea where to look'. The Tornado was then advised of the ScACC frequency that the S92 would be working, the pilot responded, *"Roger"* although he then asked for confirmation of the frequency.

The S92 established communication with the ScACC West Coast Sector at 1940 reporting, *"just departed from Stornoway we're at Fifteen Hundred feet presently ten miles from Stornoway on the One Four Zero bearing shortly to descend to operate low level with a surface contact requesting a Basic Service please";* the service was agreed and read back by the pilot. Shortly afterwards, Stornoway telephoned the West Coast Sector to pass information about the Tornado, adding that it had been given the sector frequency. The Radar Controller issued TI about the Tornado, to the S92 pilot, *"just to let you know there is currently low level military jet traffic five miles to the south of Stornoway tracking southeast towards your general direction is reportedly at Five Hundred feet keep a good lookout please"*. The pilot responded, *"I've got him on TCAS the same height as me closing me four miles this time"*. He continued to update its distance as three, then two miles. Initially, the controller stated that the pilot would have to avoid at his discretion but in view of the pilot's increasing concern, he continued, *"that traffic looks like it is tracking southeast towards yourselves either avoid to the south or climb"*. The S92 pilot reported receiving repeated TAs, commenting that the Tornado was initially within a quarter of a mile at the same height and then one hundred feet below. He added that he had taken *"immediate avoiding action"*.

After the event, the S92 pilot discussed the incident with the Stornoway Controller who had heard the proceedings on the ScACC frequency, the pilot stating his intention to file an Airprox. During this period, the pilot of the Tornado transmitted to the S92 pilot *"more or less to say that Tornado which had the Airprox we turned back to check you were okay we are visual with you now down beneath us"*. He then added, *"we spotted you and climbed we're at estimate we were told that you were a thousand and below a thousand feet we had climbed to above a thousand feet obviously we could have climbed a bit further"*.

AIRPROX REPORT No 2010014

The ScACC radar recordings show the situation with the Tornado proceeding SE towards the S92 with both ac at FL009 (1500ft on Stornoway QNH 1034mb). At 1941:48, the S92 is seen to be turning left from its SE track, 2.4nm ahead of the Tornado. This appears to be taking the S92 towards the projected track of the Tornado. As the two ac pass, 0.1nm apart, the S92 has descended to FL007 (1300ft) and the Tornado climbed to FL011 (1700ft).

At the time of the incident, which occurred in Class G airspace, the S92 was receiving a BS, which is defined as:

'A Basic Service is an ATS provided for the purpose of giving advice and information useful for the safe and efficient conduct of flights. Basic Service relies on the pilot avoiding other traffic, unaided by controllers. 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 ATZ, and the pilot remains responsible for collision avoidance at all times. 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'.

On this occasion, the ScACC Controller considered that there was a definite risk of a collision. Under a BS a pilot is expected to discharge his collision avoidance responsibility without assistance from a controller. However, the concern manifested by the pilot, as the Tornado approached his helicopter, led the controller into taking the unusual step of suggesting an avoiding action manoeuvre i.e. by descending or turning. In the event, the helicopter was in a left turn, when the controller suggested turning to the S. It did commence a descent as the Tornado approached within close proximity.

ATSI Note: The following additional transcript was obtained regarding the conversation between Stornoway TWR and ScACC at 19:40:41:

WCST: Antrim…Sorry West coast even.

STN: Hi it's Stornoway. For the Coastguard one hundred, there's military traffic, a Tornado routing just south of the field at this time. I think he's about 500ft heading towards the coastguard's direction. I have given him your frequency.

WCST: OK, I'll let the coastguard know.

STN: Cheers

WCST: Thank you

The Stornoway watch officially closed at 1955.

The 1920 Stornoway METAR was: 22006kt; 9999; wx nil; FEW030, BKN038; Ps05/Ps00 Q1034.

UK MIL Low Flying Ops did not comment.

HQ AIR (OPS) comments that both ac were operating in Class G airspace. The GR4 crew, under the misapprehension that the S92 was operating below 1000ft, climbed to build in 500ft vertical separation. This incident highlights the fact that inaccurate information is worse than no information; if "height unknown" had been passed the GR4 would most likely have taken lateral separation. The situation could also have potentially been avoided if a NOTAM/warning had been issued concerning the SAR Training.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The Board observed that although this was a serious incident, it could easily have been avoided. Had the Tornado crew been aware of the pre-planned training flight of the S92 it is probable that they would have given it a wide berth. Members were surprised that there was no interaction between the Coastguard operators and the Military (specifically the Low Flying Booking Cell); they were also surprised when they were informed that RAF Lossiemouth crews, the prime users of that part of the night low-flying system, were not aware of the Stornoway Coastguard activities. They considered this to be a significant breakdown in communication and agreed that the onus was on the Coastguard operators to inform the Military rather than the Military to seek the information. Far from being a quiet area, the NW of Scotland is widely used by Military ac at night. Members noted that, although the Military Low Flying Handbook Sect 3 (Night) warned of several SAR Helicopter Night Training Areas and night SAR procedures, Stornoway was not mentioned. The Board therefore recommended that this be reviewed. One Member also suggested that the CANP procedure (AIC Y028/2010 refers) could be extended to include Coastguard training flights.

Although the Tornado crew wisely called Stornoway as they passed close to the airfield, giving their intentions, the first call did not give the controller a clear and unambiguous picture of their intended routeing; this was, at least partially, rectified by their second call. Only at that stage, as they were coasting out tracking to the SE, did the controller have enough information to recognise that there was going to be a confliction and react accordingly by informing ScACC who were by then working the S92. However the information passed to the Tornado that the S92 was at 'about 1000ft and below' was not correct; neither was the information passed to ScACC and subsequently the S92 that the Tornado was 'about 500ft'. These, the Board agreed, had been key factors in determining the altitudes that the respective pilots elected to fly i.e. the S92 maintaining 1500ft and the Tornado climbing to 1500ft (and into conflict). That being the case, Members agreed unanimously that this had contributed to the cause of the incident.

Given that both ac had been operating legitimately in Class G airspace under the 'see and avoid' principle, the Board concentrated on determining why the crews had not seen the opposing ac until a late stage. Despite being aware of its presence from TCAS, until the last few seconds of the encounter the S92 had been 'tail on' to the rapidly overtaking Tornado; that being the case, Members agreed that the helicopter crew could not reasonably have been expected to see it. Even after the S92 turned, the Tornado would have been 'head on' to it and still difficult to see in the final few seconds before the ac crossed. The S92 crew did, however, change track, which, although it reduced the extant lateral separation, altered the aspect of the helicopter to the Tornado, and enabled its pilot to see their lights and react.

Since the Tornado was the overtaking ac, under the Rules of the Air, it should have given way to the S92. The Tornado crew believed they had given way by climbing to 500ft above the helicopter and were surprised when it was seen late, at the same height, crossing from right to left. The radar and videos showed that the Tornado initially approached the S92 from almost directly astern. The S92 would therefore have been obscured to the Navigator by the pilot's seat and ac framework; also its lights were not visible to the Tornado pilot until a late stage [from the HUD video 12sec before the ac pulled up]. The videos also showed that this corresponded with the S92 turning left and its lighting regime suddenly becoming much more effective from almost the beam rather than the stern. This left turn undoubtedly assisted the Tornado pilot in seeing the S92 and reacting to it, albeit late, by climbing to take visual, vertical separation. Although the reaction was significantly later than the crew would have desired, due to the circumstances, Members agreed that the Tornado crew could not reasonably have been expected to see the S92 any earlier. That being the case, Members agreed unanimously that the cause of the Airprox had been a conflict in Class G airspace. In assessing the risk, the Board agreed that, although there had been an erosion of normal safety standards, the S92's descent and the Tornado's climb had removed the risk of a collision.

There was discussion about the advisability of flying low-level operations under IFR at night (without a radar service); the civil helicopter Member, however, informed the Board that this is routine, as the operator's AOC does not give exemption from the civil regulations prohibiting VFR operations at night. He went on to say that the difference is minimal, as the 'see and avoid' rules still pertain and are the principal means of collision avoidance.

AIRPROX REPORT No 2010014

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Conflict in Class G airspace resolved by both crews.

Degree of Risk: B.

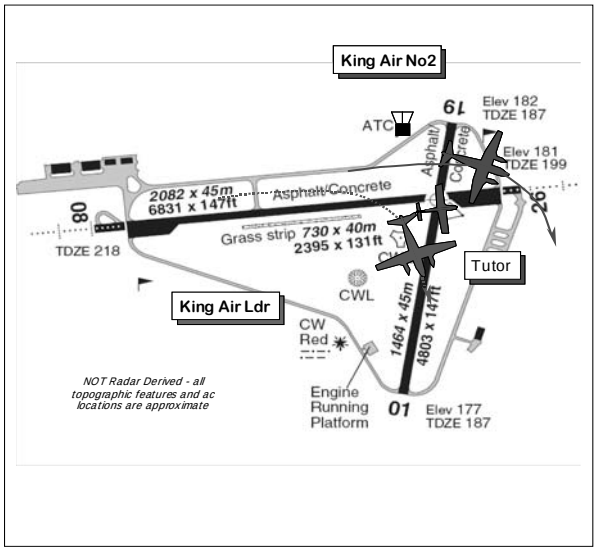
Contributory Factors: Incorrect TI passed by Stornoway TWR.

Recommendation: 1. The MoD is recommended to amend the Low Flying Handbook to provide more comprehensive guidance on SAR training flights.

2. The Maritime Coastguard Agency considers using existing CANP procedures to notify military cews about Coastguard training flights.

AIRPROX REPORT NO 2010015

Date/Time:	8 Mar 2010 1258Z	
Position:	5301N 00029W (Cranwell - elev 218ft)	
Airspace:	Cranwell MATZ/ATZ (Class: G)	
	Reporting Ac	*Reported Ac*
Type:	Grob Tutor T Mk1	BE200 King Air
Operator:	HQ Air (Trg)	HQ Air (Trg)
Alt/FL:	400ft	600ft
	QFE (1024mb)	QFE (1024mb)
Weather:	VMC CLNC	VMC CLNC
Visibility:	10km+	10km+
Reported Separation:		
NIL V/300M (NO1) 100M (NO2)		NR
Recorded Separation:		
	Not recorded	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE GROB 115E TUTOR T Mk 1 PILOT, a QFI, reports he was conducting a VFR instructor-training sortie in the cct at Cranwell whilst in communication with TOWER on 125·05MHz. They were flying in the RH cct (RHC) and using the RW08 grass strip. As P-I-C he was seated in the R seat with his student instructor in the L seat. His ac has a white colour-scheme and the HISLs and landing lamp were both on. Mode S is fitted, but SSR was selected to 'standby' in accordance with unit cct procedures.

Climbing out in the cct upwind heading 085° at 80kt, after completing a touch & go, both he and his student were aware of a King Air formation joining for the main RW08 RHC. Climbing through 400-500ft QFE (1024mb), abeam the RW intersection, he saw a King Air in their 5 o'clock at the same height breaking into the cct about 300m behind and at the same height as his aeroplane. A second King Air then appeared in their 10 o'clock, 100m away at the same height in a right-hand break across the nose of his Grob from L - R. No avoiding action was taken but he assessed the Risk as 'high'.

TOWER asked the King Air formation if they had seen the Tutor upwind, whilst also stating that the grass runway was active. The response from the leader of the King Air formation was unclear but he thought it was 'negative'. An Airprox was reported to TOWER on the RT at the time of the occurrence.

UKAB Note (1): The UK Mil AIP at AD2 – EGYD-1-13 specifies that the main [conventional] cct height is 1000ft QFE with the light ac (LA) cct at 800ft QFE. The RW08 grass strip is situated 150ft S of the edge of RW08.

THE BE200 KING AIR PILOT reports he was flying as No2 of a formation of two ac inbound to Cranwell under VFR and in communication with TOWER on 125·05MHz. His ac has a white and blue colour-scheme and the HISLs were on; Mode S is fitted but SSR was selected to 'standby'.

Flying a visual recovery to Cranwell for a visual 'run-in and break', he was flying in echelon to port of the lead ac. Following the lead pilot's call at Initials, TOWER reported 2 ac in the cct and during the run-in at 200kt to RW08 RHC, both of these ac were seen visually by the formation. The lead King Air pilot broke slightly further upwind than normal and, having seen the Grob Tutor climbing away from the grass runway, he delayed his own break to avoid over flying it. He was visual with the Grob Tutor throughout the level break at 600ft QFE (1024mb). No avoiding action was necessary and he assessed the Risk as 'none'.

UKAB Note (2): Although the No2 King Air pilot did not quantify the minimum separation, his diagram shows the Grob Tutor passing obliquely to starboard, some 450m abeam, about 150ft below his ac.

AIRPROX REPORT No 2010015

THE CRANWELL AERODROME CONTROLLER (ADC) reports that his workload was medium/high. Two Grob Tutor ac were operating in the visual cct to RW08 RHC, when the King Air formation called to join through Initials, which was approved. When the King Air formation leader called at Initials he was told, 'one upwind main, one upwind grass remaining' and given the surface wind. After calling 'on the break' the lead King Air broke and turned downwind; however, the No 2 continued on the deadside for a couple of hundred feet and then broke at 600-800ft QFE (1024mb). The level turn crosswind took the No2 towards the Grob Tutor that was climbing-out upwind of the grass strip at about 500-600ft QFE, so he asked the pilot whether he was visual with the Tutor 'upwind grass'. No response was received, he thought, so again he asked 'are you visual with the Tutor departing upwind grass?' The next call received was the Grob Tutor reporting the Airprox in the visual cct. He was not aware of any confirmation by the No2 King Air pilot that he was visual with the Tutor at the time of the Airprox. He estimated the minimum separation to be 50-80ft horizontally, 50ft vertically.

HQ AIR ATM SAFETY MANAGEMENT reports that the ADC was operating under a medium workload with 2 ac in the visual cct prior to the arrival of the King Air formation and had been in position for 58min; the weather conditions were reported as good – Aerodrome Weather State Colour Code (CC): Blue – min 8km; lowest cloud SCT 2500ft agl.

At 1256:01, the leader of the King Air formation called on the Cranwell TOWER frequency 125.05MHz for a clearance to join the cct. The ADC gave the standard response, "[C/S] *Cranwell TOWER join runway 0-8 right hand Q-F-E 1-0-2-4 2 in grass active".* The King Air formation leader acknowledged TOWER's call at 1256:07 "*08 right hand 1-0-2-4* [C/S]*".* The 2 ac reported to be in the cct on the joining call were two Grob Tutor ac – including the ac flown by the reporting pilot - both operating to the grass RW08.

The subject Grob Tutor crew called finals for the grass runway, to which the ADC responded at 1256:15, "[C/S] *clear touch and go grass".* At 1256:39, the second Grob crew called a 'fan stop', which was acknowledged by the ADC. After the second Grob crew called, *"..climbing away",* the King Air leader reported, "[C/S] *initial for the low break"* at 1257:04. This was immediately acknowledged by the ADC who advised "*..1 short final for the grass* [the subject Grob Tutor] *1 cross wind* [the second Grob] *surface wind 3-6-0 10 knots".* This cct information was acknowledged by the King Air leader using the formation C/S. Two sec after the lead King air pilot reported at 1257:45 "[C/S] *on the break low land"* and having heard the message passed by the ADC to the lead King Air pilot, the second Grob crew then reported in a clipped transmission that they were sequencing to let the King Air formation execute their approach, *"..at the beginning of the downwind leg to let the pair in"*; this was acknowledged by the lead King Air pilot at 1257:51. The ADC reports seeing the lead King Air break and turn downwind but the No2 King Air extended further into the deadside before breaking. This caused the ADC some concern so he passed further TI about the subject Grob Tutor at 1258:01, "[King Air No2 C/S] *Tutor up wind grass..departing",* and then again 8 sec later, "[King Air No2 C/S] *are you visual with the Tutor upwind grass?".* The RT transcript reveals at 1258:10, that the No2 King Air pilot acknowledged this call using just his call sign, although the controller reported that the next call received was from the Grob Tutor QFI reporting the Airprox, which actually occurred some 5sec later at 1258:15. After breaking into the cct the lead King Air departed for a further radar approach whilst the No2 landed.

This AIRPROX is not shown on the Claxby Radar recording.

Military controllers are encouraged not to 'over control' military ac. However, the passing of cct information is fundamental to enable aircrew to sequence correctly in the cct. In this case the ADC, who was working within his abilities in a busy aerodrome visual cct, provided timely and accurate information to the crews involved. Initial joining calls were standard and should have enabled all crews in the visual cct to gain adequate SA. The ADC correctly identified a concern that might arise over the positioning of the No2 King Air in relation to the Grob Tutor and so called the Grob Tutor to the King Air pilot twice; this TI was subsequently acknowledged on frequency. By extending the break upwind further into deadside the No2 effectively cut across the climb-out to the grass strip, which brought him into confliction with the Grob Tutor.

Air Cmd ATM Safety Management does not believe ATC contributed to this Airprox. Since this incident Cranwell ATC has carried out a safety survey into visual cct procedures, which has included amendments to the use of the grass strip running parallel to the paved runway surface. In a recent standards bulletin SATCO has reinforced the importance of controllers keeping a good lookout in the visual circuit and reacting in a timely manner. The Station Flight Safety Officer has also reminded ac operators of their responsibilities whilst flying in the visual cct. These

measures are reasonable given the importance military crews attach to maintaining their autonomy in the visual cct.

Air Cmd ATM Safety Management Support recommended a review of the Run-in and Break procedure at Cranwell, in particular the interaction between the break point within the cct and the grass runway.

UKAB Note (3): The UK MIL AIP at AD2-EGYD-1-10, Local Traffic Regulations notes a Warning at para 4c that: '…a grass strip South and parallel to Rwy 26/08 may be in use with circuits flown inside the main visual circuit. Both circuits are flown independent of and co-incident to the main circuit.'

UKAB Note (4): The RAF Cranwell Flying Order Book (FOB) specifies at D-12-2, para 8a Circuit

Joins via the Initial Point (IP).

'The IP for each RW is 2nm from the threshold, displaced 100m from the centre line, on the deadside. The standard join is to be flown through the IP at circuit height. Any subsequent descent, for a low-level circuit or low break, is to be made after leaving the IP. Aircraft are not to over fly Cranwell village below 1000ft QFE (800ft QFE for light ac). The minimum height for a visual run-in and break (VRIAB) is 300ft QFE. Ac leaving the circuit...'

UKAB Note (5): A Safety Management Survey was conducted by the Unit, which considered the conditions required to support Grass RW operations, and a final report was issued on 28 Aug 2009. It was noted that:

'The positioning of the Grass RWs relative to the main instrument runway are in contravention of [JSP 554 Sect 200, 201.100.5 – that gives the criteria and specific dimensions allowable when designing new RWs to operate parallel strips] which require a minimum centreline separation distance of 210m for VFR operations and 1035m for IFR operations. The current distance between centrelines of the northern and southern Grass RWs and the main RW are 87.3m and 124.85m respectively. Due to the cost implications and impracticality in meeting these requirements, permission has previously been granted to retain the existing aerodrome features without complying with current regulation.'

Many facets of the operation of the Grass RWs were considered in this detailed Survey, which was too extensive to précis here. It was concluded that:

'Grass RW operations have proven to be effective under the current SOPs. The hazards identified have been mitigated by the implementation of procedures or by the addition of restrictions.

HQ AIR (TRG) comments that this Airprox raises several questions however, the fundamental issue was how the King Air formation integrated into the visual circuit at Cranwell that at the time had Tutors operating from the parallel grass strip. The King Air formation joining the Cranwell circuit from a 600ft break through the Tutor circuit of 800ft was not a good plan. Had the Tutor been operating from the main RW08 this Airprox could have still occurred.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

Members recognised that it was the responsibility of pilots joining the cct to integrate safely with traffic already established in the pattern. The reporting Tutor pilot had little impact on the outcome of this Airprox other than being one of the ac involved; although aware of the formation joining from the RT, he was unable to sight the formation any earlier as they approached from astern and it was the King Air pilots that chose the final separation. The Tutor QFI reports the Airprox occurred as he passed abeam the RW intersection when he became aware of the two King Airs breaking either side. It seemed to the Board that his best course of action in these circumstances was to stay predictable by maintaining his course, speed and RoC allowing the King Airs to fly around him. The Tutor QFI was uncertain whether the pilot of the No2 had seen him and so was the ADC. Having passed TI on the Tutor to the No 2, the ADC then asked if he was "..*visual with the Tutor upwind grass"; the* No2 King Air pilot acknowledged the call using his callsign but did not confirm that he was visual. However, the No2 pilot's written account reinforces

that both of the circuiting Tutors were seen by the formation; additionally he reports seeing the Grob Tutor climbing away from the grass runway, but it is not entirely clear when the subject Tutor was first seen.

Before this Airprox occurred the main RW and the grass were controlled independently by TOWER; the grass strip is now treated as an extension of the RW surface. It was the Board's view, however, that the functional use of the grass strip by the Tutor was not intrinsic to the Cause here. The catalyst to this Airprox was the execution of the low break into the cct by the King Air formation. This had been requested in good time by the formation leader and approved by the ADC. The cct state passed by TOWER was correct and should have facilitated visual acquisition of the two Tutors already established in the cct to the grass strip for RW08. The Board discussed the wisdom of permitting the King Air formation to execute a low break with the LA cct active; some airfields prohibit low breaks by medium and high performance aircraft in these circumstances. However, at aerodromes with intense elementary flying training being conducted there will be few occasions when the LA cct is not active, and the Board was briefed that it was SOP at Cranwell to permit low breaks with the LA cct active. Given this requirement to integrate different aircraft types as a matter of routine, the Command has recommended a review of the 'run-in and break' procedures at Cranwell and specifically the location of the 'break' position. The Board agreed that this aspect needed to be reviewed but noted that aircraft joining should always be prepared to adjust their break position if necessary to fit in with aircraft already established in the cct. This was the nub of the issue.

Clearly the No2 King Air PF, whose attention would have been concentrated on the lead ac to starboard, would have been entirely reliant on his leader to position the formation where it could break clear of other circuiting ac. Formation leaders must assume that their wingmen, even in multi-crew ac, are not visual with other ac in the cct. Pilot Members were strongly of the view that in this case the formation leader had left the break too late – a point mentioned in the No2 King Air pilot's report where he states that the lead King Air pilot broke slightly further upwind than normal. Thus when the leader broke to starboard and the No2 became a separate element, he was too close to the upwind end and confronted with the Tutor climbing out at close quarters, which he had to promptly manoeuvre around. Thus the Tutor was bracketed by the two King Air ac as they broke around him. In the Board's view, the lead King Air pilot had not allowed sufficient room for his No2 to manoeuvre at the break, which was executed too late. The Board agreed, therefore, that the Cause of this Airprox was that the King Air formation leader did not integrate his formation into the circuit safely.

When considering the inherent Risk, pilot Members recognised that, since the No2 was visual with the Tutor, he would have been able to delay his break and increase the separation distance if necessary. However, the Board considered that it was fortunate that the No2 had seen the Tutor before executing his break. Although the actual separation could not be ascertained independently, with the Tutor crew constrained in their ability to manoeuvre as the two King Airs passed either side L and R at far from ideal distances, the Board concluded that the safety of the ac involved had not been assured.

It was clear to the Board that, notwithstanding the poor execution of this run-in and break, the extant cct procedures had been complied with. Rather than make a formal Safety Recommendation, the Board noted and endorsed the Command's recommendation for a review of the visual cct procedures at RAF Cranwell.

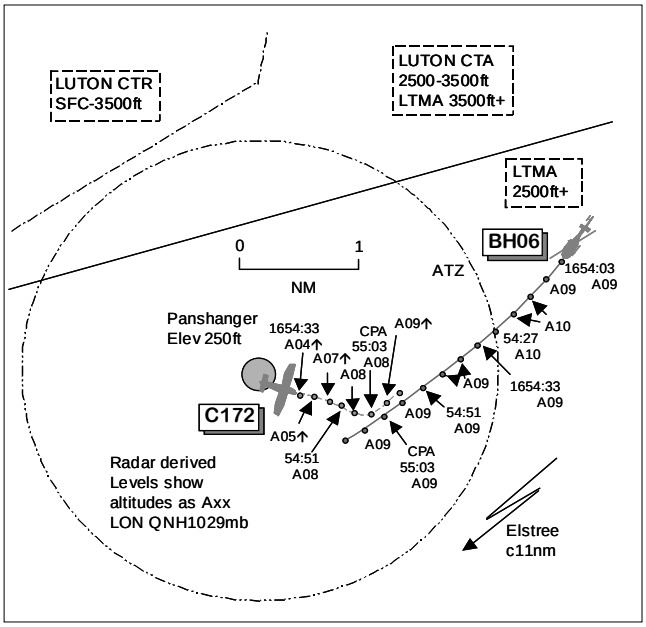
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The King Air formation leader did not integrate his formation into the circuit safely.

Degree of Risk: B.

AIRPROX REPORT NO 2010016

Date/Time:	9 Mar 2010 1655Z	
Position:	5148N 00008W (1nm SE Panshanger - elev 250ft)	
Airspace:	ATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	C172	BH06 JetRanger
Operator:	Civ Trg	Civ Pte
Alt/FL:	800ft↑ (QFE)	1000ft (N/K)
Weather:	VMC CLBC	VMC CLBC
Visibility:	>10km	8km
Reported Separation:	Nil V/150m H	Not seen
Recorded Separation:	100ft V/0·1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE C172 PILOT reports flying a cct familiarisation training sortie at Panshanger on RW11 LH cct and in communication with Panshanger Radio, squawking 7000 with Mode C. The visibility was >10km below an overcast sky; the cloud base was significantly above cct height, and the ac was coloured white/orange with the anti-collision light switched on. On climbout RW11 heading 110° at 70kt the student lowered the ac's nose to perform a look-out check whereupon the student noticed, and brought to his attention, a helicopter at approximately his 11 o'clock range 0·75nm, slightly higher than themselves entering the ATZ on a crossing SW'ly track from L to R. He made a radio call to ascertain whether the helicopter was on frequency but received no response. As the helicopter showed no signs of changing its flightpath, he urged his student to turn crosswind early to avoid a potential collision; the helicopter was maintaining a constant bearing. As they turned L climbing through 800ft QFE the helicopter passed down their RHS at the same level, allowing him a good view of it from his RH seat and close enough to read its registration. It appeared the helicopter, a blue/white JetRanger with strobe lights on, did not deviate from its course throughout. Having established that the helicopter had flown through the ATZ with no radio contact, he called Farnborough N LARS to enquire whether the JetRanger pilot was working them. The reply was negative but the helicopter was showing on radar squawking 7000 so he asked for them to track it to establish where it landed. Shortly after this Panshanger Radio told him that Farnborough had called by telephone stating the helicopter had landed at Elstree. He asked the A/G operator, another instructor, to telephone Elstree and verify the registration and type, which was confirmed. He assessed the risk as low.

THE BH06 JETRANGER PILOT reports flying enroute to Elstree VFR and in receipt of a BS from either Essex Radar or Elstree. The visibility was 8km in VMC and the helicopter was coloured white/blue with strobe lights switched on. About 5nm N of Elstree, he thought, heading 230° at 90kt and 1000ft, a passenger thought he saw an ac pass behind. There was a break in the cloud above them and the sun was directly in their forward view. He called the ATSU he was working and they stated that they knew of no other traffic; therefore the matter was concluded at that point.

UKAB Note (1): Met Office archive data provided METARs for Luton and Stansted: - EGGW 091650Z 03013KT 350V050 9999 FEW022 BKN048 06/02 Q1028= and EGSS 091650Z 01012KT 9999 SCT024 BKN040 06/01 Q1028=

UKAB Note(2): The UK AIP at AD 2-EGLG-1-1 Para 2.17 ATS Airspace defines the Panshanger ATZ as a circle radius 2nm centred on the longest notified RW (11/29) 514807N 0000930W from SFC to 2000ft aal; elev 250ft amsl.

UKAB Note (3): The Rules of the Air Regulations Rule 12 Flight in the vicinity of an aerodrome states *'(1) Subject to paragraph (2), a flying machine, glider or airship flying in the vicinity of what the commander of the aircraft knows, or ought reasonably know, to be an aerodrome shall; (a) 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; and (b) make all turns to the left unless ground signals otherwise indicate. (2) Paragraph (1) shall not apply if the air traffic control unit at that aerodrome otherwise authorises.'*

UKAB Note (4): Rule 45 Flight within aerodrome traffic zones states during the notified hours of watch of the air/ ground radio station Para (5) *'...the commander shall obtain information from the air/ground communication service to enable the flight to be conducted safely within the zone.'* Para (6) states *'The commander of an aircraft flying within the aerodrome traffic zone of an aerodrome shall; (a) cause a continuous watch to be maintained on the appropriate radio frequency notified for communications at the aerodrome; or (b) if this is not possible, cause a watch to be kept for such instructions as may be issued by visual means; and (c) if the aircraft is fitted with means of communication by radio with the ground, communicate his position and height to the .....air/ground communication service at the aerodrome on entering the zone and immediately prior to leaving it.*

UKAB Note (5): Analysis of the Debden radar recording at 1654:03 shows a 7000 squawk, believed to be the BH06, 2·7nm ENE of Panshanger tracking SW indicating unverified altitude 1000ft LON QNH 1029mb. The BH06 continues on a steady track and is seen to enter the Panshanger ATZ at 1654:27. Six seconds later a 7000 squawk appears, believed to be the C172, 0·5nm SE of Panshanger tracking 110° and showing unverified altitude 400ft QNH with the BH06 in its 11 o'clock range 1·6nm and 500ft above. The ac continue on converging tracks, the radar showing the C172's Mode C levelling-off at altitude 800ft QNH at 1654:51 with the BH06 in its 1130 position at range 0·7nm. The next sweep 6sec later shows the C172 commencing a L turn, the subject ac separated by 0·4nm with the BH06 100ft above. The CPA occurs on the next sweep at 1655:03, the ac passing starboard to starboard, the BH06 showing 900ft QNH, 100ft above the C172 with lateral separation of 0·1nm. Thereafter the BH06 passes 0·9nm SE abeam Panshanger whilst the C172 continues its climb on a NE'ly track crosswind for RW11.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac and radar video recordings.

The radar recording shows that the incident took place within the Panshanger ATZ; this is airspace that is clearly marked on the 1:500000 and 1:250000 charts and is there for the protection of cct traffic. The onus was on BH06 pilot to take due regard of the airspace by either remaining clear or by calling on the Panshangar frequency to obtain information prior to entering the ATZ to comply with Rule 45 of Rules of the Air Regulations. This was not done and had clearly caused the Airprox.

The C172 student saw the converging BH06 on a constant bearing and alerted the instructor who elected to turn crosswind early whilst maintaining visual contact with it, leading to the BH06 passing close down their RHS at the same level. The BH06 pilot apparently did not see the C172 climbing out from RW11 as no flightpath deviation can be seen. The early visual acquisition and action taken by the C172 pilot allowed the Board to conclude that any risk of collision had been quickly and effectively removed.

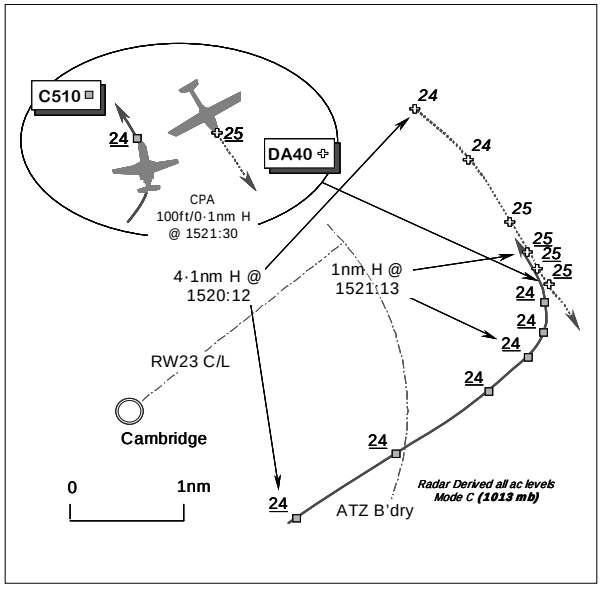
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The BH06 pilot entered the Panshangar ATZ contrary to Rule 45 and flew into conflict with the C172.

Degree of Risk: C.

AIRPROX REPORT NO 2010017

Date/Time:	25 Feb 2010 1521Z	
Position:	5212N 00010E (4nm NE of Cambridge A/D - elev 47ft)	
Airspace:	London FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Cessna C510	Diamond DA40
Operator:	Civ Comm	Civ Club
Alt/FL:	1600ft QNH	2000ft QNH
Weather:	VMC CLBC	VMC CAVOK
Visibility:	10km+	10nm
Reported Separation:	100ft V/300ft H	500ft V/1-2nm H
Recorded Separation:	100ft V/0·1nm H (200yd H)	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE CESSNA CITATION 510 PILOT reports he was conducting a local VFR training flight from Cambridge and in receipt of an Aerodrome Control Service from Cambridge TOWER on 122·2MHz. The local Cambridge conspicuity squawk was selected with Mode C; a Traffic Information System (TIS) – a form of TCAS I - is fitted which provides TAs only. His ac is coloured white and the HISLs and landing lights were on.

Flying at 140-150kt in VMC some 400ft below cloud at 1600ft QNH, at the end of the downwind leg for RW23 whilst turning onto L base, about half way through the turn another ac – that he thought was a PA28 but actually the DA40 - was observed flying close by in the opposite direction. He did not take avoiding action as he recognised that the other ac was not on a collision course and a T.I.S. 'avoidance alert' was heard, which indicated it was 100ft+ above them. He estimated the DA40 was 100ft above his ac as it passed on a reciprocal heading 300ft away safely down their starboard side with a 'low' Risk. He informed TOWER of the occurrence on RT, and later by phone, and he was told the other ac was working Cambridge Radar.

UKAB Note (1): The C510 cct training flight was simulating the steep London City airport approaches with the PAPIs set at a 5° glide-path.

THE DIAMOND DA40 PILOT reports he was en-route from Gamston to Biggin Hill via Earls Colne under VFR whilst in receipt of a BS from Cambridge APPROACH (APP) on 123·6MHz. The assigned squawk was selected with Mode C on; elementary Mode S is fitted.

En-route in a level cruise at an altitude of 2000ft in CAVOK, heading 120° at 110kt, he saw a twin-engine business jet to his R (West). It was first seen about 5nm away below him – he thought it was climbing - and he was a little surprised that he had not received any notification from APP that a fast jet was travelling in an opposite direction to him, near to his position. He was not aware of the Airprox until contacted by the RAC at LATCC (Mil).

UKAB Note (2): The DA40 pilot initially reported seeing a jet passing at least 1–2nm away well clear to the SE of Cambridge, which he did not consider to be an Airprox. Given the significant disparity in horizontal separation, in a subsequent conversation with UKAB Staff when the geometry of the encounter was described in detail, the DA40 pilot opined that he had not seen the C510 when it passed 0·1nm to starboard in a position some 4nm NE of Cambridge airport.

UKAB Note (3): Both the Cambridge Aerodrome Controller (ADC) and the Cambridge Approach Radar Controller (RADAR) completed brief reports; however, as the C510 crew had not mentioned it would be reported as an Airprox at the time, they were unable to recall any additional details.

AIRPROX REPORT No 2010017

ATSI reports that the controllers' memory of events was vague. This is reflected in both of their written reports completed at a later date. Their workload was reported as being moderate.

The Airprox occurred in Class G airspace 3·9nm NE of Cambridge Airport, which has an ATZ, bounded by a circle 2½nm radius centred on the mid-point of RW23 extending to a height of 2000ft aal. The standard cct direction for RW23 is left hand. The Cambridge RW23 instrument approaches conflict with the Lakenheath & Mildenhall CMATZ and co-ordination is required with Lakenheath for each instrument arrival.

The ADC was mentoring a trainee and ATC equipment includes VDF and an ATM. The ATM provides a primary radar picture without SSR and the standard configuration is a fixed range setting of 12nm, orientated S [the RW is to the S of the Control Tower], with the runway centreline extended to 10nm. Shown on the ATM are the Duxford and Fowlmere ATZs together with Newmarket Heath and Lakenheath/Mildenhall CMATZ.

The primary radar is situated on the aerodrome and was being affected by clutter in the north-eastern quadrant, due mainly to breakthrough of permanent echoes. Consequently instrument inbounds were in receipt of a 'Traffic Service with reduced information due poor radar performance'. The SSR is supplied from the Debden Radar head and provided the RADAR controller with a stable SSR picture. The clutter also affected the aerodrome ATM display.

The 1520 Cambridge METAR was: 14009KT 9999 FEW020 09/06 Q0985.

MATS Pt1, Section 1, Chapter 11, Page 10, Para 6.1.1- comments that

Pilots flying in the vicinity of aerodromes, ATS routes, or navigational aids where it is known that a Procedural Service is provided, are strongly encouraged to attempt to establish RTF contact with the notified ATS provider.

MATS Pt1, Section 3, Chapter 1, Page 5, Para 8.2 states:

A particular watch should be kept for situations where a VFR flight may approach the aerodrome in a sector in which other aircraft are letting down on an instrument approach aid, or where sequencing is in operation. D/F indications, where available, will assist in this respect. In these circumstances the pilot of the VFR flight should not be given clearance for a straight-in approach and should be advised to avoid the initial and final approach areas.

[UKAB Note (4): The higher cct altitude, combined with a late descent for the 5° approach resulted in the C510 extending downwind for a 4nm final thereby taking the jet outside the ATZ.]

At 1459 the C510 was given take-off clearance into a left hand cct to RW23 and during the cct detail the ac was squawking A6161. Three other ac were operating in the cct, with additional activity on the aerodrome.

The DA40 was en-route on a VFR flight from Gamston to Biggin Hill with a Cottesmore squawk of A3721 set when the pilot established contact with Cambridge RADAR at 1513:45, requesting a BS. At 1514:02, the DA40 pilot advised, "[C/S]..*D-A 40 1 P-O-B from Gamston to Biggin Hill via Earls Colne..1 thousand 6 hundred feet on 9-7-0 will remain clear of your zone but requesting a basic service for transit...".* Cambridge RADAR agreed to provide a BS, passed the Cambridge QNH (986mb) and requested the pilot select a squawk of A6174.

The Cambridge RADAR controller could not remember the precise events but recognised that the route followed by the DA40 would take it NE of the aerodrome. The controller does not recall there being any potential confliction with traffic on the ILS. There were 4 inbound ac expected and the RADAR Controller reported that due to the trainee Tower Controller, inbound flights were being provided with tactical vectors with appropriate speed control, allowing the Tower Controller sufficient time to integrate the C510 between the instrument arrivals.

The track of the DA40 crossed through the RW23 approach 3·9nm NE of the aerodrome. The RADAR controller agreed that under normal circumstances such traffic would be notified to the ADC, however, on this occasion he could not remember doing so and was not aware that the DA40 had passed close to the ATZ. The RADAR controller believes that this may have been due to the increased workload and co-ordination required with Lakenheath, together with poor radar performance due to clutter and the garbling of SSR labels in the vicinity of the aerodrome. Radar recordings show two of the other cct ac displaying a squawk of A7000. The Radar

Controller was aware of the C510 cct and agreed that passing the DA40 pilot pertinent information on the aerodrome activity and cct status would have aided the pilots SA.

At 1519 the QNH changed from 986mb to 985mb. The C510 crew had completed 3 ccts and at 1520:12, reported, "[C/S]..*is..late downwind for full stop".* TOWER responded, "[C/S]..*roger report final number 2 following Cessna 1-7-2 short final".* Traffic inbound on the ILS was now at 11·7nm and TOWER asked the C510 crew, *"...are you able to keep the circuit tight - traffic on the ILS approximately 10 miles."* The pilot of the C510 replied, *"...we have to go out to about..4 miles to get to pick up the steep approach* [C/S]", which TOWER acknowledged *"Roger report final."* Because the C510 was extending downwind TOWER cleared another circuiting ac to final and at 1521:30 instructed the C510 crew to, *"..report final number 2 following a Cherokee turned inside you tight left base"* . The C510 crew reponded at 1521:40, with *"..roger we just passed an aircraft on the right hand side there..by about..3 hundred feet and he's at the same level."* At 1521:46, TOWER acknowledged with *"...roger I'll just speak to RADAR".* The ADC reports that they were monitoring the cct visually and the unknown ac had not been seen. The workload in TOWER was now increasing from moderate to busy. The C510 crew did not use the term Airprox or avoiding action and neither of the controllers was aware of the close proximity of the two ac.

At this point a conversation was initiated by the RADAR controller, interrupted a number of times by RT calls. RADAR advised TOWER that another inbound ac was about 3nm to the S [actually to the SW] routeing to the overhead. TOWER [incorrectly] assumed this to be the aircraft reported by the C510 pilot and advised RADAR that the C510 crew had seen this ac at about 300ft away laterally. RADAR responded that the pilot of the other inbound ac [approaching from the SW] had been asked to climb and agreed to transfer the other ac to TOWER. Before the call was ended, the RADAR controller passed the range on 2 further inbounds - at 8nm and 13nm.

The radar recordings at 1521:30, show the C510 3·9nm E of the aerodrome in a L turn onto base leg, indicating FL024 [about 1560ft QNH (985mb)], with the DA40 100ft above it on a reciprical track passing 0·1nm [200yd] to starboard, indicating FL025 [about 1660ft QNH (985mb)]. Neither controller was aware of the close proximity of the 2 ac. The C510 continued within the cct and landed at 1524 with no further mention of the incident. The pilot of the DA40 did not mention on RT another ac being in close proximity and at 1527:45, the DA40 pilot switched en-route - "*Cambridge RADAR* [C/S]..*well clear of your Zone now request..frequency change to Earls Colne 1-2-2 decimal 2-5",* which was approved without further comment.

TOWER was not aware of the DA40 transitting close to the ATZ and reports that no traffic information had been passed by the RADAR controller. In addition, the ATM does not have SSR capability and the primary return of the DA40 would not have been detected easily because of the 'clutter' from permanent echoes. At the time of the Airprox, TOWER's attention was concentrated on the busy visual cct. The Cambridge MATS Pt2 states that controllers must always be mindful that when operating as ADC the primary method of observation is visually from the VCR.

RADAR did not notice the C510 or DA40 in close proximity either before or after the Airprox and considered that clutter on the display, together with garbling of the SSR labels and additional workload may have prevented detection of the potential confliction.

MATS Pt1, Section 1, Chapter 11, Page 4, Para 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.'

MATS Pt1, Section 1, Chapter 11, Page 4, Para 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.'

MATS Pt1, Section 3, Chapter 1, Page 3, Para 4.1.1 states:

Approach Control shall co-ordinate with Aerodrome Control:

Aircraft approaching to land, if necessary requesting clearance to land;

b) Arriving aircraft which are to be cleared to visual holding points;

c) Aircraft routeing through the traffic circuit.

TOWER was not aware of the DA40 passing through the final approach and was, therefore, not in a position to pass appropriate TI to the pilot of the C510. The ADC was monitoring a busy cct visually and would only have referred to the ATM occasionally in order to correlate an impending inbound and assess the distance from touchdown. The ATM was displaying a primary radar picture that was itself cluttered with permanent echoes that would have made it difficult to notice another moving primary contact. If SSR had been available on the ATM, then TOWER with the short-range display would have been alerted to the potential conflict. An upgrade to provide the ATM with SSR capability is scheduled before the end of 2010.

It is unfortunate that the RADAR Controller did not provide the DA40 pilot with pertinent information on the aerodrome cct activity, as this would have aided the pilot's SA considerably. The RADAR Controller cannot recollect the exact events but believes that clutter on the radar displays and garbling of the SSR labels around the aerodrome made it difficult to monitor the DA40. The additional co-ordination required with Lakenheath may have been distracting at a time when the DA40 was passing NE of the aerodrome. Inbounds were being advised about reduced TI due to poor radar performance. Radar recordings provided by Swanwick do not reflect the Cambridge primary radar picture on the day, although the SSR feed would be the same. It is difficult to assess the impact that these factors had on the RADAR controller's ability to monitor the progress of the DA40 as it passed through the final approach, close to the ATZ. It is considered probable that the human factors issues associated with radar performance, distraction and workload priority, resulted in the DA40, in receipt of a BS, passing close to the ATZ unobserved by the RADAR Controller.

The Radar controller was familiar with the general route to be flown by the DA40. Pilots flying in the vicinity of aerodromes are strongly encouraged to attempt to establish RT contact with the notified ATS provider. It would therefore, have been appropriate, on initial contact, for the controller to have provided TI, in general terms, to assist with the pilot's situational awareness regarding aerodrome activity. This was a missed opportunity on the part of the controller that could have provided an early warning to the pilot and thus influenced the routeing and flight profile of the DA40 pilot. Both flights were operating VFR in Class G airspace and were ultimately responsible for their own separation and collision avoidance.

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 authority.

It was evident that the unusual cct pattern flown by the C510 to achieve the steep angle of approach had necessitated the ac flying well outside the conventional downwind cct area to pick-up the desired glide path. Thus well outside the normal sanctuary afforded to cct traffic by the ATZ, in unregulated airspace, the C510 crew had to rely on visual acquisition of transiting traffic in addition to any information on aerodrome traffic provided by TOWER. The ATSI report makes it clear that the ADC had not been appraised of the DA40's transit in the vicinity of the aerodrome by RADAR. Neither was the ADC aware of the potential conflict to the NE of the airport from the ATM. Consequently, the ADC was unable to provide any warning about the other ac before the C510 pilots spotted the DA40 themselves, passing an estimated 300ft to starboard during their base-leg turn. The C510 pilots were thus unaware of the DA40 until that point, so whatever separation that did exist was purely fortuitous. The Board agreed unanimously that this late sighting by the C510 pilots was part of the Cause.

The ATSI report highlighted that the DA40 had apparently passed close to the ATZ unobserved by the RADAR Controller. Aware that the DA40 pilot's intended routeing would take it close to the aerodrome, it should have been plain to RADAR that the DA40 would potentially conflict with the C510's extended ccts downwind that he was sequencing other IFR traffic around. Whilst RADAR might have been distracted by other higher priority tasks, and the reported radar clutter had possibly masked the conflict, if the opportunity had been available, it would have been appropriate for RADAR to co-ordinate the DA40's routeing through the extended visual traffic circuit with the ADC.

Under the provisions of a BS there was no obligation upon RADAR to pass radar-derived TI to the DA40 pilot about the C510 and Members were keen to emphasise that if such radar assistance was required then a TS should be requested. Here, however, RADAR's priorities might have been the other IFR inbounds and he might not have had the capacity to offer a TS to transit traffic. Nonetheless, a general warning about visual cct traffic extending 4nm downwind at 1600ft QNH would have been beneficial; it was unfortunate that RADAR did not pass such a warning as it might well have prevented this Airprox.

The Board was appraised of the DA40 pilot's subsequent comments that he did not consider that the weather conditions were such that a TS was warranted and that he expected to be able to fulfil his responsibilities to 'see and avoid' other ac in Class G airspace without radar assistance from ATC. A GA pilot Member noted that when passing close to an aerodrome it was always worthwhile looking into the cct area to try and see arriving or departing traffic. Indeed pilots in transit close to aerodromes are encouraged to call for an ATS and here the DA40 pilot did just that. Therefore, it was unfortunate that he did not receive any benefit from it and he flew by unaware of the close quarters situation with the C510. The Members agreed that the non-sighting by the DA40 pilot was the other part of the Cause.

Turning to Risk, it seemed that the C510's TIS had not alerted the pilots beforehand and, although they had spotted the other ac late, in the reporting pilot's view it had passed safely down their starboard side with a 'low' Risk. As he was unsighted, neither was the DA40 pilot able to affect the outcome of this close quarters encounter. At these distances with only 100ft of vertical separation as the two ac passed a mere 200yd apart the Board concluded that the safety of the ac involved had certainly been compromised.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A non-sighting by the DA40 pilot and a late sighting by the C510 pilots.

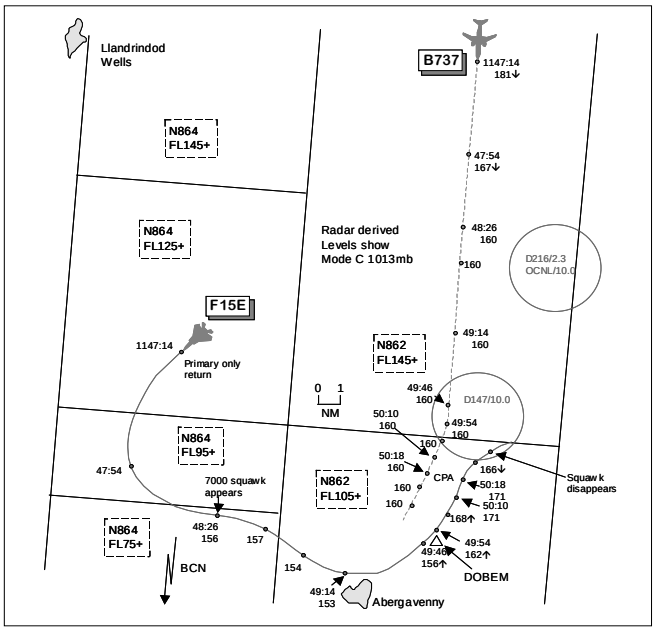
Degree of Risk: B.

AIRPROX REPORT No 2010018

AIRPROX REPORT NO 2010018

Date/Time: 5 Mar 2010 1150Z
Position: 5155N 00255W (18nm NE BCN)
Airspace: N862 (Class: A)
Reporter: Cardiff APR

	1st Ac	*2nd Ac*
Type:	B737-800	F15E
Operator:	CAT	Foreign Mil
Alt/FL:	FL160	(N/K)
Weather:	VMC CLOC	VMC
Visibility:	25km	
Reported Separation:		
ATC	1000ft V/2nm H	
	500ft V/2nm H	1000ft V/2nm H
Recorded Separation:		
	1100ft V/1·6nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE CARDIFF RADAR CONTROLLER reports that he was instructing a low time trainee and, just before the incident, had taken over the RT from the trainee to resolve an unrelated situation developing near BCN. The B737 was inbound to Bristol from the N and was placed on a radar heading against outbound traffic from Bristol that was joining airway L9 W'bound. As the B737 passed RILES an unknown intermittent contact appeared on radar about 8nm SW of the B737 tracking E'bound at >300kt and it briefly indicated FL150. At this point he thought the ac might have been infringing CAS but that it posed no hazard to the B737 owing to its E'ly track. He left the B737 on its present heading as he thought it was the best course of action at this stage. The unknown contact was then observed to turn NE'bound still at FL150 (intermittent Mode A and C) so he turned the B737 R onto heading 210° to take it away from the unknown contact's predicted track. When about 6nm S of the B737 the unknown traffic then turned towards the B737 and began to climb, the B737 pilot reporting that he had 'TCAS' traffic range 5nm and then an unintelligible phrase relating to 'avoiding'. He believed this reference to 'avoiding' and 'TCAS' meant that the B737 was following his own response to a TCAS RA so he told the pilot that it was unknown traffic, possibly military, and to continue as required to avoid. The pilot elected to continue on the assigned heading and remained at FL160 before reporting visual with the other ac, commenting that it was a military type. There were intermittent Mode C readouts as the unknown traffic passed 2nm E and 1000ft above the B737, before it then descended about 3nm behind the B737, indicating FL166. After this the Mode A and C readout from the unknown traffic were no longer visible and the primary contact also disappeared shortly thereafter.

THE B737 PILOT reports inbound to Bristol IFR and in receipt of a RCS from Cardiff on 125·85MHz, squawking an assigned code with Modes S and C. During the level phase of their arrival about 25nm N of Bristol at 250kt and FL160 Cardiff issued a radar heading 180° before they noticed traffic on TCAS at FL150 about 6nm ahead of them closing relatively quickly. The target then proceeded to climb and then it generated a TA but they only saw the other ac, a grey coloured twin-tailed military ac, probably an F15, as it passed their 9 o'clock position range 2nm about 500ft above. At the time the visibility was 25km flying clear of cloud in VMC. They queried the traffic but radar did not know who it was so they confirmed to ATC that it was a military jet. ATC asked whether they had had a TCAS RA to which they replied 'negative'. No avoiding action was required as the TA never became an RA and the jet had manoeuvred away from their flightpath before any avoiding action was required. He assessed the risk as high as the controller was not aware of the other ac.

THE F15E LEAD PILOT reports flying a 2-ship incentive flight with a briefed plan to conduct low flying and general handling in Wales. The visibility was >10nm in VMC and the ac was coloured dark grey with HISLs switched on. Since this was an incentive flight for non-aircrew members in the back seats of both ac, the normal electronic maps

and airspace overlays were not available to the pilots in flight, nor were there the normal tapes or recorders to review the flight after landing. Positional SA was only from the paper maps carried. After low-flying the formation split to conduct separate General Handling and on conclusion they were executing a flight rejoin when the Airprox occurred. His ac was in the Llandrindod Wells area whilst the No2 ac's pilot reported his position N of turning point 5 (N of Abergavenny), which was about 20nm to his SE, so he headed in that direction for the rejoin. Enroute to the position stated by the No2 pilot at 300kt, he looked at the chart to reference the green airspace lines; however, he wrongly identified the Western boundary of CAS and was flying above the 12500/9500ft base in the Western half of CAS. During this period he was using radar to locate the No2 ac and he had radar contact with other ac in the area. One of these was the subject B737 at 15nm radar range followed by visual acquisition at 5-7nm; visual separation was maintained with the B737, which passed 2nm away and 1000ft below, whilst he manoeuvred to rejoin with the No2. Approaching Abergavenny he recognised the airspace error and commenced a descent back into the low-flying structure. He completed the rejoin and proceeded W along the planned route towards turning point 6 (10nm N of Carmarthen). Approaching point 6 the flight reached 'bingo' fuel and began a climb to RTB, which was completed uneventfully. He assessed the risk as low.

ATSI reports that the Airprox was reported by the Cardiff Radar controller and occurred at 1150:18 on Airway N862, Class A CAS, at FL160 in the vicinity of DOBEM. The B737 was in receipt of a RCS from Cardiff Radar on frequency 125·85MHz. The B737 was inbound to Bristol from Belfast City and was released by London TC on a heading to provide separation from a Bristol outbound joining the airway. Shortly before the B737 flight called Cardiff, radar recordings (Clee Hill) show a number of unknown contacts operating in the area. Three of significance are high speed with one displaying 7000 Mode A only and two others showing as primary radar contacts without SSR. The subject F15E, an unknown ac at the time, is one of the primary contacts.

MATS Pt1, Section 1, Chapter 5, Page 11 states *'...aircraft operating in controlled airspace are deemed to be separated from unknown aircraft flying in adjoining uncontrolled airspace...'*. At 1147:10 the B737 flight called Cardiff Radar, *"Cardiff good day from B737 c/s descending one six zero AMRAL"* and ATC replied, *"B737 c/s roger"*. At this point the radar recordings show the subject F15E as a primary only contact 18nm to the SW of the B737 tracking away to the SW. The Cardiff Radar controller reports observing the contact turn onto an E'ly track and briefly indicate FL150 with intermittent Mode A and C at a speed of approximately >300kt. The controller determined that the ac might be an infringer, but on the E'ly track it posed no hazard. At 1148:26 radar recordings show the unknown contact displaying a squawk of 7000 indicating FL156, 17nm SW of the B737 indicating FL160.

At 1149:10, in the belief that the unknown contact was not a threat, the controller instructed the B737 flight to, *"...continue present heading"* but then observed unknown traffic turn onto a NE'ly track and at 1149:45 instructed the B737 flight to, *"...turn right heading two one zero degrees".* This was correctly readback by the B737 crew followed by, *"Confirm er we got TCAS traffic in front five miles....?????..avoiding".* The transmission from the pilot using the term 'TCAS' followed by an 'unintelligible word' and 'avoiding', led the controller to believe that the B737 was responding to a TCAS RA. The controller replied, *"B737 c/s roger that's unknown traffic and continue as you wish."* The B737 crew advised, *"Okay er two one degrees err we're keeping an eye on him B737 c/s".* At 1149:54 radar recordings show that the required separation had been lost with a minimum distance of 4·9nm and 200ft, with both ac closing. At 1150:08 the controller updated the B737 flight, *"B737 c/s yeah tha - that's unknown traffic believed to be military traffic just climbing now through flight level one seven zero"* and the B737 pilot replies, *"Yeah we got err the traffic in sight now thanks"*.

[UKAB Note (1): At 1150:10 radar recordings show the 2 ac on opposite direction but parallel tracks a range of 2nm with the B737 at FL160 and the unknown contact indicating FL171. The CPA occurs on the next sweep at 1150:18 as the subject ac pass port to port at a range of 1·6nm in level flight with vertical separation of 1100ft. The next sweep 8sec later shows the unknown ac commencing a R turn and a descent before the SSR disappears on the next sweep.]

The B737 was then given descent for a normal approach into Bristol. Tracing action was taken and it was later confirmed that the unknown traffic was an F15E.

The controller had considered that the pilot of the B737 was following a TCAS RA. This may have caused the controller to allow the pilot to continue as he wished rather than give what would have been appropriate avoiding action in order to achieve the required separation minima.

MATS Pt1, Section 1, Chapter 5, Page 9, Use of Mode C for Vertical Separation states *'Aircraft Under a Radar Control Service: If the intentions of Mode C transponding aircraft are not known, the minimum separation must be increased to 5000 feet. Unverified Mode C data may be used for separation purposes provided a minimum vertical separation of 5000 feet is maintained and radar returns, however presented, are not allowed to merge'.*

MATS Pt1, Section 1, Chapter 5, Page 13, Unknown Aircraft states: *'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: in Class A, C and D airspace - 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'. 'When avoiding action is issued to an aircraft under a Radar Control Service, controllers must seek to achieve the required minima and pilots must comply with the instructions given, even if they report visual with the other aircraft. It is recognized that it may not always be possible for controllers to achieve the required separation minima against unknown traffic infringing controlled airspace due to the potential for their sudden appearance and/or unpredictable manoeuvres; however, controllers shall apply all reasonable endeavours'.*

HQ 3AF comments that the Airprox, thanks to the F-15E lead pilot's candid report, would appear to be the result of a basic navigational error by a pilot accustomed to having a WSO in the back seat. Moreover, a WSO, in addition to operating the ac's suite of navigation aids, adds significantly to the overall SA of the crew. Nevertheless, and notwithstanding his unauthorised penetration of Class A CAS, the pilot acquired the B737 on radar at 15nm and subsequently kept it in sight until clear but understandably, neither the Cardiff APR nor the B737 crew was aware of the fact.

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.

Although Members agreed unanimously that the cause was the unauthorised penetration of CAS by the F15E pilot, the Board discussed at length some underlying points uncovered during the investigation. First, the Cardiff Radar Controller had placed the B737 on a tactical heading, which was changed to 210° when he saw the F15E radar return turn NE'ly. However, after receiving the B737 crew's transmission mentioning 'TCAS' and 'avoiding' with an unintelligible word between, the Cardiff Radar Controller had believed that the B737 crew were responding to a TCAS RA so he had deliberately elected not to issue any positive control instructions when separation was lost. Members agreed that some phraseology used by aircrew when mentioning TCAS could be potentially misleading particularly if coupled with poor RT. Examples mentioned, which are routinely used/heard during RT exchanges, are when TI is passed by ATC and the response from aircrew is 'TCAS contact' or 'we have traffic on TCAS'. Standard ACAS/TCAS phraseology only mentions the word TCAS in 2 phrases - 'TCAS RA' or 'unable, TCAS RA'. Members believed that if there was any doubt about the crew's intention, the controller should have asked for clarification. A commercial pilot Member opined that pilots reacting to RA demands might be unable to provide immediate clarification. In this incident the controller could have issued 'avoiding action' against the F15E and if the crew were unable to comply owing to a TCAS RA event, they would have reported it. As Members were concerned that pilots could potentially mislead controllers and there appeared to be a need for controllers to be able to clarify the TCAS status of a flight, Members agreed that a recommendation should be addressed to the CAA and MoD to remind pilots of the need to comply with correct phraseology and to remind controllers of the need to seek clarification of any RT transmission that is unclear.

It was unfortunate that the F15E pilot had not taken due regard of the airspace prior to climbing out from low-level, something that military pilot Members opined should have be taken into account during the pre-flight planning process. The pilot was flying in the area he had planned to be in and the CAS boundaries/base levels are clearly depicted both on the UK Military low-flying charts as well as on the RAF enroute chart.

Turning to risk, the Radar Controller had noticed the CAS penetration very quickly after the F15E's SSR appeared on his display and had monitored its track, giving tactical headings intended to keep the B737 clear of the F15E's predicted flightpath. Members could not reconcile why the F15E's squawk only appeared for 2min when it was thought that it should have been showing for some time both before and after the CPA. However, when the B737 flight was given its second radar heading and the crew informed the Radar Controller of their TCAS contact and

'avoiding', the controller advised the crew that it was unknown traffic and to *"...continue as you wish"*. The B737 crew had acquired the F15E on TCAS and monitored its flightpath which generated a TCAS TA and did not require 'avoiding action' to be taken, the F15E being visually acquired as it passed 2nm away to their L and 500ft above. The F15E pilot had established radar contact on the B737 at 15nm as he manoeuvred his ac to rejoin with his No2, sighting the airliner at 5-7nm and taking visual separation against it, climbing 1000ft above it and 2nm clear. Although this had had the potential for being a more serious confliction, the visual sighting by the B737 crew and the action taken by the F15E pilot was 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 F15E pilot entered CAS without clearance and flew into conflict with the B737.

Degree of Risk: C.

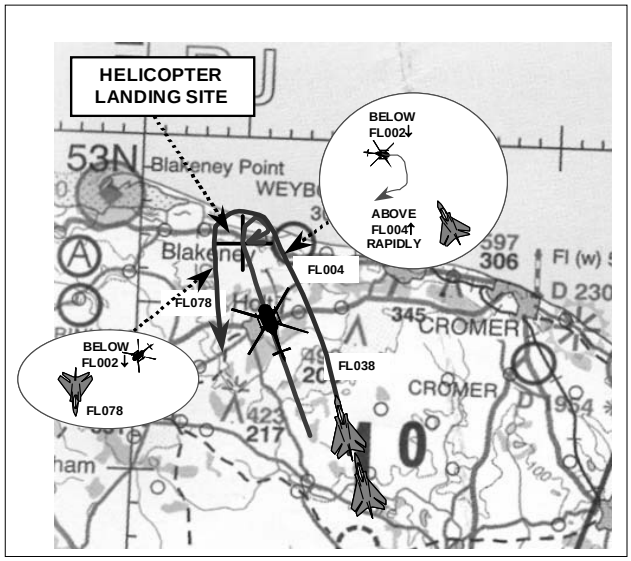
Recommendation: The CAA and MoD are recommended to:

1) Remind pilots to comply with standard phraseology in order to minimise the possibility of misleading controllers about TCAS contacts and reactions.

2) Remind controllers to seek clarification whenever a received transmission is ambiguous.

AIRPROX REPORT NO 2010019

Date/Time:	16 Mar 2010 1035Z	
Position:	5256N 00106E (Salthouse)	
Airspace:	London FIR/LFA5	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	BK117-C1	Tornado GR4
Operator:	Civ Comm	HQ AIR (OPS)
Alt/FL:	500ft (RPS 1022mb)	725ft (NK)
Weather:	VMC CAVOK	VMC NK
Visibility:	20km	9999m
Reported Separation:	300ft V/NK	NK
Recorded Separation:	NR See Note UKAB (1)	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE BK117-C1 pilot reports that he was flying a yellow ac on a Helimed flight answering an emergency call to Salthouse from Norwich in a TCAS (1) equipped ac and they were squawking 0020. While heading 350° at 135kt, as they were about to carry out the landing site identification 1min before landing, he received a call from Norwich Radar, who were providing him with a BS, passing TI regarding 2 military jets descending behind them and heading N. He checked the TCAS and simultaneously received a TA indicating an ac at 2nm in his 6 o'clock at about 500ft. After acknowledging the call, he checked the TCAS again and noted that the TA was now indicating 1nm and 300ft above so he elected to take avoiding action by descending straight ahead and he called Norwich Radar informing them of his descent. At about 100ft in the descent he made a right turn to try to acquire the ac but he did not see it so he continued the right turn and landed into wind (240/05) just to the N of the A149 at Salthouse. Since he only saw the other ac on TCAS he did not assess the risk.

After landing he was approached by an ambulance paramedic who commented on the close proximity of 2 military jets; he estimated their distance to be less than 1000m.

He was aware that a military exercise was in progress and that NOTAM HO493/1 was active, centred on a point approximately 1nm E of his intended landing point.

THE TORNADO PILOT reports that at the time of the incident they were conducting an exercise close air support flight in support of an Army Joint Tactical Air Controller (JTAC) operational work-up. A NOTAM was published for the exercise. Subsequently a civilian aeromed helicopter filed an Airprox but the crew were unaware of the incident and the ac did not show on the post flight analysis of the HUD/HDD video.

ATSI reports that the BK117, outbound from Norwich Airport on a Cat A flight to Salthouse, established communication with Norwich APR at 1028, the pilot confirming he was, "outbound northerly request Basic Service". The helicopter was approximately 4nm NNW of the airport, at FL003 (altitude 500ft on QNH 1021mb), squawking 0020, the Air Ambulance Helicopter Emergency Medivac code. The controller confirmed a BS and the pilot read it back. The next transmission from the helicopter was at 1034:03, when the pilot reported "approaching scene letting down" and the controller acknowledged the call.

Shortly after the radar recording shows an ac (the subject Tornado) tracking NNW at high speed, 7.1nm SE of the BK117 but there is no Mode C displayed on either ac at the time. At 1034:25, the controller asked if the helicopter was still on the frequency and after confirmation from the pilot, he passed TI, "Roger military aircraft in your five o'clock range three miles northbound passing one thousand four hundred feet in descent it's two aircraft fast moving in about a three mile trail now passing a thousand feet in your four o'clock". Probably due to the helicopter's low level, there was no acknowledgement of this call heard on the RTF recording, but in his written

report the pilot stated he received and acknowledged the transmission. At this time the radar recording shows the BK117 at FL002 (400ft) and the closest Tornado 4.5nm SE of it at FL022 (2400ft) and thereafter, the Tornado continues to close on the BK117. Five sec later the BK117 is at FL002 (400ft) and the Tornado is 3.9nm SE at FL016 (1800ft). The Mode C of the helicopter disappears at 1034:46 when the Tornado is 2nm SE at FL006 (800ft). Although the BK117 does not show on the radar recording at 1034:50, the Mode C of the Tornado, which is still tracking NNW, indicates FL004 (600ft); the Tornado subsequently, turns S and climbs.

The MATS Part 1, Section 1, Chapter 11, Paragraph 3.5, describes a BS:

'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 a regular flow of specified 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'.

On this occasion, the controller observed the military traffic approaching and descending towards the BK117 and he reacted appropriately by issuing TI.

UKAB Note (1): The recording of the Cromer radar (5nm E of the position) shows the incident clearly. The Tornados are flying in line astern formation with the No 2 ac 1.8nm behind the leader who was squawking 3640 with Mode C. At 1034:21 they approach the helicopter landing site tracking 350° descending through FL038 just as the helicopter approaches the site from the S also tracking 350° and having descended to FL002. The helicopter continues to descend, passes over the site and enters a right turn disappearing below radar cover. It is not possible to determine how long the helicopter stays airborne (before landing) after it disappears below radar cover (possibly at about 300ft agl). The lead Tornado continues to descend to FL004 (800ft amsl/~600ft agl) and passes 1.46nm E of the helicopter landing site and commences a left turn and rapid climb to FL090 rolling out on S to pass 0.8nm W of the landing site. The No 2 passes slightly further to the E 20 sec later but turns left, also onto S, and passes almost over the landing site but with no SSR displayed (presumably he follows his leader and also climbs rapidly).

HQ AIR (OPS) comments that the timely provision of TI and sensible reaction from the helicopter maximised the separation achieved, however this still caused the helicopter to be concerned although the separation distance was not eroded to an unsafe degree.

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 reports from the ATC and the Tornado Operating authorities.

The Board noted the professional approach of the BK117 pilot, in that even on a very short notice emergency flight he checked the NOTAMs and was aware that one of them affected his flight. This NOTAM was not, however, a prohibition or airspace closure but a warning, and Members agreed that he had been justified to proceed 'with due regard'.

The Board also noted that, even though not required to do so when providing a BS, the Norwich APR Controller observed the potential confliction between the Tornado(s) and the Helicopter and warned its pilot of their approach, enabling him to correlate this information with his TCAS indications. Had the Helicopter pilot requested a TS this would have been provided routinely.

The Board considered this to be a preventable incident; had the Tornado crew or the controlling FAC been made aware of the Medivac Helicopter's route or area of operation, it was thought most likely that they would have discontinued their exercise temporarily to allow it to conduct an unhindered evacuation of the casualty. Both the Civilian Helicopter Member and the HQ Air (Ops) Member informed the Board that while there is no formal process in place to facilitate this, they agreed that a call on VHF Guard by the Helicopter pilot would have been relayed to the Tornado on UHF Guard by the D&D cell even in the relatively short time available. Members considered this a correct and appropriate use of the Emergency frequency.

The JFACSU advisor to the Board noted that the FAC (JTAC) had not been asked for a report into the incident. In the absence of such a report it was likely that the FAC had not seen the helicopter or that he did not judge there

to be a confliction since FACs are trained to call an “abort” during any target run if a hazard arises due to the presence of intruders. [A recommendation In Airprox Report 2010004, together with revised procedures in the UKAB Secretariat, should address the role of FACs in Airprox reporting and investigation in future.]

Both ac had been operating legitimately in Class G Airspace where they shared an equal responsibility to ‘see and avoid’ other ac. That neither pilot saw the other ac suggested to Members that they had been well separated with the Tornado probably well into its dive recovery and in a steep climb and the Helicopter either on the ground or on its final approach with its pilot concentrating on the landing. Given the geometry of the encounter and the manoeuvres of both aircraft in the final stages, the Board considered that neither pilot could reasonably have been expected to see the other ac and this incident had been a conflict in Class G airspace with no risk of the ac colliding.

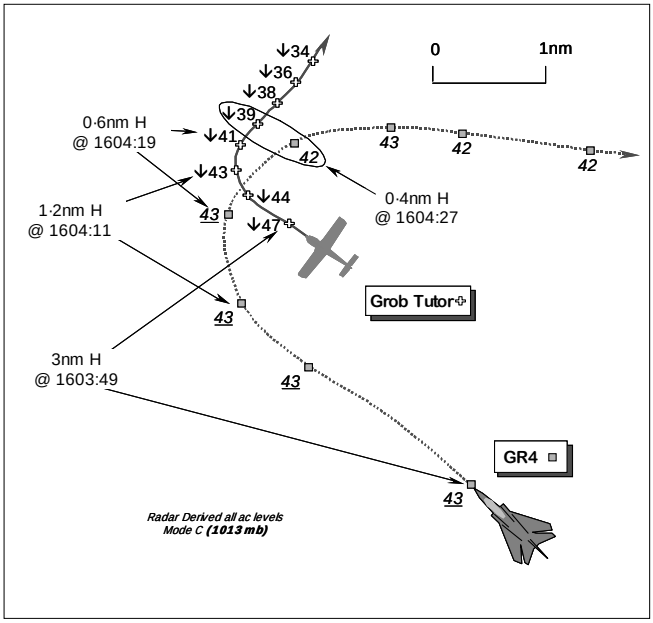
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Conflict in Class G airspace.

Degree of Risk: C.

AIRPROX REPORT NO 2010020

Date/Time:	1 Mar 2010 1604Z	
Position:	5253N 00023W (7½nm SE of Barkston Heath - elev 367ft)	
Airspace:	Lincolnshire AIAA	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Grob Tutor T Mk1	Tornado GR4
Operator:	HQ Air (Trg)	HQ Air (Ops)
Alt/FL:	3500ft↓	3500ft
	QFE (998mb)	QNH (1012mb)
Weather:	VMC	VMC
Visibility:	>20km	20km
Reported Separation:		
	50ft V/100-150m H	Not seen
Recorded Separation:		
	300ft @ 0·4nm Min H	
	1·2nm H @ nil V	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE GROB 115E TUTOR T Mk1 PILOT, a QFI, reports he was flying VFR in CAVOK conducting an instrument training sortie under simulated IFR for his student who was flying the Tutor for a radar recovery to Barkston Heath for an SRA. They were in receipt of a TS from Cranwell APPROACH (APP) on UHF and the assigned squawk of A2620 was selected with Mode C on; elementary Mode S is fitted.

During the recovery they complied with an instruction from APP to descend from 6000ft to 1800ft Barkston QFE. About 8nm SE of Barkston Heath heading 030° at 100kt, descending through 3500ft QFE (998mb) [about 3950ft (1013mb)], he identified a fast-jet closing from astern, which passed to starboard at the same height whilst banking hard to the R in a descending turn. He took control of the aeroplane from his student and advised APP of the Airprox. The jet – a grey Tornado – was first seen 100-150m away and passed some 50ft above his Tutor at the closest point with a 'high' Risk of a collision. He did not take avoiding action himself as the Tornado was seen to be taking action, he thought. The SRA into Barkston Heath was then completed without further incident.

The ac has a white colour-scheme; the HISLs and landing light were on.

THE TORNADO GR4 PILOT reports they had transited the Cranwell/Coningsby gap, VFR and in receipt of a TS from Waddington APP. During this transit they received TI on a contact in their 12 o'clock (due south), which they identified as a Tutor ac, northbound and well above them [not the subject Tutor]. Having completed the low-level portion of the sortie they climbed the ac whilst they discussed the pre-requisites of conducting a 'Show of Force' (SoF) into Holbeach Range - EGD 207. During the climb, they terminated the TS from Waddington APP and free-called Holbeach on Range Secondary prior to range entry. They circled [L] at 4000ft QNH (1012mb) at 350kt in VMC, whilst RT and pre-range/SoF checks were completed, before turning R and heading eastbound into Holbeach Range, descending to 2000ft in the process. At no stage were they aware of their proximity to any other traffic during the transition from Waddington APP to Holbeach Range Secondary or whilst descending from 4000 to 2000ft amsl.

UKAB Note (1): The GR4 crew had already switched from Waddington APP, and subsequent to loitering some 12-15nm SSE of Barkston Heath - and SSE of the Airprox location - the Airprox occurred as they were setting course eastbound towards Holbeach Range.

THE CRANWELL APPROACH CONTROLLER (APP1) reports that he was handing over the operating position to the relief controller, having been on console for 2 hours. He was acting as a mentor to a trainee controller who had been working within his capacity, the IFR traffic having decreased from 3 tracks to 2. His trainee was

concentrating on another ac close to the Tutor operating at a similar level, but not a threat. [UKAB Note (2): At about the time of the position handover at 1604:18, another Tutor is shown 1½nm E of the subject Grob Tutor, westbound maintaining FL88.] He – the mentor - completed the hand over of the position to the relief controller. At no time was the conflicting ac seen prior to the Tutor pilot declaring an Airprox.

THE CRANWELL APPROACH CONTROLLER (APP2) reports that he was in the process of taking over the Approach position from an experienced mentor (APP1) and his trainee controller. Prior to plugging in, APP1 provided a brief of the traffic situation: a King Air downwind in the Cranwell radar pattern and a Tutor about 10nm SE of Barkston Heath, heading 030° in the descent to 1800ft QFE. Once content with the overall scenario, APP1 unplugged and he plugged in. As the trainee was unplugging he sat down whereupon the Tutor pilot reported a close Airprox with a Harrier and asked if he had seen anything. At the time of the handover there was no traffic that was deemed to be conflicting with the 2 ac on frequency, and therefore he did not ascertain whether any TI had been passed to the Tutor crew. There was a considerable amount of garbling of squawks and label overlap and he had to rotate the SSR labels prior to being able to respond with TI on what he perceived to be the reported ac (the only fast moving contact in that vicinity) which was wearing a range squawk and tracking away to the E indicating FL41 Mode C. At this point the Tutor was indicating FL31 Mode C.

THE CRANWELL ATC SUPERVISOR reports that the Watchman ASR and MSSR were fully serviceable; the Watchman Ground Clutter Filter (GCF) was selected on. The Cranwell Aerodrome Weather State Colour Code (CC) was: BLU – min 8km; lowest cloud SCT 2500ft agl; the workload on the Unit was assessed as 'low'. After arranging a controller change for APP, at the time of the position handover he was dealing with an administrative issue. After this had been dealt with the UHF APP RT frequency - Stud 5 - was then selected for monitoring purposes, whereupon the Grob Tutor crew immediately reported the Airprox. The other ac – the GR4 - appeared to be a fast moving contact, well above and passing behind him.

HQ AIR ATM SAFETY MANAGEMENT reports that the Tutor was recovering to Barkston Heath under a TS from Cranwell APP on UHF 280·775MHz. The initial vectoring for the Tutor crew was given by a trainee controller under instruction from an experienced mentor – APP1. At 1602:26, the Tutor crew called Cranwell APP, "*Cranwell APPROACH* [C/S] *request radar recovery to Barkston with Juliet"*. The Tutor crew was asked to report their position, to which they responded "*squawking 2-6-2-0* [C/S] *a Tutor 2 P-O-B currently 5 miles south east of Barkston heading 3-0-0 flight level 5-0 request traffic service radar to SRA".* At 1603:02 a TS was applied and the Tutor crew was instructed to descend to a height of 1800ft QFE (998mb). The conflicting ac – the Tornado GR4 - was about 6½nm SSE of the Tutor in a L turn at this point, squawking A7002 [Danger Areas General that was selected at 1600:26 - 4min before the CPA] and indicating FL49 Mode C [deemed verified]. At 1603:42, when the GR4 was about 5nm SE of the Tutor heading NW, the Tutor crew was instructed to turn R onto a heading of 030°. Between 1603 and 1604:18 various transmissions were made in relation to the SRA but no TI was given. At 1604:11 the conflicting Tornado was 1·2nm S of the Tutor just commencing a R turn. The handover of the APP control position was carried out at about 1604:18, when another experienced controller – APP2 - took over responsibility for the position from APP1. At 1604:19, the radar recording shows the Tornado GR4 turning R through NE indicating FL43 – 0·6nm astern and 200ft above the Tutor – the latter descending through FL41. [UKAB Note (3): The CPA occurred at 1604:27, as the Tornado GR4 passed 0·4nm abeam the Tutor that had steadied on 030°; vertical separation of 300ft Mode C was apparent, the Tornado GR4 indicating FL42 some 300ft above the Tutor that was descending through FL39.] From this point the range opens but still no TI was given. At 1604:30 the Tutor crew reported "[C/S] *we've just had a..close Airprox..with a Harrier* [sic – but actually the GR4] *did you see him on radar?".* APP responded "[Tutor C/S] *traffic now indicating East of your position 3 miles tracking East 4 thousand feet descending",* whereupon the Tutor crew reported the Airprox on the RT.

This Airprox occurred in Class G airspace between traffic under a TS and the GR4 operating VFR without an ATS. The incident was further complicated by the controllers involved conducting a position handover in the time frame of the Airprox - initially by the trainee as part of his training and then completed by his mentor. No TI was passed on the fast moving VFR traffic. From the controllers' accounts, it would appear that the CPA and turn that caused the Airprox happened during the handover. This Command believes that there was ample time before the handover to call the traffic and, given the speed and direction of the GR4 towards the Tutor, would have been best practice. It is clear that the process of a trainee handing over a control position was a contributory factor to this Airprox. It is also noted that due to the difference in performance of the ac involved and the geometry of the encounter, it would have been difficult for the crew of the Tutor to take effective avoiding action against the fast-jet, even with accurate and timely TI. Shortly before the CPA the much faster jet turned directly at the Tutor and passed close enough to cause concern.

SATCO Cranwell has highlighted the issues surrounding this Airprox in a recent Unit Standards Bulletin; controllers have been reminded to pay particular attention to the traffic situation during the handover of operating positions. This Command has also recommended that this scenario is incorporated into Unit training simulations.

HQ AIR (TRG) comments that under a TS the Tutor crew could have expected TI on the Tornado. The GR4 crew were going about their business VFR and it seems that they did not see the Tutor. With a recorded minimum horizontal separation of 0·4nm there was little Risk of collision but as the Tornado approached from behind the Tutor, the crew may have been concerned by the fast moving GR4 passing close aboard.

HQ AIR (OPS) comments that, while it is disappointing that TI was not passed to the Tutor concerning the GR4, it would not have materially changed the circumstances of the reported Airprox. The GR4 maintained a traffic service until required to change to the range frequency; the reported position of the Airprox is less than 2min flying time from the range boundary and the crew would have needed to be talking to the range. It is unclear whether the GR4 saw the subject Tutor or not; they report seeing a northbound Tutor and avoiding it but there is no certainty that the Tutor they saw was the subject aircraft. Additionally the GR4 crew were not aware of a proximate pass. However, just inside ½nm is not unreasonable if visual and this may be a matter of perception. If the subject Tutor was indeed seen by the GR4 then there was no risk of collision, and the Tutor perceived the proximity of the GR4 to be too close.

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.

It was clear from the radar recording that the Grob crew were not able to see the GR4 approaching from astern without any prior warning from APP, until it overtook them on the starboard side. A military controller Member was disappointed that the controllers had not spotted the GR4 and that TI had not been passed in this situation. With three pairs of eyes focusing on the display at various stages during the handover of the operating position it was surprising that none had detected the GR4 closing steadily on the Tutor from the S. The Board was briefed that no fewer than 6 other Tutor ac were operating to the E of the Airprox location at the time, so there was a lot to look at and assimilate, plus significant potential for SSR label overlap to mask the presence of the GR4 after the CPA, but the GR4 was readily discernable as it approached from the S. Moreover, the GR4 had spent over 4min loitering to the S of the Airprox location before heading N and then E into the range, so the effectiveness of the controllers' scans and consequently the TS provided to the subject Tutor crew was questionable. Clearly there is plenty of scope for distraction during a position hand-over by a trainee controller, but this should not be detrimental to the overall provision of the ATS and a lesson to all Mentors who must guard against this.

The HQ Air Member explained that the GR4's holding position was not an unusual location prior to range entry for a SoF exercise. Whilst recognising that the crew would need to be speaking to the Range Controller before entry, an HQ Air Member opined that holding at about 4000ft ALT adjacent to the southern boundary to the Lincolnshire AIAA, with the preponderance of training ac operating in the vicinity, it might have helped the GR4 crew's SA if they had obtained a TS, but clearly it remained the crew's responsibility in this Class G environment to 'see and avoid' other ac. The HQ Air Trg Member reinforced the Command's view that with the GR4 approaching from astern of the Tutor, even if Cranwell APP had passed TI then it might have had little impact on the outcome. There was not a lot the Tutor QFI could do if he could not see the traffic beforehand apart from request further updates as any sudden manoeuvre to help acquire the jet visually might have placed him in a worse predicament. Nevertheless, if the Tutor crew had been forewarned, when they eventually sighted the jet to starboard, it would not have been so much of a surprise. The HQ Air pilot Member opined that fast-jet pilots might not necessarily be concerned at the separation distances replicated by the radar recording here. The CPA of 0·4nm was not in his view a close call and it was not entirely clear if the GR4 crew actually saw the Tutor and discounted it as being too far away to be of concern, or alternatively, they did not see it at all. With a very small cross-sectional area Tutor ac are notoriously difficult to see and even more so when viewed stern-on. The consensus was that the GR4 crew probably had not seen the small white training ac, initially tail-on with little crossing motion to draw attention to it, as throughout their R turn to the E they would have been 'belly-up' to the Grob. The Board agreed that this Airprox had stemmed from a conflict in the Lincolnshire AIAA, but at the distances recorded here no risk of a collision had existed.

AIRPROX REPORT No 2010020

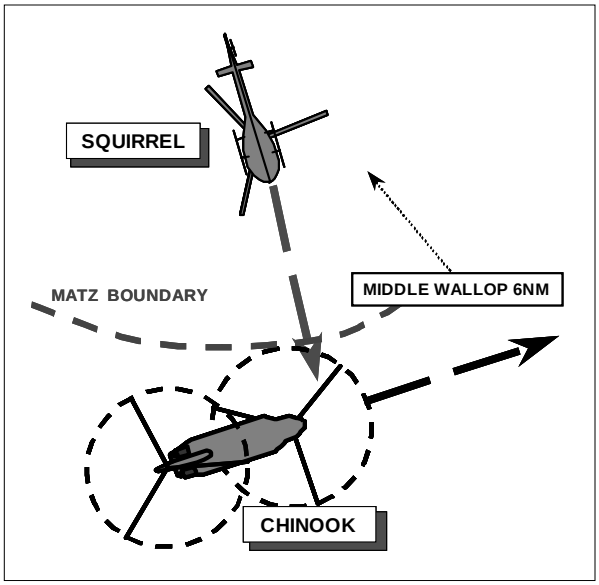
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Conflict in the Lincolnshire AIAA.

Degree of Risk: C.

AIRPROX REPORT NO 2010021

Date/Time:	16 Mar 2010 2103Z (Night)	
Position:	5103N 00130W (6nm S Middle Wallop)	
Airspace:	LFA 1	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Squirrel	Chinook
Operator:	HQ AAC	HQ JHC
Alt/FL:	300ft (Rad Alt)	NR
Weather:	VMC (CAVOK)	NR
Visibility:	>10km	NR
Reported Separation:	V 100ft/H 300	Not Seen
Recorded Separation:	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE SQUIRREL PILOT reports that they were flying a standard night departure from Middle Wallop, in receipt of a BS from TWR and squawking with Mode C. When they were approaching the southern MATZ boundary, heading 170° at 90kt, having cleared with TWR, they commenced a descent to 200ft agl and while in the descent a Chinook passed through their 12 o'clock flying from right to left, about 100ft lower than them and about 300m ahead. He assessed the risk as being high.

The NHP contacted Wallop to confirm whether the ac was talking to the controller, which he was not.

JHC Policy states that all ac are to notify Wallop of their intended routing. OC Night had received no notification that the Chinook would be in the area, apart from LFA 1 – Salisbury Plain – LFA 1.

UKAB Note (1): A copy of this policy was requested by the UKAB, but was not forthcoming.

THE CHINOOK PILOT reports, 3 months after the event, that he was conducting a training sortie at the time of this incident in the vicinity of Wallop.

He was operating in accordance with Low Flying Handbook orders relating to LFA 1 and was monitoring Low Level Common frequency on UHF and Odiham APP on VHF. Odiham was selected on VHF as he was returning to Odiham and this frequency was used for 'Ops Normal' calls throughout their operations in LFA1.

When the sortie was planned, the route was notified to RAF Odiham Operations in accordance with JHC policy. Odiham has an e-mail trail to verify that this occurred. He believes there must have been a break down in the Ops process if this information was not disseminated.

He did not see the other ac involved.

UKAB Note (2): A copy of the e-mail trail was requested from RAF Odiham but was not forthcoming.

ATSI reported that the Airprox occurred 6.5nm S of Middle Wallop in Class G airspace. A Squirrel helicopter was conducting a NVG night flying sortie and was in receipt of a BS from Middle Wallop TWR (WallopTWR). The Controller reported that due to excessive radar clutter, suppression filters had been selected on the radar display but he believed that this had no bearing on the incident.

The Middle Wallop weather was reported as:

AIRPROX REPORT No 2010021

METAR EGVP 162050 20006KT CAVOK 05/02 Q1024 BLU NOSIG=

At 2055:55 Wallop TWR made a general broadcast of new ATIS information ROMEO with QFE remaining 1013mb and the New Portland RPS of 1019mb.

At 2058:32 the Squirrel pilot reported ready for departure and was cleared for take off by Wallop TWR, *" ..c/s clear take off surface wind one nine zero degrees six knots"* and the pilot responded, *"take off ..c/s".*

At 2102:38 the Squirrel pilot reported, "..*c/s..MATZ boundary south to er to low level".* Wallop TWR acknowledged the call and passed the Portland RPS of 1019mb. The controller's written report states that the Squirrel disappeared beneath radar coverage which is normal for the flight profile, given the terrain to the S. At that point the Wallop TWR Controller expected the Squirrel to change to the Low Flying Area (LFA) common frequency but at 2103:35 the the pilot reported, "c/s....*can you be advised that we've just had a er C H fortyseven pass about er one hundred feet across the nose at just south of West Dean oh just by West Dean";* the controller responded, *"Roger not on our frequency I'm afraid".* The Squirrel pilot then asked, *"Is he er have you go-have you got him on radar"* and the controller responded, *"No I just - It's intermittent contact on both of you down there at the moment".* At 2103:58 the Squirrel pilot replied *"Yeah he passed about er eighty feet er in in front and er just below the nose",* ATC acknowledged the call and the pilot of the Squirrel requested, *"could you inform O C night".*

The Wallop TWR Controller's report stated that an Odiham SSR code, without primary, was observed, just E of the point where the incident occurred and was seen tracking towards Odiham. Odiham were advised that the Chinook helicopter had been involved in an incident and the callsign was confirmed.

A BS is described in MATS Part 1, Section 1, Chapter 11, Page 4, Para 3.5.1 and 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. The controller will not normally update this 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 Middle Wallop TWR Controller was not aware of any other traffic in the vicinity and was therefore not in a position to provide any general TI or warning to the pilot of the Squirrel helicopter.

HQ JHC comments that JHC aircrew conform to the procedures in the Low Flying Handbook (LFH). There is no further JHC Policy. LFH Section 2 LFA 1 Night Procedures Para 2 states:

'**Dissemination of Night Flying Route Information**. Middle Wallop are to produce night flying power-point slides and distribute them to the other MOBs within LFA1 whist Benson and Odiham are to produce route information on a night flying proforma for distribution to the other MOBs. ATCO Boscombe Down is to notify Middle Wallop when they are night flying in order to receive the slides.'

Since the merge of LFAs 1A, 1B and 1C into a single LFA, there has been a problem in the dissemination of night flying information between the MOBs. This has been discussed at length at the LFA1 Users WG and significant progress has been made since this incident. Detailed slides showing routes and timings are now distributed on a daily basis to all the MOBs using LFA1 and this should help prevent incidents such as this. However, the incident happened in Class G airspace, and although the Squirrel crew would have been alerted to the possible presence of a Chinook, they would still have to see it to avoid it. From the Chinook crews perspective, it would have been good airmanship to have given a quick information call to Middle Wallop to acknowledge that they were operating in close proximity to the MATZ as this would have provide far greater SA to the departing Squirrel crew.

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, a report from the air traffic controller involved and a report from the ac operating authority.

Despite the LFA1 night notification procedures appearing to have broken down, Members agreed that, since both ac had been operating legitimately in the Class G airspace of the UKNLFS, the pilots shared an equal responsibility to see and avoid other ac; the Squirrel crew saw the Chinook, albeit later than optimal, but the Chinook crew did not see the Squirrel nor were they aware of its proximity. Members were aware that both with and without NVG/S, lookout at night could be particularly difficult, especially in areas of high surface traffic or other cultural lighting. Nevertheless, collision avoidance depends on good lookout, which is therefore paramount. A specialist Military helicopter pilot Member observed that he would have expected the Squirrel crew to clear the area of their flightpath and ensure appropriate separation as they descended to Low Level; further he informed the Board that the incident could have been avoided had the Chinook crew given Middle Wallop APP a courtesy call as they passed through the 'choke point' just to S of their (active) MATZ.

The Board was unable to determine positively why the night flying notification procedures had not worked as designed; it seemed, however, that there might have been a breakdown of the communication chain in RAF Odiham Ops centre. One Member also observed that, although his report was minimal and very late, the Chinook pilot also appeared to be unaware that the Squirrel was entering the LFA to the S of Middle Wallop at the time they passed through the area.

When considering the degree of risk the Board noted that the Squirrel crew saw the Chinook in time to take effective avoiding action and therefore had removed any risk of collision.

The Board also noted the work of the LFA 1 Users WG and endorsed their aim of identifying and resolving the operational issues.

PART C: ASSESSMENT OF CAUSE AND RISK

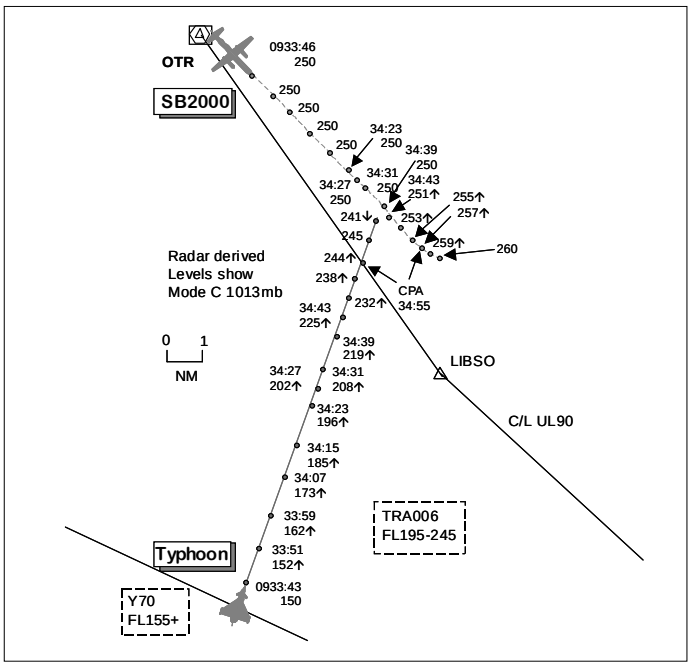
Cause: Non-sighting by the Chinook crew and late sighting by the Squirrel crew.

Degree of Risk: C.

AIRPROX REPORT No 2010022

AIRPROX REPORT NO 2010022

Date/Time:	18 Mar 2010 0935Z	
Position:	5336N 00004E (9nm SE OTR)	
Airspace:	TRA006/UL90	(Class: C)
Reporter:	ScACC E Sector RC	
	1st Ac	*2nd Ac*
Type:	Typhoon	SB2000
Operator:	HQ AIR (OPS)	CAT
Alt/FL:	↑FL240	↓FL250
Weather:	VMC CLOC	VMC NR
Visibility:	20km	NR
Reported Separation:		
	1800ft V/3·5nm H	NR
Recorded Separation:		
	1300ft V/1·7nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE SCACC E SECTOR RADAR CONTROLLER reports that the SB2000 was inbound to Norwich in the area of OTR at FL250. A military squawk [the subject Typhoon] was seen crossing under airway Y70 NE'bound at FL150 and then it commenced a climb at a high rate so he asked the Planner to call London Mil Console 15 to coordinate. The Console 15 controller said that he would stop-off the Typhoon at a lower level but as the Typhoon was passing FL200 the SB2000 crew received a TCAS RA and climbed to FL260. As the crew were already responding to the RA and the Typhoon's track was taking it behind the SB2000 it was deemed unnecessary to give avoiding action. Instead he gave TI to assist the crew in locating the traffic. The Typhoon continued with its high ROC and was observed at FL246 with 1·6nm lateral separation against the SB2000. He commented that this had been the 3rd time a civil ac under his control had had to respond to a TCAS RA against fast climbing military traffic.

THE TYPHOON PILOT reports flying a student convex GH sortie from Coningsby following a SID 2 to FL150 on departure. Following handover to London heading 023° and when cleared to FL240 under a RCS the student pilot, on his 3rd sortie on type, maintained the climb profile but allowed the ac to accelerate to 420kt leading to a ROC assessed to be slightly above 8000fpm. The QFI warned the student of the impending level-off at 2000ft and 1000ft to go and although the student initiated a –3G bunt manoeuvre to achieve the correct level, the ac apexed at FL246, 600ft high for several seconds before the QFI was able to take control and establish the ac at the correct level. During this sequence of events they had radar contact on traffic 20nm ahead and watched a low-wing twin-engine ac pass 1800ft above and 3·5nm laterally to their R. He assessed the risk as low.

THE SB2000 PILOT reports Scottish cleared them to descend from FL270 to FL250 at OTR. Before levelling-off they received a TCAS TA against traffic climbing at a high rate. After they levelled-off they then received a TCAS RA 'climb' which they actioned against traffic in a rapid climb to their R and informed ATC. Once clear of conflict they were recleared to FL250 and Scottish was then able to coordinate the traffic with London Mil.

HQ AIR BM SAFETY MANAGEMENT reports that the Typhoon was conducting a student convex general handling sortie NE of RAF Coningsby, routing to the D323 complex. Whilst under a DS, cleared to FL240, the Typhoon climbed to FL246 and into confliction with a SB2000 inbound to Norwich cruising at FL250.

The Typhoon was handed to LATCC Mil LMARS Console 15 controller shortly after departing RAF Coningsby. ATC RAF Coningsby instructed the Typhoon pilot to climb FL150 and handed over the flight without incident under a TS. On initial contact with LATCC Mil at 0932Z the Typhoon pilot reported, *"London Mil Typhoon c/s with you in*

the climb flight level one five zero". LATCC Mil identified the ac and applied a TS. Shortly after initial contact the Typhoon pilot asked and was given a DS. The controller was aware the requested level was FL360; however, the controller correctly identified conflicting traffic transiting the UAR at FL250 and instructed the Typhoon pilot to climb FL240 IAW standing coordination rules as laid down in MATS Pt 2. At 0933 Console 15 controller informed the Typhoon pilot *"Typhoon c/s traffic left eleven o'clock fifteen miles crossing left right coordinated above"*. The pilot responded, *"Typhoon c/s looking"*. At 0934Z conversations took place between the Typhoon pilot and Console 15 about his onward tactical frequency for his sortie. Shortly after 0934Z Scottish East controller called Console 15 by landline and said, *"Hi East just er friendly coordination the Typhoon c/s just watch the rate of climb against our SB2000 c/s"*. Control frequency chatter then occurred as Console 15 reiterated the Typhoon onward frequency at the same time as continuing the conversation with Scottish East. Console 15 stated, *"he's on normal rate but ill stop him slightly lower"*; this statement was based on the controller not instructing the Typhoon to operate outside normal ROC. (There are no electronic indicators available to the controller at LATCC (Mil) which display ROC at the console.) This is not SOP but can be considered a valid decision if the controller considers 'defensive' controlling is required. Scottish East replied, "*Ok can you stop him off the SB2000 c/s just got an RA".* Console 15 controller transmitted, *"Typhoon c/s stop climb flight level two three zero".* From the subsequent conversation between controller and aircrew it is considered that this instruction was never assimilated within the cockpit. At 0935Z Console 15 controller asked, *"Typhoon c/s confirm level passing"* the pilot replied *"Typhoon c/s is er confirm level height two three zero"*, and then Console 15 reiterated *"Roger your initial cleared level was two four zero and I asked you to stop at two three".* Console 15 then asked, *"Can you confirm what level you climb up to it was showing two four six"*, the pilot responded, *"affirm it was an over shoot to two four six many apologies*". [CPA at 0934:55 is shown as 1·7nm as the Typhoon indicates FL244 and the SB2000 is climbing in accordance with a TCAS RA passing FL257.]

In summary, the Typhoon was on a standard and familiar route into a designated training area (D323) to conduct a pilot training sortie. Although the pilot reported being under a RCS (above FL240 within Class C) this was never applied by the controller due to the time frame the ac was above FL245. At the time of the incident the Typhoon was within an active TRA and as such, IAW CAP 493, was provided with a service on the basis of ac operating outside CAS. The Typhoon was given instructions to stop at FL240 against the SB2000 at FL250 IAW standard deeming conventions, which were acknowledged by the aircrew. The call from Scottish East controller to apply 2000ft separation due to the potential hazard of ROC is not SOP. It is evident from the pilots report that cockpit workload was high due to the nature of the training sortie. The indications that the ac would not level off were not assimilated in time to prevent the situation developing into an incident. Console15 applied a TS then a DS correctly and identified the requirement to use standard coordination against an ac on a published UAR indicating FL250. The controller was not aware that the Typhoon was climbing in excess of 8000fpm and was therefore unable to offer advice to the crew. HQ AIR ATM considers this Airprox to be a result of a breakdown in CRMS and a reduction in external SA by the crew of the Typhoon.

ATSI reports that the Airprox occurred with the SB2000 at FL250 in Class C CAS SE of OTR.

The SB2000 was routing to EGSH and was inbound UMBEL [24nm NW OTR] at FL270 when it called the ScACC E Sector on 133·800 MHz at 0924. The E controller instructed the flight to route UMBEL – NORWICH, a track that approximated airway UL90.

At 0931 as the SB2000 was 10nm NW of OTR the E controller instructed the SB2000 to '*descend flight level two five zero*'. The clearance was read back correctly and the Mode S SFL of the SB2000 was observed to change on the situation display.

The SB2000 passed OTR at 0933:32 having attained its new cleared level of FL250. At this time a Typhoon under the control of London Military E (Console 15) was 20nm S of OTR and tracking N at FL150 underneath airway Y70 in uncontrolled airspace. As the Typhoon passed the N edge of Y70 it was observed to commence a steep climb. The SB2000 was 14nm N of the Typhoon.

Due to the high ROC of the Typhoon many radar sources were unable to maintain continuous reporting of the Mode C. However, the St. Annes radar recorded continuous Mode C data during the Typhoon's climb. The ac climbed at GSs between 536 and 577kt. Average climb rate between 0933:50 and 0934:52 was calculated as 8017 fpm; however the instant climb rate as depicted by Mode C on the situation display ranged from between 3429fpm to 13333fpm. The highest ROC was seen as the Typhoon approached it's cleared level (0934:43 FL218, 0934:52 FL238 equivalent to 13333 fpm).

At 0934:20 the E controller informs the SB2000 pilot, *"SB2000 c/s there is er fast climbing jet traffic currently in your two o'clock range of eight miles er through flight level two hundred at this time we're just on the military now to coordinate"*. The pilot of the SB2000 responded, *"Yeah got er high climbing tac* [sic] *on TCAS and we've now got a er R-A SB2000 c/s"*. In accordance with CAP493 Manual of Air Traffic Services Part 1 procedures the controller did not attempt to modify the ac's flight path. The E controller responded to the SB2000 pilot by stating, *"SB2000 c/s follow the R-A"*. [The recorded radar data shows the Typhoon passing FL202 at 0934:27].

At the same time as the TCAS RA RT exchange was taking place the E Sector Planner had called the military controller (Console 15) associated with the Typhoon and requested that the military controller, *"watch the rate of climb against our SB2000 c/s"*. The telephone exchange between the two controllers was concluded with the military controller stating, *"I'll stop [the Typhoon] at two three zero".*

The time taken from the Typhoon leaving FL150 (0933:51) to the activation of the TCAS RA (as notified on frequency by the SB2000 pilot) was 30sec.

During the encounter the required separation standard of 5NM laterally or 1000ft vertically was never infringed: at the CPA 1334:55 (8·6nm SE of OTR) the distance between the 2 ac was 1·7nm and 1300ft.

The SB2000 crew reported, *"clear of conflict"* at 0935:20, by which time it had climbed 1000ft from its cleared level to FL260. Once returned to FL250 the SB2000's flight to Norwich continued uneventfully.

There are considered to be no implications for civil air traffic as a consequence of this Airprox.

HQ AIR (OPS) comments that this was a busy CONVEX sortie and the student pilot had misjudged the required airspace for the level off. The climb performance of the Typhoon is well known and earlier or more positive intervention by the QFI could have prevented the minor level bust and TCAS RA. Prompt adherence to TCAS RA procedures by the SB2000 ensured that separation was not degraded to a dangerous degree. Additionally the Typhoon had RADAR contact and then Visual contact with the traffic and no risk of collision existed.

UKAB Note (1): Whereas the St Annes radar recording shows the Typhoon's Mode C throughout the incident, the Great Dun Fell (GDF) and Claxby both display NMC for the Typhoon after it commences its climb from FL150, the GDF showing only one height readout as the ac passes FL200.

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 Board identified that there were 2 separate but related aspects to this Airprox: first, the Typhoon's flight path and ROC induced a TCAS RA in the SB2000 and, second, the Typhoon subsequently climbed above its cleared level.

Considering the TCAS RA first, Members recognised that after the Typhoon commenced its climb from FL150 in Class G airspace it entered the active TRA at FL195 so the maximum ROC/ROD restrictions did not apply [Mil AIP ENR 1-1-1]. The critical factor in this incident was the flightpath flown by the Typhoon crew as the ac was effectively pointing at the TCAS equipped SB2000 with a high ROC, and this had breached the TCAS safety 'bubble' and generated the RA. The Board noted that the RA was generated while the Typhoon was still approximately 4000ft below the SB2000; even if the Typhoon had been subject to the 8000fpm ROC restriction, it would likely still have induced an RA slightly later. In order to avoid 'spooking' the SB2000's TCAS, the Board considered that a much lower ROC was necessary, and/or a change of vector to increase the nose-tail separation between the fighter and airliner.

Turning to the 'level-bust', the Board noted that despite the lack of continuous Mode C reporting good coordination had been effected between ScACC and Lon Mil, after ScACC noted the Typhoon's ROC but neither controller could anticipate the 'level-bust'. Noting the inexperience of the Typhoon front-seater, the HQ AIR OPS Member opined that the steep climb profile required earlier intervention by the instructor to avert a 'level-bust' by bunting the ac, well before 2000ft to go. A more aggressive 'roll upside-down and pull' manoeuvre would have been more

appropriate to ensure compliance with the level-off restriction. The Board also noted that the Typhoon crew did not appear to assimilate the instruction to level off 1000ft earlier than initially cleared, at FL230.

In determining the cause of the Airprox, Members considered the inducement of the TCAS RA and the 'level-bust'. Although the RA on its own might have resulted in the declaration of an Airprox, the 'level-bust' would have put the Typhoon within 400ft and 1·7nm of the Saab, had the latter not followed its TCAS RA demand and climbed to FL257 at the CPA. As it was, the SB2000 crew had been given the 'heads-up' with a TCAS TA and had then reacted promptly to the RA, flying the avoidance manoeuvre until 'clear of conflict' had been received. The Typhoon crew had been issued with TI on the SB2000, located it on radar and then seen it pass above and to their R whilst attempting to level-off. Therefore the Board agreed that the combined actions taken by all parties had ensured that safety margins had not been eroded even though the Typhoon crew climbed above their assigned level, the cause of the Airprox.

PART C: ASSESSMENT OF CAUSE AND RISK

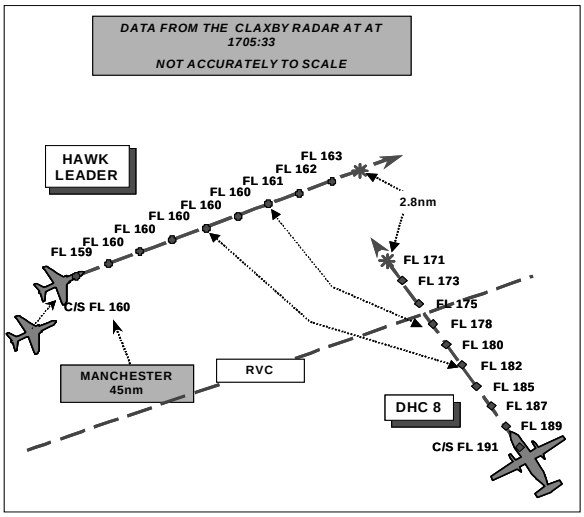
Cause: The Typhoon crew climbed above their assigned level.

Degree of Risk: C.

AIRPROX REPORT No 2010024

AIRPROX REPORT NO 2010024

Date/Time:	24 Mar 2010 1706Z	
Position:	5244N 00135W (Lichfield Corridor)	
Airspace:	Y53	(Class: A)
	Reporting Ac	*Reported Ac*
Type:	DHC-8	Hawk
Operator:	CAT	HQ AIR (TRG)
Alt/FL:	FL170	FL160
Weather:	IMC CLAC	IMC KLWD
Visibility:	10km	0.5km
Reported Separation:		
	NR	NR
Recorded Separation:		
	800ft V/2.8nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE DHC-8 PILOT reports flying a scheduled passenger flight under IFR, squawking as directed. Shortly after levelling at FL170, heading 325° at 240kt under RC from ScACC, about 50nm SE of MAN, the crew noted on TCAS an ac crossing about 5nm ahead and 1000ft below. Shortly afterwards the TCAS displayed a TA with "Traffic, Traffic" and it was noted that the ac had commenced a climb; by then the lateral separation was less than 5nm. Shortly thereafter ATC issued an instruction *"avoiding action turn left 280 degrees"* so the Captain disengaged the autopilot and made a level left turn and satisfactory separation was quickly attained. The minimum separation was estimated to have been 1nm and 600ft. ATC commented that the traffic was in the Lichfield RVC and did not have permission to climb above FL160. He believed that the traffic was a formation of 2 Hawk ac but only one was seen on TCAS.

The weather conditions were such that while they were in clear air, they were only just above cloud and were therefore IMC.

He assessed the risk as being low.

THE HAWK PILOT reports flying a training sortie; the handling pilot was an advanced flying training student pilot in the front cockpit with a QFI in the rear seat. They were heading 075° at M0.73 and they were cleared to FL160 by London Mil having climbed due to weather. During this period their No2, also being flown by a student pilot but with a QFI on board, was closing in to close formation due to weather, from a loose position swept at 75yds. Both the Captain and handling pilot were concerned that their No2 was not going to attain a close formation position before they went fully IMC and the QFI was looking over his shoulder to keep the ac visual. At this time the student pilot had, through distraction, allowed their ac to creep up to FL162, which the Captain noticed and promptly told the student pilot to recover to FL160; they peaked at FL163, which the QFI noted at the time.

Obviously this was enough to cause the avoiding action to be taken by the ac above at FL170 and they accept responsibility, but there was never any actual danger as the QFIs would not have allowed the situation to develop any further.

He considered it noteworthy that on their return flight at approx 2215 the same day, this time as a singleton, they also deviated from their cleared height. Again, the student pilot was flying and the instructor prompted him to 'check height' as they climbed through FL161; he recovered and having topped at FL162. The controller informed him that they had indicated FL164, some 200ft above their indicated level. Whilst this is not an excuse for their poor height control it indicated that their IFF [Mode C] might have been over reading slightly. Unfortunately the avionics in the Hawk Mk1 are dated and they do not have an autopilot or 'height hold' facility, which means the ac is flown manually at all times.

Controller Reports. For brevity the ScACC Controller's report, the NATS Unit investigation and the London (Mil) controller's reports have not been included as the information they contain is included below.

HQ Air BM Safety Management reports that a pair of Hawk TMk1 ac were being flown as a formation by Advanced Flying Training student pilots with QFIs in the rear seats. They were transiting the Lichfield Radar Corridor (RVC), from W to E at FL160, within Class A CAS under RC from London Mil. The LIC RVC was booked for transit by the London Mil Cent TAC controller and the Hawks were coordinated through the corridor at FL160. Meanwhile a DHC-8 was routing to Manchester in Class A CAS under RC from ScACC at FL170. The corridor would normally be flown at FL140 Eastbound but, due to a previous ac experiencing icing at that level, a higher level was requested and agreed by ScACC.

The Hawks reported on frequency at 1656 saying, "*Er London C/S with you flight level one four zero"* and the controller responded, *"C/S London MIL good afternoon identified flight level one four zero traffic service own navigation through the Lichfield corridor*". At 1658 the controller instructed, "*C/S climb flight level one six zero to transit the Lichfield corridor, previous aircraft have been experiencing icing at flight level one four zero".*

At 1700, prior to the start time of the radar replay, London (Mil) transmitted, *"C/S check your level you are showing one six three"* and leader responded*, "Flight level one six zero C/S apologies*". Just after 1705 Hawk Leader requested a climb FL170. At 1705:12 the Hawks are shown indicating FL161 and on subsequent SSR updates they indicate FL162 and FL163. After the request the controller once again stated, "C/*S Er roger maintain flight one six zero until coordinated and check your level you are showing flight level one six three"* and leader responded "*Descend one six zero C/S"*. At 1706 leader transmitted "C/*S now happy to maintain flight level one six zero"*.

[UKAB Note (1): At 1659:50 the recording of the Clee Hill radar shows the Hawks to be level at FL161. At 1700:50 the Hawk leader ballooned for 1 sweep to FL163 in a left turn onto a heading for the RVC before returning to FL160 and remaining level until 1705:12 when it climbs to FL163 for 2 sweeps before again descending to FL160 as described above.]

The CPA occurred at 1705:37 and the Hawks passed 2.8nm ahead and 800ft below the DHC-8. After the Hawks were clear of the coordinated traffic, with no other traffic to conflict they were given a climb to FL170 as requested and released own navigation direct to RAF Marham.

LATCC (Mil) Cent TAC complied with the procedures for the Lichfield RVC and was proactive in seeking to use FL160 to overcome a reported icing level at FL140. The ac were also correctly placed under RC on entering Class A CAS. The controller monitored the flight and instructed the ac to check altitude prior to the incident. On seeing that the ac had again deviated from the coordinated level, the controller asked the crew to check their level. In a situation where a cleared level has been contravened, standard practice is to give avoiding action descent or climb; however in this situation the first indication of the ac operating outside the recognised Mode C limits (200ft) was coincidental to the CPA.

ATSI reports that the pilot of a DHC-8 reported an Airprox while at FL170 in Class A CAS, 19nm SE of TNT.

The DHC-8 was inbound TNT descending to FL200 when it called the ScACC STAFA Sector at 1702:20 while 41nm SE of TNT and the controller instructed the aircraft to route TNT–DAYNE. At this time a formation of 2 Hawks was transiting the Lichfield RVC, coordinated at FL160, and was 11nm SW of LIC. The transit had previously been co-ordinated by London (Mil) with the STAFA sector at 1656.

A review of the recording of the Clee Hill radar showed that the formation, while transiting the RVC prior to the incident, had been displaying Mode C level information of between FL160 and FL163, but mainly alternating between FL160 and FL161.

At 1703:20, as the DHC-8 was passing FL210 in the descent, the ScACC controller instructed the DHC-8 to "*descend flight level one seven zero"* and the clearance was read-back correctly and the Mode S Selected Flight Level was seen to change accordingly. The Hawk formation was then 4.5nm SE of LIC and in the DHC-8's 10 o'clock position at a range of 26nm. At 1704:44 the DHC-8 and Hawks were 10nm apart, still in the DHC-8's 10 o'clock. The DHC-8 was passing FL184 and its rate of descent was between 2 and 3000 fpm and the Hawks were reporting FL160.

As the Hawk formation came into the DHC-8's 12 o'clock at 1705:16, range 4.7nm, the level of the formation increased to FL161; the DHC-8 was then passing FL175. On the next radar update at 1705:25, the formation had climbed to FL163 and the DHC-8 was passing FL172 (900ft vertical separation) thus the required separation of 5nm/1000ft had been eroded. The formation passed through the DHC-8's 12 o'clock at a range of 3.7nm indicating FL163 and at this time the STAFA controller issued the DHC-8 with an avoiding action turn to the left and passed TI. The DHC-8 pilot reported seeing the formation on TCAS - but did not report an RA - and stopped his decent at FL171 (800ft vertical separation); the ac were 2.9nm apart. Minimum distance between the ac was recorded as 2.8nm/800ft at 1705:40 and at 1705:56 the required separation was restored when the Hawk formation descended back to their cleared level of FL160. The avoiding action turn of the DHC-8 and faster speed of the formation also rapidly increased the lateral distance between the ac.

Following the encounter the DHC-8 was instructed to resume its own navigation to DAYNE.

There are considered to be no implications for civil ATC as a consequence of this incident.

HQ AIR (TRG) comments that this Airprox was the result of distraction by the Hawk Lead crew who were concerned that their No2 was not going to attain a close formation position before they went fully IMC. Consequently, as soon as the QFI saw the level deviation, he told his student to 'check height' but not until they had climbed and triggered a TCAS TA in the DHC-8. From the position and levels of the aircraft involved there was no risk of an actual collision. The avoiding-action turn issued by the STAFA controller very quickly regained separation between the DHC-8 and Hawk formation.

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.

The Board observed that, although there were a number of factors underlying this incident, it was essentially an altitude deviation by the Hawk formation leader, unnoticed by the No2. Members noted that the deviation had taken place just after the formation had passed through the descending DHC-8's 12 o'clock, over 3nm away. Nevertheless, there was a breach of the stipulated separation but this did not cause a TCAS RA in the DHC-8. Furthermore, the alt deviation was noted almost instantaneously by both the ScACC and London (Mil) Controllers and both reacted quickly and, in the Controller Members' opinion, correctly. Their respective actions ensured that separation was restored quickly and had prevented any risk of collision.

Pilot instructor Members observed that when instructing many aspects of flying, instructors are often faced with conflicting priorities. In this case the imperative for both instructors was ensuring that the No2 Hawk student closed from loose formation to close expeditiously but safely before the formation entered cloud. While the instructors' attention was focused on this aspect, the Lead student pilot allowed his ac to climb slightly, topping at FL163, before his instructor spotted this, simultaneously with the Controllers, and warned his student to return to their cleared level. Although, almost certainly a feature well known to student pilots, the lack of an autopilot and outdated altitude/SSR instrumentation in the Hawk T Mk1, make accurate manual flying even more important, as any unintentional climb/descent may cause unnecessary TCAS warnings in other ac.

There was extensive discussion regarding whether or not any TI to the Hawk formation regarding the DHC-8 would have contributed to the outcome. Current Military Controller Members agreed that providing TI regarding co-ordinated traffic is not considered necessary even if it were practicable for aircraft crossing these busy airways. Pilot Members, however, agreed that such TI would enhance significantly their SA regarding relevant airways traffic. Further, both pilot and Controller Members agreed that several years ago TI would have been provided routinely. A current NATS Controller Member agreed that TI would be beneficial and stated that, when it was possible to do so, passing TI would be considered best practice in terms of 'Defensive Controlling'.

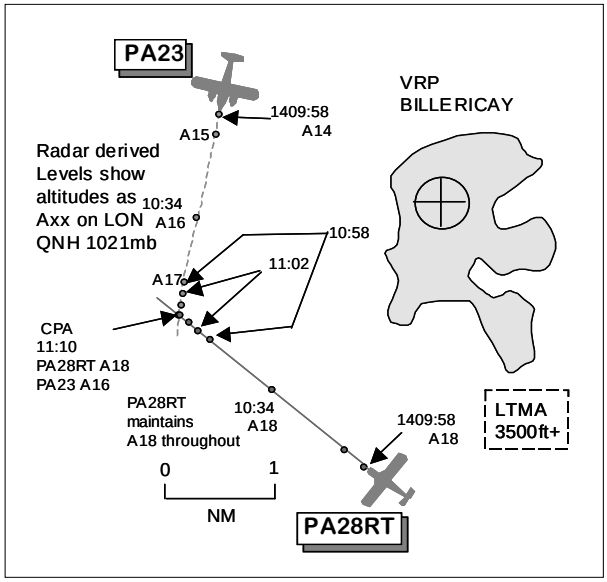
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Hawk pair climbed above their cleared level.

Degree of Risk: C.

AIRPROX REPORT NO 2010025

Date/Time:	17 Mar 2010 1411Z	
Position:	5137N 00021E (2·5nm WSW Billericay)	
Airspace:	LFIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	PA23	PA28RT
Operator:	Civ Pte	Civ Pte
Alt/FL:	1900ft (QNH 1021mb)	1800ft (QNH)
Weather:	VMC CAVOK	VMC NR
Visibility:	20nm	NR
Reported Separation:	50ft V/100m H	not seen
Recorded Separation:	200ft V/<0·1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PA23 PILOT reports enroute to Redhill, VFR and in receipt of a BS from Farnborough on 132·8MHz, squawking 5031 with Modes S and C; PCAS was fitted. The visibility was 20nm in CAVOK VMC and the ac was coloured white/blue/red. Heading 200° at 1900ft QNH 1021mb and 130kt, the pilot seated in RH seat saw, identified and pointed out to him fast-moving traffic, a bronze coloured single-engine low-wing T-tailed ac in his 9 o'clock at the same height. He immediately initiated a dive estimating the other ac passed 50ft above and 100m clear ahead, appearing to continue W'ly uninterrupted. No TA alert was received during the encounter and he assessed the risk as high.

THE PA28RT PILOT reports being unaware of being involved in an Airprox until contacted post incident. He was enroute to N Weald, VFR at 1800ft QNH and 120kt and in receipt of a BS from either Southend or N Weald, squawking 7000 with Modes S and C; PCAS was fitted. The Wx was VMC and the ac was coloured brown with strobe lights switched on. In the area of Billericay on a direct track he did not see any conflicting ac and he could not remember receiving a TA.

THE FARNBOROUGH LARS N CONTROLLER reports working the combined N and E Sectors in bandboxed configuration and giving the PA23 flight a BS. On his radar he spotted a direct confliction (the traffic was squawking 7000 with Mode C indicating 100ft above the PA23) so he advised the PA23 pilot that he had 'traffic crossing'. The pilot reported visual and the flight was then transferred to the LARS E frequency and issued a new squawk. The PA23 pilot then advised he was filing an Airprox and that the conflicting traffic had crossed within 50ft of his ac and he thought it was a Saratoga type. The conflicting traffic was seen to descend into N Weald and, after speaking to the ATSU, an ac matching the description landed at N Weald and its registration was obtained.

ATSI reports that the Airprox occurred in Class G airspace 2·5nm to the WSW of Billericay VRP. Farnborough LARS N and Farnborough LARS E were operating in a combined band-boxed configuration on frequencies 132·8MHz(N) and 123·225MHz(E).

The PA23 was on a VFR flight from Andrewsfield to Redhill. At 1402:40 the PA23 pilot called LARS N and requested a BS, *"PA23 c/s P-A twenty three Apache two P-O-B currently one thousand two hundred feet having just left Andrewsfield en-route to Redhill V-F-R request Flight Information Service Basic Service sorry"*. The controller acknowledged the call, *"PA23 c/s roger squawk five zero three one Q-N-H is one zero two one Basic Service"* which was readback correctly.

At 1411:01 the LARS N passed a warning to the PA23, *"PA23 c/s your traffic crossing you similar level"* and the PA23 pilot replied with *"Traffic in sight PA23 c/s"*. At this point radar recordings show the PA23 tracking SSW at

an altitude of 1700ft with the unknown aircraft at a distance of 0·4nm crossing from L to R indicating an altitude of 1800ft. At 1411:10, the CPA, radar recordings show the tracks of the 2 ac converging to within less than 0·1nm, with the PA23 now indicating an altitude of 1600ft and the unknown traffic altitude 1800ft. The PA23 flight is then asked to contact the same controller on the LARS E frequency of 123·225MHz. After communication is established at 1411:30 the PA23 pilot is asked to squawk 5024 and the PA23 pilot reads back the squawk and reports an Airprox, *"five zero two four we have that's an Airmiss report erm he was about fifty foot over the top of us direct confliction."* The PA23 pilot asks the Farnborough controller for contact details on the other traffic. After tracing action the Farnborough controller provides the c/s of the other traffic, a PA28RT inbound to North Weald.

MATS Pt1, Section 1, Chapter 11, Page 4, Para 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*'.

MATS Pt1, Section 1, Chapter 11, Page 4, Para 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'*.

The PA23 pilot was in receipt of a BS from LARS N and the controller, having determined that the unknown traffic was in direct conflict, passed a warning to the pilot of the PA23 who then reported the traffic in sight.

UKAB Note (1): Met Office archive data shows the Southend METAR as EGMC 171350Z 22011KT 9999 FEW049 14/04 Q1021=

UKAB Note (2): The radar recording at 1409:58 shows the subject ac approaching each other on a line of constant bearing, the PA28RT tracking 310° and the PA23 190°. The PA28RT maintains altitude1800ft whilst the PA23 climbs slowly from 1400ft to 1700ft over the course of 1min. The PA23 is seen to descend 100ft at the CPA to altitude 1600ft with vertical separation showing 200ft. The PA23 pilot reported flying at 1900ft and seeing the PA28RT at the same altitude and attaining 50ft vertical separation as the ac pass; Mode C tolerance is ± 200ft.

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 this incident occurred in Class G airspace, both pilots were responsible for maintaining their own separation from other ac through 'see and avoid'. Although the PA23 had right of way, this was dependant on the PA28RT pilot seeing the potential confliction, which he didn't and this was a part of the cause of the Airprox. The PA23 pilot was alerted to the approaching PA28RT by a warning from Farnborough LARS N, a good call, which facilitated his visual acquisition, albeit late, which was the other part of the cause. The opportunity for the pilots to see each other's ac was there for some time prior to the Airprox; however, with the ac approaching on a constant bearing, the conflicting ac would appear as a stationary object within the pilot's field of view making detection more difficult. Moving one's head in the cockpit or altering the ac's flightpath by turning breaks the situation, creating relative movement between ac and an improved opportunity for visual acquisition. There was little time between the ATC warning and the CPA but the PA23 pilot reacted quickly and dived his ac below the PA28RT, which passed 50ft above and 100m ahead. The Board believed that this action had been just enough to remove the actual collision risk but that safety had not been assured as they passed.

Members noted that despite both ac carrying PCAS equipment, neither pilot could recall if any alerts were generated. Both ac's transponders were being interrogated by SSR so the ac's replies should have been captured by the PCAS but, for whatever reason, the conflicting target went either undetected by the equipment or by the pilots.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Non-sighting by the PA28RT pilot and a late sighting by the PA23 pilot.

Degree of Risk: B.

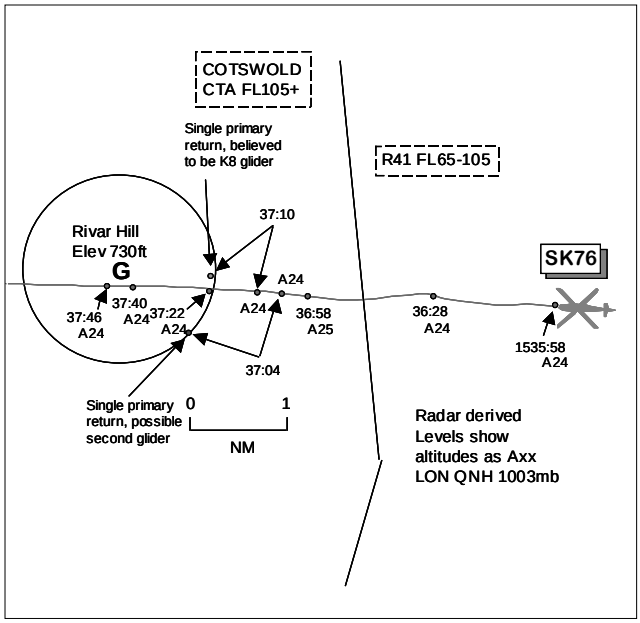
AIRPROX REPORT No 2010026

AIRPROX REPORT NO 2010026

Date/Time: 24 Mar 2010 1537Z
Position: 5120N 00131W
(1nm E Rivar Hill G/S - elev 730ft)

Airspace:	FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	K8 Glider	SK76
Operator:	Civ Trg	Civ Comm
Alt/FL:	1600ft	2500ft
	(QFE 978mb)	(QNH)
Weather:	VMC CLBC	VMC CLBC
Visibility:	10km	10km

Reported Separation:
20ft V/100yd H *200ft V/0·5nm H
Recorded Separation:
NR
*not the reporting glider



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE K8 GLIDER PILOT reports flying a local solo sortie from Rivar Hill non-radio. The visibility was 10km flying 400ft below cloud in VMC and the ac was coloured green/white. Soaring in weak lift about 0·25nm E of Rivar Hill heading 180° at 35kt and 1600ft QFE 978mb he heard a helicopter and spotted it about 0·25nm on his port side heading 270° and closing rapidly. He dived his glider to accelerate out of the helicopter's flightpath and provide vertical separation. The helicopter, an Agusta type, he thought, passed about 20ft above and 100yd behind, maintaining course and speed and showing no sign of having seen his glider. He assessed the risk as high. The helicopter then passed O/H Rivar Hill, a winch launch site with permission to launch to 3000ft agl, thus infringing the cable hazard. The incident was seen by the Duty Instructor, who was airborne in another glider about 0·5nm to the S at 1300ft QFE, and personnel on the ground.

THE SK76 PILOT reports flying enroute to a private site near Bristol VFR and in receipt of a BS from Farnborough and then Lyneham squawking an assigned code with Mode C; TCAS 1 was fitted. The visibility was 10km in VMC, although poor flying into sun, and the ac was coloured blue. Heading 280° at 140kt and 2500ft QNH he saw a white glider converging from his 10-11 o'clock range 900m and 200ft below. At the same time as he saw it, the glider started a descent and turn so no avoiding action was taken. He assessed the risk as low.

UKAB Note (1): The SK76 pilot was contacted by the UKAB Secretariat to clarify his viewpoint of the incident owing to the disparate reporting of the geometry by both pilots. He confirmed that he only saw the glider to his L and did not see any glider crossing ahead from R to L.

ATSI reports that the SK76 flight established communication with Farnborough LARS (W) at 1528 reporting *"...just airborne from Blackbushe en route to a private site near Bristol in the climb to Two Thousand Five Hundred feet squawking Seven Thousand requesting Basic Service"*. After a slight delay, whilst the controller dealt with other traffic, the pilot of the SK76 was advised of the QNH and *"...it's a Basic Service squawk Zero Four Three Zero"*. The pilot confirmed receipt of a BS. The helicopter is seen to change squawk at 1535:08, when it is 19·5nm from Blackbushe. No further contact was made with the SK76 until 1538, when it was transferred to Lyneham, to remain on the same squawk. At the time, it had just passed Rivar Hill, which is situated approximately 26nm from Blackbushe.

'A Basic Service is an ATS provided for the purpose of giving advice and information useful for the safe and efficient conduct of flights. Basic Service relies on the pilot avoiding other traffic, unaided by controllers. 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 ATZ, and the pilot remains responsible for collision avoidance at all times'.

UKAB Note (2): The UK AIP at ENR 5-5-1-5 promulgates Rivar Hill as a Glider Launching Site centred 512038N 0013235W active during daylight hours with winch launching up to 3000ft agl; site elevation 730ft amsl.

UKAB Note (3): The Airprox is not captured on recorded radar. The Pease Pottage radar recording at 1535:58 shows the SK76 4·6nm E of Rivar Hill tracking 270° indicating altitude 2400ft London QNH 1003mb. The SK76 continues on a broadly W'ly track reaching a position 1·5nm E of Rivar Hill at 1537:04 with a single pop-up primary contact, believed to be the second glider reported by the K8 pilot, in its 11 o'clock range 1nm. On the next radar sweep 6sec later at 1537:10 another single pop-up primary contact appears, believed to be the K8, in the SK76's 1230 position range 0·5nm. Thereafter, no other returns appear that could possibly be gliders close to Rivar Hill, the SK76 passing through the Rivar Hill O/H between sweeps at 1537:40 and 1537:46 at 2400ft QNH.

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.

Whether the SK76 pilot had planned to fly directly O/H the gliding site whilst flying VFR is not known; however, the gliding site is clearly marked on the 1:250,000 and 1:500,000 topographical charts. The radar recording shows the SK76 on a steady W'ly track approaching the glider site from the E at 2400ft LON QNH before transiting directly O/H post Airprox. Members agreed that best practice was to take due regard of the airspace and its activities during the planning stages before flight and then plan and fly the route accordingly. As the incident occurred in Class G airspace both pilots were responsible for maintaining their own separation from other traffic through 'see and avoid'. Although the SK76 was under a BS from Farnborough, the controller was under no obligation to monitor the flight or pass TI. The SK76 pilot, who was flying into sun, recalled seeing a white glider out to his L but not the green K8 crossing ahead; the K8 pilot heard and then saw the helicopter, albeit late, 0·25nm away to his L. Members agreed that the non-sighting by the SK76 pilot and late sighting by the K8 pilot had been the cause of the incident.

Although the K8 pilot had right of way, he fortunately saw the approaching SK76 on his LHS and dived his glider to avoid it, which the GA/Glider Member opined was probably the only option available owing to the glider's low performance. The SK76 was then seen to pass 20ft above and 100yd behind maintaining its course and speed. Taking these elements into account the Members believed that the robust action taken by the K8 pilot had been just enough to remove the actual collision risk but with the ac passing in close proximity, unsighted by one pilot, safety had not been assured during the encounter.

The same lesson was identified in this Airprox as that in 2010007 - when flying close to a promulgated site, an encounter with a glider is likely and therefore a wide berth should be given. The far greater potential hazard was that of an impact with the winch cable if crossing O/H the site below the promulgated maximum winch height, in this case 3000ft agl (3730ft amsl). Fortunately no launch was in progress when the SK76 pilot passed O/H Rivar Hill.

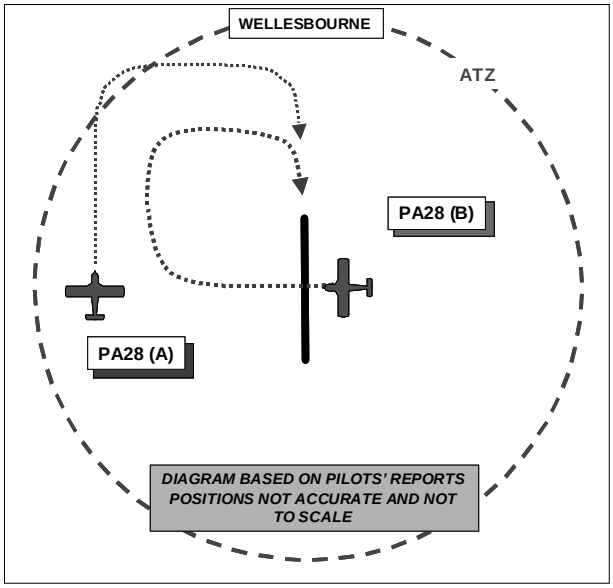
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A non-sighting by the SK76 pilot and a late sighting by the K8 pilot in the vicinity of a notified and active gliding site.

Degree of Risk: B.

AIRPROX REPORT NO 2010027

Date/Time:	25 Mar 2010 1115Z	
Position:	5212N 00137W (Wellesbourne - elev 159ft)	
Airspace:	ATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	PA28	PA28
Operator:	Civ Trg	Civ Pte
Alt/FL:	500ft (QFE 994mb)	1000ft (QFE 994mb)
Weather:	VMC CLBC	VMC CLBC
Visibility:	>10km	>10km
Reported Separation:	100ft V/50m H	0ft V/300m H
Recorded Separation:	NR See UKAB Note (1).	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PA28 PILOT (A) reports flying a local training flight with a student as the handling pilot in a white and green ac with HISLs switched on, squawking 7000 with Modes C and S and in contact with Wellesbourne Info. They were downwind in the RH cct for RW18 when a dark blue and white PA28, joining from the deadside onto the downwind leg, turned inside them in a tight and unconventional cct. The AFISO alerted them to look for the ac, but they already had him in sight. The other pilot was alerted to them when he made his downwind call and he also stated that he had their ac in sight. The ac passed a few hundred feet behind them and then positioned to their 7 o'clock but they were unable to see it due to the blindspot behind the cabin. They continued to final approach at normal speeds (initially 70kt) being aware of several other ac ahead and made the appropriate RT call in the correct position. They checked their 5 o'clock and 7 o'clock positions looking for the other ac but since nothing was seen and the pilot had stated he had them in sight they assumed it was positioning behind them on final; further no RT calls was heard from the ac indicating that it was in any other position.

They established their ac on a 3-degree glidepath but when they were at about 500ft they saw the front of the other ac immediately below them on a very shallow glidepath at a distance estimated as less than 100ft. He immediately took control and initiated a missed approach and reported the Airprox on the frequency; the FISO confirmed this with a time check. He considered that there was a risk of collision on final approach and, had PA28 (B) corrected its shallow glidepath, he would have climbed up into their ac having not been seen. He assessed the risk as medium.

Since the other PA28 was then seen also commencing a missed approach from a very low level over the RW, due to traffic occupying it, they elected to extend upwind for safety as the missed approach executed by the other ac took it over a local village that is a noise abatement area, thereby putting it ahead of their ac. They maintained good separation from the other ac for the rest of the circuit, as its flightpath was unpredictable and not in accordance with local procedures.

THE PA28 PILOT (B) reported that he was flying a blue and white ac with all lights switched on, squawking with Mode C, on a local solo flight from Wellesbourne and in receipt of a FIS from them. He was downwind to land at 1000ft, heading 003° at 90kt, with a 30kt tailwind and the cct was very busy when he saw another PA28 ahead of him initially descending through about 500ft on the crosswind leg, flying what appeared to be a wide circuit. The ac appeared to be extending downwind and he erroneously turned base in front of it but he was visual with an ac on late final. He recognised that he had made an error that had placed him in front of the other ac but he did not believe that there had been a risk of collision at any stage.

The FISO reports that the RW18 was in use with a RH cct, which was busy with around 5 ac. The pilot of PA28 (A) reported downwind and shortly afterwards he watched PA28 (B) turn downwind; PA28 (B) was 'closer in' than PA28 (A) and slightly behind. As he thought that there was a risk of the ac getting closer round the base-leg turn, he confirmed over the RT that both pilots were aware of each other. PA28 (A) reported 'final' followed shortly afterwards by PA28 (B) also reporting 'final'. Because it appeared to be very close behind PA28 (A), he asked PA28 (B) pilot if he would be going around; the pilot replied that he had the other ac in sight, but did not immediately go around. About 10sec later PA28 (B) initiated a go-around and shortly afterwards PA28 (A) also initiated a go-around; the ac appeared to get quite close, he estimated less than 150ft.

ATSI had nothing to add to the FISO's report

UKAB Note (1): The recording of the Clee hill radar shows the incident. There are 5 ac in the Wellesbourne cct, all squawking 7000 with Mode C so it is not possible to identify specific ac with any degree of certainty. At 1112 one contact appears to cut inside another in the cct, but this also happens some 2min later. It is not possible, therefore, to determine which incident is the one reported.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, radar recordings and a report from the FISO involved.

The Board noted that at the time of the incident the Wellesbourne cct had been busy, so much so that the radar recording was inconclusive. A member of the Secretariat pointed out that, although it was not possible to identify which ac was which, the pattern being formed extended to/beyond the edge of the ATZ; GA Members considered this to be large, but not unreasonably so. They also agreed that the cct had not been excessively busy and that the respective pilots should have been able to cope with the traffic situation. Members also agreed that despite any frustration regarding the pattern being formed by others, pilots are required by the Rules of the Air (Rule 12 (a)) to conform with it and not 'cut inside' others; all 3 reports available to the Board agreed that the pilot of PA28 (B) had not conformed to the pattern formed by PA28 (A) ahead of him and this had been the sole cause of the incident. It was also pointed out by a Member who flies both military and light ac that while military fixed wing ccts are standardised, the same does not apply to civil airfields where both the teaching and local procedures can differ widely.

Although they agreed that there had been no risk, the Board agreed that this had been an unnecessary incident that could have been avoided by a more professional approach and an open dialogue on the ground.

PART C: ASSESSMENT OF CAUSE AND RISK

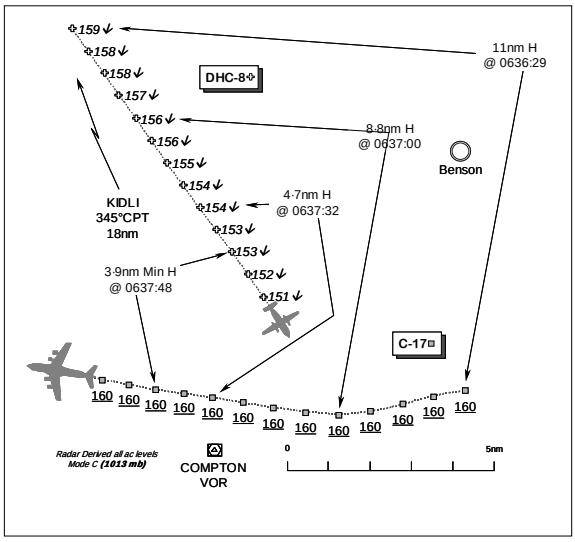
Cause: The pilot of PA28 (B) did not integrate into the circuit pattern established by PA28 (A) ahead.

Degree of Risk: C.

AIRPROX REPORT No 2010028

AIRPROX REPORT NO 2010028

Date/Time:	2 Apr 2010 0637Z	
Position:	5133N 00114W (3½nm N of COMPTON VOR)	
Airspace:	N859	(Class: A)
	Reporting Ac	*Reported Ac*
Type:	DHC-8 Q400	C-17A
Operator:	CAT	HQ Air (Ops)
Alt/FL:	↓FL150	FL160
Weather:	NK CLBL	VMC CLAC
Visibility:	25km	40km
Reported Separation:	600ft V/3nm H	700ft V/3½nm H
Recorded Separation:	700ft V @ 3·9nm Min H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE de HAVILLAND DHC-8 Q400 PILOT (DHC-8) reports he was en-route from Leeds Bradford Airport to Gatwick IFR and in receipt of a RCS from LTCC on 133·175 MHz [TC MIDLANDS]. The assigned squawk was selected with Mode C; Mode S is fitted. Southbound at 250kt, they were cleared by London to descend to FL150. Descending clear above cloud, in between layers with an in-flight visibility of 25km, as they approached their assigned level a large dark-coloured ac with a T-tail was seen 3-4nm away on the nose crossing from L to R. TCAS displayed the other ac around 600ft above and about 3nm away. A TA caution was enunciated 'traffic traffic' and they positively identified the cause as the other ac they had spotted ahead - the C-17 - in level flight. An RA was not indicated and no avoiding action was taken. He assessed the risk as 'low' as they were flying in VMC, but added that in IMC it would be, potentially, more risky.

He reported the proximate traffic to London CONTROL, the controller advised that he was unaware of the identity of the other ac and would report the matter to his Watch Supervisor. No further action was taken by the DHC-8 crew mid-flight, but on arrival at Gatwick they identified the ac as a C-17 Globemaster and passed this information along to LTC with the exact occurrence time and level etc.

Apparently, their clearance should have been to 'Descend to FL150 level by KIDLI', but they were not given the clearance 'conditionally', they were simply 'cleared to FL150'.

THE BOEING C-17A GLOBEMASTER III (C-17) PILOT reports he was inbound to Brize Norton under IFR and in receipt of a RCS from London CONTROL [LACC Sector 23]. The assigned squawk was selected with Mode C; Mode S and TCAS are fitted.

Heading 270°, in the vicinity of COMPTON VOR at 250kt, flying level at FL160 in a standard stepped descent into Brize Norton, TCAS enunciated a TA. The ac believed to be in conflict – the DHC-8 - was acquired visually and on TCAS from about 4nm away. He estimated the minimum separation to be about 3½nm away to starboard, 700ft below their level and descending; therefore, the Risk of collision was 'low'. TCAS did not enunciate an RA and no avoiding action was taken.

The ac has a grey colour-scheme but the HISLs were on.

THE OUTGOING LTC TC MIDLANDS (COWLEY & WELIN) SECTOR CONTROLLER (TC MID) reports that he was working the bandboxed TC MIDLANDS Sector with 5-6 Gatwick inbounds which he had sped up for TC SW. The DHC-8 was cleared down to FL150 at a speed of 250kt, but he had forgotten to instruct the crew to be level at FL150 by KIDLI. About 6min after he issued the descent instruction to the DHC-8 crew another controller took-

over the sector, but he did not see that the DHC-8 was a little high when he handed the position over. He was not aware that the DHC-8 was high until he saw the replay of the radar recording.

THE LAC SECTOR 23 TACTICAL CONTROLLER (SEC23 TAC) reports that the C-17 called on frequency at FL160 as per the TC Capital – SEC23 Standing agreement. A short while later the LACC Multi Radar Tracking System SSR label for the DHC-8 turned green and was displayed as a foreground track descending through FL154, about 6nm N of the C-17. The respective tracks and Mode C levels of the two ac indicated that no risk of a collision existed and, although close, he was content that the DHC-8 would pass astern of the C-17 with 5nm horizontal separation. The S23 PLANNER, using the range & bearing tool, thought the minimum horizontal separation was 5nm. Neither TI nor avoiding action was passed to the C-17 crew. A short while later he queried the proximity and late descent of the DHC-8 with the TC SW CO-ORDINATOR, who explained it was in fact a TC MIDLANDS responsibility. Later, he was informed the minimum separation was 800ft vertically and 4nm horizontally.

ATSI reports the incident occurred on a Bank Holiday Friday; the controller had been in position since 0600 and was due to be relieved at 0630.

The LTC Manual of Air Traffic Services Part 2 (edition 3.09) page MID – 8 states that the Standing Agreement for Gatwick inbounds from the COWLY sector to the WILLO sector is FL150 level KIDLI. Standing Agreements are part of the requirement for the silent transfer of traffic from one sector to another (without the need for individual co-ordination). In this case, the Standing Agreement also serves to ensure that ac from the COWLY Sector do not penetrate LTC COMPTON airspace.

The DHC-8 crew called the TC Midlands Sector on 121·025MHz at 0625 maintaining FL190 on a heading of 160°. TC MID acknowledged the call. The controller was operating with the COWLY and WELIN Sectors bandboxed onto a single position. The sectors were reported as quiet for a Friday, hence the bandboxed configuration. Under normal circumstances, the sectors would usually be split. The controller reported being comfortable with the traffic load on the combined sectors and did not believe that the bandboxed configuration was a factor in the incident.

At 0627 the DHC-8 crew was instructed to fly a speed of 250kt. This was to allow the TC MID controller to deliver a stream of Gatwick inbounds to the next sector, WILLO, in an orderly manner. At 0630 the TC MID controller instructed the DHC-8 to '*descend now flight level 1-5-0*'; this was read-back correctly by the pilot. The Mode S Selected Flight Level [SFL] of the DHC-8 changed to FL150 at 0630:16, with 27nm to run to KIDLI and its subsequent ROD was observed on the radar recording as about 500ft/min.

TC MID reported that in order to meet the requirements of the Standing Agreement for Gatwick inbounds, it was usual to issue a descent clearance that included the instruction 'level by KIDLI'. However, experience and knowledge of ac performance was equally used in assessing whether or not, at the time of issuing the clearance an ac would be level at FL150 by KIDLI. TC MID believed that, in this instance, not using the level restriction in the clearance was uncharacteristic. Also, the controller reported that it was normal practice for TC MID controllers to annotate the FPS with 'L' when a level restriction had been passed in the clearance. As the controller had omitted to use the level restriction there was no 'L' on the FPS.

At 0634 a change of sector controller took place. The position handover was reported as taking approximately 1-2min and followed the standard format prescribed for LTC controllers. Traffic was handed over using a 'strips to radar' method. Neither the outgoing nor the incoming controller observed that the DHC-8 was high in relation to its position - which at 0634 was 5nm N of KIDLI passing FL171 in the descent. As the outgoing controller had not assimilated the DHC-8's slow RoD, this ac performance information could not be passed to the incoming controller.

At 0635 the incoming sector controller transferred the DHC-8 to the WILLO Sector, but before this occurred he did not assimilate the DHC-8's level in relation to its position; the flight passed abeam KIDLI at 0635:20 descending through FL165. The requirement of the COWLY to WILLO Standing Agreement [to be level at FL150 by KIDLI] had therefore not been met.

At 0637, as the DHC-8 passed FL156, the C-17 crossed the DHC-8's 12 o'clock from L - R at a range of 8·8nm maintaining FL160. The C-17 was under the control of LAC Sector 23, inbound to Brize Norton; however, the position of the C-17 placed it in the previously worked sector LTC Compton's airspace. It was also noted that the

DHC-8 was actually within the area of responsibility of LTC NORTHWEST; as part of the standing agreement between the COWLY and WILLO sectors, Gatwick inbounds transit NORTHWEST's airspace silently.

[UKAB Note (1): As the C-17 drew R into the DHC-8's 1 to 4o'clock, the horizontal distance between the two ac reduced to less than the required separation of 5nm/1000ft [for LAC Sectors]. The CPA between the ac occurred at 0637:48 – 3·9nm/700ft. The loss of separation lasted for 37sec.]

After the loss of separation, the pilot of the DHC-8 reported the Airprox to the WILLO controller at 0639:20, to whom the C-17 was 'unknown' traffic. The proximity of the two ac was also noted by the LAC S23 controller who, due to the positions and tracks of the two ac, deemed avoiding action unnecessary, as there was no risk of collision.

This Airprox is attributable to both the outgoing and incoming LTC Midlands controllers. A number of causal factors, rather than one individual factor, culminated in the DHC-8 being incorrectly transferred from the TC MID Sector. Both controllers were responsible for ensuring that the DHC-8 exited the Sector in accordance with the terms of the Standing Agreement and to issue instructions to achieve this. The outgoing TC MID controller issued the DHC-8 with descent from FL190 to FL150, in the belief and expectation that with 27nm to run the ac would be level before KIDLI. Experience and knowledge are valid in assessing whether or not an ac will, on the basis of controller's instructions, achieve the required level. After the descent instruction was issued, the TC MID Controller did not notice the DHC-8's slow rate of descent. Had he done so he would have been able to instruct the aircraft to be level by KIDLI.

LTC has procedures in place to ensure a thorough handover of operational sectors between controllers, including procedures for identifying and handing over sector traffic. Both the outgoing and incoming TC MID controllers, when conducting the handover of the operating position, did not assimilate that the DHC-8 was too high in relation to its position from KIDLI.

The incoming TC MID controller then mistakenly transferred the DHC-8 to the WILLO Sector without affecting co-ordination with the receiving and adjacent sectors, as the flight was not in compliance with the Standing Agreement requirements for a 'silent' radar handover.

ATSI recommended that LTC undertake to review TC MIDLANDs controllers' use of appropriate instructions to ensure that ac subject to the COWLY – WILLO Standing Agreement are achieving FL150 by KIDLI.

HQ AIR (OPS) has nothing to add and concurs with the ATSI assessment.

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 together with reports from some of the controllers involved and the appropriate ATC and operating authorities.

It was plain that the descent instruction issued by the outgoing TC MID controller to the DHC-8 crew did not specify that they were required to be level at FL150 by KIDLI. A CAT pilot Member advised the Board that without any other amplifying instructions, and in accordance with company policy, the crew would establish a RoD commensurate with national procedures that would achieve the most economical fuel consumption. This is what appeared to have happened.

With the aim of appraising CAT crews of what levels might normally be established by ATC, a CAT Member suggested that the levels associated with the Standing Agreements might be shown on the Standard Instrument Arrival (STAR) charts for London Gatwick, as is the case for the STAR charts produced by his company's supplier for another destination. The NATS Ltd Advisor was not averse to such a suggestion but another CAT pilot Member did not agree. The levels established are not shown in the AIP and might not always be used as they can be changed tactically. Whilst it might not be commonplace, there was considerable potential for controllers to issue tactical levels required by the extant traffic situation, having co-ordinated with other Sectors where appropriate. Crews might therefore become confused if they were instructed to do something different to that printed on the STAR without further explanation – increasing the potential for error. Another CAT pilot Member believed that the level selection was purely an ATC matter and should be issued by the controller as necessary. The suggestion of

promulgating these Standing Agreement levels did not, therefore, meet with widespread approval and the overwhelming view of the Members was that additional information might clutter the chart to the detriment of clarity. Consequently, the suggestion was not taken forward.

It was evident that neither the outgoing nor the incoming TC MID controllers detected that the DHC-8 was too high as the flight passed KIDLI, so another opportunity to forestall this Airprox was lost. Thus the DHC-8 was not separated from the adjacent LAC and LTC Sectors traffic by the stipulated minima – 1000ft vertically - against the C-17 under the control of LAC S23, which compliance with the COWLY – WILLO Standing Agreement would have ensured. Moreover, when the incoming TC MID controller transferred the DHC-8 to WILLO and it was above the Standing Agreement level, a radar hand-over should have been effected. The Board agreed unanimously that the Cause of this Airprox was that the descent instruction issued by the outgoing TC MID controller did not require the DHC-8 to be level at FL150 by KIDLI. Furthermore, the incoming TC MID controller did not comply with the COWLY – WILLO Standing Agreement when the DHC-8 was transferred. Although a loss of stipulated separation occurred it was evident that TCAS had detected the other ac, the DHC-8 crew had seen the C-17 at range and was able to take further action if need be. Moreover at the distances involved here the Members agreed unanimously that no risk of a collision had existed.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: i) The descent instruction issued by the outgoing TC MID controller did not require the DHC-8 to be level at FL150 by KIDLI.

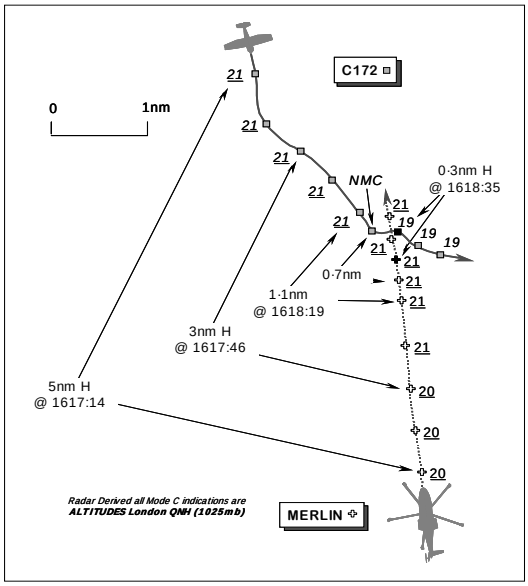
ii) The incoming TC MID controller did not comply with the COWLY – WILLO Standing Agreement when the DHC-8 was transferred.

Degree of Risk: C.

AIRPROX REPORT No 2010030

AIRPROX REPORT NO 2010030

Date/Time:	12 Apr 2010 1618Z	
Position:	5146N 00114W (11nm NNW of Benson A/D - elev 203ft)	
Airspace:	Oxford AIAA	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Merlin HC3	C172
Operator:	HQ JHC	Civ Pte
Alt/FL:	1900ft	2000ft
	QFE (1017mb)	(NK)
Weather:	VMC In Haze	VMC CAVOK
Visibility:	3000m	10km
Reported Separation:		
	100ft V/nil H	200ft V/¼nm H
Recorded Separation:		
	200ft V	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE MERLIN HC3 CAPTAIN, a QHI, reports that on completion of a training sortie in North Wales the crew were carrying out a routine IF recovery at Benson in VMC. As the ac captain and QHI he occupied the centre seat with trainee pilots in both L and R seats; the RH seat occupant was the PF on instruments.

Whilst under a TS from Benson APPROACH (APP) on 376·65MHz, they were in receipt of radar vectors for an ILS approach to RW19 at 1900ft Benson QFE (1017mb). The allocated squawk of A3672 was selected with Mode C on; neither TCAS nor any form of CWS is fitted. The crew were operating in haze, which reduced slant visibility; however, they were flying well clear of cloud.

Approaching a position 10nm NNW of the A/D – to the NE of Oxford – on a vector of 360° at 120kt to position for the ILS, the RH seat PF sighted another ac as it emerged from directly beneath their helicopter and cleared into their 2 o'clock. From the centre seat the Captain also spotted the other ac at the same time through the front-right chin window. The white single-engine C172 high-wing monoplane had passed an estimated 100ft below his Merlin with a 'high' risk of collision before heading away on an easterly track. There was no time for evasion, but if the C172 had been seen earlier, avoiding action would definitely have been taken. At this point both ac were flying straight and level. The pilot of the other ac took no avoiding action, he thought. No other traffic had been reported in the vicinity by ATC who were immediately informed about the other ac, but the controller stated that no other squawks were observed. The instrument recovery was continued without further incident.

On landing he managed to contact the C172 pilot, who stated that he would never routinely contact Benson ATC.

The captain perceived the flight safety risk as high; although there was some vertical separation, a collision was avoided purely by chance. The incident highlighted the lack of primary radar cover at Benson and the need to maintain an effective lookout at all times when receiving a radar service.

The helicopter has a green camouflage scheme but the white upper & lower HISLs were on.

THE C172 PILOT reports that after take-off from RW01 at Oxford/Kidlington he departed downwind VFR to begin his flight detail under a BS from Oxford APP on 125·325MHz. A squawk of A7000 was selected on, with Mode C.

He was advised by APP that there was no traffic on frequency to affect his flight SE of the airport and he took up a heading of about 120° at 110kt to follow the A40 Oxford Ring Road toward Headington, climbing to an altitude of 2000ft Oxford QNH in CAVOK conditions. About 3½nm SE of Oxford Airport, as he levelled out and was in the process of trimming his ac, the Merlin helicopter was spotted about 1nm away in the right forward quadrant, at an

approximate angle of 50^{o}, in close proximity. The helicopter was at almost the same altitude, but he estimated slightly above and it was immediately apparent that his aeroplane had not been seen by the Merlin's crew. A rapid descent to the left was initiated to avoid a collision with the helicopter, which passed 200ft above and ¼nm away to starboard with a 'medium' risk of a collision as he descended to 1500ft ALT. The descent was stopped when visual contact was gained with the Merlin in his rear left quadrant, at this point, well clear above his aeroplane.

UKAB Note (1): In a subsequent telephone conversation with UKAB Staff, the C172 pilot confirmed that a week after the Airprox occurred a fault was confirmed within his ac's SSR transponder. This was subsequently rectified with a replacement unit.

THE BENSON APPROACH CONTROLLER (APP) reports that a formation of 2 Merlin helicopters was recovering to Benson for individual instrument approaches following a radar handover from Brize Norton. He was operating with SSR only to RW01RH. The lead helicopter crew wanted an ILS approach, against the stream, to RW19 and the No2 crew wanted a PAR to RW01RH. After the formation split, the No2 was vectored S for RW01RH, whilst the lead Merlin was vectored to the N, his intention being to delay the lead Merlin with a racetrack circuit while the No2 completed his approach and the PAR was swung [to monitor the ILS approach]. Both ac were turned eastwards, the No2 onto base leg and the lead [subject] Merlin for delay. Then the lead Merlin pilot reported that he had just passed very close to a civilian Cessna, about 100m away and about 100ft below. The pilot was informed that there was no contact on radar. He did not say at that point that he wanted to file an Airprox; it was only a few hours afterwards when the aircraft captain telephoned ATC to discuss the incident that he said he would be filing an Airprox.

THE OXFORD COMBINED AERODROME/PROCEDURAL APPROACH CONTROLLER, who is not equipped with radar, provided a short report stating that: no comment was made by the C172 pilot about any incident with another ac during his departure or before switching to Farnborough LARS at 1625.

HQ AIR CMD ATM SAFETY MANAGEMENT reports that the Airprox occurred in Class G airspace within the Oxfordshire Area of Intense Aerial Activity (AIAA). The Merlin crew was under a TS from Benson APP on 376·650 MHz; however, only a reduced service [previously termed a limited service] was provided using SSR only (data supplied by the Brize Norton SSR head), because of the un-serviceability of the Benson Watchman ASR. APP reports operating under a low workload with only 2 ac under control. The Merlin was initially the lead ac of a pair that had been split for individual approaches. The subject helicopter was being vectored NW of Benson for an ILS to RW19, while the other Merlin was vectored to the SW for a PAR to RW01RH, which was the duty RW. Consequently APP was working with a wide geographical split.

The APP RT transcript shows one traffic call made at 1615:31, which was to another ac not involved in the Airprox. The remainder of the transmissions were exclusively connected to the vectoring of ac and none included TI. The radar recording shows the Merlin transiting N, as vectored by APP for the ILS, with another contact transiting SE from Oxford Kidlington squawking A7000 and indicating an altitude of 2100ft London QNH (1025mb). At 1618:45 the Merlin crew reported, "[C/S] *we just came very close to a civilian Cessna approximately a hundred metres at about a hundred feet below us and he's going away at our 4 o'clock*". APP replied, "[C/S] *roger no contact on radar*"; the controller reaffirmed in his written account that there was no contact on radar. The radar recording utilises a different source to that of the Brize Norton MSSR, which was the source of the SSR data displayed to the controller at Benson.

APP was quiet and had separated the Merlin formation for vectors to different runways under a limited radar service, without the Watchman ASR that was unserviceable. APP did not see the confliction arising and no TI was passed to the Merlin crew. The geographical split of the traffic under service meant the controller's scan was spread over a wide area, however, at the time he reported no other contact on radar. With the ASR out-of-service, coupled with the apparent lack of SSR contact on the C172 on the Benson display, the controller was unable to provide adequate TI to the Merlin crew about the confliction. Since this Airprox, Benson has regained full use of the Watchman primary ASR.

ATSI reports that the Airprox occurred in Class G airspace 5nm SE of Oxford Airport. The C172 was operating on a VFR flight and in receipt of an ATS from Oxford ATC. The Oxford controller was providing a combined Aerodrome and Approach Control service, without the aid of surveillance radar equipment.

The C172 departed from RW01 at 1614 and at 1615:40 the pilot and Oxford controller agreed the provision of a BS. At 1615:42, the Clee Hill radar recording shows a radar return ½nm NE of Oxford Airport tracking SE. The radar return from this transponder is intermittent and alternates between a squawk of A0000 with no Mode C indicated and a squawk of A7000 with Mode C. At 1618:38, the radar recording shows this contact, 5nm SE of Oxford, southbound, squawking A7000, indicating 1900ft Mode C reported altitude.

Oxford APP did not receive any reports from the pilot of the C172 regarding the close proximity of another ac and at 1625:07, the pilot advised switching en-route to Farnborough on 125·250MHz.

The Oxford controller was not aware of the conflicting traffic and MATS Pt1, Section 11, Page 4, Para 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.

UKAB Note (2): The Clee Hill Radar recording shows the Merlin as a good primary contact, identified from its A3617 squawk, northbound maintaining a level cruise at 2000ft Mode C London QNH (1025mb). The C172 – shown only as a secondary return about 90% of the time with no supporting primary – is squawking A7000 and indicating 2100ft London QNH unverified Mode C, in the helicopter's 11 o'clock at a range of 5nm. The ac close to 3nm and thereafter the Merlin maintains an indicated 2100ft QNH on a steady course. The C172 flies a generally SSE'ly course to a range of 1·1nm from the Merlin at 1618:19, at the same altitude. On the next sweep when the ac had closed to 0·7nm, A0000 (SSR data unreliable) is shown by the C172 with NMC, coupled thereafter with a sharp L turn, which is indicative of the C172 pilot's reported avoiding action L turn. The descent is confirmed on the successive return at 1618:35, where the C172 indicates 1900ft QNH, some 200ft below the Merlin, just as the aeroplane has crossed ahead of the helicopter at the CPA directly over the A40 dual-carriageway. However, the horizontal separation of 0·3nm based on the SSR return of the C172 may be questionable as the C172's course is somewhat erratic and may be subject to 'track jitter'. The C172 clears to starboard of the Merlin, which on a steady track passed 0·3nm astern of the C172 as the range increased.

Neither of the Heathrow Radar heads detected the C172's SSR, but they did pick up the primary contact from over 30nm away.

HQ JHC comments that the C172 was under a BS and therefore responsible for separation, which ultimately he maintained by taking avoiding action. The Merlin was under a TS and would therefore expect to be passed information on conflicting traffic. As the C172 did not appear on Bensons SSR and the primary radar was U/S, ATC were unable to report on it. The Class G Oxford AIAA airspace is particularly busy and often has non-transponding ac. Whilst ATC were unable to pass information on the unseen ac, the Merlin crew may have reasonably been expected to see the C172 operating at the same height, despite the reduced slant visibility. Being on the same frequency might have added to the situational awareness of both ac, increasing the likelihood of seeing each other. JHC crews will be reminded of the need for particularly good lookout within the Oxford AIAA, especially when the primary radar is U/S.

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.

It was plain to the Board, from the Merlin Captain's commendably frank account, that none of the three pilots aboard his helicopter had seen the C172 closing on a steady relative bearing in the prevailing haze before the aeroplane was spotted clearing to starboard. There was no time for evasion, so this was, effectively, a non-sighting on their part and the confliction had passed by the time they saw the reported ac. The Board noted that the Merlin crew were in receipt of a 'reduced' TS and a civilian pilot Member questioned whether the crew would have been advised of this caveat or aware of the significance of it. Whilst the RT transcript provided did not encompass the period when notification of this reduced radar service might have been transmitted to the crew, a military controller Member advised the Board that it was SOP for controllers to include the word 'reduced' whenever appropriate in advising crews about the level of service being provided. The MAA Advisor explained to

the Board that the ASR had been a long-term unserviceability at the Merlin's base that had been NOTAM'd and thus the crew should have been aware of the nature of this limitation. However, there were periods when Benson ATCOs had deployed to Brize Norton to provide a radar service to Benson aircraft in an attempt to mitigate the loss of Benson's primary ASR; therefore it was not always the case that crews would receive a reduced service during the period of the NOTAM. On balance, the Board accepted that while there was some scope for crews to be confused about the exact nature of the service they were receiving, in this Airprox the Merlin Captain's report makes it clear that he fully understood the reason for the reduced TS provided.

The Board noted that installation of a mobile ASR had been planned but the situation had been resolved prior to the installation of portable equipment. Nevertheless, Members were of the view that this Airprox highlighted the importance of provisioning back-up equipment at the earliest opportunity to Units that operate in a high-density Class G environment where non-transponding traffic will routinely be encountered.

It was evident from the C172 pilot's account that he was squawking the SSR conspicuity code, which should have made the aeroplane evident on the Benson APP controller's 'secondary only' display. The C172 shows plainly on the recording of the Clee Hill Radar source over 50nm away, but the Board was aware that this did not necessarily replicate what was displayed to Benson APP at the time. Members recognised that the SSR data provided to Benson was from the Brize Norton head, which nonetheless should still have readily detected the C172 at an altitude of 2000ft as it passed within a range of 15nm. However, it was evident that the C172's SSR was only apparent about 90% of the time and occasionally displayed A0000 – data unreliable. The Board therefore acknowledged the Command's view that the C172's SSR contact was absent from the Benson controller's display. Moreover, it was subsequently confirmed that the C172' SSR transponder had proved faulty, which was indicative of why the controller was unable to provide any TI about the C172 to the Merlin crew beforehand.

The C172 pilot lacked any radar assistance from Oxford APP, which is not provisioned with such equipment. It had been suggested that he should have called Benson but there was no compunction on him to do so and he later switched directly to Farnborough - the nominated LARS unit to the E. Nevertheless, in the GA Member's view it would have been worthwhile if the C172 pilot had called Benson ATC to advise of his transit adjacent to their instrument approach pattern and a general warning might well have ensued before he free-called Farnborough. From the C172 pilot's perspective, he had sighted the Merlin ahead at a range of about 1nm away and, in a pilot Member's opinion, in good time. The radar recording illustrated both ac were at the same level at about this point but the C172 pilot's avoiding action turn to the L was executed just after horizontal separation had reduced to 0·7nm. This L turn surprised some pilot Members as it took the aeroplane across the nose of the Merlin but as the C172 pilot was following the A40 – presumably in compliance with the right-hand traffic rule – it might be that from his perspective at these close quarters this was the safer option. Notwithstanding any reservations over the accuracy of the C172's indicated unverified Mode C readout because of the unserviceability reported later, a descent of 200ft was apparent and in-line with the C172 pilot's visual estimate of the vertical separation that pertained, who was better placed to judge the vertical separation here. As it was the radar recording showed that the C172 passed about 0·3nm ahead and 200ft below the Merlin. Therefore, the Members concluded unanimously that this Airprox had resulted from a conflict in the Oxford AIAA resolved by the C172 pilot. Moreover, in the Board's view the C172 pilot's avoiding action was effective and had ensured that there was no risk of a collision.

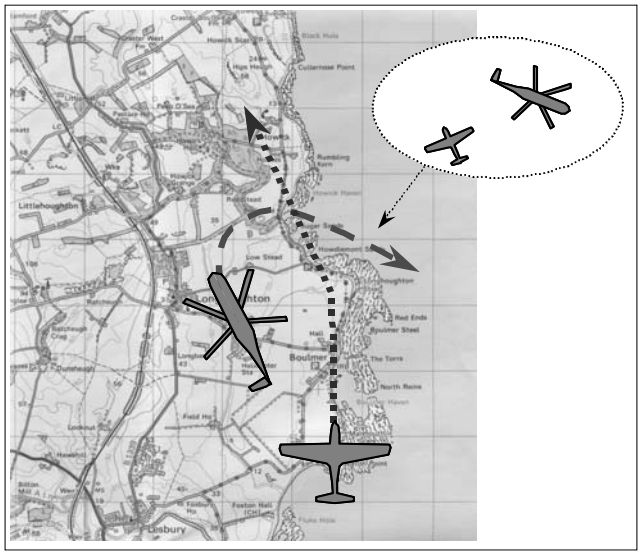
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Conflict in the Oxford AIAA resolved by the C172 pilot.

Degree of Risk: C.

AIRPROX REPORT NO 2010031

Date/Time:	7 Mar 2010 1318Z (Sunday)	
Position:	5525N 00134W (Boulmer)	
Airspace:	Scot FIR	(Class:G)
	Reporting Ac	*Reported Ac*
Type:	Sea King	Chipmunk
Operator:	HQ AIR (OPS)	Civ Pte
Alt/FL:	120ft (QNH 1034mb)	700ft (NK)
Weather:	VMC NR	VMC CAVOK
Visibility:	10km	>50km
Reported Separation:	50ft V/125m H	NR
Recorded Separation:	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE SEA KING PILOT reports flying a yellow helicopter on a local S&R training flight squawking 7000 with Mode C in contact with Boulmer Radio. Whilst completing the finals turn of a drum winching circuit, in a period of high workload, in a 30° aob right turn onto 120° at 50kt and descending from 150ft AMSL towards 100ft, the winchman, who was primarily concentrating his attention on remaining visual with the simulated survivor through the right-hand bubble window, called "ac 2 o'clock high". The reported ac was a red and white Chipmunk, initially 300m away, which passed 125m to the right and 50ft above. The winchman continued to observe the ac and call its position as it descended northwards along the coast passing behind them. He did not take any further avoiding action as he was already in a descending turn to 50ft asl. The ac was last seen behind them on the coast where it was then obscured by the terrain. At a time interval of 90sec after the CPA, the winchman judged that the ac appeared to be flying at 100ft agl, based on the height of the Sea King and the backdrop with the horizon.

The crew considered this to be a significant flight safety risk as it occurred during a period of high workload and at a height civilian ac are not expected.

THE CHIPMUNK PILOT reports flying a red, white and grey ac on a local, VFR private flight from Eshott airfield with a CAA test pilot and instructor sic [UKAB Note: Class Rating Instructor] in the rear seat. They were squawking 7000 but Mode C was not fitted and they were in receipt of an 'advisory service' from Eshott. They were following the Northumberland coast heading N at 700ft and 90kt, just when abeam Boulmer, when both his passenger and he saw a helicopter 45° right of the nose about 2nm away. He altered course 20° to the W onto 340° to avoid the helicopter; at no time was there any possibility of a conflict, and he assessed the risk as being none.

He has been flying in this area for a number of years and is aware that the SAR crews carry out regular exercises off the coast; he always keeps an improved lookout whenever he is near Boulmer.

UKAB Note (1): The incident took place below the base of radar cover.

UKAB Note (2): Boulmer does not have a MATZ or an ATZ.

HQ AIR (OPS) comments that the Sea King crew perceived a confliction but the Chipmunk crew were visual and took avoiding action. An advisory radio call to Boulmer from the Chipmunk would have improved the situational awareness although there is no requirement to do this.

Boulmer is one of the few SAR helicopter sites that does not have an ATZ. The establishment of an ATZ should ensure that passing traffic is able to deconflict via RT and should be pursued.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac and report from the Sea King operating authority.

The absence of radar data and the substantially different pilots' reports made it difficult for the Board to analyse this incident. In particular, it was not possible to determine with any degree of certainty the precise tracks of the two ac. The Chipmunk pilot reported that he was following the coast when he saw the Sea King 45° right of the nose at 2nm and turned left 20° to avoid; if this estimate was correct the miss-distance would have been in excess of 2.7nm. If the helicopter's reported position was accurate, this would put the Chipmunk some 2nm inland. Alternatively, the helicopter was working with a buoy much further out to sea than its reported position. The Chipmunk pilot reported that he was flying at 700ft, presumably, though not reported, amsl which would have put his ac well clear vertically at over 500ft above the Sea King. The Sea King crew also reported that the Chipmunk was following the coast but the crewman saw it in their 2 o'clock slightly above them. Members observed that if the Chipmunk had been over 2nm W of the helicopter, then it would have been in the 4-6 o'clock position relative to the helicopter. Moreover, if the Chipmunk was several hundred feet higher than the helicopter in its 4-6 o'clock position while the helicopter was banking to the right in its finals turn on to the buoy, it would have been particularly difficult to see out of the starboard bubble window.

Although unable to resolve the differences positively, Members agreed that the Chipmunk was probably further from the Sea King than its crew estimated, but considerably closer than the Chipmunk pilot estimated; by flying close to the Sea King at a critical time in their winching circuit the Chipmunk pilot had caused the Sea King crew concern.

The Board noted the arguments for and against the establishment of an ATZ at RAF Boulmer given by the several Members and Advisors, but agreed unanimously that comment on this aspect would be inappropriate.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Chipmunk flew close enough to the Sea King to cause its crew concern.

Degree of Risk: C.

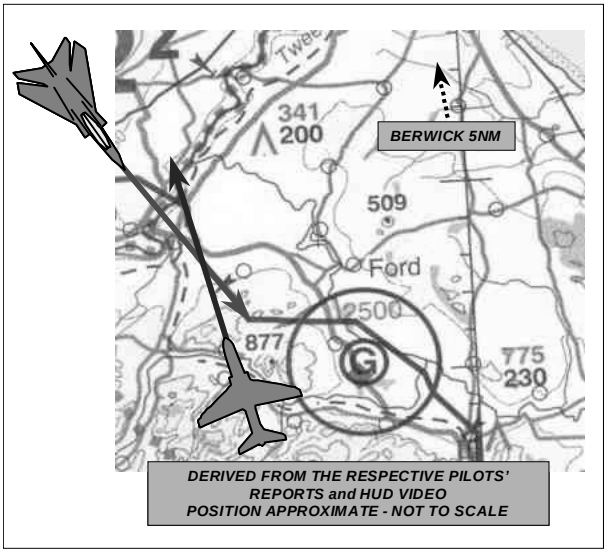
AIRPROX REPORT No 2010032

AIRPROX REPORT NO 2010032

Date/Time:	26 Apr 2010 1258Z	
Position:	5541N 00206W	(5NM SW Berwick)
Airspace:	UKDLFS	(Class: G)
	Reporting Ac	*Reporting Ac*
Type:	Tornado	Hawk Mk1
Operator:	HQ AIR (OPS)	HQ AIR (OPS)
Alt/FL:	250ft	300ft
	(RPS 1015mb)	(RPS 1015mb)
Weather:	VMC CLBC	VMC CAVOK
Visibility:	20km	10km

Reported Separation:
NK <200ft V/<200ft H

Recorded Separation:
Not Recorded (See UKAB Note (2))



BOTH PILOTS FILED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE TORNADO PILOT reports flying a low level tactical training sortie in LFA 12/16 in a grey ac with HISLs and Nav lights switched on, squawking 7001 with Mode C, but TCAS was not fitted. They had been low level for 15min in good weather and were heading 180° [the HUD video shows 140°, which is depicted in the diagram above] at 420kt [the HUD video shows 450kt G/S], when they saw very late a black Hawk ac appear from behind the metal work round the HUD and cross the canopy diagonally from right to left very slightly above them. He took no avoiding action as it was too late but continued looking for a wingman. They transmitted on the UHF 'Guard' frequency to confirm that the Hawk pilot had seen them; the Hawk pilot stated that he would also be reporting an Airprox.

He assessed the risk as Medium.

THE HAWK Mk 1 PILOT reports leading a pair of ac on a low level tactical training sortie in LFA 12/16 in a black ac with HISLs and Nav lights switched on, squawking 7001 with Mode C; TCAS was not fitted. They were in a high workload situation having split the formation for a low level target run at a nominal 300ft agl, heading 347° at 420kt, when a grey Tornado GR4 was seen just left of the ac nose at less than 1nm range. As the Tornado blossomed in the canopy, he pulled aggressively to 8.7G, to avoid a collision and missed the Tornado by an estimated 200ft. The Tornado did not appear to manoeuvre but the pilot contacted him on UHF 'Guard' concerning the incident.

He assessed the risk as Very High.

HQ AIR (OPS) comments that this is a classic example where two ac were correctly using the LFS and operating to the "see and avoid" principle. Cockpit structure is a known hindrance to lookout and crews are aware of it; TCAS would have alerted each ac to the other if fitted and could have increased the safety margins considerably.

UKAB Note (1): The incident took place below the base of recorded radar coverage.

UKAB Note (2): The incident is seen clearly on the Tornado HUD/Head Down Display Video. The Hawk first becomes visible 5sec before the CPA, approaching the Tornado from its 1 o'clock, slightly high, on a line of constant bearing but descending. When co alt with the Tornado, closing at over 800kt, it commences a pull-up and right turn, about 2sec before the CPA to pass about 100ft above. The Tornado turns right by about 10° but only after the CPA.

UKAB Note (3): Both ac were correctly booked into the LFS and LF Ops advise that they were warned of 'Mixed Traffic' with their respective bookings.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac and a report from the ac operating authority.

The Board was shown the Tornado HUD video, which showed the event clearly. Before commencing their deliberations, the HQ Air (Ops) Member reminded colleagues that, although the Hawk initially became discernable on close inspection of the HUD recording 5 seconds before the ac crossed, the Tornado pilot would not have acquired it immediately. The light conditions were not conducive to an early acquisition and the terrain and ac flight profiles, when viewed from the Tornado cockpit, meant that the black Hawk was below the skyline against a dark agricultural background and had no relative motion. Although the pilot was most likely conducting a full lookout scan, he might not have been looking in the precise area of the Hawk's approach in that 5 second period; furthermore it was most likely obscured by the ac fuselage or cockpit framework to the rear seat crewmember. Given that the Hawk was below the skyline from the Tornado crew's perspective then the opposite would have been the case (i.e. the Tornado was just above the local horizon), albeit still with no relative motion, when viewed from the Hawk's cockpit; that would explain why the Hawk pilot (in the front seat) saw the Tornado slightly earlier and reacted accordingly by pulling up hard and right to avoid it.

The Tornado crew had not seen the Hawk effectively until the ac crossed and therefore had not been able to react to it. The Hawk pilot, on the other hand, saw the Tornado a few seconds earlier, and had time to initiate an effective avoiding manoeuvre. Since the ac had not been obscured to each other by terrain or other features and notwithstanding the high rate of closure, the Board agreed that neither pilot had seen and avoided the opposing ac in sufficient time to prevent a compromise to the safety of their ac and therefore the cause had been an issue of sighting. Members agreed, however, that the Hawk pilot's late manoeuvre had (just) removed the risk of collision.

PART C: ASSESSMENT OF CAUSE AND RISK

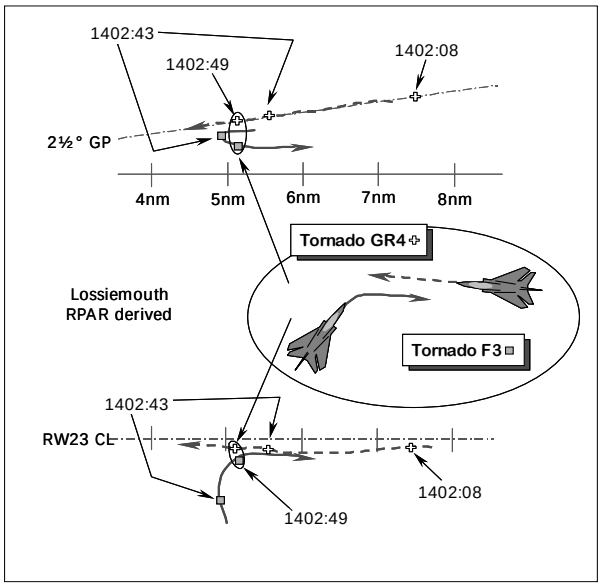
Cause: Effective non-sighting by the Tornado crew and a late sighting by the Hawk crew.

Degree of Risk: B.

AIRPROX REPORT No 2010033

AIRPROX REPORT NO 2010033

Date/Time:	26 Apr 2010 1402Z	
Position:	5746N 00313W (5½nm FINAL RW23 Lossiemouth - elev 41ft)	
Airspace:	Lossiemouth CMATZ (Class: G)	
	Reporting Ac	*Reporting Ac*
Type:	Tornado F3	Tornado GR4
Operator:	HQ Air (Ops)	HQ Air (Ops)
Alt/FL:	1000ft	1500ft↓
	QFE (1017mb)	QFE (1017mb)
Weather:	VMC CLOC	VMC CLOC
Visibility:	10km	20km
Reported Separation:		
	400ft V/500ft H	>200ft H
Recorded Separation:		
	See UKAB Note (6)	



BOTH PILOTS FILED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE TORNADO F3 PILOT reports he was conducting a visual recovery [VFR] to RW23 at Lossiemouth from about 15nm SE of the aerodrome at 350kt. The SSR was selected to standby. Neither TCAS nor Mode S is fitted; his ac's AI radar was u/s.

Although requested, no TI was provided by the APPROACH (APP) controller about any other ac recovering before switching to TOWER (TWR) on 279·05MHz. Approaching the extended centreline to RW23 at 8nm, flying level at 1000ft QFE (1017mb), a standard 8nm instrument traffic call was broadcast by TWR, so he manoeuvred off of his westerly heading in an attempt to gain visual contact with the instrument traffic. Whilst in the turn he spotted a Tornado GR4 at close range – crossing from R – L about ½nm away – descending wings level on a 2½° glide-path instrument approach. To avoid the GR4 he initiated a descending RH break at about 3G. The GR4 passed about 500ft ahead with a 'high' Risk, some 400ft above his F3 after he had executed his avoiding action descent. Although the manoeuvre was not extreme he and his navigator believed that the 2 ac were on a collision course beforehand.

He added that having spoken to the GR4 pilot, the first TI received on their frequency was coincident with his own F3's avoiding action. He did not report the Airprox on RT, but subsequently contacted the ATC Supervisor by landline and reported it. His ac has a low-conspicuity, grey, air defence scheme but the white HISLs were on.

THE CAPTAIN OF THE TORNADO GR4 reports he was conducting a pilot-pilot check from the rear-seat as the PNF and had just taken off from Lossiemouth into the radar pattern for RW23 to conduct a single-engine [SE] profile PAR under IFR in VMC. Whilst in receipt of a TS from TALKDOWN, flying level at 1500ft QFE at 8nm from touchdown, heading 230° at 300kt, the controller advised them about a 'visual joiner passing down your left hand side'. Looking L he saw an F3 at 9 o'clock in a RH descending turn belly up to his ac. Assessing the range visually as about 500ft at 'pick up', he estimated it was closer during the break manoeuvre by the F3 to a minimum horizontal separation that could have been as close as 200ft with a 'very high' Risk of a collision. He stressed that there was no time to react and take control of his GR4 to evade the other ac between his first sighting and the F3 passing astern. There was no indication from ATC about the conflict until it was too late and he assessed that if the F3 crew had not taken evasive action a mid-air collision would have been a certainty.

The assigned SSR code was selected with Mode C; neither TCAS nor Mode S is fitted. All external lights were 'on' with HISLs on white.

THE LOSSIEMOUTH APPROACH (APP) CONTROLLER reports he was mentor to a trainee controller. RW23 was the duty runway; SSR was u/s and the Watchman ASR was operating without any filters selected.

The F3 was the first ac on frequency for recovery and was handed over by Scottish MILITARY for a visual recovery back to Lossiemouth. The F3 crew was given initial vectors for descent and then own navigation for the aerodrome westbound, the crew reporting visual about 8nm E. At this point the radar traffic – the GR4 - was just turning base-leg some 15-18nm from touchdown on an extended pattern, and was not considered to be a factor to the F3's visual recovery when it was switched to TOWER. There was no further liaison or communication with the F3 crew by APP; the estimated horizontal separation was ½nm.

THE LOSSIEMOUTH TALKDOWN CONTROLLER reports he was mentor to a trainee controller on TALKDOWN operating on 244·375MHz. The GR4 was at about 6-7nm from touchdown for a PAR to RW23 at 1500ft Clutch QFE (1017mb) when a contact appeared on the PAR screen to the GR4's L at a similar height and range. At this point the trainee pointed out the conflicting traffic to DIRECTOR (DIR) and was told that it was inbound radar - visual traffic passing down his LH side. The trainee then relayed the same message to the GR4 crew with the confliction evident in 1 plane only. As the conflicting traffic – the F3 - got closer it was slightly ahead and then turned hard R to pass astern of the GR4 on PAR. He did not offer avoiding action and reduced the displayed range at this stage to concentrate on the approach; the confliction was no longer evident. The GR4 pilot stated on RT that he wanted to speak to the F3 pilot when he landed and the talk-down was continued. The minimum separation was estimated as 100ft vertically and ½nm horizontally; the SUPERVISOR was briefed on the incident afterwards.

THE LOSSIEMOUTH AERODROME CONTROLLER (ADC) reports that he was mentor to a trainee controller whilst operating TWR band boxed with GROUND. The workload was low on the TWR frequency, with only one ac which had aborted a take-off, however several ac were taxying out for departure on the GROUND (GND) frequency. Just as 2 other ac were calling ready for departure, the F3 crew called inbound for a visual join and was given the joining details for RW23 with the circuit clear. Shortly afterwards an 8½mile call was received from TALKDOWN on radar traffic – the GR4 – for a low-approach and depart the cct. The F3 crew made no further transmissions until they reported positioning behind the radar traffic, which was now inside 4nm.

[UKAB Note (1): 4 flights were under service from the combined TWR/GND position, including the F3, when the Airprox occurred.]

THE LOSSIEMOUTH ATC SUPERVISOR reports that SSR was u/s all day so no Mode C readout was available from any ac. When the Airprox occurred he was in the VCR due to the [expected] amount of traffic in the visual cct and the number of ac on recovery. Although not identified to him, he saw an ac orbit around the instrument traffic, which he believed was the F3 visual joiner.

When the visual cct traffic had eased, he returned to the ACR to be told by the DEPARTURES (DEPS) controller that the GR4 Captain might call when on the ground because he wasn't happy about his instrument approach. He then had a call from the F3 pilot who enquired about his visual recovery – specifically why he wasn't told about the instrument traffic when working with APP. He also stated that after he called TWR to join the visual cct he heard the broadcast 'Tornado 8 miles, low approach join'. After this he saw a GR4 on an instrument approach that was very close and he descended to avoid it.

The APP mentor said that when the F3 pilot advised that he was visual with the aerodrome they did not call the GR4 on PAR because they did not think it was a factor. He then spoke with the TALKDOWN mentor who said that they were informed by DIR that there was a visual joiner passing down the LH side of the instrument traffic. This was then relayed to the ac.

SATCO LOSSIEMOUTH comments that traffic information on the GR4 radar traffic was not passed to the F3 crew. At least 10nm track spacing existed between the F3 and GR4 when the F3 coasted out and APP perceived that as the F3 was expected to turn toward the IP it would not conflict with the following GR4. However, the F3 crew turned in a manner not consistent with the normal IP join expected by the APP controller, which would have been a continuing LH arc towards the IP.

No orders were in place regarding the controllers' responsibilities for a radar-visual or visual joiner. In the interim, it has been specified that visual joiners must be advised of radar traffic, and this acknowledged, before transfer to TOWER. Radar-visual joiners must be separated from instrument traffic until visual with it before transfer to

TOWER. A Safety Survey [Completed 20 Aug 10] was conducted to review visual and radar-visual joining procedures.

HQ AIR BM ATM SAFETY MANAGEMENT reports that the point at which the F3 crew became visual with the airfield and transferred to the ADC's freq, the F3 was reported to be 8-10 miles S/SE of the aerodrome, with the GR4 to the N, at 13·5 track miles, positioning for a PAR to RW23. Although APP considered their workload to be low at the time of the occurrence, at the point at which the F3 crew reported visual with the aerodrome, APP appears busy conducting liaison on the landline.

[UKAB Note (2): At 14:00:08, the F3 crew advised, *"Lossie Approach* [F3 C/S] *is visual with the tower if no further traffic to effect?"* At the time of the transmission APP was liaising with TWR and DEPS to, *"call for releases"* because of the F3 that was, *"..south of the airfield at 10 miles just visual with the aerodrome now"*. Without passing any further advice to the F3 crew, at 1400:22, APP instructed the F3 crew to, "[F3 C/S] *squawk standby to tower stud 2", w*hich was acknowledged.]

Whilst in the opinion of APP the F3's position was such that it would run well ahead of the GR4, given the F3 crew's requirement to position outside Lossiemouth town in accordance with the FOB, the track distance for both ac was actually relatively similar. Consequently, best practice suggests that APP should have warned the F3 crew of the presence of the GR4 positioning for PAR. Whilst APP's liaison/planning task might have distracted them from an effective assessment of the track distance, APP reports that they assessed the F3 would not affect the GR4's recovery.

[UKAB Note (3): At 1400:37, the F3 crew called TWR requesting to join. TWR responded 6sec later, "[F3 C/S] Lossie *Tower join runway 2-3, clutch Q-F-E 1-0-1-7 circuit clear*", the RW and QFE being read-back by the F3 crew. At 1401:50, TALKDOWN made the standard liaison call to TWR via the on-channel intercom, *"8 and a half miles* [GR4 C/S] *low approach and depart".* Some 10sec later TWR responded, *"say again".* A broadcast was made by the ADC on the TWR frequency at 1402:08, *"Tornado 8 miles low approach depart",* which would have been the first notification to cct traffic - the solitary F3 - of the presence of the inbound GR4 as instrument traffic. TALKDOWN made another call on intercom at 1402:17, *"7 miles* [GR4 C/S] *low approach depart",* which TWR immediately read-back, *"7 miles low approach depart roger TOWER"*, but no further broadcast was made.]

The PAR replay shows that at 1402:39, the F3 began to paint in both azimuth and elevation and was quickly spotted by the PAR controller, with TI being sourced from DIR and passed to the GR4 crew.

[UKAB Note (4): At 1402:36, the GR4 crew was told by TALKDOWN they were, *"on glide path slightly left of centreline correcting slowly",* followed 7sec later at 1402:43 by a warning about the presence of the F3, *"5 and a half miles visual joiner on your left hand side".* The GR4 pilot reported visual 4sec later. At 1403:10, TALKDOWN made the standard clearance request to TWR via the on-channel intercom, *"4 miles* [GR4 C/S] *low approach";* coincident with this message at 1403:11, the F3 crew reported to TWR, "..[F3 C/S] *is repositioning behind instrument traffic".* TWR issued the clearance to TALKDOWN for the GR4 at 1403:12, "[GR4 C/S] *cleared low approach deadside only 1* ***on*** [the RW]," and added 3 sec later, *"circuit clear."* TALKDOWN relayed a clearance to the GR4 crew at 3½ miles and after TOWER corrected the message to *"1 in"* at 1403:19, TALKDOWN transmitted *"..low approach deadside only 1* ***in*** [the cct]," which the GR4 crew read-back omitting the cct state. The F3 crew then queried at 1403:21 with TWR, *"is there any other further instrument traffic to affect?" after broadcasting "Tornado 4 miles low approach deadside only", TOWER requested the F3's "..present position",* which was reported at 1403:31, about 48sec after the occurrence as *"currently [5] 5 miles on the extended centre line".* The RPAR recording shows the F3 cleared out to 7¾ nm from touchdown before turning in again towards Initials some 3nm astern of the GR4; the F3 crew reported *"initials"* at 1404:25.]

Whilst DIR could have been more proactive in telling TALKDOWN earlier of the potential presence of the F3 joining visually, this also would not have prevented the Airprox. At the point that the TI was passed to the GR4 crew, the F3 appears on the PAR replay to have reversed his left-hand turn, in keeping with the pilot's report that he had become visual with the GR4 crew and manoeuvred to avoid what he perceived to be a confliction. Only 4sec elapsed between passing the TI to the GR4 crew and the pilot becoming visual, with a further 2sec to the CPA. This gave the PAR controller no time in which to react further to the situation and pass avoiding action to the GR4 crew.

The Supervisor reports that TWR was busy and the tape transcript broadly supports this assessment, although the only airborne ac on TWR's frequency was the F3. [UKAB Note (5): the ADC himself reports the workload as low.] DSATCO Lossiemouth reports that '..visual joining traffic often does not paint in primary [radar] once they have squawked standby and been transferred to TOWER.' Bearing in mind this potential weakness, best practice would suggest that as the Supervisor was in the VCR to oversee the busy departure and recovery wave, he should be visually scanning to attempt to identify the F3, to aid the ADC in his integration of this traffic with the GR4. Whilst, the Supervisor reports that he was visual with 'an aircraft [the F3] orbit[ing] around the instrument traffic', it is not clear at what point he became visual with it and no mention is made as to whether he brought this to the attention of the ADC. The absence of any information passed by the ADC about the GR4 to the F3 crew would suggest that the SUPERVISOR had not made TWR aware of the potential for confliction and indicate that the ADC had not spotted it themselves. Whilst the potential lack of radar data, as suggested by the Lossiemouth DSATCO, can be viewed as an aggravating factor in this occurrence, the lack of timely TI to the F3 crew about the GR4 indicates a breakdown of visual scan, situational awareness and CRM of both the ADC team and, critically, the SUPERVISOR. The ATC team fulfilled their duty in making the 8nm broadcast and expecting the VFR traffic to sequence themselves accordingly, best practice suggests that as much information as possible be given to the aircrew to facilitate their rejoin. The SUPERVISOR had positioned in the VCR to assist the ADC because of the reported amount of traffic in the cct and the number of departures, yet the available evidence suggests that they did not become aware of the potential for confliction until it was too late to resolve the situation. Given that the only 2 ac airborne at the time were the GR4 and the F3, it is contended that the SUPERVISOR had not developed his situational awareness sufficiently such that they could perceive this potential for confliction and as a result, the opportunity to pass TI to the F3 crew was lost.

This occurrence highlights the criticality of visual monitoring of all ac within the visual cct environment and the utility of the Highbrite VRD in aiding IFR/VFR integration. HQ Air BM ATM recommended that Lossiemouth ATC conduct a safety survey of visual joining procedures and IFR/VFR integration.

Subsequent to this Airprox Lossiemouth ATC initiated a review of visual joining procedures and IFR/VFR integration, which found that there was mixed understanding amongst ATC personnel and aircrew of visual joining procedures. It was recommended that more definitive guidance be placed within ATC and aircrew orders. As a result, a change of operating procedures proposal was raised, which has defined the visual and radar-visual approach procedures and provides clear instruction on the provision of TI by ATC to ac recovering visually.

UKAB Note (6): Analysis of the RPAR video recording suggests that at the minimum horizontal separation displayed was in the order of 300m at 1402:49, as the F3 turned R to pass astern of the GR4. Non-linear expansion of the azimuth display does not facilitate a more accurate assessment. Vertical separation at the same point appears to have been no less than 500ft but the same caveat applies.

HQ AIR (OPS) comments that this Airprox may have been avoided if the F3 had been made aware of the radar traffic earlier. The situation was exacerbated by the pattern speed of the GR4 conducting a simulated SE approach which eroded the separation perceived by APP to be sufficient, APP did not call the GR4 on PAR because they did not think it was a factor, this was proven to be an incorrect assumption. Given the F3 crew's requirement to position outside Lossiemouth town in accordance with the FOB, the track distance for both ac was relatively similar and it is disappointing that this was not assimilated. Consequently, best practice suggests that APP should have warned the F3 crew of the presence of the GR4 positioning for PAR.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The HQ Air Ops fast-jet pilot Member reiterated the Command's view that this Airprox might have been avoided if the F3 had been made aware of the GR4 instrument traffic earlier. He was concerned that despite the F3 crew's request for information about any other traffic on recovery – and he stressed that these were the only two ac on recovery in the vicinity – APP did not pass TI about the GR4. Controller Members concurred that APP had an opportunity to warn the F3 crew and the controller had misjudged the potential for the two ac to fly into close quarters. The F3 had seemed well ahead at the outset and was reportedly faster, but the ATM Safety Analysis report indicated the track distance for both ac was actually relatively similar when the requirement for the F3 to

remain clear of Lossiemouth town to seaward was taken into account, albeit that the absence of search radar data here did not allow the ac's track made good to be analysed at all. Military controller Members affirmed that in a normal aerodrome environment the visual cct traffic joining through the IP should avoid traffic conducting an instrument approach – see Post meeting Note below. However, APP's omission to all intents suggested that there was no other ac on recovery. Moreover this perception would have been reinforced when the F3 crew switched to TWR and was advised by the ADC that the cct was clear. Thus the crew would have had no inkling of any other ac airborne in the vicinity at the time. Whilst clearly the ultimate responsibility was on the F3 crew to 'see and avoid' other traffic whilst flying their visual recovery, the ATM Safety Analysis report reinforced the Board's view that the passing of a warning by APP to the F3 crew about the GR4 positioning for PAR was 'best practice'. Other than seeing it for themselves, the first occasion the F3 crew would have been aware of another ac close by was when the ADC broadcast the standard 8nm call – that was actually transmitted by TWR when the GR4 was at 7½nm from touchdown and barely 35sec before the Airprox occurred.

Perception of range and hence whether ac are actually in conflict can be difficult for controllers just by visual observation from the VCR and here the F3 was visible according to the SUP's account, albeit that that the ac had not been identified to him. The ATM Safety Analysis report is critical of the SUP for a lack of SA and for not giving additional support to the ADC team whilst in the VCR, but the Board did not concur with this view. Whether the poor radar coverage reported might also have affected the Highbrite VRD was unclear, but controller Members agreed with the Command's contention that the ADC might also have spotted the potential conflict earlier from the Highbrite suggesting a breakdown in the ADC's scan and SA. Moreover, the aborted take-off and traffic preparing to depart might have focused the mentor ADC's attention at the time. As it was, no information was forthcoming from ATC before the regular TWR broadcast. The Board agreed that a lack of TI about the inbound IFR GR4 was a fundamental element within the Cause of this Airprox.

Whilst executing their instrument approach, albeit under a TS, Members agreed that the GR4 crew would expect timely TI on any traffic that was likely to affect their approach and that the onus was on the F3 to avoid the instrument traffic. As it was the GR4 crew was not warned about the F3 by TALKDOWN until they were at 5½nm from touchdown, just as the Airprox occurred, when they were advised about a "..*visual joiner on your left hand side".* Thus the F3 was not acquired by the GR4 safety pilot in the rear seat until he saw it at 9 o'clock in a RH descending turn belly up to his ac some 500ft away already taking robust avoiding action. Therefore, in the Board's view, the GR4 crew was not able to affect the outcome and did not contribute to the Cause. The F3 pilot reports that when he heard the ADC's broadcast he started to manoeuvre off his westerly heading in an attempt to gain visual contact with the instrument traffic. It was whilst in the turn that he spotted the GR4 for the first time at about ½nm away crossing from R – L. It was clear that that this late sighting by the F3 crew was the other important element. Following a comprehensive debate the Board agreed that the lack of TI led to a late sighting by the F3 crew and that was the Cause of this Airprox.

Whereas the GR4 pilot estimated the horizontal separation could have been as close as 200ft within this encounter, the RPAR recording suggests the minimum horizontal separation was in the order of 300m as the F3 turned R to pass astern. Vertical separation was about 500ft at this point and in accord with that reported by the F3 pilot after he had executed his avoiding action descent, who was probably in a better position to judge the separation accurately. Although the F3 pilot reported that the Risk was 'high' and the GR4 pilot had reported there was no time to react and evade the other F3, it was clear to the pilot Members that the F3 pilot was already taking robust and effective action to resolve the conflict. Whilst some Members contended that safety had not been assured here, the majority of the Members concurred that the F3 pilot had seen the other ac in time and that his manoeuvre had been effective in removing the actual Risk of a collision.

Post meeting Note: Extract from AP3456 - The Circuit – The Join From the Initial Point.

…the IP should be approached at a height which will provide vertical clearance from radar approach traffic in that vicinity. Once the aircraft is positively established as running-in on the airfield's deadside, height and speed can be adjusted to arrive abeam the runway threshold at circuit height and at a suitable speed to commence the decelerating turn onto the downwind leg.

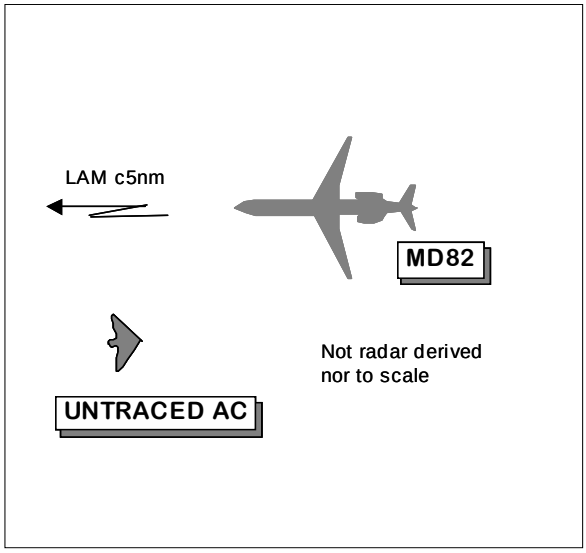
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Lack of TI led to late sighting by the F3 crew.

Degree of Risk: C.

AIRPROX REPORT NO 2010034

Date/Time:	25 Apr 2010 1418Z (Sunday)	
Position:	5139N 00016E (5nm E LAM)	
Airspace:	LTMA	(Class: A)
	Reporting Ac	*Reported Ac*
Type:	MD82	Untraced ac
Operator:	CAT	N/K
Alt/FL:	↓FL160	(N/K)
Weather:	VMC NR	NK NR
Visibility:	NR	NR
Reported Separation:	50-100m H	
Recorded Separation:	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE MD82 PILOT reports descending towards LAM to enter the hold while looking for the preceding ac. Suddenly, in front and a little to the L, there appeared a dark object coming in their direction. As it got closer it appeared to resemble a green/white coloured parachute/hang-glider, which was much bigger than a Wx balloon. It passed about 50-100m to their L. No action was required but ATC was informed.

RAC MIL reports extensive procedural tracing action was carried out but the identity of the object/ac remains unknown. Adjacent glider sites, airfields and private strips were contacted but no ac fitting the description could be identified at these locations. AUS were contacted regarding permission notices issued for balloon releases for that geographical area but none were issued.

THE LTC NE DEPS/LAM RADAR CONTROLLER reports operating in bandboxed mode with the MD82 inbound to Heathrow maintaining FL170, he thought. About 3nm E of LAM the crew reported that they had observed a small ac or possibly a glider about 30sec prior to levelling at FL170; they considered it had passed very close. A number of primary and secondary contacts were observed in the area but this was nothing out of the ordinary. No CAIT warning had been activated on any of the secondary contacts. The crew reported that they would be filing an Airprox. He requested that other traffic keep a good lookout in the area but nothing was observed.

NATS UNIT INVESTIGATIONS reports the Airprox occurred approximately 5nm east of LAM at 1418 UTC. The MD82 was inbound to Heathrow Airport via LAM. At 1418:41, when the ac was 3nm E of LAM, the MD82 flight was instructed to descend to FL160. The read back to this instruction was garbled with another ac's transmission and so the controller asked the crew to confirm the cleared level as FL160. The following transmissions then took place.

MD82: *"Confirming FL160, MD82 c/s, and we actually had some foreign object up here. It looked like a hang-glider, parachute or something"*.

Controller: *"OK, at your level now?"*

MD82: *"It passed us just around 30 seconds ago"*.

Controller: *"OK, and was that at your level?"*

MD82: *"That's right"*.

Controller: *"OK, we'll get that reported"*.

The controller then continued with other tasks for the next minute before making the following transmission to the MD82 flight:

Controller: *"MD82 c/s, what did you say it looked like?*"

MD82: *"Like a parachute to a hang-glider. It was green and white and very close to us"*.

On questioning, the Capt of the MD82 confirmed their intention to file an Airprox report. The controller subsequently passed details of MD82's report to the next inbound flight (AC3) and the crew were asked to report if they became visual. No further sightings were reported by the crew of AC3 or any other flight. At the time of this event the controller was using the Debden Radar. There was no traffic displayed on radar or known to the controller that could be readily attributed to the object described by the crew of the MD82.

Following this event, Swanwick Investigations contacted the MD82's company to request a further description from the crew regarding the object seen. The Capt reported: -

"In descend towards LAM VOR we were looking for preceding aircraft when we saw a dark shadow coming towards us a little from the left. I first thought it was a military aircraft because it had a shape of two wings. Getting closer it turned out to be a hang-glider/parachute object, the long and thinner type with green and white square markings. No letters or other markings as I could see. I think it came approximate 50-100 meters close to us, maybe closer because I could see it perfectly on my left side. When I first observed the object it looked like a normal distance for a preceding aircraft but it was much smaller and darker and was coming in our direction".

This incident was reported to ATC at 1418:41 with the MD82 crew reporting that the event occurred approximately 30sec beforehand. The position of the MD82 was reviewed at this time on the radar replay system using several different radar sources (Debden, H23, S10 & MRT). There was no surveillance data to support the presence of an object in the position described by the crew although both the Debden and MRT pictures displayed an intermittent primary return approximately 2nm S of the MD82's track. Further analysis of the surveillance data was undertaken by the Surveillance Asset Investigations Team at NATS. Although some slow moving primary returns were detected in the vicinity of the MD82 at the time of the reported event, the lack of a definitive track did not support these returns as being genuine and are considered to have been radar "clutter".

ATSI endorsed the NATS Unit report.

BHPA comments that it is physically extremely unlikely to have been an unpowered hang glider or paraglider at that location and height as either would have had to be launched from/by another ac at a greater height. As powered hang gliders and paragliders do tend to show up on primary radar due to the engine and propeller, and that it would have taken a specialist modified and in-flight tuneable engine, and that it would still have taken a considerable time to both climb to that height and descend from it (the UK record climb of 17,500ft took 92min on the way up and 46min on the way down), it also seems very unlikely to have been one of these.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilot of the MD82, 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 Capt's description of a green/white ac, possibly a hang-glider/parachute, passing 50-100m down their LHS at their level was explicit enough for Members to be in no doubt that something was encountered. However, the radar recording does not show any target that could be correlated with an ac-type radar return and the crew of an ac following behind the MD82 did not visually acquire the untraced ac. Members noted the comments made by the BHPA and added that, although possible, it would have been extremely unusual for a hang-glider or microlight pilot to fly his ac at high level, particularly above 10,000ft where oxygen would be needed for safe operation. On the limited information available and with tracing action not revealing the origin, type or size of the conflicting ac, Members were left with little option other than to classify this as a conflict in Class A airspace but were unable to assess the risk of collision.

AIRPROX REPORT No 2010034

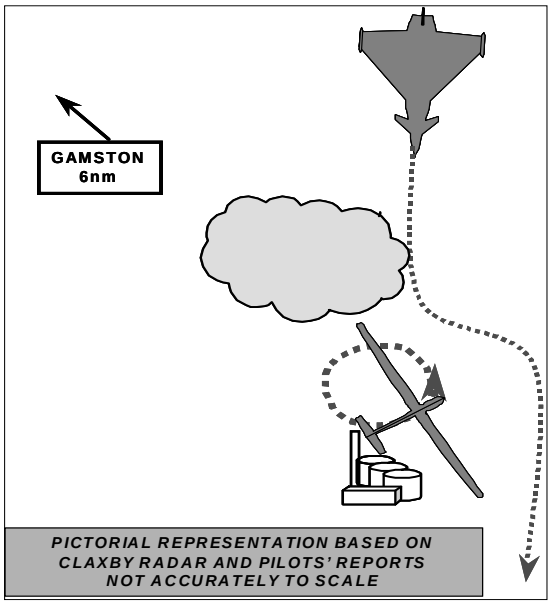
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Conflict in Class A airspace with an untraced ac.

Degree of Risk: D.

AIRPROX REPORT NO 2010035

Date/Time:	8 Apr 2010 1410Z	
Position:	5318N 00046W	(6nm E Gamston)
Airspace:	Lon FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Typhoon	ASW 28 Glider
Operator:	HQ AIR (OPS)	Civ Pte
Alt/FL:	2300ft	[2300ft]
	(RPS 1025mb)	[datalogger]
Weather:	VMC (CLBL)	VMC CLBC
Visibility:	40km	20km
Reported Separation:		
	0 V/500ft H	~100ft V/~200m H
Recorded Separation:		
	NR (See UKAB Note: (1))	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE TYPHOON PILOT reports flying a grey ac with HISLs and nav lights switched on, on a dual training flight from Coningsby, squawking 7001 with Mode C but not in receipt of an ATS; TCAS was not fitted. While heading 180° at 360kt and at 2300ft on the RPS, a mid wing, unpowered glider was seen about 2nm ahead in a left turn, at the same alt, but to the right of the nose. Initially he did not consider it necessary to take avoiding action, as the glider appeared to be moving away to the right, so his unaltered flight path would take him safely behind the glider without alarming its pilot. As they closed however, he observed that the glider's high turn rate and low turn radius was such that it had performed a level left hand turn through about 120^{o} and was then converging from right to left and significantly reducing the separation distance. He therefore broke left to give the greatest spacing possible and generated a lateral miss-distance of about 500ft thus ensuring that there was no risk of collision.

THE GLIDER PILOT provided a comprehensive report with several datalogger traces enabling a thorough investigation. He reported that he was flying a white glider, listening out on a glider common frequency, but with no SSR fitted, on a day of strong thermic activity. He was on a cross-country flight from Saltby and was climbing in a left hand turn in strong lift over Tuxford Power Station. Just after passing through an Easterly heading he saw a Typhoon ac directly in front of him 200m away banking steeply to the left; it then rolled back onto its original heading and he could see the rear of the ac. From this he deduced that the Typhoon had originally been heading directly towards him. The height was difficult to confirm but his logger trace shows a very strong climb from 2080ft at 1409:00 to 2700ft at 1410:00. He considered that transiting a fast jet through and the choke point between Scampton/Doncaster, at between 2000ft and 4000ft on a thermic day and over a major thermal trigger such as the power station had significantly increased the level of risk of encountering gliders. He could not evade the Typhoon due to the relative speed differences but, fortunately, the other pilot saw him or had technology to enable him see his ac.

UKAB Note (1): Although the Typhoon is seen on the recordings of several radars, throughout the period, the glider is not seen at any time. The recording of the Claxby radar at 1408:30 shows the Typhoon tracking 230° and indicating FL020 (2550ft amsl); at 1409:04 it turns left onto 180°, remaining at the same alt. At 1409:34 the Typhoon, having descended to an alt of 2350ft amsl, commences a hard left turn at position 5318.5N 00046.2W (Tuxford Power Station) and then reverses back onto 180° generating a track displacement of 0.4nm. At that time the glider datalogger shows it to be at 2300ft amsl climbing in a left hand orbit in the position reported by the Typhoon pilot; it does not show on radar although there is a slow moving contact, squawking an RAF Waddington conspicuity code (no Mode C), tracking S, 1nm NW of the position.

HQ AIR (OPS) comments that both ac were operating legitimately in Class G airspace. Neither ac was under a radar service or TCAS equipped so the 'see and avoid principle' pertained and in this case it worked and the Typhoon avoided the glider.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The Board noted the comprehensive report and data-logger information provided by the glider pilot, which had allowed a comprehensive investigation, despite the glider not showing on recorded radar.

The GA Member opined that the Typhoon pilot did well to see the small cross-section, white glider early enough to assess its flightpath and avoid it when it made an unexpected turn towards him. The HQ Air Member noted the glider pilot's comment regarding thermals over power-stations and the increased probability of encountering gliders there, but thought that many military aircrew would not be aware of this; he thought it most informative and worthy of publicising.

Since both ac had been operating legitimately in Class G airspace and the Typhoon pilot saw the glider early enough to avoid it, albeit perhaps by a smaller margin than desirable, there had been no risk of collision.

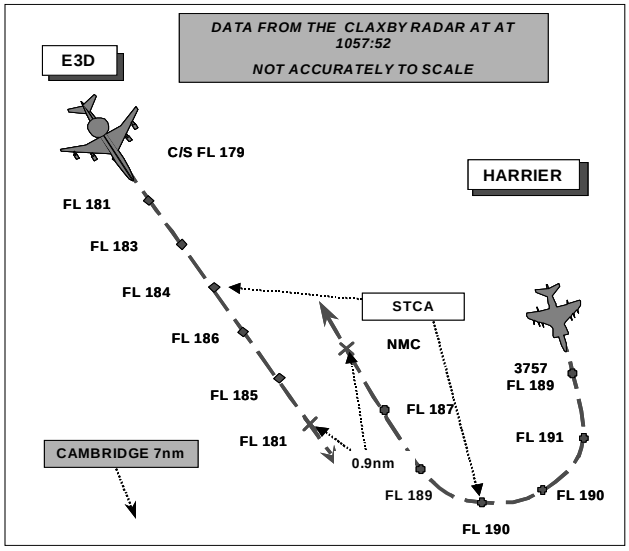
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Conflict in Class G airspace resolved by the Typhoon pilot.

Degree of Risk: C.

AIRPROX REPORT NO 2010036

Date/Time:	29 Apr 2010 1058Z	
Position:	5220N 00010E	(7NM N CAM)
Airspace:	Lon FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	E3D Sentry	Harrier
Operator:	HQ AIR (OPS)	HQ AIR (OPS)
Alt/FL:	FL180↑	FL90
Weather:	IMC CLBL	VMC
Visibility:	2000m	5.0km
Reported Separation:		
	NK	NR



Recorded Separation:

NR V / 1.0nm H at 1057:52 (100ft V /1.0 H on previous sweep at 1057:49)

UKAB Note (1): Several radars were checked, but all showed that the Harrier Mode C dropped out at the CPA, reappearing about 20-30sec later several hundred feet lower.

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE E3D PILOT reports flying an exercise support mission from RAF Waddington. During the climbout they were handed over to London (Mil), given a TS, cleared to FL190, while heading 180° at 280kt, given their airways joining clearance, via a point NE of BKY, and were routing direct to that point. As they approached top of climb a TCAS contact was observed overtaking them to their left, on a similar heading and climbing, appearing to maintain about 1000ft above them. The range of the contact increased to about 7nm in their 11 o'clock. London (Mil) called a contact in their 1 o'clock at a similar range, so he called their TCAS contact to them; London (Mil) reported that they now had this contact 'on radar' and that it was 'a Harrier'. As they were passing FL185 about to level off, the TCAS contact also seemed to level and then to manoeuvre towards them. London (Mil) called again reporting that the traffic was manoeuvring as they received first a TA ('Traffic, Traffic') followed by an RA 'monitor vertical speed', first directing a level off and then rapidly a RA descent, which they followed and called the RA to London (Mil). The confliction cleared from TCAS as they transitioned from a climb to a descent and they levelled at FL180 before once more climbing to FL190 and continuing to their airways joining point. London (Mil) confirmed via landline that the other ac had been squawking 3737 and was believed to be working with Cottesmore ATC. Their in-flight conditions were IMC as they were climbing through thin cloud layers and they did not see the other ac at any point during the incident.

The resolution of the TCAS display does not allow an accurate assessment of the closest distance between ac, nor of accurate plotting of the manoeuvring of the other ac relative to them.

He assessed the risk as being low.

THE HARRIER PILOT provided a brief report 2 months after the incident stating that he was carrying out a local dual GH from RAF Wittering in the Lincolnshire MTA, he thought, in receipt of a TS from Wittering APP, he thought, squawking as directed with Mode C. While at FL90, [actually F/L190], heading 350°, out of sun, at 350kt, he was passed TI on an E3D, which he saw immediately. He continued his turn, which was taking him clear of the E3, and he assessed the risk as being low.

THE LONDON MIL CONTROLLER reported that he was controlling as the GP14 position with a UT assistant and assistant mentor. The E3D was cleared on his own navigation to 16 miles NE of BKY climbing to FL190, en route to join CAS under a TS. At 1057, the E3D pilot requested TI on traffic in his 11 o' clock, at 4nm, indicating 1500 feet above on TCAS. The conflicting traffic was called to the E3D as tracking SE at FL190 and appeared to be on

a diverging heading from the E3D. The conflictor then executed a 'sharp' right hand turn to track N and began to descend, passing about 1nm to the east of the E3D. The E3D reported taking a TCAS RA and descended to FL180. The conflictor was called once more and the RA acknowledged. Once clear of the traffic, the E3D resumed his climb and joined CAS. The conflicting aircraft was squawking 3757 [Cottesmore].

THE LONDON MIL SUPERVISOR reported that he did not witness the incident.

HQ AIR ATM Safety Management reports that an E3D departed RAF Waddington and was handed to London (Mil) to transit to CAS and join N of BKY. At 1053 the pilot reported, "*London military good morning C/S out of Waddington in the climb passing flight level nine five cleared one nine zero";* the ac was identified and placed on TS. The controller then confirmed that the E3D was to join airways at BKY and released it saying, "*own navigation fifteen miles North East of Barkway".* At 1054 the pilot was asked his estimate for BKY, enabling the controller to obtain a joining clearance. At 1055:17 the conflicting traffic, the subject Harrier, can be seen SE of the E3D indicating FL93, 4100ft below the E3D, and 8sec later its Mode C drops out but it continues to track SE, diverging from the E3D. At 1055:46 the E3D is tracking SE, indicating FL144, climbing, and the Harrier is about 5nm SE and still on a diverging track, indicating 700ft below. London (Mil) then passed TI at 1056Z on a contact 10nm S of the E3D, which was tracking NE with no Mode C and the pilot replied, "C/S *has got TCAS traffic eleven o'clock for five miles".* The TCAS contact was the subject Harrier and London (Mil) then reported, "C/S *previously reported traffic is now five miles south er manoeuvring no height information*" to which the pilot replied, "C/S *shows at fifteen hundred feet above".* This discrepancy would appear to have made the controller scan again and he reported, "*Apologies C/S er traffic now on radar in your twelve o'clock five miles tracking southeast at FL one eight five".*

Based on the SSR code, LATCC Mil reported the ac as a Harrier and the E3D pilot, *"C/S R A we're levelling this level".* Then, as the Harrier appeared to start a right hand turn towards the E3D at FL 191, the latter reports, "C/S *following TCAS descent*"; simultaneously the Harrier tightens the right hand turn and passes to the E of the E3D. Once clear of the conflicting traffic the E3D continues its climb to FL190 towards BKY.

This Airprox happened in busy Class G airspace with the E3D receiving a TS from London (Mil) and, although the conflicting traffic was displaying a Mode 3A code allocated to RAF Cottesmore, investigation showed that the ac was operating VFR and not receiving a service from Cottesmore at the time.

The London (Mil) controller passed TI on an ac S of the E3D as at that time it looked like the most likely conflicting traffic, having a course which would cut across E3D's track. When the controller was passing this TI the Harrier was SE of the E3D and heading away from it; therefore this would have excluded it from the controller's initial scan. Even when the E3D pilot later requested an update, it was heading away and would not have been considered to be a hazard. The controller had already called the Harrier before it turned towards the E3D at a similar altitude. That being the case, it is considered that the controller acted IAW requirements for the provision of a TS.

HQ AIR (OPS) comments that as the Harrier was manoeuvring VMC in Class G airspace, was visual with the E3D and did not get closer than 1 nm it is unsurprising that his recollection of this non-event was vague. TCAS II equipped ac operating in class G airspace will occasionally be subject to RAs, which should continue to be followed to maximise separation and enhance visual lookout.

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 the significant errors in the report provided by the Harrier pilot and observed that reports made immediately after the event are generally significantly more accurate as detail fades with time and it is that detail that can be significant.

In this case both ac had been operating legitimately and conducting their respective tasks in Class G airspace, one joining CAS and the other apparently conducting GH. The E3D had been receiving a service from London (Mil) but, despite that he reported otherwise, the Harrier pilot had not been in receipt of a ATC service from any unit; had he been, he would most likely have been warned of the E3D's presence behind him. The HQ Air (Ops) Member pointed out that TCAS can be very valuable as an aid to assist pilots with their responsibility to see and

avoid other traffic in class G airspace. If this avoidance is as a result of following a TCAS RA, it is nonetheless avoidance and, as in this case, the safety of both ac is assured.

Although procedures and practices for the operation of TCAS in Class G airspace can be problematical, the Board welcomed reports of such occurrences as they can contribute to a fuller understanding of the operational difficulties.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Sighting report (TCAS).

Degree of Risk: C.

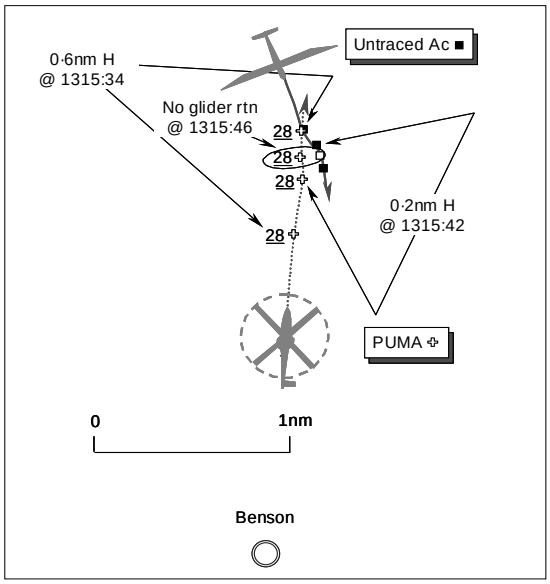
AIRPROX REPORT No 2010037

AIRPROX REPORT NO 2010037

Date/Time: 27 Apr 2010 1315Z
Position: 5139N 00105W
(009° Benson A/D 2·3nm - elev 75ft)

Airspace:	Benson MATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Puma HC1	Untraced Ac
Operator:	HQ JHC	NK
Alt/FL:	2500ft	NR
	QFE (1023mb)	
Weather:	VMC Haze	NR
Visibility:	8km	NR

Reported Separation:
150ft V/nil H
Recorded Separation:
<0·1nm H - see UKAB Note (1)



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PUMA HC1 HELICOPTER PILOT reports that the Airprox occurred during an IFR training sortie whilst flying the Benson COPTER TACAN [BSO] procedure for RW19 and in receipt of a TS from Benson APPROACH (APP) on 376·65MHz. The assigned squawk of A3617 was selected with Mode C; Mode S is not fitted. The helicopter is coloured olive green, but the white HISL and landing lamp were on.

Flying outbound at 120kt from the BSO in VMC, level at 2500ft QFE (1023mb), heading 006° about 2·5nm from the overhead a white glider was first seen as it was passing 150ft above his helicopter on a reciprocal heading. Horizontal separation was 'nil'; no avoiding action was taken as the white glider was already passing overhead in a wings level attitude. ATC was informed on RT that the glider was close to the aerodrome and the sortie was continued uneventfully thereafter. He assessed the Risk as 'high'.

UKAB Note (1): Analysis of the Heathrow 10cm and 23cm radars shows the Puma identified from its A3617 squawk, overhead Benson tracking N with a slow moving southbound primary contact 3·2nm N of Benson that may, or may not be, the reported ac as its altitude cannot be determined. At 1315:34, the Puma indicates 2800ft Mode C London QNH (1027mb) some 1·8nm from the overhead, and maintains this altitude throughout the encounter, with the unknown contact at 12 o'clock – 0·6nm range. A slight L turn SSE'ly is discernable in the contact's track and at 1315:42 the contact is shown in the Puma's 1 o'clock – 0·2nm drawing to starboard. No return is apparent from the unknown ac on the next sweep, which is perceived to be the CPA, at a position 009° Benson aerodrome 2·3nm, with the Puma indicating 2800ft London QNH and thereby clear to the N and above the Benson ATZ. Horizontal separation of 0·2nm is again apparent as the primary contact draws aft into the Puma's 5 o'clock as the helicopter maintains its course and altitude.

The Puma pilot reports that a white glider passed 150ft above him; it is perceived that at the CPA, the unknown primary contact passed less than 0·1nm [<200yd] to starboard. Whilst it is unlikely, it is feasible that the primary contact shown might not be the reported ac.

The primary contact can be tracked E and S of Benson and eventually disappeared from coverage 15nm N of Lasham Glider launching Site. Extensive tracing action amongst local glider clubs in an effort to identify the reported ac proved fruitless. Consequently the identity of the reported ac that may, or may not be, a glider remains unknown.

BENSON DIRECTOR (DIR) reports he was Mentor to a controller under training who had been on consul for about 1hour when the Airprox occurred. The trainee was not busy; he had worked only 2 ac during this training session, one at a time, and the workload was low with only one ac under an ATS when the Airprox occurred.

The trainee controlled well, calling any traffic displayed correctly and in good time. The Puma pilot was under his own navigation with a TS at 2500ft QFE, when he reported that whilst leaving the TACAN he had seen a glider 200ft above him. The trainee informed the Puma crew that the ac was not visible on radar as they were working 'SSR only', the pilot having been made aware of this and that it was a 'reduced' service on first contact. Nothing in the pilot's voice caused him concern over how close the ac were to each other. Apart from informing the Supervisor that there was a glider within the MATZ the event didn't prompt much reaction. The Puma pilot did not report the Airprox at the time on RT.

THE BENSON ATC SUPERVISOR reports that the Watchman ASR was OOS and the Airprox occurred on a relatively quiet day whilst operating in CC BLU/WHT weather conditions. Working SSR only, they had no idea of the scale of non-transponder equipped ac in the vicinity. The trainee DIR on console was competent and the DIR mentor very experienced. As stated by the controller, the tone of the Puma pilot's voice did not cause any concern and ATC was unaware he was filing an Airprox against the glider before the shift finished. This was yet another incident caused by a lack of TI due to a lack of primary radar.

HQ AIR BM ATM SAFETY MANAGEMENT reports that this Airprox occurred whilst Benson ATC was degraded due to the loss of their primary Watchman ASR; all radar services were being provided with secondary radar – SSR - only. The Puma crew was being provided with a reduced TS at the time of the incident and because the glider was not operating SSR the controller was unable to see it on the 'SSR only' radar display. The controller acted in accordance with the spirit of TS, with reduced capability due to the unserviceability of the primary ASR.

UKAB Note (2): The UK AIP at ENR 2-2-2-1, promulgates the dimensions of the Benson ATZ as a Circle radius of radius 2 nm centred on longest notified RW01/19, active H24, from the surface to 2000ft above the aerodrome elevation of 226ft.

UKAB Note (3): At 1300:49, DIR advised the Puma crew*"…identified, traffic service reduced service S-S-R only",* which was acknowledged. At 1315:39, DIR reported TI on an unrelated ac *"..traffic right 1o'clock 6 miles crossing right-left 6 hundred feet above"*. Visual contact was acknowledged by the crew 8sec later, who then added at 1316:04, *"..that traffic was a glider reciprocal heading directly above us."* DIR responded at 1316:13 that this was *"..unlikely I can see that traffic SSR only, traffic I'm calling to you is now* [the unrelated ac] *right, 1 o'clock 3 miles crossing right left 5 hundred feet above…working…zone..".* Following the warning from the Puma crew about the glider, DIR queried whether it was above or below, whereupon the Puma crew responded that *"..it was above us by approximately 2-0-0 feet."*

THE PUMA HC1 HELICOPTER PILOT'S STATION comments that the lack of primary radar must be considered to be a contributory factor. As the crew was flying under simulated IF conditions the PF would have been operating under an IF visor, with the PNF's attention divided between the instruments and lookout. The crewman's ability to lookout would be affected by his position in the ac.

A NOTAM had been issued that the ASR was out-of-service and unit aircrew had been briefed as to the dangers of operating in the vicinity of Benson during this period.

HQ JHC comments that this is a further example (see Airprox 2010 045 and 2010 030) of the difficulties of operating in the vicinity of the Benson ATZ, without a serviceable primary radar. It is recognised that the crew was flying under simulated IF conditions with one pilot being under an IF visor, which would have reduced the overall quality of the lookout.

It is surprising that the crew did not indicate their intention to file an Airprox at the time, considering that they assessed the Risk of collision as 'high'. JHC crews will be reminded of the need to indicate their intention to file an Airprox at the time of the occurrence, in order to capture time-critical evidence. They will also be reminded that they can file an Airprox and then subsequently withdraw it if necessary, once further information has been established.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included a report from the Puma pilot, a transcript of the relevant RT frequency, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

It was unfortunate that the reported ac had not been traced and, without the reported pilot's account, the Board's assessment was inevitably incomplete. The speed and the observed track of the unknown contact shown on the radar recording suggested to some Members that it might well have been a powered glider, which could look virtually identical to a conventional glider when viewed from the Puma pilot's perspective below it.

It was evident that this Airprox occurred above the Benson ATZ, but a pilot Member with considerable gliding experience suggested it was unlikely that a glider pilot, with no additional lift from a thermal en-route, would continue to descend towards the ATZ. This reinforced the Board's view that the aircraft had been a powered glider. The MAA Advisor highlighted that there had been a number of occurrences, involving gliders and powered ac, where ac had remained outside the ATZ but flown through the concomitant MATZ - as here. Outside the embedded ATZ, the observation of MATZ procedures is not compulsory for civil pilots. Nevertheless a MATZ Penetration Service is available from military ATSUs to ac flown by civilian pilots for the increased protection of those who wish to fly through this airspace. Guidance for civilian pilots about MATZ penetrations is contained in the AIP (currently ENR 2-2-3-1 dated 11 Feb 2010) and in the Board's view, good airmanship would dictate observance of those procedures.

In the light of this and a number of similar incidents, some Members of the Board considered it to be unfortunate that glider pilots do not communicate more with military ATSUs; the more that ATC knew about ac in the vicinity, the safer for all and the quality of TI correspondingly better. A CAT pilot Member with considerable gliding experience explained that many gliders are not fitted with RT and, even if they are, not all pilots will have an RT licence. He also suggested that, in his experience, the response from some ATSUs was not always helpful, and hence glider pilots' apparent reluctance to communicate. Nevertheless the BGA Member stressed the importance of talking to the respective ATSU where feasible. However, ATC was also handicapped here by a major long-term unserviceability. It was plain that with the ASR out-of-service and no supporting SSR data, DIR was unable to provide any TI about the unknown ac to the Puma pilot at all. As highlighted by the Command, this was yet another Airprox illustrating the difficulties of providing an ATS in Class G airspace without a primary ASR.

Whilst some Members believed that there was sufficient information available on which to base a conclusion as to Cause and Risk, others considered that without a report from the untraced pilot, much was merely speculation. One Member suggested this Airprox was the result of the untraced pilot's poor airmanship in penetrating the Benson MATZ without calling ATC, but others recognised this was unsound as the unknown ac might not have been fitted with RT, the pilot might not have had a RT licence and civilian pilots are legitimately entitled to do so. Furthermore, it was not at all clear if the unknown contact visible on the Heathrow Radar was the ac seen by the Puma pilot. Members suggested that a descending glider pilot was unlikely to overfly the Puma at the separation reported here of 150ft if he had seen it in time to afford it greater separation. Another possibility was that if the unknown contact was indeed the ac seen by the Puma pilot, it seems he might have turned L to try and afford greater separation, suggesting a late sighting by the untraced pilot at close quarters. Some Members were drawn to a late sighting by the Puma pilot as the Cause but, whilst the other ac was plainly seen by the Puma pilot, he reports that the white glider was already passing a mere 150ft overhead in a wings level attitude when seen and thus effectively, a non-sighting on his part. With such a diversity of views some Members were not convinced that they could draw meaningful conclusions whereas others believed that it was a risk-bearing encounter. Eventually the Board determined by a majority verdict that this Airprox was effectively, a non-sighting by the Puma crew and possibly a non-sighting by the untraced pilot. However, given the scant information available and the uncertainty as to whether the radar recording did illustrate the ac seen by the Puma pilot the overwhelming view of the Members was there was insufficient information on which to base an assessment of the actual Risk that pertained.

PART C: ASSESSMENT OF CAUSE AND RISK

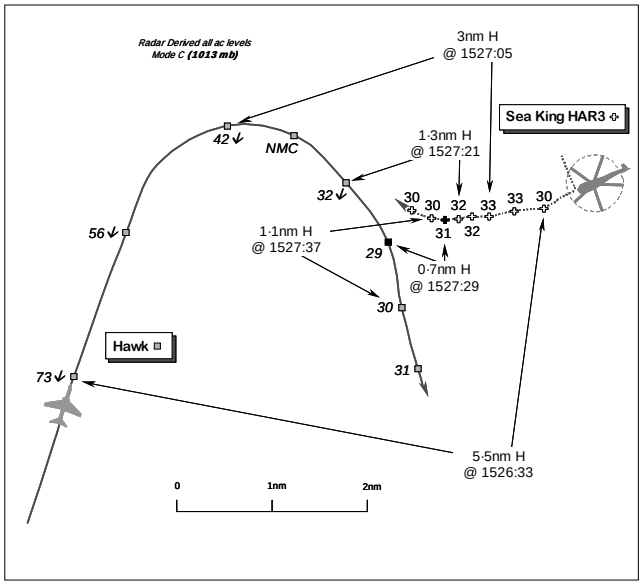
Cause: Effectively a non-sighting by the Puma crew and possibly a non-sighting by the untraced aircraft pilot.

Degree of Risk: D.

AIRPROX REPORT NO 2010038

Date/Time: 26 Apr 2010 1527Z
Position: 5525N 00137W
(0·6nm SW of Boulmer HLS - elev 75ft)

Airspace:	Scottish FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Sea King HAR3	Hawk
Operator:	HQ Air (Ops)	HQ Air (Trg)
Alt/FL:	3000ft	3000ft
	QNH (1016mb)	QNH (1022mb)
Weather:	VMC CLOC	VMC NR
Visibility:	20km	35km
Reported Separation:		
	Nil V/<1nm H	1·5-2nm H
Recorded Separation:		
	200ft V @ 0·7nm Min H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE WESTLAND SEA KING HAR3 PILOT reports that he had departed from Boulmer VFR to conduct an air test with a crew of 2 pilots and was in receipt of a TS from Newcastle RADAR (RAD) on VHF - 124·375MHz. A squawk of A3760 was selected with Mode C; neither Mode S nor any form of TCAS is fitted. The helicopter has a yellow high-conspicuity colour-scheme and the upper and lower HISLs were on.

The Airprox occurred whilst executing the 'maximum contingency portion' of the air test, flying level at 3000ft QNH (1016mb) in VMC, heading 300°(T) at 70kt. They were just about to complete the check for the No 1 ECU, with one engine driving at close to maximum, when they heard RAD calling a Hawk pilot. The Hawk pilot was advised of the location of his helicopter - to the SE of the Hawk at close range. He and his co-pilot looked to their 12 o'clock and saw a black Hawk ac about 1nm away at about the same altitude that appeared to be flying straight towards them on a reciprocal heading. The Hawk pilot then told RAD he was visual with his helicopter and made a sharp turn onto S and crossed less than 1nm ahead from R – L and descending with a 'high' Risk of a collision. No avoiding action was taken and he maintained his NW'ly heading due to the very late sighting, the configuration of his helicopter for the air test and confirmation that the other aircraft was manoeuvring to deconflict. He added that the cockpit workload was 'high' because of the demands of the air test, which required the crew be 'heads-in' rather more than normal. The minimum crew was carried because of the nature of the flight but a TS had been obtained to assist the reduced lookout and increase the crew's SA. However, they had not been given any TI nor made aware of the Hawk by RAD at any time, he thought.

THE HAWK T1 PILOT, reports he was conducting an advanced instructional sortie VFR whilst in receipt of a TS from Newcastle RAD on UHF - 284·6MHz. An allocated squawk of A3751 was selected with Mode C; neither Mode S nor any form of TCAS is fitted. His ac has a black colour-scheme and the upper and lower HISLs were on.

He was descending VMC under 'own navigation' to below cloud about 6nm NW of Boulmer on a northerly heading at 400kt, with an in-flight visibility of about 35km. When clear below cloud descending through an altitude of about 3500ft, a RH turn was initiated. Turning through 090°, RAD informed them of rotary-wing traffic 3nm E of their position at a similar altitude, which was the first information about the possible confliction. The rear seat pilot sighted the yellow Sea King about 3nm away as they turned; no avoiding action was taken as the R turn had resolved the confliction. The R turn was continued onto a SE'ly heading and the helicopter passed 1½-2nm away to port with no Risk of a collision.

THE NEWCASTLE APPROACH RADAR CONTROLLER (RAD) reports that the Hawk pilots were receiving a TS and requesting a low-level letdown in Northumberland; the Sea King pilots were also receiving a TS operating just NW of Boulmer. The Hawk pilot said that he wished to descend towards Amble and then route northwards, so an

initial descent was given to an altitude of 5000ft to keep the ac terrain-safe and above some other ac – including the Sea King. He was just about to pass TI on the Sea King to the Hawk pilot when the latter requested a L turn. The Hawk then tracked northwards passing about 4nm W of the Sea King descending through FL70. At this point he believed the Hawk was flying away from the Sea King so he gave a further descent instruction to the Hawk pilot and advised him to maintain his own terrain clearance below 4300ft. Very soon after this the Hawk turned hard R, whereupon he issued TI, first to the Hawk pilots and then to the Sea King pilots. After passing 1nm W of the helicopter the Hawk routed to Amble.

The Newcastle 1520 Weather was given as: 270/15kt; >10km nil Weather; FEW at 4500ft; QNH 1022mb.

ATSI reports that the Airprox occurred in Class G airspace. The town of Amble is situated on the coast, 6nm SSE of Boulmer. The Sea King was operating VFR, conducting an air test in the vicinity of Boulmer. The Hawk was routeing from the SW and intended to carry out a let down from medium to low-level. The crews of both ac were in receipt of a TS from Newcastle RAD on cross-coupled frequencies: 124·375MHz (VHF) for the Sea King and 284·6MHz (UHF) for the Hawk. [This allows all VHF transmissions to be heard on UHF and vice versa.]

The Sea King pilots first contacted Newcastle RAD at 1452:50 to operate VFR in the Boulmer area in receipt of a BS. At 1512:24, the Sea King pilots made a request to Newcastle, "…[Sea King C/S]..*would it be possible to get a Traffic Service please we'll be operating..about 3 thousand feet in the local Boulmer area".* Newcastle replied, "[Sea King C/S] *for Newcastle then squawk 3-7-6-0 ident"* which the Sea King crew read back correctly. At 1515:25 Newcastle advised, "[Sea King C/S] *you're now positively identified 2-5 miles to the 2-4 miles north of Newcastle it is a Traffic Service with your own terrain clearance the Tyne pressure..setting is still 1-0-1-6".* The Sea King pilot read back, *"Traffic Service..with our own terrain clearance 1-0-1-6 copied* [Sea King C/S]*".*

At about 1520 the Newcastle controller handed over responsibility for the provision of the radar service to another radar controller.

At 1521:34, radar recordings show the Hawk 16nm SW of Durham Tees Valley Airport tracking towards Newcastle displaying a code callsign converted SSR label indicating FL230. After a radar handover from London Military, the Hawk descended to FL190 and changed to the Newcastle assigned SSR code of A3751. At 1523:45 the Hawk crew called Newcastle, "..[Hawk C/S] *on handover flight level 1-9-0 Traffic Service".* The controller replied "[Hawk C/S] *Newcastle RADAR good afternoon you're identified Traffic Service report ready for further descent",* to which the pilot then responded, *"..ready for descent* ". Newcastle enquired, "[Hawk C/S] a*re you hoping to go..low level in Northumberland"* and the Hawk pilot replied, "[Hawk C/S] *VMC at Amble and moving north."* Newcastle then instructed the Hawk crew to, "[C/S] *descend initially altitude 5 thousand feet on the Newcastle Q-N-H 1-0-2-2",* which was read-back accurately. The controller's written report states that the Hawk was given initial descent to 5000ft to remain terrain-safe and also to keep the Hawk above some light ac in the vicinity, including the Sea King.

The controller was now aware that the Hawk crew was intending to let down in the Amble area and also aware of the Sea King in that vicinity. RAD reported that he was about to pass TI to the Hawk when, at 1524:55, the pilot requested "[Hawk C/S] *request..left turn through 10 degrees",* whereupon Newcastle replied, "…*own navigation approved".* At 1526:33, the radar recording shows the Hawk was 5·5nm SW of the Sea King, passing FL73 in the descent. The controller states that the Hawk passed 4nm W of the Sea King at about 7000ft. In the belief that the Hawk would continue on the northerly track, at 1526:40 Newcastle advised, "[Hawk C/S] *there's no traffic to affect your further descent so descend further but anything below altitude 4 thousand 3 hundred feet you're taking your own terrain clearance report V-M-C below",* to which the reply was, "[Hawk C/S] *V-M-C below".* Newcastle then sought clarification "..[Hawk C/S] *apologies was that V-M-C below now*"; at this point a transmitter is switched but with no modulation.

As the Hawk passed 3·7nm WNW abeam the Sea King, the controller observed the Hawk commencing a R turn and immediately passed TI on the Sea King at 1527:10, "[Hawk C/S] *Newcastle RADAR see you turning right traffic is a helicopter 3 miles southeast of you slightly below".* The Hawk pilot responded, "[Hawk C/S] *looking".* There is a further transmission believed to be from the Hawk [words doubtful but possibly] *"got it"* and then another believed to be from Newcastle *"roger",* before Newcastle passed TI to the Sea King pilots at 1527:20,"…[Sea King C/S] *traffic is a Hawk has you in sight 2 miles northwest of you 1 mile west".* At 1527:21 radar recordings show the Hawk converging 1·3nm NW of the Sea King with both ac indicating FL32 Mode C [about 3470ft Newcastle QNH (1022mb)]. The Sea King pilot reported, *"..crossing right to left in front of us now..visual."* At this point radar recordings show the Hawk passing 0·7nm SW of the Sea King and 200ft below it. Newcastle advised the Sea

King pilots, *"has you in sight as well".* Shortly afterwards the Sea King pilot advised at 1527:30, *"Hello Newcastle…we're air testing so we've got a slightly limited lookout at the moment",* which was acknowledged, *"roger".*

About 3min after the Airprox occurred the Sea King pilot enquired about the minimum separation that had obtained. Newcastle advised that there was about 1nm separation as the Hawk passed ahead, whereupon the Sea King pilot advised that he would contact Newcastle when back at base.

The Hawk pilot reported VMC below, routeing low-level W and then N. Newcastle advised the Hawk about the helicopter, now just to the NW of Boulmer. The Hawk pilot reported switching en-route at 1530:46 and was instructed to squawk A7000.

MATS Pt1, Ch11, P5, 4.1.1 states that 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.'

MATS Pt1, Ch11, P6, 4.5.1 states that:

'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.'

'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 3 NM 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. Controllers shall aim to pass information on relevant traffic before the conflicting aircraft is within 5 NM, in order to give the pilot sufficient time to meet his collision avoidance responsibilities and to allow for an update in traffic information if considered necessary. Distances displayed on ATS surveillance systems can be at variance to the actual distances between aircraft due to the limitations in accuracy of surveillance systems. Furthermore, some aircraft may not be displayed at all by ATS surveillance systems.'

MATS Pt1, Ch11, P6, 4.6.1 states that:

'Whether traffic information has been passed or not, a pilot is expected to discharge his collision avoidance responsibility without assistance from the controller. If after receiving traffic information, a pilot requires deconfliction advice, an upgrade to Deconfliction Service shall be requested. The controller shall make all reasonable endeavours to accommodate this request as soon as practicable and provide deconfliction advice at the earliest opportunity.'

'When providing headings/levels for the purpose of positioning and/or sequencing or as navigational assistance, the controller should take into account traffic in the immediate vicinity, so that a risk of collision is not knowingly introduced by the instructions passed. However, the controller is not required to achieve defined deconfliction minima.'

During the Hawk's descent from medium to low-level the controller had asked the pilot if he was hoping to go low-level in Northumberland. In response the Hawk pilot had reported his intention to be flying in VMC at Amble moving N. The controller's written report stated that he was about to pass traffic information on the Sea King, when the Hawk requested a L turn. At this point the controller judged that the Hawk would continue N to pass 4nm W of the Sea King and would continue to fly N away from the Sea King. The Hawk, having already passed well to the W of Amble, was advised that there was no traffic to affect further descent and the Hawk reported VMC below. However, as the Hawk passed 3·7nm WNW abeam the Sea King, the controller observed the ac making a turn to the R. The controller recognised that the two ac were now in potential conflict and passed late TI, which may have assisted both pilots in achieving collision avoidance. Had the controller passed TI earlier, the situational awareness of both pilots would have been significantly improved.

HQ AIR (OPS) comments that the Hawk pilots were made aware of the Sea King in good time to see and avoid it, which they did. If an air test cannot be conducted whilst manoeuvrability and a good lookout is maintained, perhaps an area of sanitised airspace should be booked for the purpose.

HQ AIR (TRG) comments that the unannounced R turn by the Hawk appears to have caught out the Newcastle Controller regarding the timing of the TI. However, both ac were being operated VMC in Class G airspace. The relatively late sighting of the Hawk by the Sea King crew caused them concern particularly as their flight regime at that time limited their manoeuvrability. On the other hand the Hawk crew did not consider flying avoiding action because their turn had already broken the conflict. As the Sea King crew were conducting an air test requiring the crew to be 'heads-in' more than normal obtaining a DS may have been a more appropriate 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 controller involved and reports from the appropriate ATC and operating authorities.

The HQ JHC Members confirmed that it was normal to reduce the crew compliment on an air test and thus, commonly, no aircrewman was carried for such flights. Although this reduced their lookout capability, the Sea King Captain had taken this into account and obtained a TS to supplement the lookout scan of the two pilot crew. He was mistaken in reporting that they had not been given any TI nor made aware of the Hawk by RAD at any time; the Hawk was called to the helicopter pilots by RAD, *"..2 miles northwest of you 1 mile west",* albeit after the Hawk pilot reported the helicopter in sight and when the range was closing fast. Therefore for all practical purposes the earliest the Sea King pilots were aware of the Hawk was when it crossed into their 12 o'clock about 1nm away at about the same altitude. The Sea King crew would undoubtedly have received TI earlier if RAD had not misconstrued the Hawk crew's intentions from their requested 10° L turn. It was plain to controller Members that RAD did not expect the Hawk to turn sharply in the opposite direction towards the Sea King and when it did just that, with both flights under a TS from the same controller, RAD had a choice of which to call first. Without doubt, the controller's choice of priorities at this late stage were correct and the agile Hawk could more easily avoid the slower helicopter. Thus with the benefit of TI, the Hawk pilots were able to judge that their intended manoeuvre towards Amble would take them clear of the Sea King without more robust avoiding action being needed.

In the clear light of hindsight it was evident to the Members that the Newcastle RADAR controller had not anticipated the Hawk crew's R turn towards Amble. It appeared that the Hawk crew's L turn reinforced an assumption by RAD that, although the Hawk crew had declared that Amble was the intended low-level entry point, as the jet had already flown past this point northbound, the crew would not be turning towards it and thus would not fly close to the helicopter. The advice that there was no traffic to affect further descent also subsequently proved to be misleading. With further traffic in the vicinity perhaps a more cautious choice would have been to check the Hawk crews intended heading before releasing the crew to continue under their own navigation. Plainly RAD was endeavouring to provide a helpful TS during the Sea King crew's air test, but unbeknownst to RAD the Hawk crews requested L turn had belied their actual intentions. Nevertheless, the alert controller detected the jet's turn very swiftly and almost as soon as it had started RAD quickly issued TI to the Hawk crew, which enabled them to sight the helicopter, albeit perhaps later than ideal, but thereby ensuring they could steer clear of it. On balance, the Board considered that the controller had done a good job in providing TI to the Hawk crew once their intentions became clear.

Whilst some controller Members considered this to be a commonplace encounter in Class G airspace, it was readily understood that with a Hawk jet at close quarters, not knowing exactly what the crew was doing, the helicopter pilots would have felt quite vulnerable. With a myriad of test functions to perform and for which the resultant figures needed to be noted accurately, the air test was undoubtedly concentrating their minds inside the cockpit. Consequently, controller Members suggested that a DS would be the more appropriate ATS under these circumstances, which would assist the crew in fulfilling their mutual responsibility for maintaining separation against other Class G traffic. Other pilot Members agreed, but whether a DS was compatible with the flight parameters of this air test only the crew could gauge.

In determining the Cause and Risk, the Board noted that whilst the Sea King crew were informed about the presence of Hawk, it was at very short notice as it crossed ahead. However, the Hawk crew had been warned about the helicopter and had descended below it at a range of 1·3nm, closing to a minimum of 0·7nm laterally,

albeit by a margin that the Sea King crew might have considered less than ideal. The Board concluded therefore, that this was a sighting by the Sea King crew of traffic manoeuvring clear, with no inherent Risk of a collision.

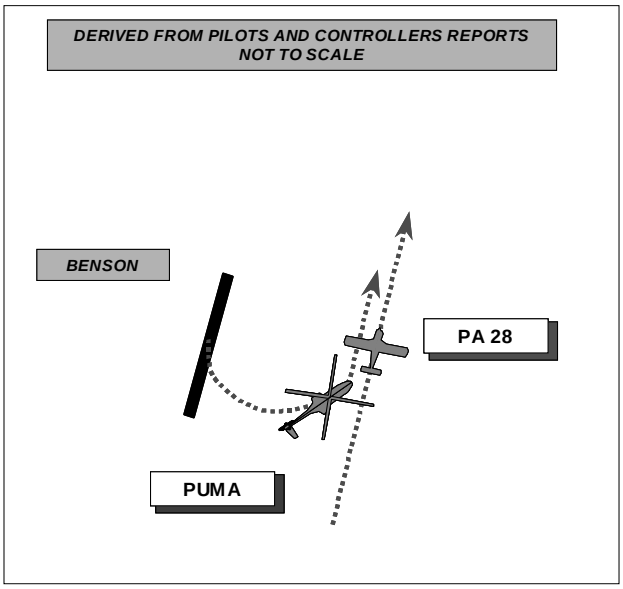
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Sighting Report.

Degree of Risk: C.

AIRPROX REPORT NO 2010039

Date/Time:	30 Apr 2010 1434Z	
Position:	5137N 00105W (Benson Circuit - elev 203ft)	
Airspace:	ATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Puma	PA28
Operator:	HQ JHC	Civ Club
Alt/FL:	1000ft (QFE 1002mb)	800ft (QFE 1016mb)
Weather:	VMC CLBC	VMC
Visibility:	25km	10nm +
Reported Separation:	NR V/50/75m H	200ft V/0.6nm H
Recorded Separation:	~0.1nm	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PUMA PILOT reports flying a training sortie in the Benson Circuit for RW19LH, in communication with Benson TWR. While levelling downwind at 1000ft QFE, passing through heading 060° at 100kt, another ac called to join the Benson circuit downwind and a blue and white low-wing light ac was seen simultaneously, 50-75m ahead and at the same height virtually in the circuit. He decelerated to increase the separation and assessed the risk as being medium.

THE PA28 PILOT reports that his departure from Kemble was delayed due to squally showers and a strong crosswind. Once airborne and squawking with Mode C, a BS was obtained from Brize Norton and a direct route to Benson was planned but a heavy shower over the Abingdon/Didcot area necessitated routing to the S and around P106. He notified Brize of his intentions and shortly after was given a handover to Benson. He did not call Benson immediately as he was concentrating on remaining clear of P106 but Benson ZONE then called him on VHF to see if he was on frequency. They passed him joining instructions including approval for a downwind join for RW19 so he positioned the ac for the downwind join. He was concentrating on ensuring his height and position were correct for the circuit at Benson and he did not get any further calls or requests from ZONE.

As he approached the circuit heading 010° at 90kt, still on the ZONE frequency, he called joining downwind RW19 and ZONE requested him to make the downwind call to Tower and he assumed that ZONE had co-ordinated with Tower. Tower clearly had not been expecting his call but he was cleared to join. Abeam the upwind position he noticed a Puma on climbout and kept his eye on it as it was not clear whether it would pass behind him and it continued to climb towards him apparently not having seen him. If the Puma had continued on its intended path he would have to take avoiding action by climbing above circuit height. When it became clear that the Puma had seen him he continued to final approach and landed.

After landing he called the ATC Supervisor and discussed the late downwind call to Tower and why it had happened; he suggested to him that he should have called Tower earlier. He felt that although a downwind join was not standard procedure a simple request to call 'field in sight' and a transfer to Tower several miles out would have given everyone better situational awareness. He believes that he complied completely with ATC instructions.

THE BENSON ADC reported that at the time the Benson Watchman radar was U/S but the HiBrite was serviceable; TWR was band-boxed with GND and he had been in position for about 35min. He was warned by APP that a PA28 was 10nm SW and would join the CCT downwind for RW19 LH. The circuit had been very busy but the traffic level had just reduced leaving 3 ac in the circuit comprising of another light ac going around on the dead-side, the reporting Puma had just completed a slow approach to touch and go (T&G), and a Heli-Med ac on approach to point west; in addition there was one ac on a PAR approach for a low approach for further PAR, one

or two aircraft on the GND frequency and one other warned in. He saw the PA28 on the HiBrite to the SW at 10nm and then again at 6nm slightly later. The next time his attention was drawn to the ac was when the pilot called downwind.

About 5min previously he called the Supervisor up to local and informed her that the Puma concerned had been flying non-standard circuits. It had been flying tighter circuits than normal and looked to be turning early and below 500ft, routing just to the S of the houses on the SE corner of the airfield in the climb. Also, on his last approach the pilot asked for a touch and go (T&G); however, when cleared for a T&G he had actually stopped on the RW for 5 to 10sec while radar traffic was approaching 4nm as he stopped and then got airborne again into the circuit, technically without permission. Both Assistants and the Controller noted the Puma stopping and considered it wrong as a less experienced ADC controller may have released the traffic lights and allowed vehicles to cross when the aircraft had stopped. The supervisor decided that he should monitor the Puma's next approach and she would contact the pilot on landing. That being the case his attention was focused on the Puma's next approach when he called finals for a T&G. At that time he had PAR traffic on approach, the second light ac going around due to the slow approach, radar traffic and the Heli-Med approaching Point West. At that point the Puma had completed a standard T&G and, as it was in forward motion and clear of the RW, he gave the radar traffic, which was at 3nm permission for a low approach. The Puma once again turned early and below 500ft. As he completed the 3-mile call broadcast, the PA28 called joining downwind and he noted its position as approaching the mid-downwind point, slightly ahead of the Puma. Although the ac looked to be at a similar height, he considered there to be sufficient lateral separation, enabling him to give the PA28 full joining instructions, before asking him if he was visual with the Puma, which he replied that was. When asked, the Puma pilot reported visual with the PA28 and then complained about the PA28 pilot not making an early downwind call.

With hindsight he thought that he should have informed the circuit traffic about the downwind joiner and maintained a closer watch on the HiBrite. However, he was informed that the PA28 would be conducting a downwind join when it was 10 miles out. He made a decision at that time not to inform the busy circuit as 10 miles was too far out to be of any relevance to the circuit traffic and he expected the PA28 to make a standard joining call 3 miles from the airfield. He thought that his attention being focussed on the Puma that was flying unusual circuits might have added to his lack of monitoring of the downwind joiner.

UKAB Note (1): The recording of the Heathrow radar shows the PA28 throughout and the Puma intermittently. The PA28 joins the circuit as described by its pilot, descending to be at 1000ft at the beginning of the downwind leg. The Puma appears as a primary only contact almost abeam the ARP converging with the PA28 and closing to 0.1nm (the minimum radar resolution) before the separation increases as the Puma decelerates in the PA28's 6 o'clock.

HQ AIR BM Safety Management reports that the Benson ADC was working under a medium to high loading without a GND controller. The Puma was flying non-standard circuits, turning straight onto the downwind leg rather than continuing upwind prior to turning not below 500ft IAW the Flying Order Book; further it was stopping on the RW after asking for a touch-and-go procedure. These actions distracted the ADC and therefore increased his workload; further the SUP reported that the initial pre-note from ZONE to TWR was not evident on the tape transcript [since it was agreed that there was a pre-note it probably took place before the transcript commenced]. The transfer of the PA28 from ZONE to TWR was not prompted by ZONE before the ac entered the circuit area and was therefore late; this compounded the poor SA of both the ADC and the circuit traffic. As the PA28 was mid-point downwind the Puma got airborne and turned below 500ft, which put it into conflict with the PA28 at 800ft.

OIC Flying Club has briefed members of the importance of being conversant with local procedures; in addition the unit is reviewing the Flying Club Orders. Best practice remains for Supervisors to roster a GRD Controller when busy periods are expected in TWR, thus reducing the workload on ADCs.

HQ JHC comments that the actions of the Puma in the build-up to the incident were far from satisfactory. By flying non-standard circuits and, in particular, remaining on the RW during a Touch and Go, the Puma caused an unnecessary increase in workload for the controller. This Airprox highlights the importance of timely radio calls - both by the controller and joining traffic - but it could have been wholly prevented by better airmanship on the part of the Puma.

AIRPROX REPORT No 2010039

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.

Both Controller and Pilot Members alike found this a challenging incident to analyse as there were so many elements and because it highlighted significant differences between civil and military regulations and practices regarding clearances to enter an ATZ and to join a visual circuit. The Board agreed that since there were so many factors that contributed to this incident, they should not be enumerated formally below as 'Contributory Factors'.

Members agreed that in this high-workload situation, the ADC had become distracted to such an extent by the Puma's non-standard circuits, that he had temporarily overlooked the approaching PA28. Had the ADC not been distracted, Members agreed that he would most likely have paid more attention to the PA28, of which he was previously aware having agreed with ZONE that it could join downwind and noted it on the HiBrite on 2 occasions; he could then have prompted the ZONE Controller to transfer it to him in an unrushed and timely manner. The ZONE Controller too, Members agreed, had contributed to the incident by not instructing the PA28 pilot to report 'visual' with the airfield, as is normal procedure, and then to call TWR before entering the circuit area; Controller Members agreed that although civil and military procedures differed, in this situation such a call would have been best practice and might have prevented the incident. It was also unanimously agreed that if a controller does not instigate a handover to TWR, then the pilot should take the initiative and request it before nearing the airfield, for example by saying 'would you like me to contact TWR?'

Civil and military Controllers also noted the discrepancy between civil and military procedures regarding circuit joining clearances; although the PA28 was a civilian ac being operated by the local flying club, it was operating from a military airfield and flying club members are required to comply with local Flying Orders and military procedures. That being the case, only the ADC had the authority to clear the ac to join the circuit. Although perhaps harsh, and despite the mitigating circumstances, Members agreed that the PA28 pilot had not been cleared by the ADC to join the circuit until well after the ac had entered it. This breakdown of Flying Order Book procedures had not been the cause of the incident as the PA28 pilot had seen from the upwind end of the runway the Puma climbing out directly towards him; the non-standard circuit had apparently also caused confusion in the PA28 pilot's mind as to the Puma pilot's further flight-path and intentions. The Board discussed the responsibility of the PA28 pilot to integrate safely with traffic already established in the circuit. With the Puma just airborne and no other aircraft in the circuit, there was no established circuit pattern for the PA28 pilot to conform with, and he would have expected the Puma to climb to 500ft before turning. With the PA28 in the downwind position and probably ahead of the Puma, albeit only just, it was the Puma pilot's responsibility to see the PA28 and integrate behind it. Clearly the Puma crew had no indication from the RT that there was traffic downwind when they turned short and saw the PA28 at a very late stage (50-75m ahead).

In determining the Cause of the Airprox, the Board struggled to establish a consensus of where the balance of responsibility lay between the controllers and aircrew involved. Therefore the Board agreed to make a factual statement indicating what had happened.

A Member familiar with both GA and Military operations commented that this incident was a good example of how an incident could occur basically through poor communication by all those involved – one transmission from any of the participants, he opined, could have broken the chain of events.

In the event, however, by monitoring the Puma's flightpath continuously, and thereby being in a position to manoeuvre should it be required, the PA28 pilot ensured that there was no risk of the ac colliding.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Unaware that the PA28 had joined the circuit downwind, the Puma crew turned into conflict with it.

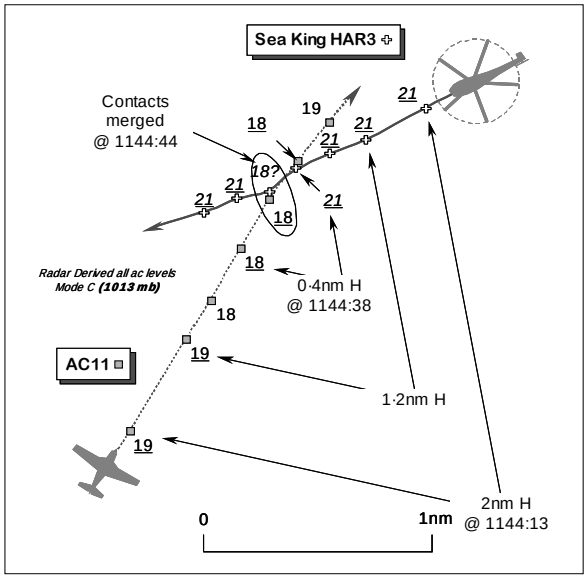
Degree of Risk: C.

AIRPROX REPORT NO 2010040

Date/Time: 28 Apr 2010 1144Z
Position: 5216N 00127E (20nm ENE of Wattisham A/D - elev 283ft)
Airspace: London FIR (Class: G)

	Reporting Ac	*Reported Ac*
Type:	Sea King HAR3	Rockwell 112
Operator:	HQ Air (Ops)	Civ Pte
Alt/FL:	2000ft	1500-2000ft
	QFE (1010mb)	QNH (1021mb)
Weather:	VMC Sleet	VMC NR
Visibility:	10km	>10km
Reported Separation:	200ft V/100m H	NR
Recorded Separation:		

Nil V - contacts merged see UKAB Note



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE WESTLAND SEA KING HAR 3 CAPTAIN reports he was conducting a local VFR training flight from Wattisham and in receipt of a TS from Wattisham APPROACH (APP) on UHF 277·725MHz. His ac has a yellow colour-scheme and the HISLs were on. A squawk of A4523 was selected with Mode C.

The PF was using an IF visor and flying the helicopter from the RHS, whilst being vectored for an instrument approach to RW23 at Wattisham in VMC at 2000ft QFE (1010mb). APP passed TI about an ac in their 11 o'clock, 6nm, some 200ft below, also working Wattisham APP, which they acknowledged with, 'copied, looking'. About 1min later, heading 245°(M) at 105kt, whilst the pilot in the LHS was carrying out the instrument approach cockpit checks in accordance with the Flight Reference Cards (FRCs), the ac captain saw an aircraft passing 100m to port and 200ft below his Sea King flying straight and level on a reciprocal heading with a 'high' Risk of a collision. The low-wing single-engine aeroplane, predominantly blue in colour, was spotted 100m away but no avoiding action was taken as the other ac was abeam and drawing aft when first seen. He queried if APP had the traffic on their radar; the controller confirmed it was the ac that TI was passed about earlier. The instrument approach was then completed.

THE ROCKWELL COMMANDER 112 (AC11) PILOT reports that he was in transit to Beccles under VFR at 1500-2000ft amsl. A BS and MATZ penetration approval had been obtained from Wattisham APP on VHF 125·8MHz and the assigned squawk was selected with Modes C and S on.

Wattisham APP informed him of an approaching helicopter, but gave no warning to take avoiding action. Heading 020° in the vicinity of Framlingham at about 110kt, he saw the bright yellow helicopter from a good distance away, which passed to port and above his ac but he could not remember the distance. He did, however, have a clear sight of the helicopter at all times, felt no rotor wash or down draft and no avoiding action was taken. He assessed the Risk as 'low'.

His ac has a blue/gold & white colour-scheme.

THE WATTISHAM APPROACH RADAR CONTROLLER (APR) reports that the Sea King was recovering to Wattisham for an ILS approach on UHF 277·725MHz. The ac was identified and placed under TS at 2000ft Wattisham QFE (1010mb). The AC11 was transiting to Beccles under BS at 2000ft Wattisham QNH (1020mb) on VHF 125·8MHz. The trainee Approach controller accurately called the AC11 to the Sea King crew as - 'traffic L 11 o'clock, 6 miles, northbound, a Commander with me at 2000ft Wattisham QNH', to which the Sea King replied, 'looking'. The trainee then became involved in a radar handover to London Military. As soon as this handover was completed the trainee advised the AC11 pilot about the, 'Sea King traffic on his nose approx half a mile 300ft

above'. The AC11 pilot reported that he was just passing that traffic with it in sight; the Sea King pilot then advised that traffic had passed about 100ft below, some 300ft away down his port side and asked if anything was shown on radar. The trainee controller advised that it was the traffic that had been called to him earlier - the AC11. After he had landed the Sea King pilot advised he was filing an Airprox; no Airprox report was made on RT by the AC11 pilot. The APR estimated the minimum separation to be ¼nm horizontally and 200ft vertically.

ATSI reports that the Wattisham Approach Radar position was being operated by a mentor and trainee, using both UHF and VHF frequencies. All the RT transmissions by the controllers were made on both frequencies. However, the RT recording confirms that any transmissions from the pilots were only made on the respective frequencies; i.e. the Sea King on UHF and the AC11 on VHF. Consequently, the ATC transmissions were received by both pilots but they would not have been able to hear the calls made by the other pilot.

The AC11 pilot established communication with Wattisham APP at 1133, requesting a BS, *"A-C 11 out of Earls Colne inbound to Beccles presently just coming up abeam the Orwell ????? re-checking the 0-6-0 I'm level at 2 thousand feet on 1-0-2-0 four souls on board and request a Basic Service"*. The controller confirmed the provision of a BS and issued the Wattisham QNH (1021mb).

The Sea King crew returning from a local VFR flight contacted Wattisham APP at 1138 to, *"request..radar pick up for an I-L-S before our crew drop off…"*. The helicopter was identified, placed under a TS, with the proviso that the crew were responsible for their own terrain clearance and instructed to climb to 2000ft Wattisham QFE (1010mb) [about 2330ft QNH (1021mb)]. The height and ATS were read back correctly by the Sea King pilot and shortly afterwards he reported reaching a height of 2000ft, heading 235°. About 2min later, at 1142:45, TI was issued to the Sea King crew, *"traffic left 11 o'clock 6 miles crossing left right indicating..2 hundred feet below your level is a..Commander 11 with me at 2 Thousand feet on the Regional on the Wattisham QNH 1-0-2-1"*. The pilot responded *"copy looking"* at 1143:00.

The trainee controller then became busy dealing with an ac routeing out to the NW of Wattisham on the VHF frequency, which involved carrying out a handover to London Military. As soon as the radar handover was completed, the pilot of the AC11 was warned, at 1144:39, *"Sea King traffic on your nose about half a mile..indicating 3 hundred feet above your level"*. The pilot replied, *"Yeah seen him he's just gone past sir"*.

[UKAB Note (1): Just after 1145:00, the Sea King crew enquired on UHF, "[C/S] *we had a..puddle jumper white aircraft pass us about..1 hundred feet below about 3 hundred feet down our port side..did you have any [radar] return on him?".* The APR replied "[Sea King C/S] *affirm that was the traffic called about a minute ago".*]

At 1144:38, the radar recording shows the 2 ac on conflicting tracks, 0·4nm apart. The AC11, indicating 1800ft Mode C, is 300ft below the Sea King, which is maintaining 2100ft Mode C. The next frame at 1144:44, shows that the Sea King has descended to the same level as the AC11, 1800ft (1013mb) [about 2040ft QNH (1021mb)] and the radar contacts of the two ac have merged. At 1144:50, the Sea King indicates 2100ft (1013mb) [2340ft QNH], with the AC11 in its 6 o'clock, at 0·3nm, 300ft below it.

[UKAB Note (2): The validity of the Sea King's Mode C indication, based on the foregoing Debden Radar data, when the contacts merged at 1144:44 is questionable. Once level, the helicopter consistently maintains 2100ft Mode C, from 4min before the Airprox until the end of the available data, with the exception of two returns – one being at the CPA and the other well after the event. The Sea King pilot's report does not mention any descent nor was any avoiding action taken in the time available. Moreover, he states that the AC11 passed abeam some 200ft below his helicopter. The Debden Radar gives consistently 'valid' data throughout that is replicated by the Cromer Radar recordings, but analysis of the Stansted 10cm Radar recording shows that the Mode C return for 1144:46, was an invalid indication (---). Notwithstanding the tolerances applicable to verified Mode C, it is feasible, therefore, that the Sea King maintained 2100ft (1013mb) and that the close proximity (<200yd) of the two ac has resulted in a spurious Mode C indication being displayed – the SSR processor possibly taking the more reliable altitude data from the enhanced capability Mode S equipped AC11 and relating it, incorrectly, to both ac.]

The MATS Part 1, Section 1, Chapter 11, Paragraph 4, defines a Traffic Service:

'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'.

A Basic Service is:

'…..an ATS provided for the purpose of giving advice and information useful for the safe and efficient conduct of flights. Basic Service relies on the pilot avoiding other traffic, unaided by controllers. 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 ATZ, and the pilot remains responsible for collision avoidance at all times. 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'.

Timely TI was issued to the Sea King crew about the AC11. Ideally, the information could have been updated as both ac approached each other. However, the controller was occupied handing over another ac and up to the last moment they were 300ft apart vertically. Although there was no requirement under a Basic Service to pass TI to the AC11 pilot, a warning was issued by the controller about the Sea King, albeit at a late stage.

HQ AIR (OPS) comments that once informed about the conflicting traffic the Sea King crew appears to not have assimilated the implications and had then become focused on internal cockpit husbandry. Fortunately the AC11 pilot was visual throughout and passed the Sea King by what he considered a safe margin; a wider berth would have been more comfortable and, arguably, demonstrated better airmanship.

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 and operating authorities.

It was evident that APP had passed accurate TI about the AC11 to the Sea King crew under the TS when the ac were 6nm apart, including the relative bearing, the fact that the AC11 was on a crossing track and that it was only 200ft below the helicopter's indicated level; the TI did not, however, include the AC11's heading. A CAT pilot Member opined that the Sea King crew would not have been able to spot the AC11 at this range and it seemed that the trainee controller's transmission had either not 'painted' a satisfactory picture for the Sea King crew, or they had apparently not absorbed the full gist of the TI nor understood that the AC11 posed a significant conflict. A controller Member, himself an experienced instructor, opined that if APP had emphasised this or that it was closing steadily it might have had more impact on the Sea King crew. Nevertheless, after acknowledging the TI, the Sea King crew started their cockpit checks, which may have detracted from their lookout. The radar recording reflected that the AC11 continued to constitute a definite hazard after the TI had been passed and there was widespread agreement amongst controller Members that a second transmission of TI would have been helpful and should have been issued, which would likely have prompted the Sea King crew to redouble their efforts to see the other ac. A Member emphasised that controllers should take into account other traffic when issuing vectors and not inadvertently generate a conflict by steering an ac under their control towards another; however, in this instance APP had not issued a vectoring instruction before the Airprox and had merely asked the Sea King crew to report their heading. The ATSI report shows that the controllers were busy with a radar handover after TI was issued, but any requirement for an update must take precedence and an experienced area controller Member stressed that Mentors should take care to ensure that priorities are allocated correctly without detriment to the overall ATS provided. Clearly the Sea King crew had a mutual responsibility to 'see and avoid' the other ac under the TS and could have asked for an update of TI themselves as they had not acquired the AC11 beforehand at a suitable range. A CAT pilot Member suggested that the Sea King pilots might have had different expectations under the TS and stressed that pilots receiving a TS should request updates on notified traffic that they cannot see. Nevertheless, pilots are expected to discharge their collision avoidance responsibilities under a TS without assistance from ATC; generally, the controller would proffer no form of deconfliction advice and if the pilots required deconfliction advice they should ask for an upgrade to a DS.

AIRPROX REPORT No 2010040

The AC11 pilot was transiting under a BS from APP and it was clear that APP had passed a warning to him of the presence of the Sea King at a range of ½nm. This was about 5sec before the contacts merged so this was barely in time, but the RT transcript revealed that the AC11 pilot had already seen the helicopter before it flew above him. As it was, the horizontal separation that did obtain was minimal as the contacts merged with, it would seem, the AC11 no more than 300ft vertically beneath the Sea King. The Board accepted that the Sea King's recorded Mode C data at the merge, which suggested that it was at the same level as the AC11, in all probability was incorrect.

In determining the primary cause of the Airprox, one Member considered that 300ft vertical separation did not pose a definite hazard and this Airprox had stemmed from the late sighting of the AC11 by the Sea King crew, who had not assimilated the TI provided. However, it was clear from his own account that the AC11 pilot had seen the helicopter from a good distance away and had watched it as the two ac converged. He was therefore, able to give the Sea King a wider berth if he chose to do so, and the Board routinely recommends pilots to avoid other aircraft both laterally and vertically. The Board concluded, therefore, that the cause of this Airprox was that the AC11 pilot flew close enough to the Sea King to cause its crew concern. However, as the AC11 had the Sea King continually in sight and could have manoeuvred if necessary, the Board agreed that no risk of a collision had existed.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The AC11 pilot flew close enough to the Sea King to cause its crew concern.

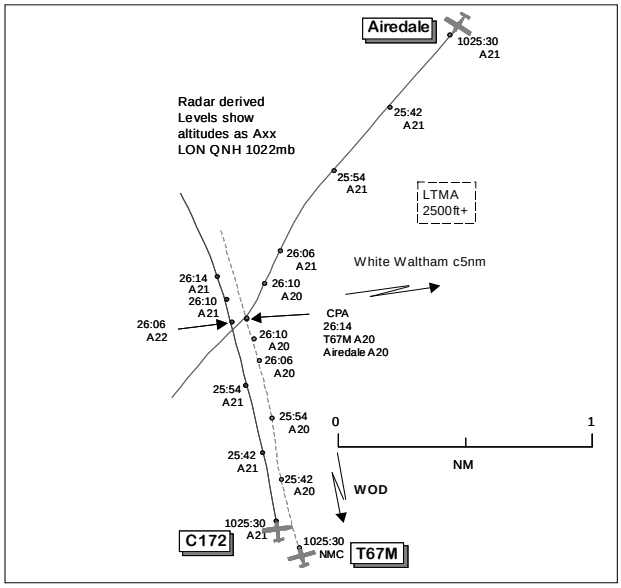
Degree of Risk: C.

AIRPROX REPORT NO 2010041

Date/Time:	3 May 2010 1026Z	
Position:	5129N 00053W (2·5nm WOD)	
Airspace:	LFIR	(Class: G)
	Reporting Ac	*Reporting Ac*
Type:	C172+T67M Formation	Beagle Airedale
Operator:	Civ Pte	Civ Pte
Alt/FL:	2000ft (QNH 1024mb)	1900ft (QNH)
Weather:	VMC CLBC	VMC CLOC
Visibility:	>30km/Unltd	>10km
Reported Separation:		
C172	50ft V/100m H	100ft V/400m H
T67M	30ft V	Not seen
Recorded Separation:		

C172 v Airedale 50-100ft V/0·2nm H

T67M v Airedale Nil V/Returns merge



ALL THREE PILOTS FILED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE C172 PILOT reports en route to Wellesbourne VFR and in loose formation with a T67M whilst under a BS from Farnborough W on 125·25MHz, squawking an assigned code with Modes S and C. The visibility was >30km flying 1000ft below cloud in VMC and the ac was coloured white/blue with strobe lights switched on. The route flown was via Guildford, WOD NDB and then on towards WCO whilst the T67M was flying slightly behind and to starboard. In the vicinity of WOD heading 355° at 100kt and 2200ft he saw another ac, a high-wing single-engine type coloured white/blue, about 200m away to his R and 50-100ft below on a near collision course. The other ac was very close to his R windscreen pillar, so he thought it had been concealed behind it previously, which would have contributed to his late sighting. He quickly determined that the other ac, although close, would pass behind him with no risk of collision which it did about 2sec later about 50-100ft below and 100m laterally. His attention turned immediately to the T67M which was going to get much closer to it. He considered whether he could alert the T67M pilot to the other ac by making an RT call but there was too little time to say anything that could have helped without making things worse. It was difficult to see exactly how the other ac would appear to the T67M pilot – below/above or relative position. The T67M did have 2 pilots onboard so he hoped 1 of them would see the conflicting ac; however, they did not until they were very close. With the visibility being excellent and having a pax who was new to light ac flying, he had not wanted too much radio work so did not consider a higher level of service. However, he later realised that he had omitted to tell Farnborough that he had another ac in formation. The T67M pilot then reported the Airprox to Farnborough a few minutes later. He assessed the risk of collision as low.

THE T67M FIREFLY reports en route to Wellesbourne in two-ship loose formation with a C172 and listening out on the Farnborough W frequency, squawking 7000 with Modes S and C. The visibility was unlimited flying 1000ft below cloud in VMC and the ac was coloured yellow/black with strobe lights switched on. The C172 was responsible for navigation whilst he concentrated on holding formation 300m R echelon with his co-pilot providing a general lookout for traffic and handling the radio. The C172 flight was in communication with Farnborough; however, he missed the C172 pilot's initial call owing to finger trouble selecting the frequency after transferring. It later became apparent that the C172 pilot had not made it clear to Farnborough that they were in formation and, as he missed that point, he didn't call to make his presence known. However, 2min before the Airprox Farnborough asked the C172 pilot if he was in formation and was given a positive response. When 2nm N of WOD heading 350° at 100kt and 2000ft, his co-pilot saw a conflicting ac, a high-wing single-engine ac, only as it passed directly underneath, possibly because the ac had been obscured by the windscreen hoop or the ac's wing. He, the handling pilot, saw it about 1sec before the CPA, the ac appearing as a white flash below and to the R before

it passed about 30ft below, too late to take any avoiding action. The other ac appeared to be tracking 240° and climbing but without having taken any avoiding action. He assessed the risk as high. He reported the Airprox to Farnborough a minute after the CPA, this being his first call on frequency.

THE BEAGLE AIREDALE PILOT reports en route to Popham VFR and in receipt of a BS from Farnborough W on 125·25MHz, squawking an assigned code with Mode C. He had been transferred from Farnborough N as he approached Marlow, which he then passed O/H avoiding the Wycombe Air Park ATZ and Heathrow CTR. He had passed his flight details and was given another squawk; the area was usually busy so he kept a good lookout. When in the Henley area heading 215° at 90kt and 1900ft he saw a Cessna in his 2 o'clock about 1nm away on a reciprocal heading slightly above. He turned slightly towards the S to maintain separation and watched it pass 100ft above and 400m clear to his R with no risk of collision; no TI had been received from Farnborough on this traffic. Only after being contacted by RAC Mil was he informed that a Firefly [T67M] had been in loose formation with the Cessna. He had not seen the T67M as at the time he was pre-occupied with watching the Cessna; he had not been told about any ac flying in formation.

THE FARNBOROUGH W CONTROLLER reports operating at medium intensity with a relatively high turnover of traffic and with a significant number of contacts seen on radar throughout the service area. The C172 was receiving a BS routeing OCK Bagshot at 2100ft QNH 1022mb. When the ac was 1nm NW of Bagshot Mast he told the pilot that he had manoeuvring traffic in his immediate vicinity which he acknowledged. A few miles later he noticed that this contact appeared to be following the C172 so he told the Cessna pilot about it again and asked if he was flying in company with another ac, which he confirmed. The Cessna pilot had not told him previously of this fact nor had the identity of the other ac been offered. As there was no requirement to obtain a c/s for the second ac he did not do so. At about 1026 a pilot called using an unfamiliar c/s [T67M] stating that an Airprox had occurred. He scanned his fpss but did not have an ac with that c/s so he asked the pilot if he was receiving a service from Farnborough as he was concerned that he may have discarded the fps. The T67M pilot replied that he was in company with the C172 and that the Airprox occurred W of White Waltham at 1025. At that time the C172 was N of Henley tracking N and the T67M pilot reported the other ac was high-wing, possibly a C152. The reported ac was not on frequency, he thought, and as there were multiple radar returns in the area it was not possible to identify the ac. He took some details down and then transferred the C172 and T67M to LARS N. The C172 pilot did not file an Airprox on frequency.

ATSI reports that the Airprox occurred 4nm SW of White Waltham below the London TMA in Class G airspace. The Beagle Airedale was VFR en-route to Popham and in receipt of a BS from Farnborough LARS W. The Slingsby T67M (Firefly) was not talking to Farnborough at the time of the incident, but called afterwards to report an Airprox. A C172 en-route to Wellesbourne Mountford was VFR and also in receipt of a BS from Farnborough LARS W. It later emerged that the Firefly was following this C172.

METAR EGLF 031020Z 36016KT 9999 VCSH SCT031 08/01 Q1022=

At 1008:30 the C172 pilot reported 3nm NW of Dorking at 2000ft and Farnborough agreed to provide a BS, issuing a squawk of 0436 and QNH 1022mb.

At 1020:05 the Airedale flight called Farnborough and a BS was agreed. Farnborough provided a squawk of 0433 and QNH 1022mb. The radar recording shows the Airedale tracking SSW and indicating an altitude of 2100ft. At 1023:32 the Farnborough controller observed that an unknown ac is following the C172 and asked, *"C172 c/s are you in company with another aircraft"*. This was confirmed by the C172 pilot but no other details were provided. At this point radar recording shows the C172 tracking N approximately 8nm SSW of the Airedale.

[UKAB Note (1): The 3 ac continue to converge, the radar recording showing at 1026:06 the C172 tracking 350°and indicating 2200ft QNH, crossing from L to R 0·3nm ahead of and 100ft above the Airedale, which is tracking 205° having just turned L about 15°. Meanwhile the T67M is in the Airedale's 11 o'clock also crossing from L to R at a of range 0·4nm indicating 100ft lower. Four seconds later the C172 is seen diverging away from the Airedale at a range of just under 0·2nm with vertical separation of 100ft whilst the T67M closes to a distance of just over 0·2nm in the Airedale's 1130 position at the same level. The CPA occurs on the next sweep at 1026:14 as the T67M and Airedale's radar returns merge with both ac indicating 2000ft QNH. The normal radar picture range shows the ac labels overlapping and garbling.]

The T67M flight then contacted Farnborough radar at 1028:10 and advised *"T67M c/s Slingsby T67 we're following er C172 c/s and we've just had an Airprox"*. The controller's written report states that he was unable to find any flight details for this ac and asks, *"Roger are you receiving a service from me"*. The T67M pilot replied, *"negative not at this time"*. Farnborough responded *"Roger in that case stand by"* and this was acknowledged. At this point the distance between the 2 ac involved is 6nm and the controller was not aware that the Airedale was the other ac involved.

The T67M pilot reported that the Airprox occurred at approximately 1025 abeam White Waltham and that the other ac was a high wing Cessna, possibly a C152. Shortly afterwards the C172 and T67M were transferred en-route.

The Farnborough controller reported multiple contacts in the area. The radar recording set at the normal operational range shows a number of contacts in the area, together with Heathrow arrivals on RW09L, resulting in a complex picture with a degree of label overlap and garbling.

The controller was providing a BS to the Airedale and C172, but not to the Firefly. MATS Pt1, Section 1, Ch 11, Pg4, para 3.1 defines: *'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'.*

Due to the multiple contacts in the area and garbling of SSR labels, the controller was not aware that the ac had passed in close proximity and was unable to pass any warning to the pilots. MATS Pt1, Section 1, Ch 11, Pg4, para 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'*.

MATS Pt1, Section 1, Ch 11, Pg5, para 3.6.1, states: *'Whether traffic information has been passed or not, a pilot is expected to discharge his collision avoidance responsibility without assistance from the controller'."*

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 authorities.

Although the C172 and T67M pilots reported flying in loose formation Members wondered whether they had had any formal training. This discipline is an item covered extensively in military flying training but is not covered in the PPL syllabus; however, it is offered as a post PPL training course by a few flying establishments in the UK. Apart from the actual flying aspects – maintaining/moving formation position and pilot's responsibilities within the formation including lookout - RT discipline, including check-in and loss of RT procedures, is a crucial element. It is not difficult, but it needs to be thought about beforehand and briefed thoroughly. SOPs for each of the flying elements is to check-in on frequency before the formation leader communicates with ATC to pass the formation's flight details. In the event the C172 pilot did not do this and the T67M pilot, who was slow to come up on the new frequency and did not check in, missed the C172 pilot's initial RT exchange with the Farnborough controller, who was unaware of the ac being in formation. Later the controller noticed the T67M flying close to the C172 and eventually the formation situation was revealed. Phraseology to be used for inter-formation exchanges is another aspect of this discipline so the C172 formation leader should have been aware of the appropriate calls to make to warn the T67M pilot of the conflicting traffic. The UKAB will examine the possibility of writing a guide for GA pilots highlighting the tasks and responsibilities associated with leading and flying as a wingman in a formation.

As this incident occurred in Class G airspace below the LTMA, the pilots were responsible for maintaining their own separation from other ac through 'see and avoid', irrespective of the ATS being provided. Under a BS, pilots should not expect any specific TI on other ac. The controller was under no obligation to monitor the flight, and did

not see the confliction on radar so no warning was passed. Members were acutely aware of the possible blurring of services, which could lead to pilots under a BS provided by a radar equipped ATSU believing that they may be getting a 'better' service than they actually are. The formation pair and Airedale had approached each other on a constant relative bearing, a situation where an ac appears as a stationary target in the pilot's field of view with no relative movement. Both the C172 and T67M pilots believed that the converging Airedale had probably been hidden by ac structures. These known blind spots should be taken into account during the lookout scan and can be alleviated by either moving the ac's flightpath or the pilot's head to clear the blind areas. Members agreed that the cause of the Airprox was that the C172 formation leader had, for whatever reason, seen the Airedale late whilst the T67M pilot, whose lookout scan was degraded owing to his attention being drawn towards the leader for his station keeping, only saw the Airedale as it passed beneath, effectively a non-sighting, whilst the T67M passed unsighted to the Airedale pilot. Under the Rules of the Air, the T67M pilot should have given way; clearly this was not possible owing his non-sighting of the conflicting Airedale.

Turning to the Risk, the C172 pilot saw the Airedale late and quickly judged that it was going to pass close, estimated separation 50-100ft vertically and 100m horizontally, but with no risk of collision with his aircraft. The Airedale pilot had seen the C172 and had manoeuvred his ac to the L ensuring adequate separation margins were maintained, his estimated separation distances being borne out by the radar recording. However, the T67M and Airedale had then passed each other purely by chance, the T67M pilot seeing the Airedale as a white flash passing 30ft below with the Airedale pilot unaware of this close call; the radar recording at the CPA indicated nil separation. These facts left the Board in no doubt that a definite risk of collision had existed during this encounter.

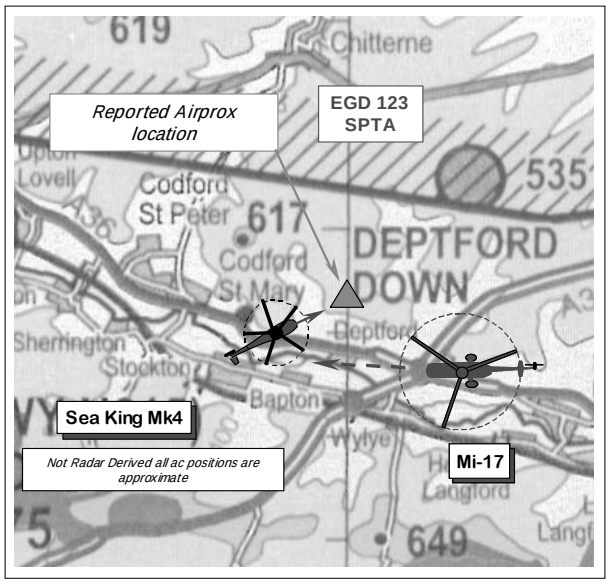
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A non-sighting by the Airedale pilot, effectively a non-sighting by the T67M pilot and a late sighting by the C172 formation leader.

Degree of Risk: A.

AIRPROX REPORT NO 2010042

Date/Time:	03 Mar 2010 1932Z (Night)	
Position:	5109N 00200W (2nm SW of Deptford Down)	
Airspace:	UKNLFS NRR1	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Sea King HC4	Mi-17
Operator:	HQ JHC	HQ JHC
Alt/FL:	1000ft	1500ft
	RPS (1010mb)	RPS (1010mb)
Weather:	VMC Sleet	VMC CLOC
Visibility:	>10km	15km
Reported Separation:		
	Nil V/200m H	200m H
Recorded Separation:		
	Not recorded	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE WESTLAND SEA KING HC4 PILOT reports that he was conducting a night low-level VFR cct training sortie using Night Vision Devices (NVDs) on Salisbury Plain Training Area (SPTA) and in communication with Salisbury OPS – an A/G Station - on 280·00MHz. The upper red HISL was on with the navigation lights set to steady/dim; the IR lights were 'off' as the flash was putting off the pilot in the RH seat whilst in the hover. A squawk of A7002 [Danger Areas General] was selected with Mode C on.

Whilst setting up for a datum autorotation at Deptford Down, heading 060° at 90kt, flying level at 1000ft PORTLAND RPS (1010mb), the aircrewman reported another ac - the Mi-17 - passing 200m down the starboard side of his helicopter at the same level but flying in the opposite direction. Assessing the Risk as 'medium', no avoiding action was taken as he thought the Mi-17 crew, once visual with his Sea King, had taken avoiding action. In order to set up for the autorotation, his Sea King helicopter was 1nm outside EG D123 when the Airprox occurred.

It would seem that the other crew was operating on a Boscombe Down ATC frequency and were warned of his Sea King's presence.

THE Mi-17 PILOT reports that he was conducting a dual night training sortie without NVDs and was in receipt of a BS from Boscombe APPROACH (APP). His Mi-17 displayed conventional night lighting, including flashing red anti-collision lights. A squawk was selected with Mode C on.

APP provided traffic information about another ac – the Sea King – which he believed he had visually identified so he thought there was no confliction with it. However, it transpired that the Sea King had actually been mis-identified for another light further in the distance. Approaching a position above the A36 between the villages of Deptford and Codford St Mary, about 1½nm S of the southern boundary of EGD123 (SPTA) (at 51°09'N 002°00'W), heading 280° at 100kt at an altitude of 1500ft PORTLAND RPS (1010mb), the Sea King was first seen passing down the starboard side 200m away on a reciprocal heading. There was no time available to take avoiding action and he assessed the Risk as 'high'. His workload was also 'high', which he attributed to the fully instructional reversionary night navigation sortie with a foreign student pilot and flight engineer. Furthermore, both crews were operating on different frequencies due to their position and operating area, but he added that a frequency change to Salisbury OPS was due before the next turning point along their route.

THE BOSCOMBE DOWN APPROACH CONTROLLER (APP) reports some 2 months after the incident [see UKAB Note (1)] that his recollection of the event may not be exact so long afterwards. He was the ATCO i/c and APPROACH controller working a fairly busy rotary radar training circuit (RTC) pattern; in addition he was

controlling rotary VFR arrivals and departures and covering the LARS frequency. The Mi-17 departed from Boscombe Down under VFR low-level to the W under a BS for a clockwise NAVEX around SPTA. Even though the flight was under a BS, he called traffic operating in the vicinity of Deptford Down as he assessed it posed a risk of collision and, as such, had a duty of care to do so. The pilot then reported changing to the SPTA frequency. Later, just as he was about to leave the building at the end of night flying, he received a telephone call from Yeovilton asking if he had any rotary traffic flying in the vicinity of Deptford Down that evening as one of his pilots has come into close proximity to what he believed to be a Mi type helicopter. Yeovilton was informed of the ac airborne at the time and the telephone number of the Squadron passed. No mention was made that an Airprox had occurred or would be filed, so he did not file a report at the time, but left a note for the morning Supervisor about the telephone call. No further mention of the incident was received regarding an Airprox until about 2 months later when he was informed by the UKAB that an Airprox had been filed.

UKAB Note (1): This Airprox was first notified to the UKAB on 11 May, in excess of 2 months after the event occurred on 3 Mar. Boscombe Down ATC was contacted direct by UKAB staff on 12 May and controllers reports together with an impound of the relevant RT frequency was requested. The reported Mi-17 pilot was identified on 20 May and his report was received on 14 Jul.

UKAB Note (2): This Airprox occurred outwith recorded radar coverage.

HQ AIR BM ATM SAFETY ANALYSIS reports that this Airprox investigation has been undertaken some time after the event. This has lead to a lack of evidence other than the controllers report provided. The aircraft in question was under a BS. The controller passed TI because he thought there was a definite risk. HQ Air ATM SM does not believe that ATC contributed to this Airprox.

UKAB Note (3): Analysis of the APP RT tape transcript reveals that the Mi-17 crew called APP at 1931:50 and was placed under a BS for the low-level departure via Wilton. Later, after APP passed the PORTLAND RPS of 1010mb, the controller queried the Mi-17 crew's operating altitude, which the pilot reported at 1937:52 as, *"..15 hundred on 1-0-1-0".* Moments later at 1938:10, APP passed TI to the Mi-17 crew, "[C/S] *traffic North-West 2 miles tracking South, indicating 1 thousand feet",* to which the Mi-17 crew replied "[C/S] *looking"* and then 3 sec later at 19:38:18, added "[C/S] *visual".* Just over 2min later at 1940:30, APP warned the Mi-17 crew "[C/S] *indicating on the southerly edge of D 1-2-3 which is active to 3 thousand feet".* This was acknowledged by the Mi-17 crew who reported switching to their en-route frequency.

MOD LF OPS comments that military crews operating from Units based in LFA1/NRR1 are NOT required to book into the area for day or night flying. Other aircrew based outside the LFA/NRR are required to book into LFA1/NRR1 with the LFBC at Wittering. The booking is for statistical purposes, no information is passed on to other LFA1/NRR1 users unless they are performing an unusual flight or operating without, or, with reduced lighting, when prior approval must be obtained and an avoidance or NOTAM promulgated. In this context, the Sea King operating with IR lights off did constitute reduced lighting.

THE WESTLAND SEA KING HC4 PILOT's UNIT, having subsequently identified the second ac as an Mi-17 and discussed this incident with that unit, comments that the Captain of the Mi-17 had mis-identified the Sea King operating at Deptford Down for another ac. He therefore only saw the Sea King when they had closed to a range of about 200m. A contributory factor to the incident was that the two ac were operating on separate frequencies whilst in the same vicinity.

HQ JHC comments that there are a number of scenarios which may have happened but the length of time passing between the incident and the filing of the report and detail of the reports means that the true cause and contributory factors is difficult to establish.

Whilst each ac involved was operating on a different frequency, the controller passed pertinent and timely information which should have prevented an Airprox. It appears that misidentification caused the Mi-17 pilot to feel comfortable that he was not flying towards the Sea King. It might be expected that if they had been operating on the same frequency they would have had more situational awareness and been in a better position to prevent the Airprox, but TI on the possible conflicting ac had been passed by Boscombe Down App. The Mi17 pilot states in his report that a frequency change to Salisbury Ops was due before the next turning point. It may have been prudent and better airmanship to have changed frequency earlier, particularly as they were closer to SPTA than Boscombe MATZ.

It is not clear from the report whether the manoeuvre by the Sea King to set up the datum autorotation (a circuit) contributed to the crew's ability to see the Mi-17. The ac may also have been on reciprocal headings at similar heights for a short period of time making it difficult to see relatively stationary lights against any background lights.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The Sea King pilot reported he was flying at 1000ft RPS, whereas the Mi-17 pilot said he was at 1500ft RPS, and confirmed as such on RT before the TI was issued by APP. This TI to the Mi-17 crew quoted the Sea King as southbound indicating 1000ft (probably with the data displayed to APP referenced to 1013mb), suggesting there should have been about 500ft separation between the two helicopters when the Sea King was downwind. However the Sea King might have been climbing to set up for the autorotation when TI was given and, as the Airprox occurred out with recorded radar coverage, there was no independent view of the geometry and separation that pertained here. It seemed clear that the Sea King was somewhat higher than its pilot reported as he said these two ac had passed starboard-to-starboard, at about the same level. Another aspect was, however, that the Sea King crew was using NVDs and the Board was aware of the difficulties of range perception when using these devices. In spite of this, both pilots' accounts agreed that the two helicopters were 200m apart at the closest point and apparently too close for comfort at night.

The debate then centred on the frequencies in use at the time; the Mi-17 crew was about to switch to Salisbury OPS – the frequency used by the Sea King crew – that is normally used within SPTA, but as an A/G Station they cannot provide any form of ATS. Nevertheless, if all ac operating in the vicinity are on the same frequency and making appropriate RT calls, then pilots can form a mental air picture of what is happening around them. This was not possible here because the Airprox occurred just before the Mi-17 crew switched across whilst outside SPTA.

Both helicopters were displaying conventional lighting appropriate to their tasks and were plainly there to be seen. The Mi-17 pilot's frank admission that he had misidentified some lights when he was given TI on the Sea King was clearly an important factor, and thus he was plainly unaware of the other helicopters close proximity as they approached each other. Therefore, the Mi-17 pilot, busy monitoring what the other members of his crew were doing, was unable to engineer any greater separation before the close quarters situation arose. The Members agreed unanimously that their effective non-sighting was part of the Cause.

While it was clear from their report that the Mi-17 crew had not seen the Sea King in time to take avoiding action, it was not clear to the Board whether the Sea King pilot saw the Mi-17 early enough to take avoiding action had he thought it necessary. The Mi-17 should have been in the Sea King crew's field of view as it approached from the E and they should have been able to spot it as they turned inbound towards Deptford Down to set up for their autorotation. Although the Sea King pilot reported that the Mi-17 was first seen passing down their starboard side, he also reported that he took no avoiding action since it appeared that the Mi-17 crew had already done so. The implication, that the Sea King could have taken avoiding action if necessary, led some Board Members to conclude that this was a late sighting. However the majority view prevailed and it was agreed that the Sea King crew, for whatever reason, did not see the Mi-17 in time to take effective avoiding action, so this was effectively a non-sighting on their part and the other half of the Cause. Furthermore, with neither crew aware of the close proximity of the other helicopter in time to take avoiding action the mutually agreed horizontal separation of 200m existed purely by chance. Some thought this separation sufficient to mitigate any actual Risk of a collision but others disagreed. The Board concluded, by a majority vote, that an actual Risk of collision had existed in the circumstances reported here.

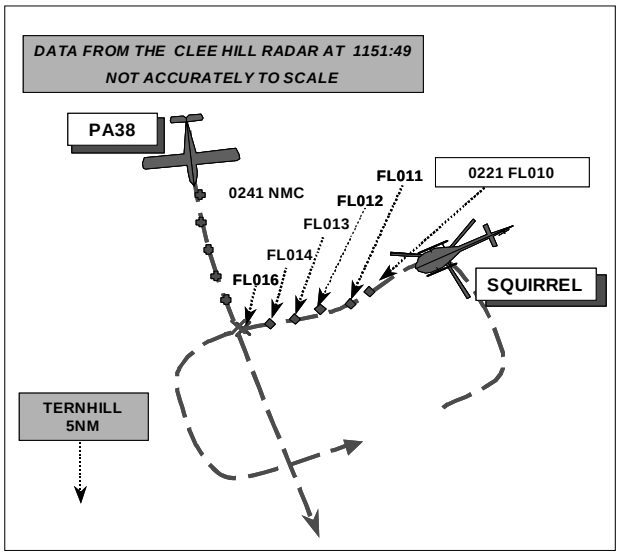
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Effectively non-sightings by the crews of both aircraft.

Degree of Risk: A.

AIRPROX REPORT NO 2010043

Date/Time:	8 Mar 2010 1152Z	
Position:	5257N 00230W	(5nm N Tern Hill)
Airspace:	Shawbury AIAA	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Squirrel	PA38
Operator:	HQ Air Trg	Civ Trg
Alt/FL:	1900ft ↑	2200ft
	(RPS 1028mb)	(RPS 1028mb)
Weather:	VMC HAZE	VMC NR
Visibility:	5.0	30
Reported Separation:		
	150ft V/50ft H	400ft V/ 0 H
Recorded Separation:		
	NR V/0 H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE SQUIRREL PILOT reports flying a yellow and black helicopter with nav lights and strobes switched on, on a training flight, squawking a Shawbury conspicuity code with Mode C and operating on a Shawbury monitored quiet frequency and booked into the LFS. Half an hour into a sortie of advanced autorotations, using the canal north of Market Drayton as a line feature entry point for comparison, the ac was being repositioned at 70kt in a left-hand racetrack to re-cross the canal on a notional into-wind heading of 070° for a further autorotation. Climbing through 1900ft with about 30° to go and the ac starting to level off, the NHP student became aware of a light ac in close proximity through the overhead window and warned the HP [instructor] who levelled off. Having levelled off and rolled 'wings level' the HP then also saw the ac, a white coloured, light fixed-wing ac similar to a Grob Tutor, continuing along the right-hand side of the canal towards the S. The fixed wing ac had made no apparent attempt to take evasive action and appeared to be following the line feature of the canal into sun. At the closest point the ac was assessed to have been about 50ft above and five 'spans' clear. The student noted that the white ac had a blue flash down the side, was being flown by a single pilot and carried a registration that they only partly noted.

He assessed the risk as being high. **THE PA38 PILOT** reports flying a white ac with blue lettering with nav lights and strobes switched on in receipt of a BS from Shawbury LARS squawking as directed with Mode C, he thought, on a training flight. He was heading 151° at 90kt, tracking from Oulton Park to Wolverhampton and just S of Nantwich and level at 2200ft on the RPS when he heard an RT exchange with traffic tracking from his left to right. He then saw a black and yellow Twin Squirrel helicopter 45° left of his nose, about 2km away and lower than himself. As he was positioned to the right of the traffic he maintained speed/direction iaw Rule 17 [RoA]; the traffic passed below him by about 400ft and then passed to the right, appearing to maintain level/direction throughout his observation. At no time did he lose sight of the helicopter or consider the separation to be an issue, assessing the risk to be none.

UKAB Note (1): The recording of the Clee Hill Radar shows both ac. At 1150 the PA38, squawking 0241 (Shawbury) but with no Mode C, is tracking 170° 3nm to the NNW of the Squirrel, squawking 0221 (Shawbury), which is tracking 080° indicating FL000 climbing. At 1150:17 when the PA38 is 2.8nm NW of the Squirrel, the latter commences a tight left turn rolling out on 230° and climbing through FL007 at 1150:48 with the PA38 in its 0230 at 1.8nm. The Squirrel continues to climb now on 250° and the PA38 tracks 170° until the ac cross at 1151:44 with the Squirrel contact climbing through FL016 coincident with the PA38, which is apparently directly above it. After the ac cross the Squirrel turns hard left onto a NW track still at FL016 passing 0.4nm behind the PA38.

HQ Air (TRG) comments that the PA38 pilot had the Squirrel in sight throughout and did not consider the separation to be an issue. However, the relatively late sighting by the Squirrel crew seems to have caused them concern. The PA38 pilot controlled the separation distance throughout this occurrence and with hindsight it may have been prudent for him to have given a wider berth even though he had right of way iaw Rule 17.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

Members agreed that ATC had played no part in this incident and that both ac had been operating legitimately in Class G airspace conducting their respective activities. That being the case, the pilots of both ac had an equal and shared responsibility to see and avoid other ac. The PA38 pilot reported that he saw the Squirrel about 2km away. Members agreed that he had seen the Squirrel involved (there were several Squirrels in the area) since the geometry was consistent, and that seeing the small helicopter climbing up from low level at 2km was reasonable in the circumstances (the Squirrel pilot reported the conditions as being HAZE).

The Board examined the Squirrel crew's participation and discussed the suitability of the area selected for the practice autorotation; bearing in mind that it was in a promulgated AAIA and that DHFS need to conduct a large number of such practices, a majority of Members agreed that there was not a more suitable alternative. That being the case, and that the majority of DHFS Squirrel flying is instructional, lookout, particularly by instructors, is most important. While accepting that the cross-cockpit view form the Squirrel is restricted, particularly when looking above, this is a known factor for which provision should be made, if necessary by manoeuvring one's head, or the ac. It was also pointed out that many civil light ac fly at or about 2000ft, ironically in order to avoid the majority of Military traffic, therefore even more attention should be paid to that height band.

The Board noted that although the PA38 pilot had right of way under the rules of the air, it is always wise to assume that the pilot(s) in the other aircraft have not seen you until their actions prove otherwise. Whenever possible an adjustment of heading to provide lateral as well as vertical separation will reduce the alarm factor of a late sighting and may assist the other pilot's acquisition.

Members agreed that, as the Squirrel crew had not seen the PA38 until about the time the ac had crossed, they had not had time to take any avoiding action; however since the PA38 pilot had seen the Squirrel at 2km, monitored it continuously, and considered that it was not a threat and had been in a position to increase the separation if necessary, it followed that there had been no risk of collision.

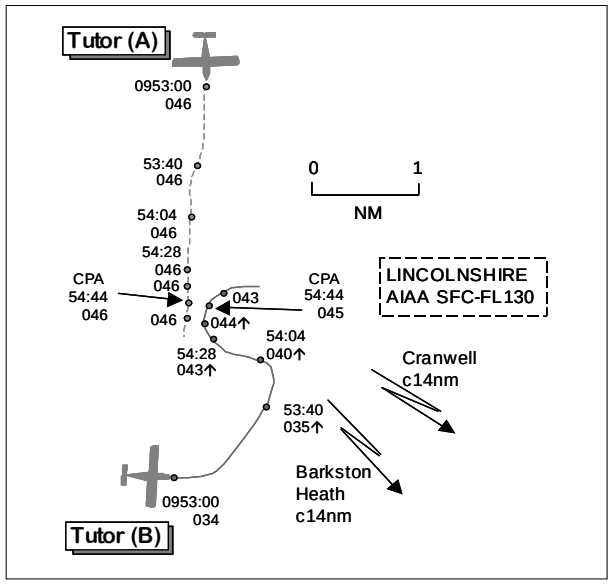
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Late sighting by the Squirrel crew.

Degree of Risk: C.

AIRPROX REPORT NO 2010044

Date/Time:	16 Mar 2010 0955Z	
Position:	5309N 00050W (4nm N Newark-on-Trent)	
Airspace:	Lincolnshire AIAA	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Grob Tutor(A)	Grob Tutor(B)
Operator:	HQ AIR (TRG)	HQ AIR (TRG)
Alt/FL:	4800ft (RPS 1020mb)	4500ft (RPS 1020mb)
Weather:	VMC CLBC	VMC CLBC
Visibility:	25km	30km
Reported Separation:	Nil V/100yd H	Nil V/200m H
Recorded Separation:	100ft V/0·2nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE GROB TUTOR (A) PILOT reports conducting a QFI training sortie from Barkston Heath and listening out on 282·6MHz, squawking 2637 (Cranwell conspicuity code) with Modes S and C. The visibility was 25km flying 500ft below cloud in VMC and the ac was coloured white with HISLs switched on. About 3nm NW of Newark heading 180° flying straight and level at 4800ft Barnsley RPS 1020mb, another Tutor was seen in his 10 o'clock range 100yd in a steep RH turn to the E. No avoiding action was taken as the other ac carried out the appropriate manoeuvre, passing 100yd away at the CPA. He assessed the risk as very high. He went on to say that the vision from his ac was poor as the opposing ac was shielded behind the canopy arch and it also blended in with the background cloud of a similar colour to the Tutor. Also his harnesses were tight which made looking around the canopy arch more difficult.

THE GROB TUTOR (B) PILOT reports flying as a solo student from Cranwell operating in the Cranwell NW sector and in communication with Barkston Director, he thought, on 282·6MHz, squawking 2637 with Modes S and C. The visibility was 30km flying 1000ft below cloud in VMC and the ac was coloured white with strobe, nav and landing lights all switched on. He had been authorised for aerobatics but did not conduct them owing to the cloud base. Instead he elected to conduct GH along the river Trent N-S at 4500ft RPS 1020mb between Newark and a disused power station 10nm N of Newark in the Trent Valley. About 5nm N of Newark heading N at 100kt he saw a Tutor conflicting in his 11 o'clock range 300m heading S at the same level, although no immediate threat was apparent. However, separation closed to within 200m so he made an avoiding action R turn onto E and, once level, re-established visual contact. The other ac was by then no threat heading in the opposite direction. He assessed the risk as low.

HQ AIR BM SAFETY MANAGEMENT reports that initial investigation showed that frequency 282·6 MHZ is published as Barkston Director, operated by RAF Cranwell ATC; however, this was being used as a discrete frequency for operators and no ATS was being applied to this ac at the time of the incident.

HQ AIR (TRG) comments that this Airprox occurred in good visibility within the Lincolnshire AIAA. Both crews should have seen each other earlier than they did but it was the pilot of Tutor (B) who saw Tutor (A) with sufficient time to take effective and appropriate avoiding action.

UKAB Note (1): The Claxby radar recording clearly captures the incident. At 0953:00 Tutor (A) is seen tracking S level at FL46 (4810ft RPS 1020mb) with Tutor (B) in its 12 o'clock range 3·9nm tracking E level at FL34 (3610ft RPS). Tutor (A) continues generally S maintaining FL46 whilst Tutor (B) turns NE'ly and is seen to commence a climb and a L turn at 0953:40 before rolling out on a W'ly track 24sec later, climbing through FL40 (4210ft RPS); lateral separation is 1·5nm. Just over 30sec later at 0954:28 Tutor (B) is turning R through a NW'ly heading,

climbing through FL43 (4510ft RPS) in Tutor (A)'s 1130 position range 0·7nm. The next sweep 8sec later shows Tutor (B) turning through N climbing through FL44 on the same relative bearing from Tutor (A) at a range of 0·4nm. The CPA occurs on the next radar sweep at 0954:44 with the subject ac passing port to port range 0·2nm, Tutor (B) still turning R and indicating FL45 (4710ft RPS), 100ft below Tutor (A). Tutor (B) is then seen to diverge rapidly and descend 200ft shortly before steadying on an E'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 ATC and operating authorities.

Members could add little to this incident. Within the Lincolnshire AIAA Class G airspace both crews had equal responsibility to maintain separation from other ac through see and avoid. The comments made by Tutor(A) pilot with respect to the canopy arch and his harness affecting his lookout scan were noted. However, known factors such as these should be alleviated by either moving the ac's flightpath or the pilot's head to clear the 'blind areas'. The possibility of replacing the fixed harness with an adjustable one, a type which was fitted to the T67M Firefly fleet, is an issue which is being investigated by HQ Air. The Tutor's colour and the ability to visually acquire an ac against a backdrop of cloud may have also added to the situation. Nevertheless, in light of the good visibility and with both ac below the main cloudbase, Members agreed that there had been ample opportunity for both crews to acquire visually each other's ac for some time prior to the CPA. However, Tutor(A) crew only saw Tutor(B) an estimated 100yd away as it passed down their LHS, effectively a non-sighting, whilst Tutor(B) pilot saw (A) late, 300m away, and elected to continue briefly before executing a R turn to avoid, estimating 200m separation. The radar recording revealed that actual separation was about 0·2nm, 400yd and the HQ Air Training Member thought that with the geometry that pertained, Tutor(B) pilot should have taken action earlier instead of waiting. That said, although Tutor(A) crew were undoubtedly surprised by the appearance of Tutor(B), the Board believed that earlier sighting and robust actions taken by Tutor(B) pilot had been effective in removing any risk of collision.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Effectively a non-sighting by Tutor(A) pilot and a late sighting by Tutor(B) pilot.

Degree of Risk: C.

AIRPROX REPORT No 2010045

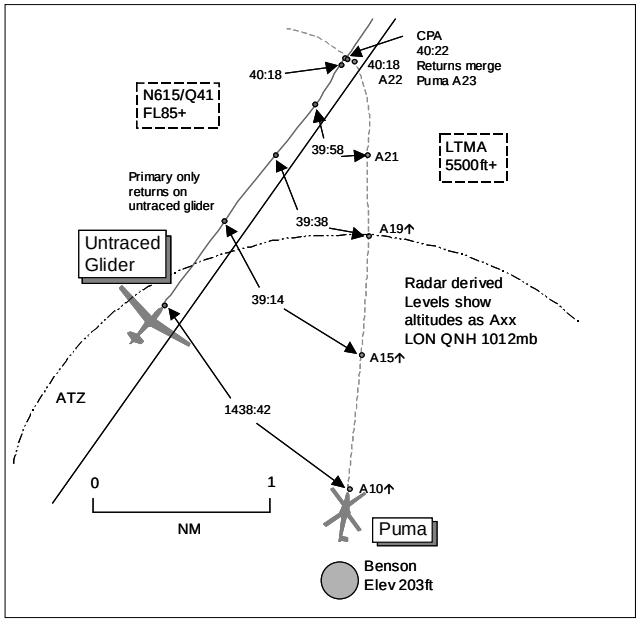
AIRPROX REPORT NO 2010045

Date/Time: 10 May 2010
1440Z

Position: 5140N 00105W
(3nm N Benson -elev 203ft)

Airspace: MATZ/Oxford (Class: G)
AIAA

	Reporting Ac	*Reported Ac*
Type:	Puma	Untraced Glider
Operator:	HQ JHC	N/K
Alt/FL:	1900ft (QFE 1006mb)	N/K
Weather:	VMC CLBC	N/K NR
Visibility:	30km	NR
Reported Separation:	100-200ft V/Nil H	NR
Recorded Separation:	returns merge	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PUMA PILOT reports flying a local sortie from Benson and in receipt of a DS, he thought, from Benson Director, squawking 3610 with Mode C. The visibility was 30km flying 2500ft below cloud in VMC and the ac was camouflaged green with HISLs, nav and landing lights all switched on. After completing an overshoot from a PAR RW01 they were being re-positioned for a further approach, an ILS RW19. When commencing a level L turn on to heading 290° [actually 310°] at 1900ft QFE 1006mb and 100kt about 3nm N of Benson, iaw ATC instructions, the handling pilot in the LH seat spotted a glider out of the corner of his eye approaching from the LHS at the same level. He immediately initiated a rapid climb to avoid the glider which was seen to pass about 100-200ft below. He informed ATC that the glider was at 1900ft and 3nm on the extended C/L of RW01. He assessed the risk as high.

RAC MIL reports that despite extensive tracing action the identity of the glider remains unknown. The glider's primary only contact could not be tracked from a point of departure nor to a destination. Procedural tracing action through numerous gliding sites did not produce any likely gliders, so the reported ac remains untraced.

THE BENSON DIRECTOR reports acting as the screen controller for a trainee on consul for 1hr and 10min with a steady flow of radar training cct traffic. As the Puma was climbing out on RW track (RW01RH) for a PAR, the supervisor informed the trainee that the Puma could now have an ILS [previously requested] against the stream if required (RW19). The trainee instructed the Puma flight to climb to 1900ft QFE [1438:35] and then correctly spotted that the pilot had read back his instructions incorrectly. The trainee then called traffic [1439:39] i.e., R 1 o'clock 5nm crossing R to L 800ft above. The trainee then did some admin with the Puma [procedure minima and intentions] until the pilot called level and then turned the Puma onto 310° [1439:58] to position the ac for the ILS. Shortly after the turn the Puma pilot called visual [1440:18] with *"...previously called traffic 3 o'clock 200ft below"*. The trainee replied that the traffic was not the ac he had called and that the ac was not visible on radar. The Puma pilot then told us that the ac he had seen was a glider. The trainee then correctly informed the Supervisor & Approach controller about the glider's approximate position and altitude and then continued to vector the Puma for its approach.

HQ AIR ATM Safety Management reports that the Puma was conducting IFR radar training in the Benson radar training cct under a TS from Benson DIR. After completion of a PAR, whilst repositioning for further approach, the Puma came into conflict with a glider. The TS was being provided using SSR only (primary radar was unserviceable). The controller was under low to medium workload and had called TI on an ac which was operating SSR shortly before the incident. SO2 SM Spt ATM believes the lack of primary radar at the time of the Airprox

was the contributing factor in the incident. The glider was not displaying SSR at the time and was therefore not seen by Benson DIR. On initial report of the glider's proximity to Benson, the controller correctly reported this to the supervisor and other ac receiving a service from Benson ATC. RAF Benson has subsequently regained the primary Watchman radar.

HQ JHC comments that the lack of primary radar at the time of the Airprox meant that neither the controller nor the Puma were aware of the proximity of the glider in question. The glider demonstrated a lack of airmanship by flying through the extended centreline of a busy airfield without transponder or notifying ATC. It appears that the Puma was confused about previously notified traffic and may have been concentrating his lookout away from the direction of the conflicting glider. It is fortunate that the Puma eventually spotted the glider and took avoiding action.

UKAB Note (1): Analysis of the Heathrow 23cm and 10cm recorded radars, not available to Benson ATC, at 1438:42, when the Puma pilot acknowledges the trainee Director's climb, first shows the Puma 0·3nm N of Benson tracking 005° climbing though altitude 1000ft QNH 1012mb (800ft Benson QFE). At the same time a primary only return, the untraced glider, shows 2nm NW of Benson tracking 035° in the Puma's 1030 position. The subject ac continue on converging headings with separation reducing to 0·7nm at 1439:38, the time when the trainee Director passes TI to the Puma pilot on traffic to the NE. Separation reduces further to 0·4nm at 1439:58 when Director instructs the Puma flight to turn L onto heading 310°. As the Puma pilot's transmission starts, reporting his sighting of the glider, the ac as separated by <0·1nm before they merge 4sec later at 1440:22, the Puma indicating a climb of 100ft to altitude 2300ft QNH, in accord with the pilot's reported avoiding action.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included a report from the Puma pilot, 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 noted the glider's track, which had taken it close to the ATZ and converged with the FAT for Benson's main RW. Any pilot intending to pass close to or through a FAT should take into account the instrument approach path profile and endeavour to fly clear (above/below or laterally spaced) from it. Although the Puma flight was receiving radar vectors from Benson Director within the MATZ, the Puma crew, as well as the glider pilot, were required to maintain separation from other traffic through 'see and avoid' as the airspace was Class G. The glider pilot had not called Benson so it was unknown traffic. However the situation was further complicated owing to the reduced level of radar services as the primary radar was oos; the glider was not squawking so it was invisible to Director. Taking these points into account Members agreed that the cause of this Airprox had been a sighting issue. Considering the geometry, Members were surprised that the glider pilot had not filed a report. The Puma had approached it from behind and then turned, just before the CPA, to pass O/H the glider. There appeared to be no track deviation on the radar recording and the Puma crew made no mention of the glider manoeuvring during the encounter. On the balance of probability, Members surmised that the Puma had probably passed unsighted to the glider pilot. The Puma handling pilot, who was heads-in instrument flying, fortunately had seen the glider, albeit late, out to his L at the same level, and had immediately climbed to avoid it, watching it pass 200ft below and then diverge out to their R. One pilot Member thought that in the circumstances that pertained, with the Puma crew unaware of the glider's presence and the late sighting, safety had been compromised. This view was not shared by the majority who believed that the visual sighting and prompt actions taken by the Puma crew had been enough to remove any risk of collision.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A probable non-sighting by the glider pilot and a late sighting by the Puma crew.

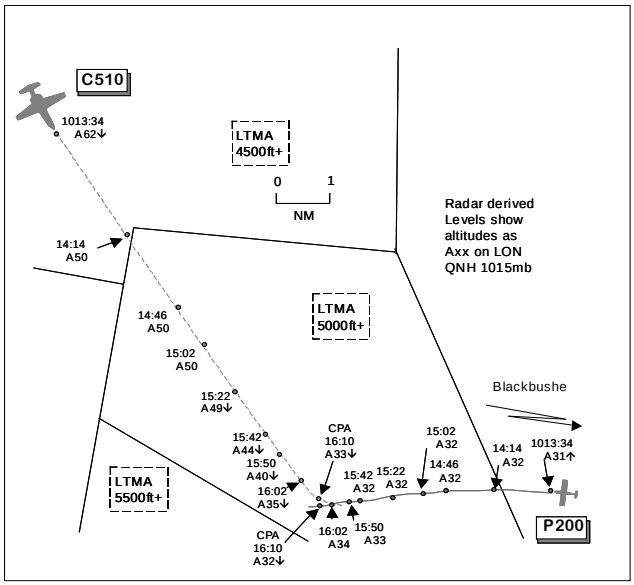
Degree of Risk: C.

AIRPROX REPORT No 2010046

AIRPROX REPORT NO 2010046

Date/Time: 13 May 2010 1016Z
Position: 5119N 00102W
(10nm WNW Farnborough)
Airspace: LFIR (Class: G)

	Reporting Ac	*Reported Ac*
Type:	C510 Mustang	Pioneer 200
Operator:	Civ Comm	Civ Pte
Alt/FL:	3400ft (QNH 1015mb)	2000ft? (QNH)
Weather:	VMC CLBC	VMC CLOC
Visibility:	>10km	>10km
Reported Separation:	Nil V/250m H	500ft+V/500m+H
Recorded Separation:	100ft V/0·1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE C510 MUSTANG PILOT reports inbound to Blackbushe IFR and shortly after leaving CAS, and following a handover from London Control to Farnborough when they were waiting for a TS to be given, they had a TCAS TA; TCAS 1 was fitted. The visibility was >10km flying 500ft below cloud in VMC and the ac was coloured white/grey/blue with anti-collision, nav and strobe lights switched on. Heading 140° at 190kt and level at 3400ft QNH a visual sighting was made of light ac traffic, a high wing C172 type he thought, in their 12 o'clock, range 300m, crossing from L to R at the same level. The A/P was disconnected and an immediate L turn (45° AoB) was initiated to pass behind the conflicting traffic; estimated separation was 250m. He was unable to report the incident to Farnborough LARS [actually Approach] immediately owing to workload but he subsequently telephoned to report it. He assessed the risk as high.

THE PIONEER PILOT reports flying a local sortie from Blackbushe under VFR, heading 300° at 100kt and in receipt of a BS from Farnborough on 125·25MHz, squawking an assigned code with Modes S and C. He had just become airborne for a local GH sortie prior to carrying out some ccts. He initially selected 0447 squawk and passed his initial message to LARS giving his flight details. He headed out to the NW to avoid Odiham MATZ and then turned W'ly to avoid R101/104. Normally he would operate between 2000ft and 3000ft but he could not recall his level at the time. As he was in contact with Farnborough he did not anticipate any traffic to be as near to his position as it was, even allowing for a much higher airspeed. He recalled feeling that the other ac, a Cessna Mustang, did come very close and reported this to the controller. He was reassured that the other ac's pilot was visual with his ac and was manoeuvring to avoid him. The other ac was seen late out to his R descending from above and he estimated it passed him by 500-1000ft vertically and 500-1000m horizontally. He did not feel the need to report an Airprox as he was left with the impression that the situation had been under control (but not his own), believing the Mustang was under a TS. Subsequently however, it seemed that he was mistaken and that both flights were under a BS. With hindsight, this situation highlights the potential dangers that exist between small light ac and faster/larger ac in busy airspace. In Class G the 'see and avoid' doctrine inevitably works less well if ac have disparate airspeeds. He assessed the risk as low.

THE FARNBOROUGH APPROACH CONTROLLER reports mentoring a trainee as OJTI. The Cessna Mustang called inbound via the silent handover procedure through CPT descending to 5000ft direct to ODIMI. The ac was entering an area of high traffic density N of Odiham. The pilot called visual with Blackbushe on his first call and was descended to 3400ft. The trainee called Blackbushe to advise them of the impending arrival before he informed the crew that further descent and routeing direct to Blackbushe was approved. He also told the crew that there was traffic in their 12 o'clock 0·5nm at a similar level; the pilot called visual with the traffic and was transferred to Blackbushe. The trainee was busy with Farnborough approach traffic and no level of service was agreed with the Mustang pilot.

THE FARNBOROUGH LARS CONTROLLER reports seated alongside an OJTI and trainee on Approach. His frequency was busy and he had been informed about a number of movements by the trainee pointing at his screen but with no verbal communication; he did not recall any Blackbushe inbounds being pointed out. He was monitoring the radar and the trainee's fpss as a precaution. He first saw the Cessna Mustang about 12nm NNW of Blackbushe and on looking ahead saw an unknown ac climbing out from Blackbushe as well as an aerobatic squawk 5nm NW of Blackbushe. He tried calling the unknown ac 2-3 times but without success and the unknown was noted at 3200ft. He indicated that this unknown ac was not on his frequency to the Approach controller and this was acknowledged. A short while later he noticed the Mustang descending through 4000ft towards the unknown and about this time the Pioneer pilot called so he issued a squawk and asked the Approach controller, *"what are you doing with that?"*, highlighting the Mustang at close range. No comment was received from either the trainee or mentor but he was acknowledged. He looked at Approach's fps on the Mustang to see that descent to 3400ft had been given. He decided to ask the Pioneer pilot to descend (as it was at 3200ft) in order to give both ac some form of deconfliction as the contacts were on a collision course; he passed TI to the Pioneer pilot. He considered turning the Pioneer but a R turn to the N would have worsened the situation and a S turn would have perhaps made the Pioneer pilot unable to sight the Mustang. As the ac closed to 0·5nm the OJTI told him that the Mustang pilot was visual with the Pioneer. He told the Pioneer pilot to maintain his level (which had not changed) given that the Mustang flight was visual and, assessing its descent profile, it looked as if it would continue descent. At no point was he given any indication of the Mustang's intentions by the Approach OJTI or trainee except the visual sighting of the Pioneer by the Mustang pilot at very close range.

ATSI reports that the Airprox occurred at 1016:08 in Class G airspace 7·2nm W of Blackbushe Airport. The Cessna Mustang (C510), inbound to Blackbushe IFR, was released to Farnborough Radar by London Control, on a silent handover, leaving CAS by descent to 5000ft and on track ODIMI. On initial contact the C510 pilot reported Blackbushe in sight.

Farnborough MATS Pt2, (17/11/09) states:

Page APR-17, paragraph 4.2.5, 3) 'LTC will instruct aircraft to leave CAS descending to the acceptance altitude 5000ft (London QNH) on track ODIMI'.

Page APR-3, Paragraph 2.4, 'Upon identification after departure, when leaving CAS or free-calling Farnborough Approach inbound, the pilot is to be requested what level of service is required by using the phraseology: *"What type of Radar service do you require?"'*

Page APR-31. 3) 'Aircraft inbound to Blackbushe leaving CAS will be controlled as if they were a Farnborough inbound to the point where they have left CAS. The aircraft will then be offered the appropriate ATSOCAS until the aircraft can continue its approach to Blackbushe visually…….The Blackbushe FISO will be notified of the inbound estimate and may inform Farnborough of the runway in use at Blackbushe and relevant airfield information'.

The Pioneer 200 (P200) flight was on a local VFR flight from Blackbushe and in receipt of a BS, having just established contact with Farnborough LARS(W).

Farnborough Approach (Radar) position was manned by a late-stage trainee (level 4) and newly qualified OJTI. Farnborough LARS(W) was seated next to the Radar trainee and the frequency was reported as busy. The workload was assessed as medium to heavy and radar recording shows a number of contacts manoeuvring in the area to the WNW of Blackbushe with labels overlapping and garbling.

ATSI had access to radar recordings, RT transcription together with controller and unit reports. It was not immediately apparent that the P200 was involved in the Airprox, because the C510 pilot had initially thought that the other aircraft involved was a C172. Consequently the LARS(W) report was written some time after the incident.

METAR EGLF 131020Z VRB02KT 9999 SCT048 12/M01 Q1015=

LARS(W) observed a number of contacts including, the C510, an aerobatic squawk and an unknown contact climbing out of Blackbushe. Radar recording shows this unknown contact displaying a Blackbushe departure squawk of 0447. LARS(W) tried unsuccessfully to establish communication with this unknown contact and then advised Radar that it was not on his frequency. At 1013:36 the (P200) pilot called LARS(W) reporting on a local

AIRPROX REPORT No 2010046

VFR flight from Blackbushe, operating in the Newbury area at 3100ft. A BS was agreed and the LARS(W) controller passed the squawk 0440 and QNH 1015mb. The pilot correctly acknowledged this and at 1014:16 radar recording shows the squawk of the unknown contact change from 0447 to 0440. The distance between the 2 ac was 9nm, with the C510 12·2nm NW of Blackbushe, indicating A4900ft

At 1014:48 the C510 flight called Farnborough Radar, *"Farnborough good morning (C510)c/s five thousand feet one zero one five direct ODIMI"*. Radar replied, *"(C510)c/s Farnborough Radar good a-good morning Q N H one zero one five",* and the C510 pilot responded, *"one zero one five and er Blackbushe in sight (C510)c/s".* At 1015:05 Radar responded, *"(C510)c/s descend to altitude three thousand four hundred feet resume own navigation direct Blackbushe".* The pilot of the C510 acknowledged this and Radar then notified Blackbushe of the imminent arrival. Radar recording shows the C510, 9·9nm WNW of Blackbushe. At the same time Radar was distracted vectoring a Farnborough inbound onto the ILS RW24.

LARS(W) observed the C510 inbound and at 1015:22 advised, *"(P200)c/s just advise if you want to climb above altitude four thousand feet please inbound jet traffic".* The P200 pilot replied, *"er negative we'll remain at er three two for a while (P200)c/s".* At this point radar recording shows the C510 starting the descent. At 1015:42 the Radar controller advised the *C510, "…descent approved you confirm you are visual with Blackbushe"* and the pilot replied, *"Affirm visual with Blackbushe er (C510)c/s".*

The LARS(W) controller's written report states that he noticed the C510 passing 4000ft and asked Radar what they were doing with the C510 but obtained no reply. At 1015:50 Radar transmitted, *"(C510)c/s roger maintain yo-maintain your own terrain clearance descent approved into Blackbushe traffic twelve o'clock half a mile left to right indicating three thousand three hundred feet".* The C510 pilot replied, *"In sight (C510)c/s".* Radar informed the pilot, *"(C510)c/s Blackbushe are on runway zero seven their QNH one zero one five one in the circuit."* This was acknowledged. At this point the radar recording, timed at 1015:50, shows the two ac 1·6nm apart and converging.

Simultaneously at 1015:54 LARS(W) requested, *"(P200)c/s could I just ask you to descend to three thousand feet there's just an inbound aircraft just er above you."* The P200 pilot replied *"Roger descending three thousand (P200)c/s".* The Radar OJTI informed LARS(W) that the C510 had the P200 in sight. Then at 1016:03 the LARS(W) controller gave a warning using the wrong c/s, *"...that traffic's just half a mile north of you three thousand three hundred feet has you in sight Business Jet"*. At 1016:08 the P200 pilot reported, *"er roger we've just er crossed paths ???? making a sharp er left turn (P200)c/s".* The LARS(W) controller added, *"(P200)c/s he did have you in sight"* and the pilot *responds, "Understood (P200)c/s".* Radar recording at 1016:10 shows C510, indicating altitude 3300ft passing 0·1nm to the N of the P200, indicating altitude 3200ft. Shortly afterwards the P200 was advised that there is no altitude restriction and the C510 is transferred to Blackbushe.

The pilot of the C510 did not request, nor did Radar ask the C510 pilot, what ATSOCAS service he required. The pilot reported visual with Blackbushe and was cleared for descent and own navigation. The phraseology used by the Radar controller, *"maintain your own terrain clearance descent approved"* and "*roger radar service terminates,"* is consistent with the provision of a TS. However the controller, in his written report, considered that because a radar service had not been agreed, a BS was being provided. The C510 pilot reported that he was waiting for a TS to be issued.

Radar recording shows a number of contacts ahead of the C510 and due to garbling it was difficult to distinguish between individual ac or levels. In the period leading up to the incident, the frequency was busy and there was little verbal communication between the two control positions. The LARS(W) controller reports that he was informed about movements, by the trainee pointing. Whilst the LARS(W) controller was aware of both ac, he was not aware of the intentions of the Radar controller to descend the C510. When he did challenge this, it was too late to react in a timely manner. The controllers were seated on adjacent consoles and were in possession of information that could, through agreement or coordination, have resolved the potential conflict.

Timely TI was not passed to the C510 pilot. The Radar OJTI reported that he would normally have provided a TS with restricted TI due to the high density of traffic. The Radar controller was aware of the high density of traffic in the area but did not pass any information regarding the general airspace activity, which would have aided the situational awareness of the pilot.

Farnborough Approach Radar was manned by a late stage trainee (level 4), under the supervision of a newly qualified OJTI. This was the first time the OJTI had worked with this particular trainee and the unit training records

indicated a high expectation of the trainee skill level. The OJTI was aware that an appropriate level of service should have been offered to the C510 and in this case believed that a TS with restricted TI should have been offered. The OJTI had also expected TI would have been passed earlier.

MATS Pt1 (01/07/10), Section 1, Chapter 11, page 1, paragraph 2.2.1 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 workload cannot be predicted;

• Pilots may make sudden manoeuvres, even when in receipt of an ATS'.

Due to the rapidly increased workload and a number of contributory factors, the Radar controller did not agree a level of ATSOCAS service, or pass TI. The C510 pilot had reported visual with Blackbushe and Radar started to transfer the flight direct to Blackbushe. The C510 was approaching an area of high traffic density and the unknown contact had just changed squawk from 0447 to 0440. There was an added distraction caused by the requirement to provide vectors to Farnborough inbound traffic onto the ILS. No TI was provided to the C510; however, a warning was given 1min and 2sec after the initial call. It is difficult for an OJTI to decide when to step in with an advanced level trainee. This is a judgement based on a combination of circumstances, training and experience. On this occasion the OJTI allowed the trainee to continue, without recognising the complexity of the situation. The OJTI did not ensure that the C510 was offered an appropriate level of service with appropriate TI.

The P200 was in receipt of a BS from Farnborough LARS(W). No service had been offered or agreed with the pilot of the C510. When it became apparent that definite risk of collision existed, a warning was given to both flights by each controller and each pilot reported the other ac in sight.

MATS Pt1 (01/07/10), 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'.

MATS Pt1 (01/07/10), 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'.

The unit has identified some important factors and learning points regarding OJTI training. The importance of newly qualified, low hour OJTIs, in particular, being aware of when it is necessary to give advice, guidance and when to step in on the frequency with more advanced late stage trainees has been highlighted. Appropriate action has been taken to debrief all OJTIs at the unit with an intention to disseminate the learning point throughout NATS.

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 that there were differing viewpoints and expectations by all parties involved in this incident. No agreement as to the level of ATS was made between the C510 crew and Farnborough APP. The C510 crew were expecting a TS after leaving CAS, however, they did not request a service during the initial RT exchange or query

it with APP when no service was specified. The APP trainee did not offer a service nor ask which service the crew required, contrary to MATS Part 2. The mentor was aware that no level of service had been agreed and subsequently debriefed the trainee on this point; however, the phraseology used by the trainee was consistent with a TS. From the RT transcript it was apparent that immediately after the initial RT exchange the C510 pilot reported Blackbushe in sight which allowed the APP to de-restrict the C510 from its IFR route to ODIMI and release it on a direct track. Members thought that because of the short timescale involved, as APP would expect the flight would be transferring to the Blackbushe frequency after he had coordinated the flight with the Blackbushe FISO, it was understandable that establishing a radar service, which would be terminated almost immediately afterwards, was not warranted. Also, even if a TS had been agreed, any TI was subject to controller workload and he had been busy speaking to Blackbushe and vectoring an inbound ac to Farnborough. LARS had gleaned information from APP's fps display and attempted to coordinate the P200's potential confliction but without success. After LARS informed the P200 pilot of the "inbound jet traffic" and attempted to build in some vertical separation from it, APP removed the C510's 3400ft altitude restriction, which negated LARS' action. Although the ATS scenario was less than ideal Members were mindful that, irrespective of the level of service, within the Class G airspace the crew of the C510 and the pilot of the P200 were responsible for their own separation from other traffic through see and avoid. Both LARS and APP issued a warning to both pilots but the pilots only saw each other's ac late and this had caused the Airprox.

The P200 pilot was told that the C510 pilot had his ac in sight but was understandably concerned as he saw it pass close to his R and behind him. Although TCAS 1 had alerted the C510 pilot to the P200, his late visual sighting had necessitated prompt and robust avoiding action, estimating he passed with 250m separation; the radar recording shows 100ft vertical and 0·1nm (185m) horizontal separation. Taking all these elements into account the Board agreed that the C510 pilot's actions had been effective in removing the actual collision risk but that safety had not been assured during the encounter.

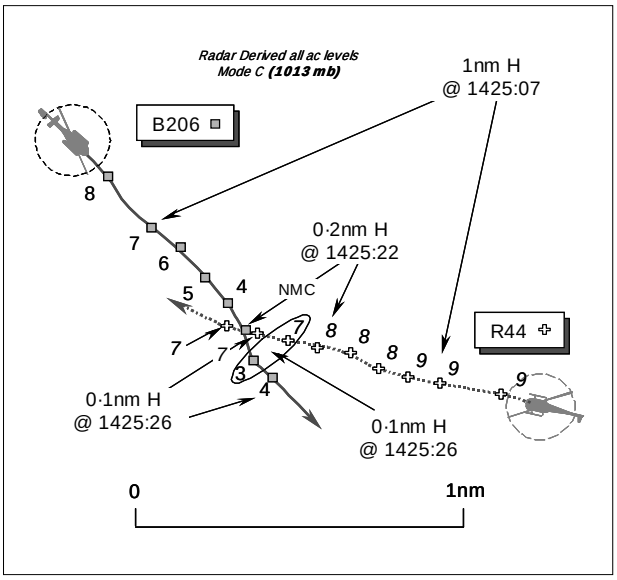
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Late sightings by the pilots of both ac.

Degree of Risk: B.

AIRPROX REPORT NO 2010047

Date/Time:	4 May 2010 1425Z	
Position:	5342N 00232W (4½ nm SSE of Samlesbury)	
Airspace:	London FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Bell 206B	Robinson R44
Operator:	Civ Comm	Civ Pvt
Alt/FL:	1000ft	NR
	QNH (1027mb)	NR
Weather:	VMC CLBC	VMC NR
Visibility:	10km	NR
Reported Separation:		
	200ft V/500m H	400ft V
Recorded Separation:		
	400ft V/0·1nm ~ 200yd H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE BELL B206B JET RANGER (B206) PILOT reports he was conducting a pipeline survey VFR at 100kt, whilst in receipt of a BS from Warton APPROACH (APP) on 129·525MHz.

About 2min before the Airprox occurred APP reported an unknown contact in his 10 o'clock at a range of 3nm at the same level. He warned his observer and increased his lookout but continued with the pipeline inspection at 500ft agl – about 1000ft Warton QNH (1027mb) – in VMC some 3000ft below cloud. APP continued to issue warnings as the separation against the unknown ac decreased, but about 4½ nm SSE of Samlesbury at ½nm range he had not established visual contact and so elected to descend to low-level and turn R away from the pipeline. TCAS I then enunciated 'TRAFFIC'. As he descended to 300ft agl he saw a blue and silver R44 or R22 helicopter, sky-lined now in their 8 o'clock position about 500m away and about 200ft above him - as confirmed by his TCAS I display. His observer noted it was an R44, blue and silver in colour. He thanked Warton for their assistance and informed them that he would file an Airprox.

Warton APP had no radio communication with the R44 but tracked it to a landing site near Maghull. Subsequently, when he landed at Blackpool, some enquiries were made and he discovered the aircraft registration, he thought, and advised the R44 pilot that an Airprox would be filed. It was suggested that the other pilot had seen his Jet Ranger, but not until he had descended to low level.

His helicopter has a dark livery; the HISLs and pulse landing lights were all on. The pipeline conspicuity squawk of A0036 was selected with Mode C.

UKAB Note (1): The registration offered by the B206 pilot was subsequently found to be incorrect by one letter, as the suggested helicopter identification had not flown in this vicinity at all. However, the pilot of the R44 helicopter seen by the B206 pilot was subsequently traced.

THE ROBINSON R44 HELICOPTER PILOT provided a brief written account supplemented with further information provided in a telephone call to UKAB staff. He reports that he was returning from Rochdale to Blackpool [a track of about 290° - 28nm] under VFR in VMC, but not in receipt of an ATS. A squawk of A7000 was selected with Mode C; his helicopter has a blue and silver colour-scheme and the HISL was on.

In the vicinity of Darwin [2nm SE of the Airprox location] he saw the Jet Ranger from a range of about nm crossing ahead from R – L at low-level - about 700-800ft below his helicopter he estimated. He was unconcerned by this as the Jet Ranger appeared to be operating at low level. No avoiding action was warranted and he estimated the minimum vertical separation to be about 400ft. This was about all he could recall, but he stressed that he kept the

Jet Ranger in sight throughout. He opined that in future, whilst in transit, he will call an appropriate ATSU and endeavour to elicit TI about ac operating nearby.

ATSI reports that the Jet Ranger pilot, on a pipeline patrol, established communication with the Warton APR at 1407. The pilot requested a BS routeing Nelson-Preston-Ramsbottom to Blackpool. The controller confirmed the BS and passed the Warton QNH (1027mb). The pilot read back the ATS and reported he would be not above 1500ft ALT. The controller commented *"Roger I see your squawk"*. The helicopter was squawking A0036 (Helicopter Pipeline/Powerline Inspection Flights).

At 1424, TI was issued to the Jet Ranger pilot *"traffic information for you southeast range 2 and a half…it's 15 hundred feet descending gonna go down your right hand side at the moment heading about 2-8-0"*. The pilot reported looking. The traffic information continued to be updated over the next minute.

APP*"If you're on a steady heading he's half past 12 range 1 and a half*".

Jet Ranger*"roger still looking"*.

APP*"Okay I see you in a right turn he's on your left side and just 1 hundred feet above you"*.

Jet Ranger*"right dropping low level not seen at all"*.

APP*"Okay traffic shows 2 hundred feet above left 10 o'clock a mile"*.

Jet Ranger*"Got him visual thanks a lot sir we're dropping low low level to...stay..clear of him"*.

APP*"Okay"*.

The pilot of the Jet Ranger described the traffic as probably an R44 helicopter.

A Basic Service is an ATS:

'..provided for the purpose of giving advice and information useful for the safe and efficient conduct of flights. Basic Service relies on the pilot avoiding other traffic, unaided by controllers. 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 ATZ, and the pilot remains responsible for collision avoidance at all times. 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'.

On this occasion the controller realised the potential for a close confliction and issued appropriate warnings to allow the pilot of the Jet Ranger to sight the R44.

The St Anne's radar recording [which was not that used by Warton] shows that as the two helicopters passed 0·1nm apart at 1425:26, the Jet Ranger was indicating 300ft (1013mb) – about 720ft QNH (1027mb) – with the subject R44 indicating 700ft (1013mb) - about 1120ft QNH (1027mb).

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, and reports from the appropriate ATC authority.

Notwithstanding the caveats applicable to the provision of TI under a BS, the APR evidently believed that a definite risk of collision existed here and astutely issued warnings to the B206 pilot in the form of a number of transmissions of TI. The steady flow of pertinent TI provided enabled the B206 pilot to formulate a good mental air picture, which ultimately enabled him to take effective action to forestall a close quarters situation. The Board commended the Warton APP controller for the conscientious service he provided to the B206 pilot, however, it was important to

point out that pilots should not expect this as the norm under a BS. There is no compunction on the part of the controller to identify or monitor a flight under a BS and pass this intensive level of information. It was fortunate, therefore, that the APR was not constrained by other more pressing tasks and was able to do so here.

It was clear that each pilot was legitimately proceeding about their respective tasks and Members noted that the B206 pilot had wisely elected to interrupt his task and descend out of harm's way. Although the TCAS I would have also contributed to the B206 crew's SA as they descended, they had only spotted the small R44 helicopter after it started to draw L down the port side, some 400ft above him the unverified Mode C of the R44 reflected at the CPA of 0·1nm.

The R44 pilot was plainly unconcerned having spotted the B206 as it crossed ahead, without any warning from ATC, but after the B206 pilot had initiated his descent in avoidance, so from his perspective no avoiding action had been necessary. Members pointed out that it was always worthwhile communicating with local ATSUs whilst in transit. Useful information can be obtained merely from listening to other pilots' transmissions on the frequency; nevertheless, if pilots wanted to receive TI about other ac in the vicinity then a TS should invariably be requested.

The Board concluded that this Airprox had been the result of a conflict in Class G airspace that had been resolved by the B206 pilot, assisted by timely TI from the APR. Given the B206 pilot's prompt descent below the level of the R44 and the latter pilot's sighting, Members agreed unanimously that there had been no Risk of a collision.

PART C: ASSESSMENT OF CAUSE AND RISK

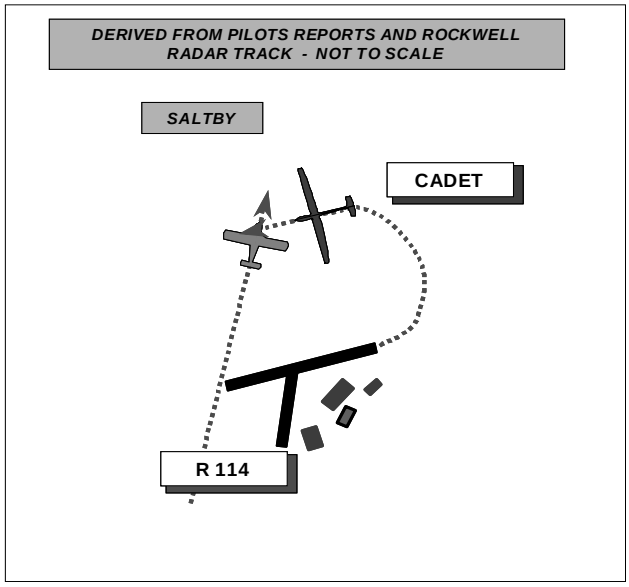
Cause: A conflict in Class G airspace resolved by the Bell 206B pilot, assisted by timely TI from the APR.

Degree of Risk: C.

AIRPROX REPORT No 2010048

AIRPROX REPORT NO 2010048

Date/Time:	15 May 2010 1528Z (Saturday)	
Position:	5249N 00043W (Saltby Airfield - elev 480ft)	
Airspace:	Lon FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Slingsby Cadet	Rockwell 114
Operator:	Civ Club	Civ Pte
Alt/FL:	1000ft (QFE)	1500ft (NK)
Weather:	VMC CAVOK	VMC CLBC
Visibility:	20km	>10km
Reported Separation:	150ft V/500m H	500ft V/400m H
Recorded Separation:	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE SLINGSBY CADET PILOT reports that he had completed a normal glider winch launch to a height of 1200ft AAL at Saltby airfield in a silver ac with no SSR, radio or lights. Turning crosswind into the cct (RWY08 LH cct) he noticed a white low wing, single-engined, ac with a green stripe on a heading of about 300° about 3-4nm away, approaching the airfield, very slightly above the horizon. Initially, he believed the ac to be the glider tug returning to the airfield. On turning downwind, however, heading 260° at 30kt, he remained visual with the ac and assessed that there was a risk of collision so he commenced a shallow descent to increase the vertical separation and completed a normal landing. The ac passed about 500m in front of him, from left to right and about 150ft above, while he was descending through 1000ft AAL. The ac flightpath did not deviate and it flew directly through the airfield overhead.

He reported the incident to the Duty Instructor on landing and assessed that although, in the event, the risk of collision was low, he believed that had the ac flown that track one minute earlier it would have flown into the winch cable or his ac on the launch.

THE ROCKWELL 114 PILOT reports flying a white ac with a green stripe on a VFR private flight squawking with Mode S. He had attempted to contact Cottesmore for a service but there was no response. While heading 005° at 140kt, 5nm NNW of Cottesmore, his passenger in the right-hand seat saw a glider 500m away in their 2 o'clock and estimated it to be 500ft below them. It passed below them and to the starboard and the pilot eventually saw the white glider when it was behind and below them. He thought that he did not see it initially as it would have been outside his field of vision as they approached, being below the sight line over the engine cowl.

Since he did not see the glider until after it passed he was unable to take any avoiding action but nevertheless assessed the risk of collision as being none.

He was avoiding Cottesmore ATZ as he had not been able to establish radio contact with ATC. He assumed they were closed but the ATZ was active, otherwise his track would have been through the ATZ. His course would have taken him close to the Glider Site where the Airprox was reported.

UKAB Note (1): The recording of the Claxby radar shows the Rockwell 114 tracking 005°, squawking 7000 with Mode C (no Mode S) throughout but the glider does not show at any time. The Rockwell passes over Saltby Airfield at 1528:03 at FL015 (1560ft amsl or about 1080ft agl). (There are also two other contacts squawking 7000 with Mode C, one 1½ nm W at FL028 and another 1½ nm E at FL026.)

UKAB Note (2): Saltby is promulgated in the UKAIP as a glider launch site (winch/ground tow and tug aircraft/ motor glider) 2000ft agl (Mon-Fri) and 4000ft agl Sat, Sun.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac and radar recordings.

The Board noted that the Rockwell pilot had taken the correct action by avoiding the Cottesmore ATZ when de got no response from their ATC; a Military Member observed that the hours of operation of Military airfields are widely published but, although MATZ are often closed at weekends, the majority of Military ATZs are H24. Having re-routed to avoid the Cottesmore ATZ, it seemed to Members that the Rockwell pilot had most likely overlooked that his new routeing put him closer to the Saltby glider launch site than he had planned on the ground and that he might not have noticed its presence on his map in the cockpit. Nevertheless, the BGA Member pointed out that it is wise to avoid glider launch sites by a wide lateral margin as winch launch cables, if collided with, can have a 'chain saw' effect on the ac wing as well as a catastrophic result for the launching glider.

In this case, however, the glider pilot saw the approaching Rockwell and monitored its position throughout the incident, judging that only a measured and small descent was required, thus removing any risk of collision.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Rockwell 114 flew through the circuit of a promulgated and active glider launch site, below winch launch height, and into conflict with the Slingsby Cadet.

Degree of Risk: C.

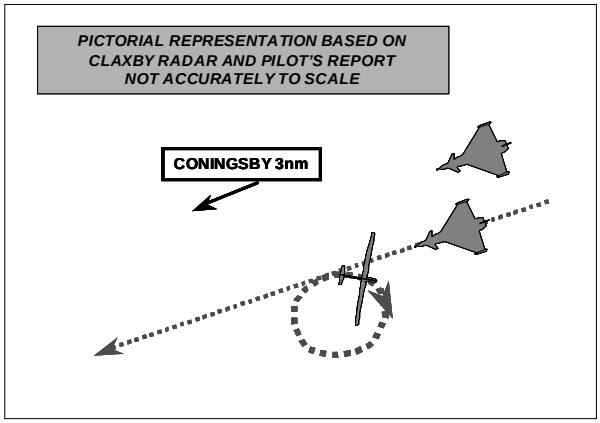
AIRPROX REPORT No 2010049

AIRPROX REPORT NO 2010049

Date/Time: 13 May 2010 1718Z
Position: 5307N 00005W
(3nm ENE Coningsby - elev 24ft)
Airspace: Coningsby MATZ (Class: G)

	Reporting Ac	*Reported Ac*
Type:	Typhoon	Untraced Glider
Operator:	HQ AIR (OPS)	NK
Alt/FL:	2000ft ↓ (QFE 1011mb)	NK
Weather:	VMC	NK
Visibility:	30km	

Reported Separation:
200ft V/ NR H
Recorded Separation:
NK (See UKAB Note (2))



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE TYPHOON PILOT reports flying dual, leading a pair of Typhoons recovering visually to Coningsby RW27 (L) in echelon formation, from a routine training sortie in contact with Coningsby TWR squawking as directed with Mode C. As the formation approached initials [070°/3nm@2000ft QFE] the No2 pilot called 'Bunt, Bunt, Bunt' in order avoid a [white] glider [which he saw 0.25nm away]. The lead Typhoon bunted aggressively and the No2 subsequently called that the collision risk had been averted. The lead Typhoon pilot did not see the glider at any stage.

The formation then recovered normally. The pilot assessed the risk as being high.

Subsequent analysis of the mission recording system revealed that the glider was on the extended centreline at 3nm and 2000ft, well within the MATZ.

UKAB Note (1): Despite extensive procedural tracing action the glider could not be identified.

UKAB Note (2): The recording of the Claxby Radar shows the Typhoons on the approach to Coningsby but they drop out in the left turn onto the centreline, reappearing 2 sweeps later with NMC. There is a primary-only return for 1 sweep only at 2.2nm on the approach, which might be the glider, coincident with Typhoon Leader. There is another intermittent primary contact 2min later, 2nm S of the position of the original primary contact but it again disappears and cannot be tracked. The Cromer and Debden radars only show the Typhoons intermittently with no primary contacts in the area.

HQ AIR BM ATM Safety Management comments that Coningsby APP then TWR were providing a TS to the Typhoon formation for a visual recovery. APP called traffic to them prior to releasing them to TWR; although not visual with the traffic, the formation reported that they were happy to continue and would keep a good look out. The Coningsby SUP reported seeing a contact on the HiBrite radar display in the VCR only after the Airprox was reported. The contact correlated with the position of the glider reported by Typhoon Leader.

Further investigation indicated that the contact seen on radar(s) was intermittent and therefore not assimilated as a threat. The lack of solid radar return presented to ATC at the time of the incident reduced the perceived threat level; however, best practice remains to pass TI in this situation if time permits.

HQ AIR (OPS) comments that this is another event caused by a non-SSR equipped ac flying in inappropriate airspace. The see and avoid principles applied in class G airspace will continue to break down while non-SSR equipped ac continue to fly in busy approach lanes to airfields without contacting the relevant controlling agency.

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.

The Board agreed that soaring in the vicinity of or, as in this case, actually on the approach to a busy airfield is poor airmanship, particularly without making radio contact with them. Members were briefed by the Secretariat that an intermittent primary contact, probably the glider concerned, can be seen on the radar recordings flying in the Coningsby area for about 1 hour around the incident time, at one time just on the ATZ boundary (height not determined). That being the case, and given the time of day, the BGA Member suggested that it had probably been locally based.

It was not clear to the Board whether the TI passed by APP to the Typhoon formation prior to their handover to TWR concerned the glider they encountered or another ac; they presumed, however, that it was the subject glider. Members also concurred the HQ Air view that, in these circumstances with an intermittent primary return, most likely a glider, the passing of incomplete or HiBrite based TI can be most helpful to aircrews.

In this instance the lead Typhoon crew did not see the glider; however, possibly as result of the previous TI generating an enhanced lookout, his wingman did see it, albeit late, and issued a correct 'bunt' instruction to his leader. The timing of the wingman's call could not be correlated with the (presumed) glider radar response and therefore the separation when the call was made could not be determined. Similarly, it was not possible to measure the increased separation as a result of the bunt manoeuvre. However, the Board considered that the manoeuvre had been effective in increasing the separation between the leader's aircraft and the glider, thus mitigating any risk that the ac would have collided. As is the usual procedure in the case of untraced ac having a close encounter, since the glider pilot did not submit a report, the Board assumed that he did not see the opposing ac.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A probable non-sighting by the glider pilot, a non-sighting by the lead Typhoon crew and a late sighting by the No2 Typhoon pilot.

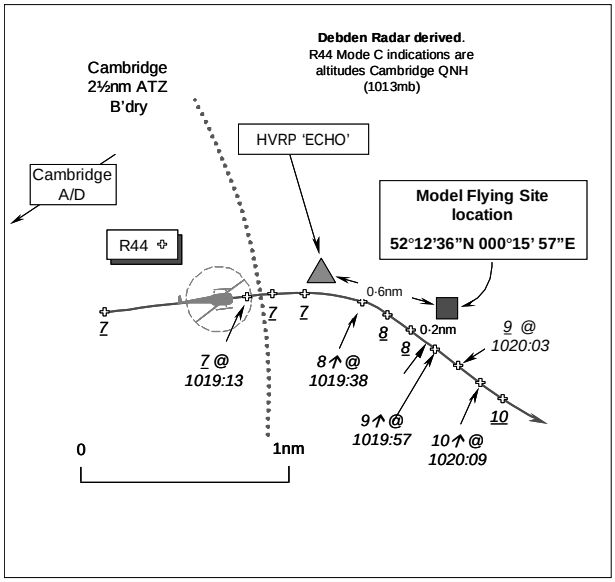
Degree of Risk: B.

AIRPROX REPORT No 2010050

AIRPROX REPORT NO 2010050

Date/Time: 9 May 2010 1019Z (Sunday)
Position: 5212N 00015E
(3½ nm E of Cambridge - elev 47ft)
Airspace: London FIR (Class: G)

	Reporting Ac	*Reported Ac*
Type:	Robinson R44	Untraced Model ac
Operator:	Civ Trg	Civ
Alt/FL:	850ft QNH (1013mb)	NK
Weather:	VMC CLOC	NK
Visibility:	30km	NK
Reported Separation:	Nil V/60m H	NK
Recorded Separation:	Not recorded	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE ROBINSON R44 HELICOPTER PILOT, the P-i-C and flight instructor, reports he was supervising a type-rating student, who was executing a visual helicopter departure from Cambridge airport. He was in receipt of a BS from Cambridge APPROACH (APP) on 123·6MHz and a squawk of A7000 was selected with Mode C on. His helicopter has a dark blue livery and the HISL – situated on the tail boom – was on.

The normal VFR departure procedure is to remain at or below 700ft QFE until reaching the ATZ boundary, after which the helicopter can be climbed to the desired operating altitude. After his R44 had passed the ATZ boundary to the E they had commenced a climb at 80kt when he noticed a large model ac of about 6ft wingspan manoeuvring very close to his helicopter. The model ac was in a vertical climb whilst spinning and at the top of the climb it executed a number of flips/rolls before descending. When the model was at the top of its climb, he estimated that it was less than 200ft away at 10o'clock, level with his own R44, which was climbing through about 850ft QFE [about 910ft QNH]. The position and altitude of the model was passed to APP. He thought the Airprox occurred at 1030UTC [UKAB Note (1): More probably just after 1019:38.]

Whilst avoiding action was not necessary it seems there are two possibilities:

The model operator saw the helicopter and deliberately flew the model into close proximity.

The helicopter was unsighted by the model operator.

In either case a Risk of collision cannot be ruled out in future encounters. This would almost certainly cause major damage to the helicopter, possibly catastrophic. He thought that a model flying club site is located almost directly underneath the eastern Helicopter VRP (HVRP) known as point 'Echo'.

UKAB Note (2): Subsequent to enquiries through the BMFA, a model flying club was identified as operating in the vicinity of the Airprox. The owner provided a comprehensive response, complete with aerial photograph and maps of their Model Flying Site (MFS). The following is an extract of the main points noted in the owner's account.

THE OWNER OF THE MODEL FLYING CLUB reports that one model aeroplane pilot was present at the MFS at the reported Airprox time of 1030UTC [and when the Airprox occurred about 10min earlier], together with another person acting as a spotter for other ac. It is reported that no other ac, either military or civilian, was sighted whilst the model aeroplane was being flown at this time. Furthermore, no model 'runaways' occurred on this date. The R44 pilot reports the MFS as being located at HVRP 'Echo', which is not the case, the owner thought the MFS was 750m E of point 'Echo' [see UKAB Note (3)]. The position of the MFS, a grass mown area the size of a football

pitch, is in the middle of a field at 52°12'36"N 000°15' 57"E - some 3·86 statute miles [3·3nm] E of Cambridge airport – and, he thought, 1·36 statute miles from the position of the Airprox originally reported by the R44 pilot – 2½nm E of Cambridge airport. Model ac flying only takes place around 250m E, W and N of the MFS.

The MFS has been established for 18 years; all club members are also members of the British Model Flying Association (BMFA) and comply with Club and BMFA rules. No free flight models are flown from this location and all models are under precise control at all times. They are 'always aware' of low ac in the vicinity and fly their models down to a low altitude or land them. No dangerous model flying is tolerated and safety is considered paramount within the club,

He concluded that another model ac, not that flown from this MFS, had been flying between the ATZ boundary and the VRP as none of the club members fly in this area. He vouched for the model ac pilot present at the MFS when the Airprox occurred as being a very responsible, safe and experienced model ac pilot, with a BMFA 'B' certificate.

Subsequent to this Airprox, he met with the Head of Training from the R44 pilot's company. A workable set of procedures (copy provided) was mutually agreed that were to be incorporated into the Company Flying Order Book and operations manuals.

UKAB Note (2): The UK AIP at EGSC AD 2.20 - LOCAL TRAFFIC REGULATIONS – para 5 Helicopter Operations states:

b. Helicopters are encouraged to join the circuit through one of three Helicopter Visual Reference Points (HVRP) north, east and south of the aerodrome. Request 'Join' one minute before HVRP and establish at 700 ft QFE.

HVRP E is noted as the plantation south of the A14 road at OS Grid TL 537 596 (52° 12' 46"N 000 15'E.

UKAB Note (3): The MFS is situated 0·8nm outside the ATZ boundary and HVRP Echo bears 290° (M) from the MFS at a range of 0·6nm – 1100m.

ATSI reports that the Airprox is reported to have occurred 2·5nm E of Cambridge Airport and just to the S of the designated HVRP Echo (OS Grid Ref: TL 537 596). HVRP Echo [the location of a tree plantation bisected by a country road] – is situated about 0·3nm to the E of the Cambridge ATZ boundary. This ATZ extends to a height of 2000ft above the aerodrome elevation of 47ft amsl and bounded by a circle 2½nm radius centred on the mid-point of RW05/23.

The Cambridge METAR for 1050Z was: 02010kt 330V060; >10km; BKN023 11/04 Q1013=.

The Robinson R44 helicopter departed VFR from Cambridge RW05 at 1017UTC on an easterly track, not above a height of 700ft QFE until crossing the boundary of the ATZ. At 1020:03 the R44 crew called Cambridge APP, *"Cambridge APPROACH* [R44 C/S] *request basic service",* and the controller responded, "[R44 C/S] *Cambridge APPROACH basic service Cambridge Q-N-H 1-0-1-3."* This was acknowledged correctly by the R44 crew, *"QNH 1-0-1-3 helicopter* [R44 C/S]*".*

At 1020:41 the R44 pilot reported, *"Helicopter* [R44 C/S] *just to let you know again we've got..models operating up to about 1000 feet right hand..Echo"*, which was acknowledged by APP.

Radar recordings show the helicopter departing the cct and leaving the ATZ to the E. No other radar returns are observed in the vicinity of the reported Airprox location. It is probable that the size of the model ac did not provide a sufficient reflective surface for an acceptable radar return.

Cambridge airport report that they were not aware of the MFS until the Airprox was reported. When questioned regarding the pilot's comment *"again we've got models",* Cambridge confirm that they had no prior knowledge of model ac operations from this site until the Airprox was reported and that they are now in the process of trying to establish a letter of agreement. Cambridge APP was providing the R44 with a BS, was not aware of the model ac activity and therefore unable to pass appropriate activity information.

MATS Pt1, Section 11, Page 4, Page 4, Para 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.

UKAB Note (4): Analysis of the Debden Radar recording shows the R44 departing from Cambridge Airport to the E but the model is not shown at all. The Helicopter levels initially at 700ft Cambridge QNH (1013mb) and exits the ATZ boundary just after 1019:13, passing about 0·1nm – 185m - S abeam HVRP E before climbing to 800ft QNH and turning R onto a SE'ly course. Passing 0·2nm – 370m - SW abeam the MFS at the closest point, the R44 indicates a climb to 900ft at 1019:57. The helicopter was due S of the MFS when the R44 crew called Cambridge APP for a BS, the helicopter climbing further to an altitude of 1000ft as it cleared to the SE.

THE BMFA comments that the owner of the model-flying club remains adamant that there was no close conflict between a model aeroplane operated from his flying site and a full size helicopter on the day of the reported Airprox. Clearly from their location they are familiar with helicopters transiting nearby and it is difficult to see how a conclusion can be reached on this matter. The Club have already taken steps to improve communications with the operator of the R44 helicopter, so although they do not feel that the R44 pilot's report accurately reflects events on the day, they have taken the matter seriously. It would be unfortunate if this Airprox resulted in a negative impact on the club activities.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilot of the R44 and a model flying club, transcripts of the relevant RT frequencies, radar video recordings, a report from the appropriate ATC authority and comment from the BMFA.

In the Board's experience the investigation of Airprox that involve model ac is invariably complicated. It is often difficult to establish the location where the model was flown from and thus the identity of the model pilot, or obtain an account from the individual about what had occurred. Moreover, without the foregoing, determination of the actual size of the model involved was impossible. The vastly differing size of model ac therefore makes accurate judgement of their range – and hence the minimum separation and associated Risk - without prior knowledge of their actual size doubly difficult even to the experienced eye. The Board did not doubt the veracity of the R44 pilot's account but acknowledged that estimation of the actual separation that pertained was problematic and could not be verified independently from radar data.

The owner of the Model Flying Club that operates from the MFS situated 0·6nm to the SW of the HVRP refutes that the model ac seen by the reporting R44 helicopter pilot had flown from his club site or was operated by one of the club members. Nonetheless, analysis of the radar recording had shown the track of the R44 had passed some 370m SW the MFS at the closest point, just as the R44 climbed to an altitude of 900ft, the altitude the pilot reported he was climbing through when the Airprox occurred. Without doubt the helicopter flew past the location where model flying was reported to be taking place, yet the model ac operator to be on the ground at the MFS together with another person acting as a spotter for other ac did not see the R44 helicopter. Whilst the R44 is undoubtedly a small ac and quite difficult to see in the air, its dark colour-scheme silhouetted against the sky coupled with the noise of the engine and rotor should have made it readily conspicuous to observers on the ground. That the R44 was not seen at all was of great concern to the Members, but given that model ac flying only takes place from the MFS around 250m to the E, W and N, the Board had been advised, the model ac could have been flying to the N of the site, so it was feasible that those on the ground might have been looking the opposite way when the R44 flew by. This seemed to be the only potential explanation for this anomaly based on the information available.

Some Members contended that on the balance of probability the R44 pilot might well have seen the model flown from the MFS, but others were not of the same opinion. It seemed surprising to many Members that another model operator might have been flying his model between the ATZ boundary and the MFS, but the account by the owner suggested this. Without irrefutable evidence as to the identity of the actual model seen by the R44 pilot, Members believed that there was insufficient information available to come to any meaningful conclusions and in the end this was their unanimous view. The Board could only conclude therefore, rather unsatisfactorily, that this Airprox had resulted from a conflict with an untraced model ac. Furthermore, the Members agreed unanimously that there was insufficient information available upon which to base an accurate assessment of the actual Risk.

Despite the foregoing, however, the Board welcomed the positive stance taken by the MFS owner and the helicopter operator to effect a liaison to establish practical guidelines and workable procedures. Moreover, the Board was briefed that Cambridge ATC was also keen to be party to these arrangements and notified when model flying was taking place at the MFS so that pilots could be advised. It was envisaged that a letter of agreement would be drawn up between those involved to ensure the mutual safety of all concerned, which seemed to the Board to be eminently sensible.

PART C: ASSESSMENT OF CAUSE AND RISK

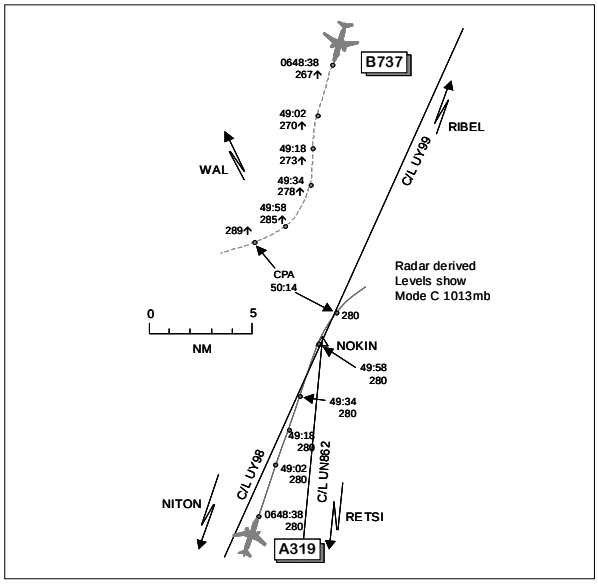
Cause: Conflict with an untraced model ac.

Degree of Risk: D.

AIRPROX REPORT No 2010051

AIRPROX REPORT NO 2010051

Date/Time:	30 Apr 2010 0650Z	
Position:	5308N 00255W (17nm SSE WAL)	
Airspace:	UAR UN862/Y99	(Class: C)
	Reporting Ac	*Reported Ac*
Type:	B737-800	A319
Operator:	CAT	CAT
Alt/FL:	↑FL300	FL280
Weather:	VMC CLAC	NK NR
Visibility:	50km	NR
Reported Separation:		
	NR V/5nm H	NR
Recorded Separation:		
	900ft V/5·4nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE B737 PILOT reports enroute to Nantes IFR and in receipt of a RCS from London, squawking 6354 with Modes S and C. Whilst climbing to FL300 at 415kt they were issued with an 'avoiding action' R turn against traffic 10nm ahead which passed, on TCAS, about 5nm away. Although the visibility was 50km clear above cloud in VMC, they did not see the other ac. A TCAS TA was generated during the encounter and he assessed the risk as 'reportable'.

THE A319 PILOT reports 2 months post incident that he remembered the circumstances but did not feel threatened by the situation. He thought that a TCAS TA may have been received during the incident and that the turn given by ATC resolved the confliction.

UKAB Note (1): The A319 company was contacted shortly after the incident. However the request for completing a CA1094 sent by UKAB was addressed to the wrong fleet manager. It was only approximately 7 weeks post incident that this was discovered and the brief statement from the Capt of the A319 was obtained.

THE LAC S5T CONTROLLER reports working fairly hard when he handed over the A319 to Scottish. To create room for more fpss he discarded the A319 fps. When the S'bound B737 flight first called, his Planner told him that he was released to FL300 subject to an ac highlighted on his display. Forgetting the A319 he climbed the B737 and, on realising his error courtesy of STCA, he took avoidance action.

THE PRESTWICK CENTRE S29 RADAR CONTROLLER reports STCA alerted his trainee and himself that the B737 and A319 were in potential conflict at NOKIN. He initiated avoiding action with the A319 whilst LAC S5 turned the B737. Standard separation was not lost.

ATSI reports that the A319 flight departed Bristol International at 0631, destination Glasgow, and called LAC Sector 5 (S5) at 0636:20 in the climb to FL150 routeing to TALGA. The Sector was manned by a Planner (P) and Tactical (T) controller and had recently been split from S23 as the traffic levels had built on the combined sectors. S5 was described as reasonably busy with no non-serviceability issues or undue distractions.

The B737 flight departed Leeds Bradford at 0635, destination Nantes, and called Prestwick Centre (PC) Sector 29 (S29), 118·775MHz, at 0643:40 in the climb to FL200 on a heading of 210°. PC S29T was manned by a mentor and trainee: the trainee's ability was described as experienced, having completed approximately 350hr of training. A Planner controller was also present. The sector was described as moderately busy with no non-serviceability issues or undue distractions.

The Standing Agreement for LAC S5 traffic from Bristol via N864/Y98 to PC S29 is 'FL240 level 20nm before REXAM/NOKIN'. The S5T initially climbed the A319 to FL220. The S5P reported that, in order to assist the tactical controller, higher climbs were being obtained for ac. The S5P coordinated FL280 for the A319 with PC S29 at 0637 and, at 0638:10, the S5T instructed the A319 flight to "*continue present heading … climb flight level two eight zero*". This was read-back correctly by the A319 pilot. The A319 was subsequently instructed to resume its own navigation to NITON and then to NOKIN before being transferred to PC S29 at 0646:40.

The S5T reported that, in order to make room for other strips, after transferring the A319 to S29, the A319 fps was discarded from the strip display. The flight's SSR data block remained visible on the situation display.

The Standing Agreement for PC S29 traffic from Leeds S'bound via N862 is 'Climbing FL270 level KARNO'. Such traffic is released for climb within S29 airspace (upper vertical limit is FL285). At 0646 the S29T climbed the B737 to FL270 and this was read-back correctly. The ac was still on its heading (210°) and was 31nm N of NOKIN.

At 0647 the A319 flight called PC S29 22nm S of NOKIN maintaining FL280 to NOKIN and the crew was instructed to route "*NOKIN RIBEL* MARGO". Approximately 1min later, at 0648:10, the S29T instructed the B737 flight to "*resume own navigation RETSI and contact London Control 133.6*". RETSI is S of NOKIN on N862 and this now placed both ac on reciprocal tracks towards NOKIN 30nm apart. The S29T reported that, as the B737 was close to NOKIN, the next convenient waypoint of RETSI was chosen. The S29T also reported that it was expected that S5 would not climb the B737 above FL270 until it had passed the A319 at FL280.

The B737 called LAC S5 at 0648:40 stating "...*coming up to two seven zero direct RETSI*". The S5T responded by climbing the B737 to FL300 and requesting its desired cruising level. At this time the track history (and Mode S heading information) of the B737 indicated it was heading 210°. The 2 ac were now 23nm apart and subsequent updates of the situation display showed the B737's position indication symbol turning L towards RETSI. The S5P had previously coordinated a higher level for the B737 with S7, which is above S29 levels. Higher climb had been approved by S7 subject to S7's own traffic, which was also climbing. The coordinated climb was written on the B737's fps and the S5P 'pointed-out' the S7 traffic to the S5T on the Tactical's situation display.

The S5P was heard to comment that the S5 controlling team "...*thought [the B737] had come over on a heading*". At 0649:00 the S5T instructed the B737 to "...*turn right fifteen degrees*". The S5T commented that this 15° turn was on top of the assumed heading it was believed the B737 had been transferred on; the 'direct RETSI' report had not been assimilated. Following a correct read-back the S5T updated the turn instruction to "...*make that a hard right heading two five zero degrees*". The S5P then called S29P at 0649:20 stating "*we're going right on [B737 c/s] which is against the [A319 c/s]"*, by which time the S29T mentor had taken over the frequency from the trainee and was issuing avoiding action on to a heading of *"east"* to the A319. The A319 was also passed TI. At 0649:30, the S5T instructed the B737 flight to "...*make that two five zero avoiding action … radar heading two five zero*". At this time the B737 was passing FL275 and its Mode S information indicated that it was heading 189° with the A319 in its 12 o'clock, reciprocal track, range 12nm at FL280. STCA activated on S5 and S29: minimum separation was recorded at 0650:14 as 5·4nm and 900ft – within the required parameters of 5nm or 1000ft.

At 0650:10, as the B737 was passing FL290, the S5T instructed the B737 flight to resume its own navigation to LAMAT. At the same time the S29T mentor instructed the A319 flight to resume its own navigation to RIBEL.

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.

Controller Members believed they understood the sequence of events that led to S5T climbing the B737 into conflict with the A319, which caused this Airprox. The LAC S5T had dispensed with the A319's fps after transferring the flight to PC S29. The B737 flight had then called on frequency climbing to the Standing Agreement level of FL270 but released for climb within PC S29 airspace. S5P had previously coordinated further climb for the B737 to a higher level with S7 subject to S7 traffic, then annotated the B737's fps accordingly, and pointed out the S7 traffic to the S5T. This may have induced S5T to climb the B737 straight away, forgetting the A319 at FL280.

Both controllers were alerted to the situation by STCA and issued prompt complementary avoiding action turns to the R. Both aircrews reacted to the instructions given which resulted in no loss of separation. These factors were enough to allow the Board to conclude that any risk of collision had been effectively removed.

PART C: ASSESSMENT OF CAUSE AND RISK

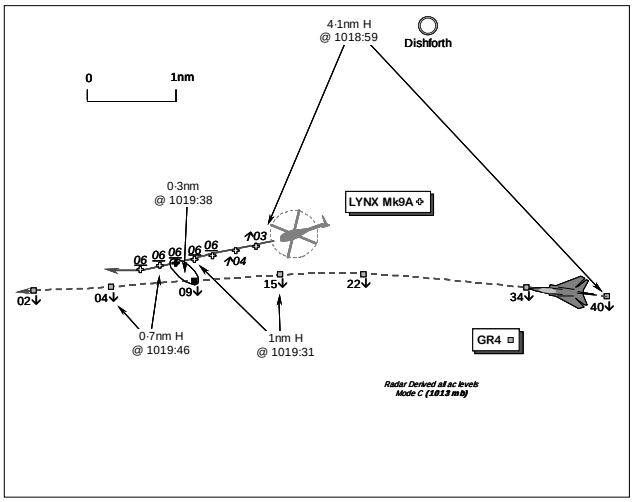
Cause: The LAC S5T climbed the B737 into conflict with the A319.

Degree of Risk: C.

AIRPROX REPORT NO 2010052

Date/Time: 20 May 2010 1019Z
Position: 5405N 00130W
(4nm SW of Dishforth - elev: 117ft)

Airspace:	UKDLFS/FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Lynx Mk 9A	Tornado GR4
Operator:	HQ JHC	HQ Air (Ops)
Alt/FL:	1000ft	1700ft
	QFE (1027mb)	RPS (1028mb)
Weather:	VMC CLBC	VMC CLBC
Visibility:	45km	10km
Reported Separation:		
	Nil V/200m H	1200ft V
Recorded Separation:		
	0·2nm [400yd] H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE LYNX MK 9A HELICOPTER PILOT reports he had departed Dishforth en-route to Blackpool under VFR and had been provided with a BS whilst working Linton ZONE. His helicopter has a grey/green camouflage scheme, but all the ac's lighting including the HISLS were on. A squawk of A0426 was selected, he thought [actually A7000] with Modes C & S on, but the Airprox occurred whilst switching from a BS with Linton ZONE on 118·550MHz to Leeds/ Bradford.

In a level cruise at 1000ft Dishforth QFE (1027mb), heading 263° about 5nm S of Ripon at 100kt, a Tornado GR4 was first seen as it passed down his port side on the same course. No avoiding action was taken, and the Tornado was seen to be in descent through his level to low-level, passing close enough to cause disturbance to his helicopter from its wake turbulence. The three crew members aboard assessed the horizontal separation to be no more than 200m; the Risk was not assessed. He switched back to Linton ZONE to advise that an Airprox would be filed.

THE TORNADO GR4 PILOT reports that they were executing a descent to low-level and in receipt of an ATS from Linton ZONE, who briefed them about a helicopter on the planned descent track at low-level but he cannot recall the height that was specified by the controller. As they descended through BKN cloud cover at 5000ft, they gained VMC and the descent was continued VFR. Heading 270° at 400kt about 10nm W of Linton-on-Ouse, just as they prepared to ask ZONE for more TI about the helicopter, the Lynx and its lights were seen by both he and his navigator approximately in their 1 o'clock heading away from their flight path and below them. Both crew members commented on the intercom that they would be clear and the descent was adjusted to maintain more than 1000ft clear of the Lynx, which passed by in their 3 o'clock about 1200ft below them with a low Risk, but he was not sure about the horizontal separation. They were visual with the helicopter throughout; no avoiding action was necessary as the Lynx had been seen and assessed to be clear to the right of the ac's nose by both pilot and navigator

Their HUD video was broken, but they believed that compared to the briefed height passed by ZONE and their own their ac's height observed against the helicopter, their spacing was adequate. His ac has a grey camouflage scheme but the HISLs were on.

THE LINTON ZONE CONTROLLER reports that his workload was 'medium to low' whilst operating the position with 235·2MHz – UHF and 118·550MHz - VHF. The GR4 crew was handed over from London MIL at FL145 for a let-down to low-level in the Linton area. When ready for descent, the GR4 crew was issued the Linton QFE (1029mb) and instructed to descend to 2500ft iaw the terrain safe level (TSL) and local airspace restrictions. The GR4 crew confirmed that they did not want the standard Linton MATZ crossing - 3nm to the N of the A/D E - W at

500ft QFE - and would maintain 3000ft QFE above the MATZ. At the same time a number of other ac were handed over for a TS or free-called and the Lynx was prenoted by Dishforth TOWER outbound via Newby Hall (a local reporting point) en-route to Blackpool. In accordance with standing regulations, the helicopter should have squawked A4530; however, when the Lynx crew called on VHF they reported squawking A7000 and the helicopter was never 'formally' identified, he thought. The Lynx pilot's initial call was 'stepped on' by traffic on UHF and he had to repeat his message. At this time, the GR4 was 5nm N of Linton, the crew confirming that they were VMC and visual with the surface. As the GR4 was indicating 4000ft and descending, TI was passed to the crew about the Lynx, he thought, as 'Traffic 12 o'clock - 3nm, indicating 700ft. This TI was acknowledged and the GR4 crew confirmed that they were happy to switch en-route, so they were given the Barnsley RPS (1028mb) and released. The Lynx crew reported changing to Leeds/Bradford APPROACH, but shortly afterwards returned to his frequency and asked if he had been working a Tornado. He replied that he had and that the GR4 crew had been given TI about his Lynx. The Lynx pilot then reported an Airprox with a horizontal separation of 500ft; he had been operating in VMC, below 1000ft, with a cloudbase in excess of 2000ft.

UKAB Note (1): The Transcription Unit was requested to review the Leeds/Bradford RT recording; it was confirmed that no transmissions of relevance were recorded.

HQ AIR BM ATM SAFETY MANAGEMENT reports that the GR4 was correctly identified on handover from LATCC (Mil) and placed under a TS by Linton ZONE. The Lynx crew called ZONE at 1017:48, approaching Newby Hall southbound at 500ft QFE (1027mb). Although the controller's report states the Lynx was never formally identified, the tape transcript reveals the controller did report to the pilot at 1018:06, that the helicopter was *"identified basic service".* The pilot then added that he was operating VFR squawking A7000, would be switching to Leeds shortly and "IFR from there". This was acknowledged by ZONE who reiterated the BS and passed the Barnsley RPS of (1028mb). At the time, the Lynx was not squawking the recognised Dishforth departure squawk of A4530, nor was the reported identification consistent with the position report method; however, this is not considered a causal factor. During the Airprox the GR4 crew was flying in VMC and in sight of the surface. ZONE identified that the Lynx's track would take them into close proximity with the GR4 and passed TI to the GR4 crew at 1019:00 about the Lynx, *"..Traffic 12 o'clock 2 miles opposite direction* [sic] *indicating 8 hundred feet";* at no point was TI given to the Lynx crew about the GR4. [UKAB Note (2): It is apparent that ZONE passed incorrect advice about the Lynx's course.]

As the Lynx crew was flying VFR under a BS, ZONE acted in accord with the service provided; however, best practice would have been to pass a warning to the Lynx crew about the presence of the GR4 approaching from astern.

UKAB Note (3): The Claxby Radar recording shows the Lynx Mk9 departing to the S of Dishforth squawking A7000 with Mode C before turning westerly. The GR4 approaches from the E in a continual descent through 4000ft (1013mb), which equates to an altitude of 4450ft BARNSLEY RPS (1028mb) at a range of 4·1nm from the Lynx. Maintaining a broadly westerly course, the GR4 closes from the Lynx's port quarter, the latter maintaining a level cruise at 600ft (1013mb) – about 1050ft RPS (1028mb) to a range of 0·3nm at 1019:38, when the GR4 is shown descending, 300ft above the helicopter. The GR4 overtakes the Lynx to port, in between sweeps, and is next shown indicating 200ft below, after descending through the Lynx's level into the helicopter's 11:30 - 0·7nm. The parallel track displacement is in the order of 0·2nm as the GR4 passed abeam the Lynx. The GR4 then opens on a steady track but the Lynx subsequently turns R into an apparent orbit.

HQ JHC comments that the Lynx crew did not assess the Risk of collision. It is assumed that the Captain filed an Airprox because the GR4 passed close enough to cause disturbance to his helicopter from its wake turbulence but it is not clear to what level the disturbance was.

It appears that the GR4 crew was convinced that they were not affecting the Lynx in any way. The GR4 pilot's report states that they were visual with the ac throughout and they attempted to adjust vertical separation but did not attempt to increase lateral separation. However, this increase in vertical separation did not lead the helicopter crew to believe that there was sufficient separation to avoid the wake turbulence having an effect. If the Lynx had been notified of the GR4 approaching from astern, he would have been prepared for the GR4 and the possibility of wake turbulence but the GR4 was in a better position to take any action.

HQ AIR (OPS) had no comment as the recorded and reported separation was in excess of 1000ft.

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.

In the view of the Air Cmd fast–jet pilot Member, the separation accorded to the Lynx helicopter by the GR4 crew was satisfactory. Nevertheless, it was evident that with no prior warning from ATC the Lynx crew had been surprised by the appearance of the GR4. The JHC Member emphasised the potential hazard to helicopters from the wake turbulence of jets at close quarters but it was not evident whether the reported 'disturbance' to the helicopter from the GR4's wake was a definite hazard in this instance. Clearly the Board was charged with assessing the Risk of a collision between the two ac and not necessarily wake turbulence issues, however, the Board agreed that the Lynx pilot was entirely correct in reporting this Airprox so that the circumstances could be looked at for the benefit of the whole aviation community.

Members recognised that the Lynx crew, operating on VHF, would not have known at the time if the GR4 crew, operating on UHF, were visual with their helicopter as the jet overtook them to port and clearly at odds with the Rules of the Air. Controller Members agreed with HQ Air ATM Safety Management view that best practice would have been for ATC to pass a warning to the Lynx crew about the presence of the GR4 approaching from astern. In the absence of any technical ability to cross-couple ATC frequencies, the military terminal ATC Member spoke of local initiatives to put transit traffic onto the same VHF frequency where feasible, so that pilots might benefit from hearing other crews transmissions and improve their SA. This was in the same vein as a previous UKAB Safety Recommendation (2009-117) relating to ac in the visual cct operating on the same frequency, which had been accepted by the MOD. However, as the GR4 crew had not advised ZONE that they were visual with the helicopter, nor the controller questioned this, the Lynx crew would have been none the wiser here, so undoubtedly only a warning could have helped the Lynx crews SA. On the other hand, the Lynx crew were operating VFR under a BS and should not expect TI routinely. The Board was advised that a frequently used fast-jet low-level entry point lay to the W and helicopter crews should expect to encounter fast-jets in this vicinity, but plainly with this geometry the Lynx crew were unable to affect the outcome.

The GR4 crew having, the benefit of TI from ZONE, albeit partially incorrect, sighted the helicopter but the range of visual acquisition was not quoted. Nevertheless the GR4 crew had spotted it beforehand and it was only they that could choose what separation to afford the helicopter as they descended through its level. The radar recording shows that they passed about 400yd clear as they overtook the Lynx, but they were level with it as they passed abeam at the closest point, which had evidently caused the Lynx crew concern. Pilot Members opined that it would have been better airmanship to have afforded the helicopter a wider berth. The Board concluded therefore that this Airprox had been caused by the Tornado GR4 crew flying close enough to the Lynx to cause its crew concern, but that no Risk of a collision had existed in these circumstances.

PART C: ASSESSMENT OF CAUSE AND RISK

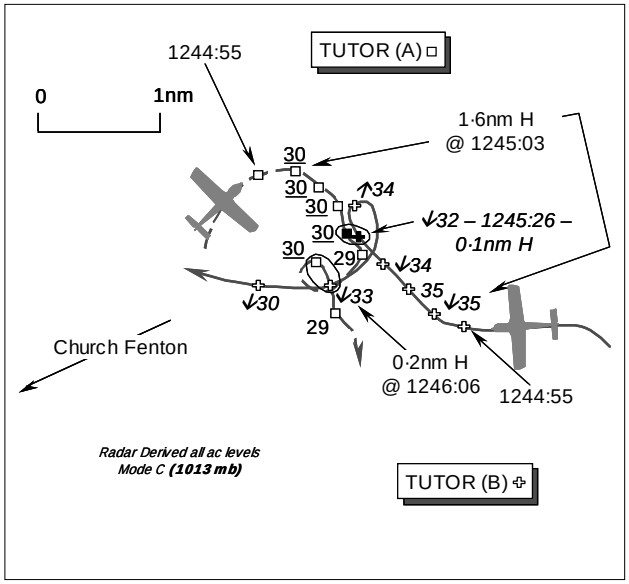
Cause: The Tornado crew flew close enough to the Lynx to cause its crew concern.

Degree of Risk: C.

AIRPROX REPORT No 2010053

AIRPROX REPORT NO 2010053

Date/Time:	19 May 2010 1245Z	
Position:	5353N 00057W (076° Church Fenton 9nm - elev 29ft)	
Airspace:	Vale of York AIAA (Class: G)	
	Reporting Ac	*Reporting Ac*
Type:	Grob Tutor II	Grob Tutor II
Operator:	HQ Air (Trg)	HQ Air (Trg)
Alt/FL:	FL30	3400ft
	SAS (1013mb)	QFE (1027mb)
Weather:	VMC CLBC	VMC CLBC
Visibility:	10km	10km
Reported Separation:		
	200ft V/200m H	200ft V/200m H
Recorded Separation:		
	200ft V/0·1nm H	



BOTH PILOTS FILED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PILOT OF GROB TUTOR II (A) reports that he was conducting a local instrument flying training sortie under a TS from Church Fenton APP [situated at Linton-on-Ouse] on 233·45MHz under VFR. Elementary Mode S is fitted and the assigned squawk of A4546 was selected with Mode C. TCAS is not yet fitted. The aeroplane is coloured white; the white HISLs and landing light were on.

An overcast cloud layer at around 4000ft resulted in training sorties and other VFR traffic to the E of Church Fenton operating in a limited height band below cloud. He had recently heard a visual recovery call from the crew of Tutor (B) and there were no other instrument recoveries taking place on the frequency. Heading 200° 8nm from Church Fenton at 108kt, whilst repositioning just S of the MATZ stub in level flight at FL30 - about 3440ft QFE (1027mb) - he sighted another ac [Tutor (B)] about 150m away approaching from the L as it appeared from behind the canopy arch. Late acquisition of this ac resulted in closure to an assessed separation of 100m horizontally, some 100ft above his aeroplane crossing at an angle of about 50° from L to R. The respective vectors and relative geometry was not sufficiently dangerous to merit avoiding action being taken. Because of the late sighting any manoeuvre would not have significantly affected the minimum separation distance. He did not recall receiving a recent traffic call relating to Tutor (B) and called Fenton APP to report an Airprox. After this transmission, the pilot of Tutor (B) made a call that suggested the other pilot had seen his aeroplane and thus had achieved visual deconfliction, so he informed Fenton APP to disregard his initial Airprox RT report.

Once on the ground it became clear that the pilot of Tutor (B) had not acquired his aeroplane significantly before he heard his Airprox report. In his view, the two ac were too close for comfort so he contacted the ATC SUPERVISOR (SUP) at Linton-on-Ouse (LOO) and initiated an Airprox report. He stressed that the level of UHF RT on Fenton APP was very high at times; there was other traffic on VHF, the APP controller's workload was often high during the sortie and the service they were receiving was affected by that. Military ac RT made up a significant proportion of the traffic calls but the relative positions of ac continually change, thus once acquired, ac can very quickly go out of sight and once again become a potential conflict, but might not be called by ATC since it was acquired previously.

UKAB Note (1): The pilot of Grob Tutor (A) also submitted a supplementary HF report:

The canopy arch is a physical obstruction to visibility from the Tutor cockpit reducing the effectiveness of peripheral vision when monitoring attitude and instruments. The Tutor requires active body movement to clear the canopy arch blind spots.

Both before and after the Airprox he missed a number of traffic calls from ATC, which he attributes to two factors:

Although he was fit to fly he considered that fatigue reduced his cockpit work-rate including lookout and situational awareness while trying to maintain effective teaching.

During the sortie he had been adjusting both RT and intercom volumes to attempt to achieve lower levels than he would have routinely used in the past. They had been advised to use 'the minimum communications volume commensurate with ensuring full intelligibility of speech' following work to identify cockpit noise levels. Utilizing the cockpit communications at too low a level led to lower situational awareness through missed calls; ATC did re-call some traffic.

He added that the use of a TS is not a panacea to deconfliction in the local airspace, more especially so when traffic density is high due to military training users whose movements are not predictable by ATC or other pilots.

THE PILOT OF GROB TUTOR II (B) reports he was conducting a Staff Continuation Training (SCT) A2 workup sortie with another QFI, the PF, in an area some 10-15nm E of Church Fenton. Throughout the sortie he thought he had been receiving a TS from Linton ZONE on local Stud 12. The assigned squawk was selected with Mode C. Elementary Mode S is fitted, TCAS is not.

Visibility in his operating area was in excess of 10km, but throughout the sortie traffic called to them had proved difficult to see. Just prior to the final part of the air exercise a manoeuvring contact 3nm to the N had been called by APP. No visual contact was established with this traffic so he positioned his aeroplane to the S to attempt deconfliction with the reported ac. On completion of the exercise he elected to carry out a visual recovery to Church Fenton.

The PF informed Linton ZONE they were freecalling Fenton APP on 233·45MHz and squawking A7000. No further update was given by ZONE on the previously called traffic - Tutor (A). About 10nm E of Church Fenton they requested and were cleared for a visual recovery to RW24 by APP. The PF then initiated a descent from 4000ft QFE and pointed the ac to position at about 8nm on the extended centre line of RW24. Heading 340° at 120kt, passing 3400ft QFE in the descent, the PF noticed another aeroplane in close proximity and leveled their ac, passing just overhead the other aeroplane - Tutor (A). He estimated the minimum separation as some 200m horizontally and 200ft vertically. The pilot of Tutor (A) then reported an Airprox; they replied that it was with them and that they were visual with his aeroplane. They then completed a normal visual recovery.

THE CHURCH FENTON APPROACH CONTROLLER (CFN APP) reports that at no time did she hear an Airprox report transmitted on either of the two frequencies in use at the time. Between 7 and 8 speaking units were on frequency, 4 of which were under a TS, with 3 operating in Area "C". All traffic in the vicinity had been called under the conditions of the TS.

THE LINTON-ON-OUSE ATC SUPERVISOR (SUP) reports that having spoken to the pilot of Tutor (A) and listened to the RT recording it is evident that both UHF and VHF were very busy. The APP controller was calling a number of tracks to the crew of Tutor (A) and then focused her attention to an ac calling on VHF. Whilst this ac was being answered the pilot of Tutor (A) declared the Airprox, but this was not acknowledged due to the high workload and the RT frequency being distorted by dual transmissions.

HQ 1Gp BM SM reports that a report from Linton-on-Ouse (LOO) ZONE was not available, as the controller had been posted OOA. CFN APP is responsible for the provision of an ATS to ac recovering and transiting close to Church Fenton. ZONE is responsible for the provision of ATS to other ac transiting within LOO's LARS area, whilst Departures (DEPS) is responsible for ac departing both LOO and CFN.

Following a hand-over from Linton DEPS the crew of Tutor (A) initially contacted CFN APP at 1233:57. APP's workload was high within a complex air situation, the controller reporting they were controlling between 7 and 8 speaking units at the time of the Airprox, of which 4 were under a TS. However, at no stage did APP 'reduce' the service offered due to controller workload.

At 1242:08, APP passed TI to the crew of Tutor (A), which was updated at the pilot's request at 1242:18 and acknowledged. By comparing the pilot's reports, RT tape transcript and radar recording it is evident that the subject of this TI was Tutor (B). The crew of Tutor (B) was in receipt of an ATS from ZONE, who passed TI on an

ac subsequently identified as Tutor (A) at 1240:39, which was updated at 1242:48 and acknowledged by Tutor (B). At 1244:41, when ZONE acknowledged the crew of Tutor (B)'s call that they were, *"freecalling stud 4"*, Tutor (A) was about 2½nm WNW of Tutor (B) in a RH turn. When Tutor (B) selected A7000 at 1244:48, Tutor (A) was 1·9nm NW of Tutor (B), indicating 600ft below the latter in a gentle R turn. Moments later the crew of Tutor (B) freecalled CFN APP on UHF at 1244:52, for a visual recovery, co-incident with a call on VHF from a civilian light ac (LA) leaving the Church Fenton cct. CFN APP responded to the crew of Tutor (B) first, by passing the A/D details. Although APP does mention this in their report, it is reasonable to suggest that the controller will have looked away from the radar display to the Electronic Tote to read the A/D details, and then looked at the fps to log the details of the flight.

Contrary to the report from the pilot of Tutor (B), who states that at the time of the Airprox he was in receipt of a TS, the RT tape transcript shows that the provision of an ATS was not established between the pilot and controller. The Linton-on-Ouse FOB states that pilots requiring a visual recovery will receive a BS, but that in order to reduce RT, the type of ATS will not be stated. CAP774 states that:

"..whether traffic information has been passed or not, a pilot is expected to discharge his collision avoidance responsibility without assistance from the controller."

Furthermore, whilst CAP774 permits controllers to pass a warning to aircrew in receipt of a BS when they perceive a definite risk of a collision, in this case there is no evidence to suggest that APP was aware of Tutor (B)'s position and thus any risk of a collision. ZONE had passed TI on Tutor (A) to the crew of Tutor (B) twice and, at the point when Tutor (B) left ZONE's frequency, the pilot did not request an update of the TI. Consequently, in terms of the provision of a TS within CAP774, ZONE fulfilled their duties with respect to the provision of TI to Tutor (B).

At 1245:11, the radar recording shows Tutor (B) turning R onto a NW'ly track which, based upon the pilot's report, is the positioning turn onto the extended centreline of RW24. At this point, Tutor (A) is 1·1nm NW of Tutor (B), indicating 500ft below it.

CAP774 states that:

"the controller shall pass traffic information on relevant traffic, and shall update the TI if it continues to constitute a definite hazard, or if requested by the pilot."

Following APP's initial transmission of TI to the crew of Tutor (A) about Tutor (B), both ac continued to manoeuvre, at one stage to within approximately 1·6nm and 300ft indicated Mode C; however, given the relative speeds of the ac and their track history, this did not constitute a definite hazard. Furthermore, CAP774 states that: '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.' From studying the radar replay it is clear that at no point does a further definite hazard exist between Tutor (A) and Tutor (B) until 1245:12 when Tutor (A) can be seen to have rolled out of his R turn onto a SE'ly track. Consequently, whilst there is a period of 2min 9sec, during which no transmissions or landline conversations are evident on the APP transcript, there was no requirement for APP to have updated the TI until 1245:12.

APP's transmission to Tutor (B) regarding the A/D details was completed at around 1245:05, with Tutor (B) responding immediately. Whilst APP was listening to Tutor (B)'s readback, they will have been completing their logging on the fps, selecting a further fps for the departing civilian LA and arranging it – bearing in mind the number of fps already likely to be in front of them – deselecting the UHF and then selecting the VHF in order to respond to the civilian LA pilot. Although supposition, it is likely that while APP was engaged in these activities the confliction between Tutor (B) and Tutor (A) arose and became evident on radar.

At 1245:15, when APP responded to the civilian LA pilot horizontal separation between Tutor (A) and Tutor (B) was about 0·85nm. The civilian LA is probably the A7000 contact around 8nm SW of the location of the Airprox. The APP controllers focus will have been attracted to the area to the E of the MATZ and specifically Selby [about 7nm SW of the Airprox location] by the civilian pilot's call, the lateral separation between Tutor (A) and the civilian LA will have further served to attract APP's attention away from the confliction. Furthermore, the high workload will have served to raise the level of cognitive arousal in APP, the result of which will have been to induce attentional tunnelling such that they will have had a tight visual focus onto the LA's location on the radar display. After APP first responded to Tutor (B), the last opportunity that APP had in which to pass TI to Tutor (A) was at

1245:15. Had APP done so at this late stage, it would have left only 5-6sec before the CPA for the crew of Tutor (A) to have assimilated the information, spotted the conflicting traffic and taken suitable action. The CPA occurred at 1245:26 with Tutor (B) passing approximately 0·1nm down the port side of Tutor (A), an indicated 200ft above it on Mode C.

It is contended that once APP responded to the civilian LA pilot's call at 1245:15, the opportunity had effectively been lost to provide advice or TI to resolve this confliction. Whilst APP did not reduce the provision of a TS due to controller workload, given the statement by the captain of Tutor (A) that his lookout and SA was compromised through the effects of fatigue, it is unlikely that a 'reduced' TS would have had an effect on the outcome of the occurrence. Consequently, it is not considered to be a contributory factor. Whilst in hindsight APP could have utilised the window of opportunity at 1245:15 to pass TI to Tutor (A), it is impossible to determine where the focus of the controller's attention was at the point a confliction might have become evident at about 1245:12. APP was engaged in a number of tasks at the time that appeared to be of a higher priority, given that they were unaware of the building confliction and had discharged their TI responsibilities. The spike of workload presented by the co-incident calls on UHF and VHF will have interrupted APP's normal workcycle of dividing their attention between their ac and will have compelled them to complete a number of actions that required them to look away from the radar screen.

The LOO FOB states that:

"the Vale of York is notified as an Area of Intense Aerial Activity (AIAA) and thus it is paramount that robust see-and-avoid measures are employed in order to reduce the risk of collision."

As such, the FOB details procedures relating to the provision and usage of operating sectors, in order to provide an element of de-confliction between LOO AIAA users.

SATCO has commented that whilst the recommendations for Tutor crews to obtain a TS whilst general handling in the Vale of York AIAA are adequate, the separation of ac in the clearly defined operating areas (A, B and C) is not being correctly utilised, resulting in several ac operating simultaneously in close proximity to each other in one area, whilst having no ac operating in either of the 2 remaining areas.

Whilst weather considerations will have a significant impact upon the utilisation of specific areas of airspace, SATCO's comment suggests that there may be a more significant issue with the lack of airspace de-confliction.

The UFSO at LOO highlights that the workload on CFN APP is an ongoing issue that ATC are trying to resolve in consultation with the resident flying units and it is certain that the workload faced by CFN APP was a contributory factor in this occurrence. This issue may have arisen following the decision by the controlling authority - HQ 22 (Training) Gp – to mandate that Tutor ac operate under a TS whenever available and practicable; however, LOO has not made this Command aware of any issue to do with excessive workload.

It is recommended that LOO undertake a review of airspace de-confliction procedures. Furthermore, it is recommended that LOO ATC conduct a safety survey on workload issues for CFN APP, in order to provide a considered safety assessment on which they may progress their work with the resident flying units.

UKAB Note (1): Analysis of the Claxby Radar recording at 1245:03, shows Grob Tutor (A) maintaining 3000ft (1013mb) in a R turn through E with Grob Tutor (B) 1·6nm to the SE descending through 3500ft (1013mb) steadying NW'ly following a R turn. The two ac converge on broadly reciprocal tracks to a CPA of 0·1nm at 1245:26, when both ac are shown passing port to port, Tutor (A) maintaining 3000ft as Tutor (B) descends to an indicated 3200ft. Thereafter Tutor (B) climbs to 3400ft, turns about and follows Tutor (A) on a SW'ly course, whence Tutor (A) executes a RH orbit at 3000ft as Tutor (B) crosses 0·2nm ahead from L to R descending through 3300ft some 300ft above Tutor (A), which heads S as Tutor (B) clears to the WNW. From the RT transcript it is clear that the Airprox was initially reported at 1245:30, referring to the first occurrence at 1245:26.

HQ AIR (TRG) comments that this Airprox occurred in the Vale of York AIAA, Class G airspace, where the primary method of avoidance is 'see and avoid' supported by TI provided by ATC. TI was passed but the constantly changing air picture in the AIAA quickly nullifies this information. Both crews saw each other albeit late and neither considered that avoiding action was required.

AIRPROX REPORT No 2010053

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 two of the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

This Airprox had occurred in the busy airspace of the Vale of York AIAA and in regard to the local internal airspace issues, the HQ Air Ops Member explained that Linton-on-Ouse has been directed to review de-confliction measures, which reassured the Board. It was evident from the comprehensive reports filed by the Captains of both ac that to help them discharge their responsibilities to 'see and avoid' other ac they had supplemented their own lookout capabilities with a TS from ZONE and APP during their sorties. However, Members agreed that both accounts represented late sightings by the respective crews, which in the Board's view was the crux of the issue. The report from HQ 1 Gp ATC showed that TI had indeed been passed to each pilot about each other's ac under the TS provided before the Airprox occurred. In the case of Tutor (A), APP transmitted TI 3min and 8sec before the CPA. Whereas ZONE passed TI to Tutor (B) that was updated 2min 38 sec before the Airprox, this was before Tutor (B) switched to APP and was thus 'deemed' to be under a BS for their visual recovery to base. The report also showed that the APP controller was focused on another ac moments before the Airprox occurred; consequently, no further updates were forthcoming from APP about each other's ac before they sighted one another. Therefore, TI had been passed but the manoeuvres of the two ac subsequently brought them back into conflict, which was not immediately apparent to APP and who was fully occupied with another flight under service on VHF to the SW. The Tutor crews on UHF would not have heard APP's transmissions on VHF and a controller Member explained that it was unfortunate that no form of cross-coupling of the frequencies was possible with current equipments at RAF Terminal ATSUs, which would have allowed the crews here to hear how busy the controller was at the time. As it was the PF of Tutor (B) saw and levelled his ac above Tutor (A), which was when the crew of Tutor (A) spotted Tutor (B). The Members agreed unanimously that the cause of the Airprox was late sightings by the pilots of both ac.

Whilst the crew of Tutor (A) had probably seen Tutor (B) a little later, they had not felt avoiding action was warranted and it was plain that the PF of Tutor (B) had sufficient time to level off and forestall the developing conflict. Both crews agreed that the vertical separation was 200ft at the closest point of 200m, which was broadly substantiated by the radar recording showing 200ft from the Mode C indications at the minimum range of 0·1nm. The Board agreed therefore, that despite the relatively close distances evident here, the avoiding action taken by Tutor (B) had been sufficient to remove any Risk of a collision.

Although APP had not specified the ATS when the crew of Tutor (B) called on their recovery to base, local regulations within the Unit FOB covered this issue and the crew was 'deemed' to be under a BS from APP during their visual recovery, not a TS as the Captain of Tutor (B) had reported. It was not clear to the Board whether the Captain of Tutor (B) had made an error in his report or whether he was under the impression that, having been in receipt of a TS from ZONE he would automatically continue under a TS with APP. Whilst not questioning in any way the principle of applying a BS automatically to traffic recovering visually, controller Members suggested that the implementation of this local modification to the regulations was unwise; an experienced controller Member observed that it took no time at all to say 'Basic Service', and doing so removed any uncertainty and reaffirmed to the pilot the exact nature of the ATS applied by the controller. Members agreed that it was unwise not to state the ATS clearly when the 'contract' was established between pilot and controller. Consequently, the Board were moved to make a Safety Recommendation through HQ (Air) AO BM to the MoD: It is recommended that outside CAS where local procedures deem that a specified ATS may be provided automatically, that controllers state the actual service on the RT as a reminder to pilots of the ATS actually being given.

PART C: ASSESSMENT OF CAUSE AND RISK

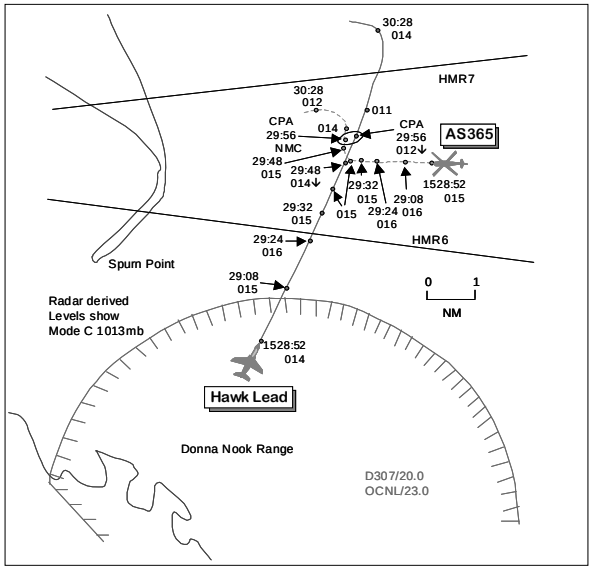
Cause: Late sightings by the pilots of both ac.

Degree of Risk: C.

Safety Recommendation: It is recommended that outside CAS, where local procedures deem that an ATS may be automatically provided, that controllers state the actual service on the RT as a reminder to pilots of the ATS actually being given.

AIRPROX REPORT NO 2010054

Date/Time:	24 May 2010 1530Z	
Position:	5337N 00016E (14nm ESE OTR)	
Airspace:	HMR7/LFIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	AS365	Hawk
Operator:	CAT	HQ AIR (OPS)
Alt/FL:	1500ft	1300ft
	(RPS 1010mb)	(agl)
Weather:	VMC CLNC	VMC CLNC
Visibility:	>10km	20km
Reported Separation:		
	NR	500ft V/600ft H
Recorded Separation:		
	0·2nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE AS365 PILOT reports returning to Humberside from Amethyst A2D platform on HMR7 heading 265° at 1500ft Humber RPS 1010mb and 135kt, and in receipt of an Offshore DS (SSR) from Anglia Radar on 125·275MHz squawking 0234 with Mode C; TCAS was not fitted. The visibility was >10km in VMC and the ac was coloured red/white/blue with strobe, nav and searchlight all switched on. They were informed of activity in Donna Nook range of 2, possibly 3 ac; they set the range frequency on Box 2 to inform them of their position but before contact could be made Anglia informed them of possible conflicting traffic leaving the range. Flying into sun they saw this ac, a black Hawk, in their 10 o'clock range 2nm and closing, appearing to be level and at the same altitude. He immediately took avoiding action by turning N and descending 400ft but, owing to the AOB, visual contact was lost. At the same time they contacted Donna Nook range to advise that they were close to their outbound traffic. On a N'ly track they became visual with a Hawk in their 3 o'clock below their level on a parallel track and then diverging. They re-established their course and height and made visual contact on a second Hawk which turned W'bound and climbed with no confliction. He assessed the risk as medium to high.

THE HAWK PILOT reports completing a training sortie in Donna Nook range and initiating a 2-ship formation rejoin, and in receipt of a BS from Donna Primary squawking 7002 with Mode C. The visibility was 20km in VMC and the ac was coloured black with nose light and HISLs switched on. Heading 024° at 300kt and 1300ft QFE 1013mb his wingman had completed his safety checks and as they acknowledged they were told of helicopter traffic and to standby for further details. By the time the update on the helicopter was called they had already seen it 15° R of the nose and 1000m ahead about 200ft higher turning across his nose from R to L to roll out parallel to his heading, now in his 11 o'clock. He descended 300ft and maintained wings-level in order to remain visual with the helicopter, estimating they passed 500ft vertically and 600ft horizontally at the CPA. He rocked his wings as he passed the helicopter on its RHS to acknowledge the fact of his visual sighting. He assessed that there was no risk of collision.

THE ANGLIA RADAR CONTROLLER reports the AS365 lifted from Amethyst field climbing to altitude 1500ft inbound to Humberside and there was no traffic to affect. The flight was provided with an Offshore DS using SSR only. Two ac in Donna Nook range were observed orbiting at 1500ft so the AS365 crew were given a 'heads-up' as the helicopter would pass about 3-4nm N of Donna Nook; the crew acknowledged. As the AS365 approached the range he gave TI on the 2 ac at which point 1 of the ac turned N towards the helicopter and the pilot reported visual with the military ac. He asked the pilot if he was "happy to continue" and he replied, "affirm". The next radar sweep showed the AS365 turning hard R (90°) with the returns merging at similar levels. The AS365 Capt reported that he was, "...going to file on that one".

ATSI comments that the AS365 flight established communication with Anglia Radar (situated at Aberdeen) at 1521. The pilot reported airborne from the Amethyst inbound to Humberside, requesting 1500ft. The helicopter was identified and provided with an Offshore DS, SSR only; altitude 1500ft was approved.

Just over 2min later, Anglia Radar informed the pilot of the AS365, *"Just a heads up there's at least two aircraft in Donna Nook err might be three actually and all indicating er fifteen hundred feet at the moment doing the usual er up and down the coast so er keep a lookout that way."* The pilot reported copying the information. At the time, the helicopter was approximately 12nm ENE of Donna Nook, on a projected track that would pass about 1·5nm N of the Danger Area boundary.

At 1528:48, Anglia Radar contacted the AS365 flight, *"traffic in Donna Nook is er just er I was about to say maintaining quite a tight ????? about four miles south of Spurn but one's just er gone off towards you he's indicating thirteen hundred feet that's in your er ten o'clock about four miles."* The pilot commented, *"we're good VFR."* Anglia updated the TI at 1529:10, *"Okay he's tracking towards you now fourteen hundred feet if nothing sighted right twenty degrees report the heading."* The pilot responded, *"We are visual."* After the controller asked, *"are you happy to carry on"*, the pilot replied, *"Affirm."* Thereafter, the military traffic continued towards the AS365, resulting in the helicopter pilot taking avoiding action.

The AS365 pilot stated, in his subsequent filed report, that he had been inbound on HMR 7. By definition, HMRs have no lateral dimensions but in the Anglia Radar Area of Responsibility the vertical operational limits are from 1500ft amsl up to and including FL60. Inbound flights will normally plan to fly at 1500ft or 3000ft amsl. Under the MOU between Aberdeen ATC and the helicopter companies operating in the North Sea, the default FIS which will be provided, within surveillance coverage, is an Offshore DS. Signatory helicopters will automatically be provided with the appropriate default FIS and there is no need for a pilot to request the service.

The MATS Part 1, Section 1, Chapter 11, states the definition of a DS: 'A Deconfliction Service is a surveillance based ATS where, in addition to the provisions of a Basic Service, the controller provides specific surveillance derived traffic information and issues headings and/or levels aimed at achieving planned deconfliction minima, or for positioning and/or sequencing. However, the avoidance of other traffic is ultimately the pilot's responsibility'. Additionally: 'A controller shall provide traffic information, accompanied with a heading and/or level aimed at achieving a planned deconfliction minima against all observed aircraft in: Class F/G airspace, active TRAs, active MTAs. The deconfliction minima against uncoordinated traffic are: -

5nm laterally (subject to surveillance capability and CAA approval); or

3000ft vertically and, unless SSR Mode 3A indicates that the Mode C data has been verified, the surveillance returns, however presented, should not merge.

High controller workload or RT loading may reduce the ability of the controller to pass deconfliction advice and the timeliness of such information. Furthermore, unknown aircraft may make unpredictable or high-energy manoeuvres. Consequently, it is recognised that controllers cannot guarantee to achieve these deconfliction minima; however, they shall apply all reasonable endeavours'.

On this occasion, it was reported that the Anglia Radar workload was medium to high. The controller issued early TI about activity in Donna Nook and, subsequently, offered an avoiding turn to the pilot of the AS365. In the event, the pilot reported visual with the traffic and opted to continue with it in sight.

There is no LoA between Anglia Radar and Donna Nook. The Aberdeen MATS Part 2, with reference to the Donna Nook Danger Area, states 'The Range Controller is not providing an ATC service to aircraft using the weapons ranges and coordination cannot be effected to assist in the resolution of traffic conflictions'.

THE DONNA NOOK RSO reports a pair of Hawks was booked traffic and had been on range for 20min prior to the incident. Both ac were requested to squawk 7002 (Danger Area conspicuity) on joining the range and were on Range Primary UHF frequency. The Hawk pair moved from the Southern cct into the Northern cct (closer to Spurn Head) at 1515 and then completed 4-5 patterns before Hawk 2 pilot reported downwind for a last pass before departing the range. As there was no conflicting traffic in the area he took no further action. As Hawk Lead pilot called 'switches safe, departing N' a helicopter flight called on VHF but, because of the overlapping transmissions, he misheard the c/s; however, he immediately informed Hawk Lead of the helicopter's presence on

the Heli-route and that he would obtain a height. He called the helicopter flight using the wrong c/s, however the pilot responded that he had a military ac flying directly towards his ac. He requested the helicopter's height and then transmitted on UHF that 1 of the formation was flying directly at the helicopter. The helicopter pilot replied he was at 1500ft but that it was too late as the other ac had just missed him. He told Hawk Lead of this and was told that he had the helicopter visual and had taken avoiding action. This information was passed to the helicopter pilot who replied he too had taken avoiding action and because, "he was carrying passengers he would be filing". He informed Hawk Lead of this before the formation left his frequency going enroute. He then called Humberside to ascertain the helicopter's direction of travel and was told the helicopter's correct c/s, that it was inbound and that the miss distance for the Airprox was very close. Anglia Radar then telephoned to ascertain the details of the range traffic. He opined that the first information about the helicopter's presence had been the pilot's initial call which coincided with the Hawks checking in with a 'switches safe' transmission, a mandatory call. He thought that there was not enough time to gain accurate position information from the helicopter flight and he had elected to notify the departing Hawks that it was in the area before interrogating the helicopter flight further.

HQ AIR ATM SAFETY MANAGEMENT reports the transmission from the AS365 pilot to Donna Nook at 1529:20 was co-incident with the transmission from Hawk Lead that they were, "departing to the N via Yankee." [UKAB Note (1): At this point, the Claxby radar replay shows that the AS365 is approximately 15° R of the Hawk's track at a range of 2·2nm, both ac showing FL016 (1500ft RPS 1010mb).] Approximately 5sec elapsed between the end of the Hawks Lead's transmission and the beginning of the transmission at 1529:31 in which the RSO passed a warning to Hawk Lead on the AS365, *"Hawk c/s roger the Barnsley 1009, the Humber 1010 one helicopter on the route just calling me now I'll find out what he's doing standby."* At this time, the relative bearing was similar, with approximately 1·5nm separation existing.

[UKAB Note(2): The RSO then asked the AS365 pilot to pass his details and was told that a military ac was pointing at them. The radar shows the AS365 is just passing through the Hawk's 12 o'clock range 0·7nm both ac indicating FL015 (1400ft RPS 1010mb). The RSO then asked the AS365 pilot for his height which was given as 1500ft. Immediately afterwards at 1529:47 the RSO transmitted, *"Helicopter's at 1500ft on the route believed to be 12 o'clock to one of you;"* the Hawk Lead replied, *"Yeah, passing him now."* As the RSO starts his transmission the AS365 is seen to have executed a hard R turn rolling out on a N'ly heading at FL015 in the Hawks 11 o'clock range 0·3nm, the Hawk indicating FL014. The CPA occurs on the next sweep at 1529:56, the Hawk having overtaken the AS365 on its RHS, the AS365 showing NMC with the Hawk indicating FL011, separation 0·2nm. The Hawk levels at FL011 before then climbing up to FL014 and executing a L turn when 2·2nm to the NNE of the AS365, which is turning L through a heading of 260°, having descended to FL012.]

RSOs at AWRs operate without the aid of surveillance equipment. Consequently, their awareness of ac operating on the fringes of the AWR is wholly dependent upon the pilots of such ac making information calls to them, under the auspices of the Danger Area Activity Information Service (DAAIS). As a result of this limitation and the fact that ac operating within the area are unable to comply with Rule 17 (Rules of the Air and ATC Regulations, 1985), the Military AIP entry for EGD307 (Donna Nook) states that 'pilots in the vicinity (of the range) are strongly advised to make use of a radar service'. Furthermore, whilst RSOs do not formally agree the provision of a type of service with aircrew using the ranges, in effect they provide a BS.

CAP 774 states that under a BS, 'if a controller considers that a definite risk of collision exists, a warning may be issued to the pilot'. In this case, the RSO recognised the c/s of the helicopter as being that of one of the North Sea ac that operated from Humberside airport. He quickly perceived the risk of collision with the Hawk formation departing the AWR to the N and passed this information to them as quickly as possible, before returning to the helicopter to ascertain further information. This further information, however, was obtained and passed at around the CPA and immediately after, thereby having no bearing on the occurrence.

From an ATM perspective, the RSO reacted quickly and correctly to what he perceived to be a risk of collision, under the terms of a BS within CAP774.

HQ AIR (OPS) comments that the AS365 was visual with the Hawk ac very early on and could have taken the DS suggested heading change to maximise separation, however he elected to continue on track until the separation margins were eroded beyond what he was prepared to accept. Unfortunately, his choice of turn direction for separation put him unsighted on the Hawk and on the same heading, this would have been an uncomfortable situation; maintaining track and adjusting height would have been far more effective at maximizing separation. The Hawk (on a BS) was nonetheless given TI on the helicopter and took avoiding action to achieve an acceptable

separation. Greater separation would probably have been achieved were it not for the simultaneous transmissions of the AS365 and Hawk Lead.

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.

Although there had been a good exchange of information between Anglia and the AS365 flight, which gave the crew early warning of the Hawks presence on the AWR, a combination of the helicopter's planned track (3-4nm N of the range boundary) and the Hawk's rapid departure N'bound from the range led Members to agree that the time available to resolve the confliction was minimal. Anglia had passed updated TI at 1528:48, when the controller noticed Hawk Lead tracking N'ly, and had then immediately given a further updated TI and an avoiding action R turn of 20°; the Board noted that, although it did not affect the outcome, the controller did not use the term "avoiding action". One controller Member thought that Anglia, whilst providing an Offshore DS, was late in giving avoiding action and that it should have been passed during the first updated TI transmission when separation had already reduced to 4nm. Another Member believed that the service should have been limited owing to the helicopter's planned track passing less than 5nm from the Danger Area with known activity inside it as Anglia was endeavouring to provide Deconfliction minima. However, in the end Members agreed that owing to the short time period available Anglia, who was unaware of the Hawk pair's intentions, had discharged his responsibilities and when the AS365 crew reported that they were happy to carry on after sighting the Hawk, they then became responsible for maintaining their own separation from it. The AS365 crew had then become concerned about the Hawk Lead's flightpath and elected to turn hard R whilst they were trying to establish RT contact with Donna Nook. The RSO had done well in the limited time available and informed the Hawk Lead pilot that there was a helicopter on the HMR as the formation reported departing the range. Hawk Lead had seen the AS365 and had taken adequate visual separation on the helicopter as he passed clear to its R and below. The Hawk had become unsighted to the AS365 crew as they turned away until they re-sighted it passing on their RHS, understandably uncomfortable, as its proximity was closer than they expected. In the end Members agreed that all parties had acted appropriately during this rapidly unfolding evolution. This allowed the Board to conclude that the incident had been a conflict in the Class G airspace where the Hawk Lead's visual sighting and action had ensured that any risk of collision was removed. Although there is no compunction to do so, both flights could mitigate similar risks in future: the helicopter crew by adjusting their routeing and/or making an earlier call to the Range, and the Hawk crews by flying over or under the normal operating levels of the HMR.

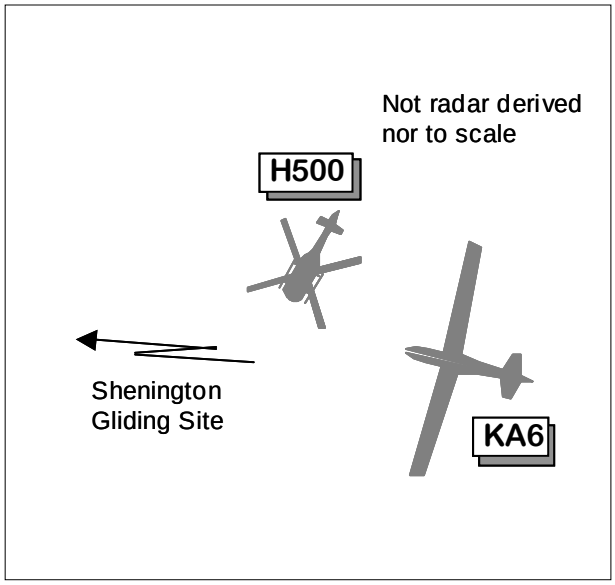
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Conflict in Class G airspace.

Degree of Risk: C.

AIRPROX REPORT NO 2010055

Date/Time:	30 May 2010 1521Z (Sunday)	
Position:	5205N 00127W (0·5nm ESE Edge Hill/ Shenington G/S - elev 642ft)	
Airspace:	LFIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	KA6	H500
Operator:	Civ Club	Civ Pte
Alt/FL:	500ft↓	100ft↑
	(QFE)	(agl)
Weather:	VMC NR	VMC CAVOK
Visibility:	NR	40km
Reported Separation:		
	200ft V/NR H	Not seen
Recorded Separation:		
	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE KA6 PILOT reports returning to Edge Hill from a 5hr 20min Silver endurance flight and in communication with Shenington Radio on 129·975MHz. The Wx was VMC and the ac was coloured white/green. After turning on to the approach at 600ft heading 280° at 55kt a helicopter took off from a field between the perimeter fence and the school, and then flew directly across his approach path. As he descended through 500ft on his approach, the helicopter passed just ahead and then about 200ft below him. At the time the strong wind and turbulent thermals precluded a go-around and gain of height from his position on the final approach. Also, an avoidance L or R turn was not possible owing to a lack of suitable landing fields. He was also concerned that the rotor wash could have potentially caused loss of control at this critical phase of flight. He assessed the risk of collision as none.

THE H500 PILOT reports lifting-off from a private site adjacent to Edge Hill/Shenington airfield and in communication with Shenington on 129·975MHz, squawking with Mode C. The visibility was 40km in CAVOK and the helicopter was coloured dark blue with nav and strobe lights switched on. He had first telephoned and advised the airfield operations/comms manager that he intended to lift within 2min and had asked whether there was any conflicting traffic. The manager was not aware of any conflicting traffic and said he would advise those gliding of his intentions. He duly lifted into about a 100ft hover and made a general broadcast of his intentions before he made a very low-level departure, about 200ft, heading 200° and 80kt, specifically to avoid potential traffic that may be landing – given the location of the departure site and RW in use, traffic on approach would have been above him. Neither he, nor the pilot seated in the front or the pax in the rear saw any traffic, despite all having been requested to keep a good lookout. He had telephoned 3 days prior to the trip and had asked that relevant notices be placed on the clubhouse notice board of his 1230 arrival time on the 30th May. He had called again on the day, prior to his departure on route to Shenington, advising of his ETA of 1220 and that he would use the general traffic frequency to notify other traffic when about 6nm out from the landing site. All the necessary calls were made and a good lookout was kept for gliders approaching to land; departures taking-off to the W were not in conflict.

THE GLIDING CLUB SUPERVISING INSTRUCTOR reports being positioned at the launch-point about 100m from the airfield boundary at the upwind end of RW28 and seeing the KA6 turning onto its approach at 600ft on a day with strong wind and turbulent thermals. A black H500 took-off from a field near Shenington village and flew directly across the approach path of the K6 at a height of 300ft. It was just beyond the boundary fence, probably avoiding the village. The H500 pilot had telephoned the club during the previous week stating he was visiting the village and was aware of gliding practices. The pilot had not asked to use the airfield and his name/registration was not recorded.

UKAB Note (1): The Airprox is not captured on recorded radar. The KA6 does not show at any time whilst the H500 first appears at 1521:29 0·5nm ESE of Edge Hill/Shenington tracking 200° squawking 7000 with NMC. The

H500 is seen to continue in a slow L turn onto a S'ly track until 1·5nm S of Shenington when it turns onto a track of 220°.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac and radar video recordings.

The Board commended the planning and preparation undertaken by the H500 pilot in the days before his flight to the area. Furthermore, on the day in question and prior to his departure from the landing site, he had made great efforts to deconflict from Edge Hill/Shenington traffic. Having lifted into a 100ft hover, he had broadcast his intentions on the Shenington frequency and departed low-level to the SSW, cognisant that he was underneath the approach to the RW in use. It was unfortunate that he did not see the glider on final approach. Members also thought that the gliding club could have done more with the information provided by the H500 pilot. It was unclear whether the H500 pilot's initial contact had been promulgated widely or where the pre-departure telephone call was answered, possibly in the clubhouse, and whether it was feasible to pass the information to the A/G operator, the winch-operator or duty pilot/instructor in the time available. The CAT helicopter Member agreed that the H500 pilot's pre-flight preparation and departure phase planning had been good but questioned whether the departure transmission had been heard by the KA6 pilot and others on the frequency. However, irrespective of RT/telephone calls on the day, the Member opined that there was no substitute for a good lookout in this see and avoid environment. He would not have expected a clearing turn to be carried out at 100ft in the hover at a critical phase of flight but, notwithstanding that gliders are notoriously difficult to see, he would have expected the H500 pilot to have ensured the approach path was clear of traffic before transitioning from the hover. In the end the H500 pilot departed into conflict with the KA6, which he did not see and this had caused the Airprox.

Turning to risk, the GA/Gliding Member opined that it was sensible for the KA6 pilot, flying a relatively low performance glider, to make a steep approach in the strong winds. This steep approach may have contributed to the H500 pilot's difficulty in seeing the glider higher and closer to the gliding site than he might have expected. The KA6 pilot was correct to be wary of rotor wash but it was felt that he always had the option of closing the airbrakes and landing long. Although the H500's departure had been ill-timed with the KA6 passing unsighted to its pilot, the Board believed that the KA6 pilot was always in a position to adjust his flightpath to avoid the H500 and that there had been no risk of collision during this encounter.

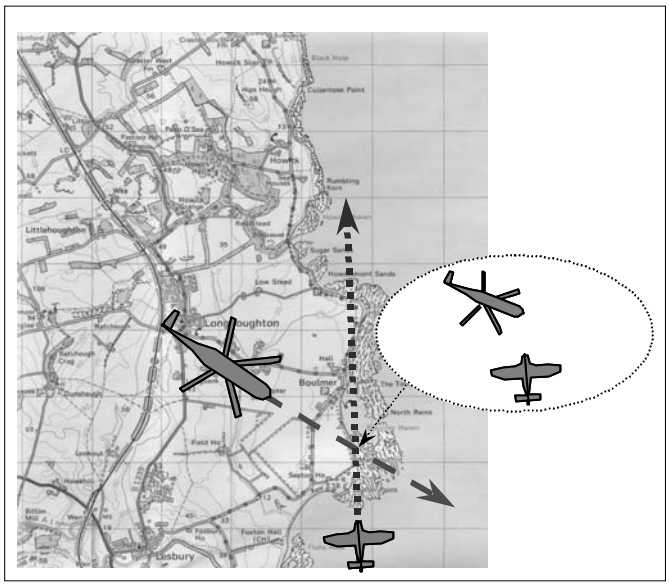
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The H500 pilot took off from a site in the vicinity of the approach to Edge Hill/Shenington and into conflict with the KA6, which he did not see.

Degree of Risk: C.

AIRPROX REPORT NO 2010056

Date/Time:	31 May 2010 1403Z	
Position:	5524N 00134W (0.5nm E Boulmer - elev 75ft)	
Airspace:	Scottish FIR	(Class: G)
	Reporting Ac	*Reporting Ac*
Type:	Sea King	Robin
Operator:	HQ AIR (OPS)	Civ Pte
Alt/FL:	450 ft (QFE 1018mb)	700ft (NR)
Weather:	VMC NR	VMC NR
Visibility:	10km	50km
Reported Separation:	100ft V/0ft H	300ft V/0H
Recorded Separation:	N/R	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE SEA KING PILOT reports that he was scrambled to an incident near Middlesbrough and was in contact with Boulmer Radio and squawking with Mode C. During startup, a Microlight pilot called Boulmer Radio and stated his intention to transit along the coast. The Microlight pilot then stated that he would remain about 5nm clear of the field to the SE and climb to 1000ft to allow their safe departure; this was adhered to. The Sea King got airborne and the crew were in a very high workload situation just after the routine departure power check at 520ft amsl, while over the coast about ½nm E of Boulmer, heading 150° and accelerating to 100kt, when the Captain, in the RHS, briefly saw a second single-engined low wing light ac through the LHS lower bubble window: the ac had already crossed from right to left [along the coast] about 100ft directly below them. The Sea King declared an Airprox with Boulmer Radio and then with Newcastle Radar and then continued on the SAROP. He assessed the risk as being high.

THE ROBIN PILOT reports that he was flying VFR in a blue and white ac, squawking but with Mode C switched off, in receipt of a 'Radar Advisory Service' [actually a BS] from Newcastle Radar. While heading 360° along the Northumberland Coast, at 120kt and at a height of 700ft, 1nm SE of Boulmer he saw a yellow helicopter about 200ft above them on a South-Easterly heading. He immediately turned left and descended to 300ft to avoid the helicopter and to keep it in sight. In his opinion the helicopter crew had not seen them until they passed underneath it, as it appeared to take no avoiding action. He assessed the risk as being Medium.

UKAB Note (1): The incident took place below the base of recorded radar cover.

ATSI reports that this Airprox occurred in Class G airspace, 1.5nm to the SSE RAF Boulmer.

Newcastle MATS Pt2, Section 1, Chapter 9, page 4, paragraph 6.4, (dated 04/08/2009) states: 'Light aircraft should be advised to call Boulmer on 123.1 MHz if they are likely to infringe the site….'.

METAR EGNT 311350Z 08007KT 050V130 9999 FEW020 15/08 Q1022=

The Tyne Regional Pressure for the period 1400 to 1500 (UTC) was 1017mb.

The DR400 departed Newcastle Airport VFR at 1348, en-route to land at Eshott airfield, situated 15nm N. Newcastle TWR transferred the ac to Newcastle Radar and at 1353:55 and the pilot reported leaving CAS *"(DR400) C/S one mile east abeam Morpeth staying visual leaving the zone to the north".* (Morpeth is situated on the N boundary of the Newcastle CTZ). A BS was agreed and the DR400 was passed the Tyne Regional Pressure

setting 1022mb. The controller erroneously passed the airfield QNH 1022mb, instead of the Tyne Regional Pressure setting of 1017mb.

At 1357:25 radar recording shows the DR400 approach the coast 12nm NNE of Newcastle Airport and then disappear from radar coverage.

A change of controller then occurred and at 1400:53 the oncoming Radar controller requested a position check from the ac *"(DR400) C/S just check your position please"* and the pilot replied, *"(DR40) C/S just north of er Amble approaching er Alnmouth". (*Alnmouth is situated 1.9nm SSW of RAF Boulmer).

The controller reported that he thought that the DR400 was manoeuvring in the Amble area and responded *"(DR400) C/S roger that's understood report when you're returning to Eshott to land please."*

At 1403:18 the Sea King pilot called Newcastle Radar and the controller acknowledged three times asking the Sea King to *"……pass your message".* Then after a pause at 1403:37 the Sea King responded "*Er Newcastle er (Sea King) C/S we'd like to declare an Airprox er small white low fixed wing aircraft south to north he appeared to be about three hundred feet we're five P.O.B. squawking double oh two three and er routeing down the coast."* Newcastle Radar acknowledged and passed the Newcastle QNH 1022mb and the Tyne RPS of 1017mb.

The Newcastle Radar controller believed the ac involved to be the DR400 and at 1404:08 advised the DR400 *"….the Sea King's just called an Airprox with you I didn't have you on Radar he's just er filed an Airprox on you as you passed overhead the Boulmer site"* and the pilot replied *"Yeah that's understood we were in good visual contact there was no confliction".* Newcastle Radar then asked the DR400 *"Roger did you have the helicopter in sight confirm"* and the pilot replied "*Affirm we had him in sight all the time from er about a minute out".* Newcastle Radar then updated the Sea King *"(Sea King) C/S that aircraft is on my frequency I didn't have him in radar contact but he had you in sight and he did have all the way"* and the Sea King pilot responded *"Er that's copied he was below five hundred feet and he wasn't speaking to Boulmer so we would like to file the Airprox (Sea King) C/S."* Newcastle Radar advised the DR400 pilot *"and (DR400) C/S did you copy he will be filing an Airprox as you did not call the Boulmer site and you are very low level in his area."*

At 1418 the Sea King is transferred to Durham Radar and at 1424 the DR400 reported visual with Eshott and advised that he was leaving the frequency.

The DR400 was in receipt of a BS from Newcastle radar. The controller had not anticipated that the DR400 would continue N of Amble and therefore did not consider suggesting that the DR400 call Boulmer radio. The Sea King was not in receipt of a service from Newcastle Radar at the time and reported the Airprox when making the first call to establish RT contact. Newcastle Radar was unable to pass any warning to either ac.

CAP 493, MATS Pt1, Section 11, Page 4, (dated 01/07/2010) states:

3.1.1 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.

3.5.1 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 ac, 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.

As a result of the Airprox Newcastle Airport have made an internal recommendation to remind all controllers that any ac operating in the Boulmer area should be asked to contact Boulmer Radio to make their intentions known.

HQ AIR (OPS) comments that the simple process of a courtesy call to Boulmer Radio iaw Newcastle MATS Pt2, Section 1, Chapter 9, page 4, paragraph 6.4, (dated 04/08/2009) could have prevented this Airprox. However, even under high workload situations, the responsibility to clear own flightpath remains and crews operating in Class G airspace must maintain a good lookout at all times.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The Board considered that better communication could have prevented this incident. Members accepted, however, that there was no obligation on Newcastle APR to request the Robin pilot to call Boulmer Radio as the controller was not aware that the ac was operating in the Boulmer area; that being the case, the MATS Part 1 regulation did not apply and it was agreed that Newcastle ATC had not played a significant part in this incident.

The Robin pilot, however, was locally based, would have been familiar with the area and aware of the SAR operations at RAF Boulmer; Members therefore considered that, despite there being no mandatory avoidance or ATZ, good airmanship would have been to either avoid the area or to call Boulmer Radio (as the Microlight pilot had done when he approached slightly earlier). Further, Members observed that the Robin pilot reported that, although his ac was fitted with a transponder, Mode C was switched off, therefore denying controllers and pilots of ac equipped with TCAS valuable information that can be used to help prevent collisions; they agreed, that this is not considered good practice.

Since both ac had been operating legitimately in Class G airspace, the pilots had an equal and shared responsibility to see and avoid other ac. The Sea King crew, possibly due to their high workload immediately after takeoff, did not see the Robin until after it had passed below their ac. The Robin pilot, however, saw the Sea King but did not estimate or report how far away it was at first sighting, leaving Members to speculate based on other information. The Robin pilot reported seeing the helicopter when he was 1nm SE of Boulmer and this, in turn, is about ½nm from the incident position; that being the case, Members agreed that the Robin pilot's sighting of the helicopter had been later than optimum. Although the Robin pilot might have expected the Sea King to give way to his ac in accordance with the Rules of the Air (Rule 9 (3)), his report says that upon sighting the helicopter he immediately turned left and descended. Pilot Members agreed that pilots with the right of way should always assume that their aircraft has not been seen until there is positive evidence to the contrary; this incident provides a good example of a situation that frequently occurs, as the Sea King pilot (s) did not see the Robin until after the two ac had crossed.

In the absence of radar evidence, it was impossible to verify the separation between the aircraft at the CPA. Given that both pilots reported that the Robin passed directly beneath the helicopter, that the estimated separation was between 100ft and 300ft, and the Sea King crew did not see the Robin before the CPA, the Board considered that normally accepted safety standards had been eroded.

PART C: ASSESSMENT OF CAUSE AND RISK

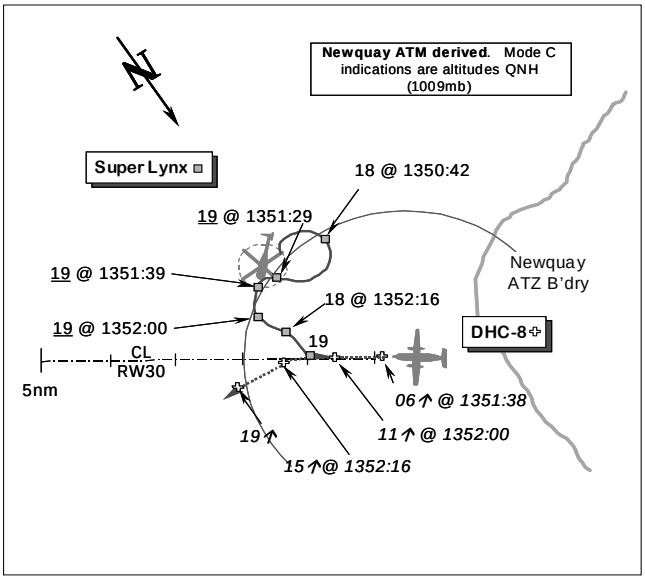
Cause: Effectively a non-sighting by the Sea King crew and a late sighting by the Robin pilot.

Degree of Risk: B.

AIRPROX REPORT No 2010057

AIRPROX REPORT NO 2010057

Date/Time:	26 May 200 1352Z	
Position:	5025N 00458W (1½nm SE of Newquay Cornwall Airport - elev 390ft)	
Airspace:	Newquay ATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	DHC-8-311	Super Lynx
Operator:	CAT	MFT
Alt/FL:	1200ft↑	1500ft
	QNH (1009mb)	QNH (1009mb)
Weather:	VMC CLOC	VMC CLOC
Visibility:	9km	5km
Reported Separation:	200ft V/500m H	
Recorded Separation:	300ft V/0·5nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE DE HAVILLAND DHC8-311 PILOT reports he was departing from Newquay Airport bound for London/ Gatwick under IFR and in receipt of an Aerodrome Control Service from Newquay TOWER on 134·375MHz. The assigned squawk of A1731 was selected with Mode C. Mode S and TCAS are fitted.

RW30 was in use with 2 helicopters in the LH cct, but on taxying-out he thought [actually at start-up], he requested RW12, subject to traffic, to facilitate a more expeditious departure to the E. This was approved by ATC and they lined up for take-off on RW12. Shortly before departure they heard TOWER advising one of the helicopter pilots on RT that their DHC-8 would be departing from RW12 and to remain clear of the climb-out for RW12. However, after take-off, following a TCAS TA whilst executing their initial climb through 1000ft aal at 150kt he became very concerned about the proximity of this cct traffic. He asked his 1st Officer – the PF - if he could see the cct traffic, who said it was descending towards them in a turn onto the FAT for RW30 – to starboard. To avoid the cct traffic he instructed his 1st Officer to make an early L turn off the RW heading of 120° on track DAWLY, the standard noise abatement procedure being to climb straight ahead until passing 2400ft QNH. Advising TOWER whilst in the L turn that they had received a TCAS 'ADJUST VERTICAL SPEED' RA, they continued the turn whilst complying with the demanded RA. He added that the cockpit workload was high at the time, while setting climb power. The Lynx helicopter passed about 500m away 200ft above his ac with a 'high' risk of collision and he reported the Airprox after landing.

His ac has a purple and white livery; the HISLs and high-intensity landing lights were all on.

THE AGUSTA WESTLAND SUPERLYNX CAPTAIN reports that he was flying a VFR instructional sortie in the LH cct to the RW in use - RW30 - whilst operating at 70kt and in communication with Newquay TOWER on 134·375MHz. A squawk of A1746 was selected with Mode C.

TOWER instructed him to hold downwind L in a RH orbit, to enable the departure of a DHC-8, which had been cleared by ATC to depart from RW12. Once the DHC-8 was airborne, TOWER asked if they were visual with the departing ac, which they had been throughout the airliner's take-off, climb-out and departure. After reporting to TOWER they were visual with the DHC-8, the controller cleared them to continue with their approach to RW30, behind the departing DHC-8. Once the DHC-8 climbed through his helicopter's level, he thought, he resumed his L base-leg to RW30 behind the departing DHC-8. No avoiding action was necessary; they had been in a RH holding pattern with minimum horizontal separation of 2½nm when at the same altitude and the Risk was 'none'. He was informed of the Airprox by Newquay ATC on the telephone after landing. The helicopter has a grey and red colour-scheme and the HISLs were on.

THE NEWQUAY CORNWALL AERODROME CONTROLLER (ADC) reports that for expedition the DHC-8 was departing from RW12 while the Lynx helicopter that had been circuiting to the runway in use - RW30 - was held in a RH orbit on the LH downwind leg to RW30. The Lynx crew, who reported visual with the departing DHC-8, was told to 'give way' and to report final for RW30. This instruction was read-back correctly by the Lynx pilot but his subsequent flight-path was too close to the departing DHC-8, resulting in a TCAS RA and the DHC-8 crew requesting an early L turn, which was approved.

The Newquay 1350 METAR was: 010°/4kt; 9km nil Wx; Cloud SCT at 1700ft; 14/10; QNH 1009mb.

ATSI reports that the Airprox occurred between the DHC-8 and the Lynx helicopter, in Class G airspace, 1·75nm SE of Newquay within the Newquay ATZ. The ATZ extends to a height of 2000ft above the airport elevation of 390ft and is bounded by a circle 2½nm radius centred on the mid-point of RW12/30.

The Lynx crew was carrying out a training exercise in the cct and RW30 was the runway in use. The DHC-8 was a scheduled flight departing from Newquay to Gatwick. Both ac were in receipt of an Aerodrome Control Service from Newquay TOWER on 134·375MHz. Ground Movement Control (GMC) was not manned.

The ADC assessed his workload as moderate. All equipment was reported as being serviceable and the ADC had access to VDF and an ATM. The Newquay MATS Pt2, Page 112, states:

An ATM is installed in the VCR in order to achieve maximum runway utilization and aerodrome capacity. The ATM is slaved off the primary radar system and is overlaid with SSR data. The ATM is aligned in such a way that the ADC can view inbound/outbound traffic in the same relative position as the view from the VCR window. The normal range selected is 15nm although is variable by selection.

The information indicated can be used in the following circumstances:

To determine the landing order, spacing and distance from touchdown of arriving ac;

To enable the controller to confirm that the initial track of a departing ac conforms with the clearance issued;

To assist in applying longitudinal separation for departing ac.

To provide information to ac on the position of other aircraft in the circuit or undertaking an instrument approach.

The DHC-8 crew had requested RW12 for departure and would be expected to comply with the Newquay noise abatement procedures as specified in the UK AIP at AD 2-EGHQ-1-6: Runway 12 departures: 'Aircraft 5700kg or more: Climb straight ahead until above 2000ft aal'.

MATS Pt1, Section 2, chapter 1, page 1, Para 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;

c) aircraft moving on the apron;

d) aircraft and vehicles, obstructions and other aircraft on the manoeuvring area.

Prior to the incident a Jet Ranger helicopter had been manoeuvring on the N side of the airfield, however, due to the impending Lynx departure and in order to conform with the cct direction, the Jet Ranger had been instructed to join the LH cct for RW30.

At 1341:12 the Lynx pilot called TOWER, "[C/S] *for left hand circuit request 5 hundred feet for..autorotation to the northern."* Tower replied, "[C/S] *that's approved into the left hand circuit clear for take off wind 3-3-0/7."*

AIRPROX REPORT No 2010057

At 1341:45 the DHC-8 crew transmitted, *"TOWER good afternoon...*[C/S]…*we've got information whisky 1-0-0-9 request start and if possible a departure off runway 1-2."* TOWER responded, *"…start approved…I think 1-2 should be available for you",* which was acknowledged by the DHC-8 crew. Opposite runway departures are approved at Newquay, provided they can be accomodated safely within the prevailing traffic conditions. At 1345:04, the DHC-8 crew was cleared by the TOWER to taxi to the holding point for RW12. At this point the Lynx was on final and cleared for an autorotation landing for RW30. Following the DHC-8 crew's request, at 1345:54, the ADC issued their departure clearance, "[C/S] *after departure a left turnout on track DAWLY climb flight level 1-7-0 and squawk 1-7-3-1."* This was correctly read back by the DHC-8 pilot

At 1346:30 the Lynx crew was cleared for,*"..take off into the left hand circuit* [for RW30]*…"*. The Jet Ranger crew was then instructed, "…*either pull away from the circuit the Lynx is joining the left hand downwind shortly again or overfly the runway."* The Jet Ranger pilot elected to position onto final for RW30 and overfly the runway and was instructed to report final with a Twin Otter departing ahead. Two pilots transmitted simultaneously at 1347:28 ready for departure; the DHC-8 crew was instructed to hold position whilst a Twin Otter was cleared for take-off on RW30. The Jet Ranger turned onto final approach for RW30 as the Twin Otter departed ahead and the Lynx turned LH downwind for RW30. The ADC's plan was to orbit both helicopters in the downwind position before allowing the DHC-8 to depart from RW12. At 1349:23 the Lynx crew, now late downwind, was instructed to, *"..orbit right at the end of the downwind leg",* which was acknowledged as, *"orbit right* [C/S]*."* After over flying the runway the Jet Ranger pilot requested, "[C/S] *to turn left and tight in",* but the ADC missed this call and was asked to say again. The Jet Ranger pilot repeated his request to turn downwind, whereupon the ADC responded, "[C/S] *approved hold at the..crosswind leg in a left hand or..right hand orbit got a aircraft…orbiting right at the end of the downwind leg,"* The Jet Ranger pilot replied, *"Roger copy looking."*

At 1350:16 the DHC-8 crew was instructed *to, "..line up runway…1-2."* The controller stated that he was satisfied that the two helicopters orbiting in the LH cct to the S would not affect the DHC-8 departing from RW12 to the N and accordingly he cleared the DHC-8 crew for take-off - "[C/S] *left turnout clear for take off wind 3-2-0/5."* The DHC-8 crew read-back their clearance at 1350:40, *"with a left turnout clear for take off* [C/S]*."* At 1351:10, with the DHC-8 rolling from RW12 the Lynx crew, having completed one orbit asked, "[C/S] *further right hand orbit downwind?"* Endeavouring to expedite the cct, the ADC stated rather than give the Lynx pilot a further RH orbit of 2min, he was asked, *"..are you visual with the Dash 8 rolling to climb out 1-2?"* The Lynx pilot replied, *"Yeah got it visual."* TOWER then instructed the Lynx pilot, at 1351:20, *"roger then give way to the Dash 8 and report final runway..3-0."* The Lynx crew read-back, *"give way to the Dash 8 and report final runway 3-0* [C/S]*."* The controller believed that the Lynx pilot, an experienced instructor, sounded confident and the controller was reassured that the Lynx would position safely to ensure the DHC-8 passed well ahead. At 1351:39, the radar recording shows the Lynx late downwind and beginning a L turn, indicating an altitude of 1900ft, with the DHC-8 passing an altitude of 600ft. The ADC was monitoring the traffic both visually and on the ATM. The controller said that he then became concerned about the position of the Lynx and considered TI was now appropriate. At 1352:00, before the controller was able to pass TI, the DHC-8 pilot transmitted, using an incorrect C/S, *".. request an early tu-left turn due traffic."* This was approved by the ADC, who repeated the incorrect C/S, *"..that's approved early left turn to approach now 1-3-3-4 bye bye."* At this point the radar recording shows the outbound DHC-8 on the centreline indicating 1100ft ALT, with the Lynx indicating 1900ft ALT on L base for RW30, in the DHC-8's 12:30 position at a range of 1·3nm, converging. Then, at 1352:16, the radar recording shows the DHC-8 commencing a L turn to the E indicating 1500ft ALT, with the Lynx 0·5nm S of the centreline indicating 1800ft ALT at the CPA. It was noted that the DHC-8 pilot's use of the wrong callsign was probably a slip due to the urgency of the transmission and this was repeated by TOWER. The DHC-8 was transferred to the radar frequency immediately after the L turn was approved and before the Lynx had passed abeam. Because the DHC-8 was no longer following noise abatement the ADC considered it important to transfer the flight early so that the APR could deal with the non-standard turn. This was co-ordinated with the APR, the ADC being satisfied at this stage that the Lynx would pass S of the DHC-8.

The ADC said that traffic levels and workload had increased steadily just before the Airprox with a number of vehicle movements on the airfield and across the runway, together with other ac requesting start and taxi. In addition there seemed to have been an issue with a vehicle holding on the taxiway that the controller explained was due to work in progress and had since been resolved. It was noted that the controller made a couple of minor slips in the RT transmission that were corrected, but may have been an indication of the increased workload. The controller stated that he was comfortable and confident with the levels of traffic and whilst he had given some thought to opening GMC, did not consider it necessary at the time

The ADC was asked whether he would have allowed the Lynx to continue in the right hand orbit, had the pilot not mentioned a further orbit and he said that he would have allowed the Lynx to orbit, but when prompted was trying to be helpful and expeditious. Rather than let the Lynx carry out another 2min orbit, the controller had decided to change the plan and was confident that the Lynx would position appropriately. Reflecting on preventing the situation happening in the future, the ADC opined that he would think twice before changing a plan allowing traffic to continue downwind in such circumstances and would probably not use the term 'give-way'.

The ADC was comfortable and confident with the traffic workload and situation. There were no distractions and the controller was able to monitor the cct traffic both visually and on the ATM. There were only 2 helicopters in the visual cct but his workload increased steadily due to ground activity. Nevertheless, the controller considered traffic levels well within his ability to provide an appropriate level of service and did not consider that opening GMC was appropriate at that point. The DHC-8 crew requested a departure from RW12, with RW30 in use. This was approved and accepted practice at Newquay, provided it can be accomodated safely within the prevailing traffic conditions and with only 2 helicopters in the cct this was a reasonable plan. The controller instructed the two helicopter crews to orbit in the visual cct and determined that separation was assured, with the DHC-8 departing safely away from the helicopters and then turning L to the N. At this point the controller did not consider that TI was required, but accepted that if passed, may have increased the crews' situational awareness of the general traffic situation. Once the DHC-8 was rolling from RW12, the Lynx pilot's transmission, "[C/S] *further right hand orbit downwind?"* This prompted the ADC to reassess the traffic situation and resulted in the controller changing his plan. The Lynx crew reported the departing DHC-8 in sight and was instructed to give-way to the DHC-8, then report final. The dynamics of the situation had now changed. The controller had given approval for the Lynx to continue to final approach and give-way to the DHC-8. The controller recognised that passing TI to the DHC-8 was appropriate, but intended to wait until the ac was safely airborne. As the Lynx started to turn onto base-leg the ADC became concerned and was about to issue TI when the DHC-8 crew, having observed the Lynx closing from the R, became concerned about the safety of their ac and requested a L turn. This L turn was immediately approved, but did not conform with the standard noise abatement procedure. The controller, satisfied at this stage that the Lynx would pass to the S of the DHC-8, immediately transferred the DHC-8 to the APR so that he could deal with the non-standard turn. The Lynx passed 0·5nm S of the DHC-8 before positioning onto final approach.

Having established a safe and reasoned plan, the ADC then removed the restriction placed on the Lynx holding downwind. This late change in plan was not sufficient to allow for timely and appropriate TI to be passed to the DHC-8 crew and resulted in a much reduced level of separation. As a consequence the crew of the DHC-8 became concerned about the safety of their ac.

The controller did not fulfil his responsibility for issuing information and instructions to the respective flights in order 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.

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 reports from the appropriate ATC authority.

The use of the opposite runway for departures when ac are circuiting to the RW in use can cause significant problems and requires additional positive steps by ATC to ensure that all the pilots concerned know what is happening. Here it was evident from ATSI's comprehensive report that the ADC was permitted by local procedures to allow departures from the opposite RW if they could be accomodated safely. Moreover the controller had a sound plan to deal with the two helicopters operating VFR in the visual cct to RW30, whilst still allowing the IFR DHC-8 to depart expeditiously from RW12. By placing the two helicopters in orbits on the downwind leg the ADC effectively removed any potential for a conflict with the DHC-8, until the point that he allowed the Lynx to leave the orbit too early without telling the departing DHC-8 crew what was happening. It was clear to Members that the Lynx crew was entirely cognisant of the presence of the DHC-8 and had kept track of it throughout its take-off and departure. Moreover, the ADC had confirmed this before he instructed the Lynx crew to "..*give way to the Dash 8 and report final…3-0",* which the Lynx crew read-back. Whilst it was evident from his account that the DHC-8 crew heard some of these exchanges too, no TI was actually transmitted to them about

the helicopter turning in towards final for RW30. CAT pilot Members understood why the DHC-8 Captain was concerned especially when a TCAS RA was subsequently triggered. A pilot Member suggested that the Lynx crew should have been more aware of the impact they could have on the departing IFR flight and whilst they were undoubtedly 'giving way', the perceived proximity of their helicopter without prior notification caused the DHC-8 pilot to take evasive action by turning L off the RW heading early. It may be that the DHC-8 Captain had assessed the separation from his TCAS display – he reported the helicopter was only 500m away – whereas the radar recording shows the Lynx at twice that range and no closer than 0·5nm at the CPA. In the Board's view, the VFR Lynx pilot was plainly 'giving way' to the IFR departure but without any visual separation criteria specified between IFR CAT ac and VFR flights, once they have been informed about the other ac, it is the VFR pilot's responsibility to afford appropriate separation. CAT pilot Members stressed that the DHC-8 crew has no option but to obey TCAS RA commands, which would undoubtedly have influenced the Captains views about raising a report, and the importance of affording TCAS equipped ac as wider berth as feasible. The helicopter pilot Member considered the separation here was entirely reasonable. Nevertheless, the Lynx Captain might have been more considerate over his positioning and this Airprox illustrated that allowing your ac's flight vector to sweep through the other ac's projected flight path will routinely result in a TCAS RA.

Notwithstanding the higher workload during this busy stage of the flight at take-off, a helicopter pilot Member thought that the two-pilot DHC-8 crew should have had sufficient SA from the RT exchange between TOWER and the Lynx crew to realise what was happening. Nevertheless, CAT pilot Members agreed that the key was the absence of TI from the ADC to the DHC-8 crew telling them that the Lynx crew had their ac in sight throughout and was remaining clear. Some Members suggested that it would have been preferable if TOWER had given TI before the take-off clearance was issued, then the DHC-8 crew could have made up their own mind before they initiated their take-off roll. Although it was plain to the Members that the ADC was trying to expedite matters with the best of intentions, in the absence of TI the DHC-8 crew was concerned by the proximity of the Super Lynx, which the Board concluded was the Cause of this Airprox. Nevertheless, with the separation evinced by the radar recording it was clear that the Lynx crew was indeed giving-way to the DHC-8 and, as they had the airliner insight throughout, the Members agreed unanimously that no Risk of a collision had existed in these circumstances.

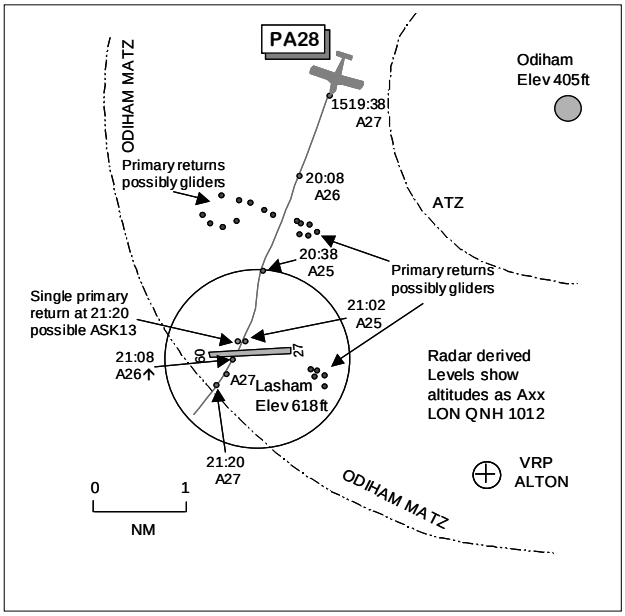
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: In the absence of TI, the DHC-8 crew was concerned by the proximity of the Super Lynx.

Degree of Risk: C.

AIRPROX REPORT NO 2010058

Date/Time:	30 May 2010 1521Z (Sunday)	
Position:	5111N 00102W (O/H Lasham - elev 618ft)	
Airspace:	LFIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	ASK13	PA28
Operator:	Civ Club	Civ Pte
Alt/FL:	1500ft↑ (QFE)	2500ft (N/K)
Weather:	VMC CLBC	VMC CLBC
Visibility:	50km	20km
Reported Separation:	200-300ft V/Nil H	Not seen
Recorded Separation:	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE ASK13 PILOT reports that during the final phase of a winch launch in a strong crosswind with a pupil under instruction, the winch power was cut. Heading 270° at 60kt the pupil reacted slowly so he took control to lower the nose and ensure normal flying attitude and speed; he estimated his height as passing 1300-1400ft agl. At the same time he saw an ac, a single-engine type, coloured white/blue, pass directly O/H flying to the S with 200-300ft vertical separation. At the time the visibility was 50km flying 2000ft below cloud in VMC and his ac was coloured red/white. He assessed the risk as very high had the winch launch not been terminated.

THE LASHAM WINCH OPERATOR reports launching was taking place to the W alongside RW27 with a surface wind about 290° at 15kt and excellent visibility and about 5000ft cloudbase. He launched the ASK13 but when it was towards the top of its launch he noticed a single-engine low-wing ac approaching from the N (his LHS) apparently on a collision course. He immediately terminated the launch and the light ac, a single-engine low-wing type coloured white/blue, passed just over the ASK13 by about 200ft with no horizontal separation. He believed that there was a good chance of a collision if he hadn't chopped the winch power.

THE PA28 PILOT reports en-route to France VFR and in receipt of a BS from Farnborough on 125·25MHz squawking an assigned code with Modes S and C. The visibility was 20km in VMC and the ac was coloured white/ maroon with nav, anti-collision and strobe lights all switched on. En-route to KATHY (IOW) he passed through the Odiham MATZ having received clearance from Farnborough, tracking W of the Odiham ATZ but through the Lasham O/H. He was informed that gliding was taking place at Lasham and he informed Farnborough that he would keep a good lookout. Heading 205° at 110kt and 2500ft QNH he saw 3-4 gliders about 5km distant all circling and climbing although none were in his flightpath so he judged the situation to be safe. The gliders passed to his L and R with 300ft vertical separation and 1000m lateral separation. He also saw a glider tug ac take-off on a W'ly direction but about 2000ft below. Later he heard the tug pilot call Farnborough stating that a light ac had passed through the Lasham O/H. In future, he will route around gliding sites, which he did on the return trip.

THE FARNBOROUGH LARS W CONTROLLER reports operating bandboxed with Approach with high traffic loading although there was no Approach traffic on frequency. The PA28 flight called and was given a BS and, at his request, Odiham MATZ penetration was given; he thought he informed the pilot of gliding at Odiham and Lasham. The ac continued en-route and he thought he may have further re-iterated caution regarding gliding at Odiham and Lasham. Some time later a glider tug pilot called on frequency requesting details of an ac that may have flown close to Lasham but at the time he was unable to confirm or provide any further details on the frequency.

AIRPROX REPORT No 2010058

ATSI comments that the Airprox is reported to have occurred overhead Lasham Airfield at approximately 1521 (UTC). The PA28 was on a VFR flight from White Waltham to Cherbourg and the glider was in the process of being cable launched from Lasham airfield. The Farnborough LARS(W) controller was operating combined Approach and LARS(W) positions and reports that there was no approach traffic on frequency, but assessed that the traffic loading on LARS(W) was high. ATSI had access to written reports and radar recordings. Transcription of the RT was not possible due to tape damage caused by a faulty recorder, which has since been replaced. Farnborough had access to the RT recording prior to this damage occurring and in the absence of RT transcription, the timings and speech from the Farnborough unit report have been used.

METAR EGLF 301520Z 30014G26KT CAVOK 18/03 Q1012=

The Farnborough Manual of Air Traffic Services (MATS) Part 2 (17/11/09), Memorandum of Understanding, between RAF Odiham and Farnborough ATC, Page ANX-31, paragraph 3.9, MATZ Crossing Aircraft, states: 'All military aircraft require clearance to transit Odiham MATZ, even when under the control of Farnborough. Civilian aircraft are to be instructed by Farnborough to avoid the Odiham ATZ (2nm and 2000ft Odiham QFE/2500ft Farnborough QNH) unless otherwise cleared by Odiham ATC.'

At 1511:10 the PA28 pilot called 2nm W of WOD requesting a BS and penetration of the Odiham MATZ. The controller responded and cleared the PA28 flight to transit Odiham MATZ. The PA28 flight was issued with a squawk of 0430 and provided with the QNH. The PA28 pilot was also issued with a caution regarding gliding activity at both Odiham and Lasham airfields, which the PA28 pilot acknowledged. At 1517:29 the controller again issued a caution regarding gliders at Odiham and Lasham airfields and the pilot again acknowledged this. The radar recording shows a number of intermittent contacts in the area and at 1521:09 shows the PA28 on a SW'ly track, passing close to Lasham airfield, displaying a squawk 0430 and Mode C reporting altitude 2600ft.

The PA28 was informed about the gliding activity at Lasham in accordance with the Farnborough MATS Part 2 (17/11/09), Page APR-19, paragraph 6, which states: 'Aircraft on a LARS track that is on own navigation may continue over Lasham at the pilot's own risk. Best practice would be to warn the pilot'.

The PA28 was in receipt of a BS from Farnborough LARS(W). CAP493, MATS Part 1 (11/03/10), Section 1, Chapter 11, Page 4, Para 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.'

UKAB Note (1): The Odiham MATZ was not active.

UKAB Note (2): The UK AIP at ENR 5-5-1-3 promulgates Lasham as a Glider Launching Site centred on 511112N 0010155W where aerotow launches take place and winch launches may be encountered up to 3000ft agl during daylight hours, site elevation 618ft amsl.

UKAB Note (3): The radar recording does not capture the Airprox. The PA28 is seen at 1519:38 3nm NNE of Lasham tracking 200° and indicating altitude 2700ft London QNH 1012mb. The PA28 continues on a steady track towards Lasham passing close to intermittent primary returns, believed to be gliders, 1·5nm to the N and NE of the glider site. At 1520:38, as the PA28 reaches a position 1nm N of Lasham, its Mode C indicates the ac level at 2500ft QNH and a slight L turn onto a more S'ly heading is then observed. Twenty four seconds later at 1521:02 the PA28 is again tracking 200° and is just about to pass O/H RW27 at altitude 2500ft. The next sweep 6sec later at 1521:08 shows the PA28 just S of the RW having commenced a climb, passing 2600ft QNH, before leveling at 2700ft QNH on the next sweep. Six seconds later a single primary only return appears, which might possibly be the ASK13, just N of RW27 close to the PA28's radar track history.

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 were disappointed that the PA28 pilot had chosen to fly through the Lasham O/H; the ac's passage at 2500ft QNH (approximately 1900ft aal) is clearly shown on the recorded radar. This had placed the ac well below the promulgated winch cable release height (3000ft agl) thereby exposing the transiting ac to the attendant risk of a rapidly climbing glider, whose pilot has a poor field view, and the launch cable. Lasham is clearly marked on UK 1:500000 and 1:250000 charts as a glider launching site with a maximum altitude of 3700ft amsl. Also, there is a promulgated frequency shown for Lasham where information about gliding activity can be obtained. An experienced gliding Member opined that Lasham can, and does, have multiple launches taking place at times which added extra potential risks to transiting traffic. Best practice is to plan a route to avoid glider sites by a wide margin. The PA28 pilot's flightpath had placed his ac into conflict with the subject ASK13 glider, which he did not see, which the Board agreed had caused the Airprox.

It was noted that the PA28 pilot was 'cleared' by Farnborough to transit the Odiham MATZ whilst under a BS, which one Member thought might have given its pilot the impression that he was getting a better level of service than he actually was. That said, LARS(W) had twice issued a warning to the PA28 pilot with respect to Lasham and Odiham gliding activity, although it appeared the pilot was content to continue on his planned track through the Lasham O/H. Under a BS in Class G airspace the pilot is responsible for maintaining his own separation from all other traffic through see and avoid.

Fortunately, the winch operator saw the approaching PA28 and, having assessed the potential confliction, terminated the launch by cutting power to the winch. Although this aborted take-off (simulated cable break) is practiced, it can still come as quite a shock to the pilot involved. The ASK13 instructor took control to establish the glider into a safe flight profile and then saw the PA28 as it passed O/H from R to L with separation estimated as 200-300ft vertically. These actions were enough to remove the actual collision risk but, with the glider passing unnoticed to the PA28 pilot, the Board believed that safety of both ac had not been assured during this encounter.

PART C: ASSESSMENT OF CAUSE AND RISK

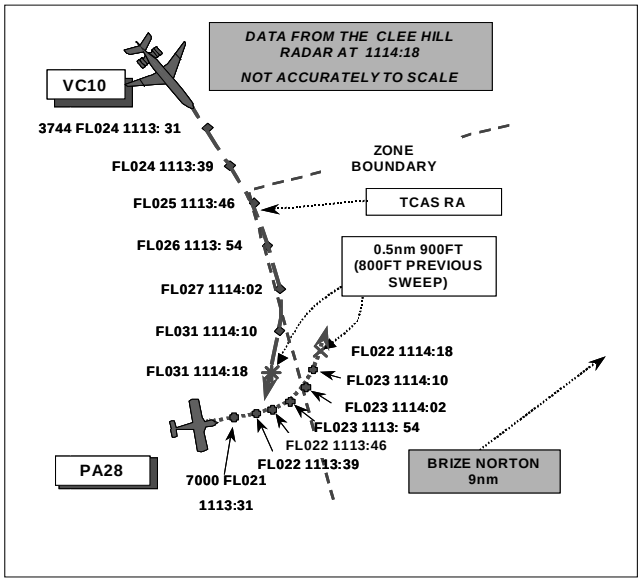
Cause: The PA28 pilot flew O/H a notified and active glider launching site below the promulgated winch cable release height and into conflict with the ASK13 glider, which he did not see.

Degree of Risk: B.

AIRPROX REPORT No 2010059

AIRPROX REPORT NO 2010059

Date/Time:	3 Jun 2010 1114Z	
Position:	5145N 00148W (8NM W Brize Norton - elev 287ft)	
Airspace:	Brize CTR	(Class: D)
	Reporting Ac	*Reported Ac*
Type:	VC10	PA28
Operator:	HQ AIR (Ops)	Civ Trg
Alt/FL:	2500ft ↓	3000ft
	(QFE 1013mb)	(N/K)
Weather:	VMC	VMC CLBC
Visibility:	30km	15km
Reported Separation:		
	250ft	Not Known
Recorded Separation:		
	800ft V 0.5nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE VC10 PILOT reports that they were returning from an AAR task in receipt of a TS from Brize DIR at a busy stage of the flight, configuring the ac for the approach while 3nm N of the centreline for RW08 at 8nm. They were descending through 2000ft QFE at 250kt and heading 150°, about to initiate a left turn to capture the ILS localizer when they received a TCAS TA then an RA instructing a climb in respect of traffic which they had initially seen on TCAS at 7nm. Following the TA but prior to the RA, he instructed the crew to keep a good lookout due to the number of ac in the area and stopped the descent. ATC simultaneously warned of the contact and they became visual with it at about 3nm, so he initially initiated a gentle evasive right turn. The TCAS RA, however, instructed a climb so they followed it, climbing to 3000ft before getting 'clear of conflict'. The ac was in their 1230 crossing from right to left and, after they had followed the RA, the light ac passed down their left hand side about 300ft below them.

They reported the Airprox to DIR on the freq in use, and assessed the risk as being low.

THE PA28 PILOT reports that he was a student pilot [with a 'student' C/S prefix] in a blue and white ac with all lights on, squawking 7000 with Mode C. He was on a VFR cross-country training flight flying at 85kt and contacted Brize Radar for a TS but was instructed to stand-by due to high controller workload. There were several other ac trying to contact Brize and they were also told to stand-by. About 5–8min later he became unsure of his position and was orbiting around Cirencester [15nm W of Brize and outside the CTR]. He was in a high workload situation but was not able to fix his position at this time so he continued on his initial track for a short period and made a another radio call to Brize Radar "student C/S unsure of position" and this was at about the same time as he saw a VC10 about 5nm away. The Radar Controller asked him if he was aware he was about to enter Controlled Airspace and he responded that he was not. Then she explained to him that he had to contact another agency (callsign and frequency unreadable) if he wished to enter controlled airspace and this led to some confusion; his position fix request was not answered.

He kept the VC10 in sight and there was a low risk of collision.

UKAB Note (1): Due to a change of procedures and unfamiliar personnel, although aware that an infringement resulting in a TCAS RA had occurred, Brize ATC was not aware that the incident had been reported as an Airprox until well after the event and only requested limited follow-up action.

HQ Air BM SM reports that the VC10 pilot's report, the tape transcripts from Brize Norton DIR and LARS and a Clee Hill radar recording were consulted in preparing this report; however there were no controller reports due to late notification of the incident by the unit. In addition, the SUP provided a report; however, this was in regard to

the PA28 infringing the Brize CTR, rather than responding to the AIRPROX or the TCAS RA report made by the VC-10 pilot.

The VC10 was recovering to Brize IFR for an ILS to RW08. The PA28 was flown by a solo-student on a VFR Navex routeing from Filton to Wellesbourne, who had become unsure of his position. Based upon the PA28 pilot's reported airspeed and time taken to reach Cirencester after his initial call to LARS, he initially probably called them between 22 and 26nm W of Brize requesting a TS. This call does not appear on the LARS tape transcript and is wholly based upon the PA28 pilot's report. At this point the PA28 was instructed to standby due to the high workload of LARS.

At 1113:11 the PA28 re-contacted LARS stating that he was unsure of his position; at that point he was around 1.2nm from the Brize CTR, with the VC10 4.3nm directly to the N of him. At 1113:15, DIR provided the VC10 with TI regarding the PA28 reporting it as being, *"right one o'clock, 3 miles, crossing right left indicating 300 feet below."* The TI was not acknowledged by the VC10 therefore it was repeated 15sec later; the PA28 was then on a constant bearing at a range of about 3.4nm.

CAP 774 states that under the terms of a TS, 'Controllers shall aim to pass information on relevant traffic before the conflicting aircraft is within 5nm, in order to give the pilot sufficient time to meet his collision avoidance responsibilities.' In the absence of a report from DIR to the contrary, it is reasonable to argue from their tape transcript her workload was low, with the VC10 probably the only ac on frequency. At that point when there was 5nm separation between the ac there is no recorded interaction between DIR and the VC10 for the previous 1min 31sec; there appears to be no reason for the lack of more timely TI to the VC10, which may have allowed the crew more time to react to the situation. However, in the absence of a report from the DIR, this is supposition.

At 1113:31, the VC10 pilot reported visual with the PA28 with the bearing staying roughly stable and the range reduced to 3nm. JSP 552 235B.105.3 'ATC Procedures in Class D Airspace' states that, 'when providing a radar service to IFR aircraft within Class D airspace, controllers are to give avoiding action if radar derived or other information indicates that a particular unknown aircraft is lost.' Brize ATC has confirmed that an ac recovering for an instrument approach is considered to be IFR, unless the pilot advises that he wishes to operate VFR. However, JSP 552 235B.105.3 also states that controllers are to 'pass TI and, if requested, provide avoiding action.' In this instance, given that the VC10 was in receipt of a TS prior to entering the CTR, that the crew had reported visual with the PA28 prior to entering the CTR, that they were on a self-positioned recovery and that DIR had advised the VC10 that the PA28 was, *"possibly shortly to enter the Zone",* it is reasonable to suggest that the VC10 crew had assumed responsibility for maintaining their own separation against the PA28 and that DIR had fulfilled his obligations within the terms of the service.

At 1113:26, the PA28 re-stated that he was, *"unsure of position, request a position fix."* At that point, the PA28 was about 0.75nm W of the CTR, with the VC10 3.4nm to the N of the PA28. At 1113:33, LARS informed the PA28 that his position was Brize 280° 10nm and suggested a heading of 300° to remain outside the CTR. At that point the VC10 bears 357° at a range of 3nm. In ATM terms, the wording used by LARS in giving the PA28 pilot his position report was very precise and indicated that she could positively identify the PA28, despite no formal method of identification being used. This suggests that she relied on data from UDF to make the identification, allied with an element of confirmation bias that the ac approaching the CTR from the W (the PA28) would shortly call Brize. This latter argument is supported by the report from the SUP about their attention being brought 'to an ac approaching the Brize CTR from [the] west.' This suggests that at least one of the radar controllers was monitoring the progress of the ac towards the CTR and brought it to the SUP's attention.

At 1113:21 the VC10 levelled with the Mode C indicating 2400ft, then at 1113:46 a climb is indicated, suggesting that the pilot was responding to the reported TCAS climb RA. At the radar sweep beginning at 1113:55, the "gentle evasive turn" reported by the VC-10 is evident on the radar replay. While this does not accord precisely with the timeline reported by the VC10 pilot, the cockpit environment would have been busy and it is understandable that the timeline reported might have been slightly inaccurate.

By the time that the PA28 acknowledged the suggested turn (23sec after LARS passed the instruction at 1113:56), the PA28 was only 0.1nm from the CTR, with the VC10 bearing 356° at a distance of 1.6nm. However, the PA28 pilot read back an incorrect heading of 030°, with the turn visible on radar almost immediately. Seven sec later LARS restated the heading of 300°, a heading that placed the PA28 directly into confliction with the VC10. At no stage did LARS offer any form of TI to the PA28 regarding the VC10.

In their handling of the PA28, LARS demonstrated a poor awareness of the meaning of the "student" prefix to the callsign and the information suggests that her sole focus was to minimise the extent of the infringement of the CTR. The suggested heading of 300° degrees, towards the VC10 is further evidence of this focus and, potentially, of 'attentional tunnelling' on the part of LARS such that she was unable to perceive the confliction with the VC10. Further evidence to support an 'attentional tunnelling' hypothesis is the presence of the confirmation bias in the identification of the PA28's position. Therefore, it is reasonable to argue that LARS was focussed on watching the PA28 tracking towards the CTR because of the unit's history of CTR infringements. Again, without a report from LARS this is supposition based upon the available information.

The SUP should have been best placed to assimilate all of the available information, to perceive the risk of confliction between the VC10 and the PA28 and to have provided pro-active guidance to LARS on her actions. Even after LARS had issued the conflicting heading, although the available time in which to react was relatively short, the SUP should have perceived the inherent risk of collision due to heading of 300° instructed, countermanded the LARS instruction and given a more suitable heading.

A further disappointing aspect of this occurrence is the apparent lack of regard paid to the "student" prefix to the PA28 pilot's callsign. CAP 413 requires controllers "in so far as is practicable, to make due allowance for the limited experience and ability of student pilots in determining the pace and complexity of instructions and/or information which are subsequently passed." HQ Air considers that, in this instance due allowance was not given.

While both the VC10 crew and the PA28 pilot became visual with each other and the VC10's TCAS RA climb resolved the confliction, the occurrence was unnecessarily complicated by the turn instruction issued to the PA28 by LARS.

HQ AIR (OPS) concurs with the HQ Air BM SM comments and notes that the adherence to TCAS RA information by the VC10 minimised the risk.

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 reports from the military ATC authority and the VC10 operating authority. Since additional information had become available after the meeting when the incident was first considered and HQ Air BM SM (not represented at that meeting) considered the cause originally agreed to be erroneous the incident was referred back to the Board for further consideration.

[UKAB Note (2): After the first meeting, HQ Air BM SM provided additional information including transcripts of both the LARS and DIR frequencies, which necessitated a review of the incident. Significantly the VC10 pilot reported to DIR that he was climbing in response to a TCAS RA at 1113:58 (20 sec after the ac had entered the CTR). Also LARS requested the PA28 to turn left on to a heading of 300° at 1113:33 when the ac was 0.5nm to the W of the Zone boundary, heading 080° (directly towards the CTR and instrument approach path); the PA28 pilot read back and turned onto 030° despite the heading being challenged by LARS. Although it is possible that a tight left turn would have prevented the PA28 from entering the CTR, it would not have prevented the conflict or probably the VC10's TCAS RA].

Members observed that this incident had been complicated since it took place on the boundary of the Brize Norton CTR (Class G). The Board concurred HQ Air BM SM's concern regarding the level service afforded to the PA28 student pilot. Although there were slightly differing accounts of events, when he reported that he was uncertain of his position, the PA28 student pilot was given little meaningful assistance by LARS. The radar recording and (limited) transcript confirmed that, although uncertain of his position, at the time of his [first recorded, see Note (2)] call to LARS the PA28 had been outside the CTR and the ac had entered the CTR after the pilot incorrectly took up a track of 030° rather than the 300° suggested by LARS. A military controller Member observed that, although the suggested heading of 300° might just have kept the PA28 out of the CTR, it had not been an appropriate heading to separate it sufficiently from the intended track of VC10. Members observed however, that had the pilot turned onto 300° when suggested (at 1113.33), the VC10's TCAS RA would most likely still have occurred and the incident would still have happened, albeit with slightly different geometry.

[UKAB Note (3): It appears that the PA28 pilot had called LARS stating that he was unsure of his position some time before the start of the Tape transcript; see also HQ Air BM SM report above.]

Experienced military controller Members observed that there had been no apparent dialogue between DIR and LARS to attempt to resolve the conflict and, although well placed to do so, the SUP had not taken charge of the situation and ensured that the respective controllers separated the ac by a suitable horizontal or vertical margin.

The Board discussed the implementation of IFR separation for ac entering Class D airspace and agreed that controllers should attempt to put this in place before ac enter the relevant airspace. In this case however, there was no other IFR traffic from which to separate the VC10, all other pertinent traffic being VFR; therefore only TI was required (and provided, albeit later than optimal). Notwithstanding this, one controller said that at his unit they attempt to separate ac from known contacts 3nm before Zone entry; HQ Air, after the first meeting, pointed out that although this is not mandated, some (other) units consider it good practice.

When considering the part played by the respective pilots, the HQ Air Member opined at the original meeting that the VC10 crew acted correctly on the information before them but, based on the pilot's report, two airline pilot Members thought that the he might not have reacted in accordance with recognised TCAS procedures (See UKAB Notes (2) and (4)).

[UKAB Note (4): The VC10 pilot's report provided a short summary of his recollection of events that was open to interpretation. Following the concern that the VC10 pilot might not have complied with recognised TCAS procedures, a copy of the VC10 TCAS procedures was requested from HQ Air and a full TCAS analysis requested from NATS. The TCAS simulation (with down-linked RA data) showed that the VC10 crew complied fully and correctly with the RA 'climb', 'do not descend' and 'clear of conflict' commands. The transcript showed that the RA was reported correctly to DIR but the 'Clear of Conflict', although implied, was not reported. In view of this additional information, the VC10 pilot's report at Part (A) above has been amended slightly to reflect an accurate sequence of events based on the RT transcript and TCAS analysis, which became available after the first Meeting.]

Bearing in mind the additional information at UKAB Note (4), the Board agreed that the VC10 crew had reacted appropriately to the information presented to them and had seen the PA28 at 3nm. That being the case they had not contributed to the cause of the incident. Although the PA28 entered the CTR without clearance, albeit with the knowledge of and in receipt of an indeterminate service from LARS, the TCAS RA was triggered while the PA28 was outside the CTR. A combination of these factors led the Board to determine that the cause of the incident had been a conflict on the boundary of Class G and Class D airspace. Controller Members opined that although not contributing directly to the cause of the incident, the overall service provided by Brize ATC to both ac had been disappointing. Since the pilots in both aircraft were visual with each other and the VC10 crew reacted correctly to their TCAS RA, the Board concluded that there was no risk of collision.

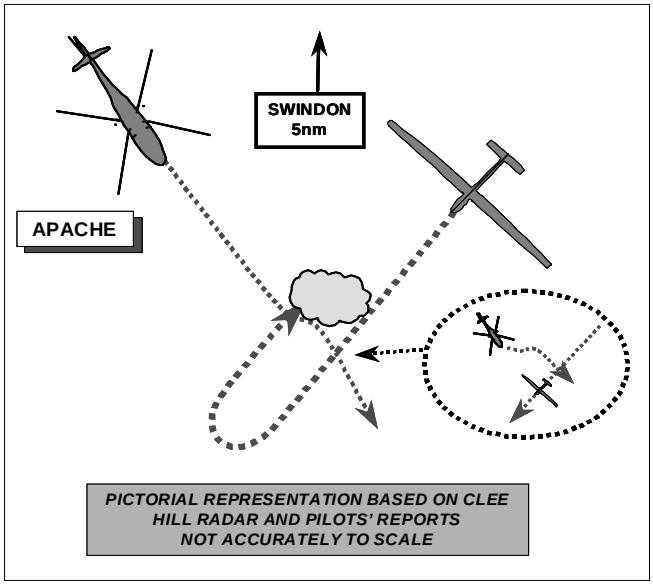
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict on the boundary of the Brize Norton CTR.

Degree of Risk: C.

AIRPROX REPORT NO 2010060

Date/Time:	21 May 2010 1332Z	
Position:	5127N 00144W (5NM S SWINDON - elev 297ft)	
Airspace:	Lon FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	AH64 Apache	Glider
Operator:	HQ JHC	NK
Alt/FL:	FL020	NK
Weather:	VMC CLBC	NK
Visibility:	20km	NK
Reported Separation:	V 100ft/H 250m	NK
Recorded Separation:	NK	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE APACHE PILOT reports flying a singleton IF training transit sortie from Lyneham to Middle Wallop in receipt of a TS from Lyneham APP, squawking as directed with Modes C and S. The student was the handling pilot from the rear seat and the captain in the front seat was conducting the lookout and operating the radar in the air/air mode; TCAS was not fitted. They were heading 130° at 110kt and at FL30 in good visibility but just below the base of the scattered cloud when a white glider appeared from behind a cloud less than 300m away tracking from L to R in front of them and at the same level. They took avoiding action in the form of a left turn descending to FL20 but the glider continued, its pilot apparently not having seen them.

He informed Lyneham APP of the Airprox and continued the sortie. He assessed the risk as being high.

UKAB Note (1): Despite extensive procedural tracing action the glider could not be identified.

UKAB Note (2): The recording of the Clee Hill radar shows the incident clearly. The Apache approaches the CPA from the NW tracking about 140°, level at FL030. The glider paints as a primary only contact tracking about 210°. At 1331:56 the Apache commences a rapid descent to FL028 and a left turn when the glider is in its 12 o'clock at 0.2nm, before recovering to FL030 and a Track of 140°. After the CPA the glider turns right onto a reciprocal track.

The Lyneham APP Controller provided a report containing the same information as in the Supervisor's report below. For brevity it has not been included.

THE LYNEHAM SUPERVISOR reports that he was in the ACR at the time of this incident monitoring the traffic flow from the Supervisor's console. The Watchman Primary Radar was deselected and undergoing a flight check but the SSR supplied via Brize MSSR was operational. The weather was colour code BLUE with 30km vis (although on the surface it appeared slightly hazy) and SCT cloud at 4000ft.

The APP/DIR task was bandboxed with 2 ac on separate frequencies, one on departure being provided with a TS (reduced - SSR only) outside the Lyneham CTR [the Apache] and one requiring an ILS against the stream to RW24. Pending departures and arrivals initially negated the requested ILS approach being permitted and a substantial amount of chatter was experienced as the aircrew pressed for the IRT profile to be granted. Coincident to this the reporting ac was on an IFR departure and given a reduced TS after leaving the CTR. The Airprox was reported at 1333Z, when the Apache was about 3.5nm SE of Marlborough tracking SE descending from FL35 to FL30, immediately after the glider was seen as it emerged from cloud close to the Apache.

The initial Airprox transmission was confused with transmissions from another ac and, due to the immediacy of the incident and the pilot's reaction, only scant details were provided about the direction of travel/markings etc of the glider they encountered; however the minimum separation distance was reported as 300ft. At the time there were no SSR returns in the reported position of the conflicting traffic.

Since the glider did not show on the Lyneham radar [at the time SSR only], therefore the controller was not able to provide any TI to the Apache pilot.

HQ AIR BM Safety Management reports that they recognises the difficulties of providing an effective radar service to ac when the unit is restricted to SSR only. The tape transcript and reports provided indicated that, although the ac was departing from a previous approach and had already been under a reduced TS, this service and restrictions were not reinstated fully on climb out. That said, it is not considered the causal factor. The controller was effectively unaware of the presence of the glider and therefore, SM Spt ATM believes the controller did not contribute to the Airprox.

HQ JHC comments that flying just below the base of scattered cloud is inappropriate, especially when in receipt of a reduced service from ATC. Even with excellent lookout skills, operating in the vicinity of cloud hampers the ability to see other aircraft early. ATC were unable to provide TI on an unseen aircraft and collision avoidance was the pilot's responsibility. The Apache pilot took avoiding action when he came into conflict with the glider and it is assumed that the glider was blissfully unaware of the conflict! This Airprox is another reminder to aircrew to be extra vigilant when operating in Class G airspace without primary radar cover.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the Apache 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.

The Board noted the difficulty controllers face when operating with reduced radar coverage; although the glider contact showed clearly as a primary-only contact on the recording of the Clee Hill radar, it did not show on the controller's SSR-only picture and therefore he was not able to give the Apache crew any warning of its presence. This has been a feature of several Airprox recently, particularly involving gliders, and is the subject of staff action at HQ Air.

The Board was concerned regarding the apparent high incidence of gliders not being able to be traced by the Radar Analysis Cell (RAC). Members were briefed on the process used and the difficulties encountered; it was pointed out that modern gliders routinely fly long, often very long, cross country flights and can be encountered, largely in Class G airspace, almost anywhere in the overland area of UK. The gliding specialist Member undertook to research the problem and another Member agreed to brief RAC staff on gliding activity.

It was pointed out that, although gliders do sometimes operate in cloud, it was most likely that the glider involved had been just below the cloudbase and had probably been obscured or not visible to the Apache safety pilot until a late stage. That being the case, Members agreed that the pilot could not reasonably have been expected to see the glider any earlier and therefore the incident had been a conflict between 2 ac operating legitimately in Class G airspace. Since the Apache pilot saw the glider in time to react and build in some vertical and lateral separation there was no risk of collision and the conflict was resolved.

Members endorsed the HQ JHC comment that the Apache pilot had been unwise in operating at FL30 just below the cloudbase, therefore restricting the time available to see and avoid other ac.

PART C: ASSESSMENT OF CAUSE AND RISK

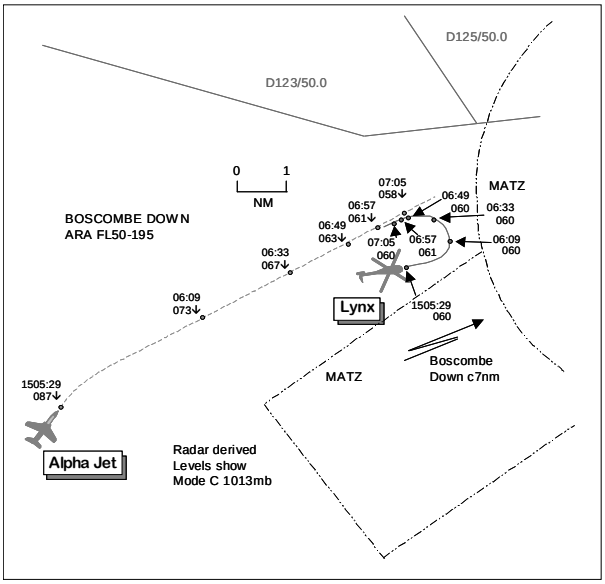
Cause: Conflict in Class G airspace resolved by the Apache pilot.

Degree of Risk: C.

AIRPROX REPORT No 2010061

AIRPROX REPORT NO 2010061

Date/Time:	24 May 2010 1507Z	
Position:	5108N 00157W (7nm W Boscombe Down)	
Airspace:	Boscombe ARA	(Class: G)
	Reporting Ac	*Reporting Ac*
Type:	Alpha Jet	Lynx AH7
Operator:	MoD ATEC	MoD ATEC
Alt/FL:	6500ft↓ (QFE 999mb)	FL65
Weather:	VMC CLOC	VMC CLBC
Visibility:	>10km	25km
Reported Separation:	100ft V/100m H	200ft V/200m H
Recorded Separation:	c100ft V/<0·1nm H	



BOTH PILOTS FILED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE ALPHA JET PILOT reports flying a local sortie from Boscombe Down and in receipt of a TS from Boscombe, squawking an assigned code with Modes S and C. The visibility was >10km in VMC and the ac was coloured black/white; no lighting was mentioned. Whilst cleared for descent to 3000ft QFE into the radar pattern on heading 050° at 280kt, a contact was called 'Lynx 12 o'clock 5nm similar heading indicating 1000ft below. The front seat pilot was flying heads-in, as this was an IRT, and rear seat pilot was responsible for lookout. Descending through 6500ft QFE a follow-up call was provided stating 'Lynx 12 o'clock 2nm crossing R to L 400ft below. No further TI was received prior to the rear seat pilot seeing the Lynx co-altitude at an estimated range of 150m. Owing to the ROD of the Alpha Jet and the slight relative bearing change at the time of the visual pick-up, it was quickly realised that a collision was not going to happen but the 2 ac passed within 100m laterally, to their R and 100ft vertically above. There had been no time for the rear seat pilot to take control. He opined that the rear seat lookout was compromised by the presence of the Alpha Jet blast screen canopy arch, front fuselage, and by the constant relative bearing of the 2 ac. At no stage did either crewmember believe that the risk of collision was high or that any other course of action was necessary given their SA and the conditions on the day. He assessed the risk as high.

THE LYNX PILOT reports flying a local sortie from Boscombe Down and in receipt of a TS from Boscombe squawking an assigned code with Modes S and C. The visibility 25km flying 2000ft below cloud in VMC and the ac was coloured red/white/blue. During data gathering for the ETPS Level Flight Performance exercise, which involved considerable heads-in time, other traffic was reported as initially 5nm and then 2nm at a similar height and descending under ATC control and was considered no confliction. Heading 270° at FL65, he thought, and 70kt flying into sun an Alpha Jet was seen 0·25nm away before it quickly passed seconds later dead ahead and then to their R 200m away and approximately 200ft below with no time to take avoiding action. He assessed the risk as high.

THE BOSCOMBE DOWN APPROACH RADAR CONTROLLER reports operating bandboxed without a Director (DIR), controlling ac on both UHF and VHF over a wide range, in a busy ac and airspace environment. He already had the Lynx on frequency operating approx 10-20nm W of Boscombe Down GH in the block FL050-080 under TS. Zone handed over the Alpha Jet for a PAR recovery, approx 25nm SW of Boscombe on a TS.

The Alpha Jet had been placed on a heading of 050°, he thought [actually 065°], and was in the descent to 3000ft QFE, passing through approximately 8000ft approx 10nm SW of the Lynx. Once on frequency, he passed TI to both flights on their relevant positions with the Alpha Jet now approx 5nm SW of the Lynx, 1000ft above

descending. He assessed that the normal ROD for an Alpha Jet would be sufficient to get below the Lynx before they came into close proximity and as such felt that the heading of the Alpha Jet was safe and the most expeditious for his recovery. As the ac closed on each other, he assessed that the ROD of the Alpha Jet was slower than normal and a TI update would be required; he gave this to both flights. The Lynx manoeuvred towards the Alpha Jet and the contacts merged at co-alt. Three days after the event, he was informed that the pilot was filing an Airprox.

Of note, Boscombe based ac are automatically under a reduced service within 15nm of Boscombe due to high traffic density and limits of surveillance cover.

During the incident, he was also providing a TS to 2 x Twin Squirrels on a separate frequency, operating approx 20-30nm NE in close proximity to CAS, SPTA D123/5 and numerous primary contacts, which were drawing his attention away from the other ac on frequency.

The unit has been operating extended hours to meet operational tasks, meaning that the number of controllers available is less than normal. As such, he was unable to call upon a DIR as he may have done considering the number of ac, their relative positions and the airspace he was operating within.

He had an interrupted sleep the night before and although he could not be sure as to its effect, if any, fatigue may have played a part in the incident as it was towards the end of a busy day.

THE BOSCOMBE DOWN SUPERVISOR reports the Wx conditions were extremely good, all equipment was fully serviceable and the Radar controller had been in the seat for approximately 30min. Although the intensity was estimated in the Approach room as medium, he was aware that Tower was getting busy and as there was a u/t ADC so he elected to go upstairs to Supervise.

At approximately 1600Z, he received a call from the Alpha Jet pilot, who told him that he felt he had been given a vector during his recovery that had caused him to merge with a rotary, the Lynx. This was the first that he, as the SUP, had heard of the incident. He asked the pilot if the conflicting traffic had been called; he said it had been called to him on a couple of occasions, but they were not visual with it until late, adding that the front seat pilot was heads down in the cockpit. He explained to the pilot exactly what the provision of TS was, and what responsibilities the controller had, but said he would speak to the controller, listen to the tapes and then call him back. At this stage the pilot did not mention reporting the incident as an Airprox.

He spoke to the controller, who confirmed that the contacts did get close; however, he had called accurate TI to both crews about each other. He asked the controller if he felt he had vectored the Alpha jet into confliction with the Lynx, and he said that the Alpha Jet was already on a heading after handover from Zone. Sup then listened to the tapes, which confirmed that the Alpha Jet had been handed over approximately 20 miles SW Boscombe descending to height 3000ft QFE – the Lynx was still over 10 miles away and not in direct confliction. Once identified on stud 4 (233·850), the controller passed TI to the Alpha Jet pilot about the Lynx and passed the information to the Lynx crew about the Alpha Jet. This information was again updated by 2 miles.

He contacted the Alpha Jet pilot to inform him that after listening to the tapes, speaking with the LEO and the controller, I felt that the APP Radar controller had not knowingly vectored the Alpha Jet into confliction with the Lynx, and that accurate TI had been passed in good time, then updated by 2 miles. The pilot's initial thoughts were that as he was recovering for a radar pattern, receiving vectors and descent instructions from ATC, he should not be coming into close proximity with other ac, and that ATC should maybe give further vectors to maintain separation. SUP explained this was not the responsibility of the controller under the terms of TS, and asked whether he was completely happy with both ATC and the pilot's responsibility when receiving a TS; he said he was happy. The pilot said he would be filing an Airprox report so he informed him that he would impound the tapes and ensure the appropriate paperwork was completed.

After recent events, he believed that there is a misunderstanding among the aircrew at Boscombe Down as to what the terms of a TS are, and that they believe that when they recover for a GCA under a TS, ATC will maintain separation from all other ac; this could be causing complacency in the cockpit regarding the amount of heads up visual scanning they do, compared with when manoeuvring in a block to the W of Boscombe.

HQ AIR BM SAFETY MANAGEMENT reports that SO2 SM Spt ATM acknowledges the workload the controller was under at the time. Best practice remains to have available manpower to man APP and DIR separately during busy periods. The lack of available manpower, on this occasion, led to a reduction in SA which restricted the controller's ability to manage effectively the traffic he had on frequency. Not withstanding the provisions of a TS, in this situation the Alpha Jet's ROD and turn of the Lynx was not assimilated and acted upon. TI was timely and accurate; unfortunately the Alpha Jet handling pilot was head down and the rear seat pilot reports his lookout being compromised by the presence of the Alpha Jet blast screen canopy arch and front fuselage.

SO2 SM Spt ATM also acknowledges that working practices were complicated due to extended hours operations to meet operational tasks which lead to a lack of available manpower. Consideration should be given at Unit level to the knock-on effect of operating hours and availability of manpower.

UKAB Note (1): CAP774 UK Flight Information Services Chapter 3 Traffic Service Page 1 Para 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'. Page 2 Para 6 Deconfliction states 'Whether traffic information has been passed or not, a pilot is expected to discharge his collision avoidance responsibility without assistance from a controller. If after receiving traffic information, a pilot requires deconfliction advice, an upgrade to Deconfliction Service shall be requested. The controller shall make all reasonable endeavours to accommodate this request as soon as practicable and provide deconfliction advice at the earliest opportunity. When providing headings/levels for the purpose of positioning and/or sequencing or as navigational assistance, the controller should take into account traffic in the immediate vicinity, so that a risk of collision is not knowingly introduced by the instructions passed. However the controller is not required to achieve defined deconfliction minima'.

UKAB Note (2): The Alpha Jet pilot made his initial call to APP after transfer from Zone at 1505:31 when the ac was 14·5nm WSW of Boscombe Down and turning R from heading 050° onto heading 065°, which was assigned by APP during the handover. The ac descends through FL87 (8300ft QFE 999mb) with the Lynx it its 1 o'clock range 7·6nm tracking 075° level at FL60 (5600ft QFE). After APP confirmed the Alpha Jet was cleared to 3000ft QFE and the level of service (TS) he then established the pilot's decision height and intentions from the PAR. Immediately after, APP transmitted (1506:11) *"Alpha Jet c/s Lynx twelve o'clock five miles similar heading indicating one thousand feet above, correction, one thousand feet below"*. By now the Alpha Jet was descending through FL73 (6900ft QFE) with the Lynx, which was in a L turn passing through heading 010°, in its 1230 position range 5·3nm level at FL60 (5600ft QFE). APP's transmission was acknowledged with an abbreviated c/s after which the APP immediately transmitted *"Lynx c/s A-Jet south west four miles tracking north east with me one thousand feet above descending inbound"*. A garbled transmission was received in reply before APP transmitted (1506:29) *"Alpha Jet c/s Lynx twelve o'clock two miles crossing right left four hundred feet below"*. The radar shows the Alpha Jet descending through FL67 (6300ft QFE) with the Lynx just R of its 12 o'clock range 3·1nm turning L through heading 300°, 300ft below. No reply was received before APP transmits (1506:51) *"Lynx c/s previously reported A-Jet one mile tracking east similar height descending"* which was acknowledged with c/s. About 10sec later the APP instructed the Alpha Jet crew to R onto 080° which was acknowledged - no mention was made on the RT by either crews of an Airprox. The CPA occurs between radar sweeps: the sweep at 1506:57 shows the Lynx steady on an almost opposite direction track of 250° in the Alpha Jet's 12 o'clock range 0·5nm, both ac showing FL61 (5700ft QFE). The next sweep at 1507:05 shows the Alpha Jet descending through FL58 in the Lynx's 6 o'clock range 0·3nm, having passed ahead and to the R of the Lynx, which is indicating FL60. By interpolation, the CPA is estimated to be 100ft vertically and a lateral separation of <0·1nm.

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.

Both crews were operating legitimately in Class G airspace of the Boscombe Down ARA where they shared an equal responsibility to see and avoid other aircraft. It was noted that the Lynx crew were operating on a flight test exercise within 15nm of Boscombe Down where there is automatically a reduced level of ATS. An ATCO Member commented that if the Lynx crew's task prevented them from fulfilling their responsibilities with respect to a TS they should have either asked for a DS and/or positioned their ac into a more suitable area, well clear of the Boscombe

O/H. Although aware of the provisions of a TS and DIR's need to position the Alpha Jet towards the Boscombe O/H to feed into the radar pattern, Members unanimously agreed that the instructions given by DIR had vectored the Alpha Jet towards the Lynx which was a part cause of the Airprox. However, Members were also acutely aware of pilots' responsibilities in receipt of a TS. Despite APP twice passing accurate and timely TI to both the Alpha Jet and Lynx crews as they converged, the pilots only saw each other late and this was another part cause. An experienced Test Pilot Member expressed concern about both crews' lack of reaction to the TI and apparent misunderstanding about the provisions, limitations and responsibilities associated with a TS. The Board concurred.

The Lynx crew's lookout was degraded owing to the test flying profile and flying into sun as the ac approached the CPA, the crew only seeing the Alpha Jet about 0·25nm ahead before it quickly passed 200m to their R and 200ft below, having descended through their level. Similarly, the Alpha Jet crew only saw the Lynx when it was co-alt range 150m before it passed 100m to their R and 100ft above. Both crews reported there being insufficient time to take avoiding action. These factors left the Board in no doubt that the subject ac had passed purely by chance, without any positive steps being taken by any party to break the chain of events, leading the Board to conclude that a definite risk of collision existed during this encounter.

PART C: ASSESSMENT OF CAUSE AND RISK

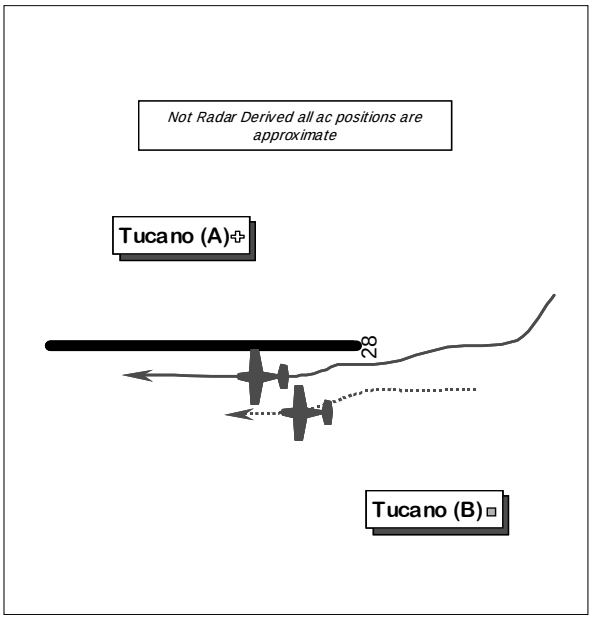
Cause: APP vectored the Alpha Jet towards the Lynx and, despite receiving accurate and timely TI, the pilots of both ac saw each other late.

Degree of Risk: A.

AIRPROX REPORT No 2010062

AIRPROX REPORT NO 2010062

Date/Time:	27 May 2010 1456Z	
Position:	5403N 00115W (Linton-on-Ouse A/D cct - elev 53ft)	
Airspace:	MATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Tucano T Mk1	Tucano T Mk1
Operator:	HQ Air (Trg)	HQ Air (Trg)
Alt/FL:	1000ft	1000ft
	QFE (1006mb)	QFE (1006mb)
Weather:	VMC	NR
Visibility:	20km	10km
Reported Separation:		
	200m H	200ft H
Recorded Separation:		
	Not recorded	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PILOT OF TUCANO T Mk1 (A), a QFI, reports he was conducting a training sortie in the cct at Linton-on-Ouse and in communication with TOWER (TWR) on 240·825MHz. SSR was selected on with Mode C; TCAS 1 is fitted.

When going around from a Practice Forced Landing (PFL) and positioning on the deadside to RW28RHC at 1000ft QFE (1006mb), he saw another Tucano in their 8 o'clock position at a range of about 200m turning away. This ac had previously been running in from Initials at high speed. No avoiding action was taken as the other Tucano was already turning away so, taking control of his aeroplane from his student, he positioned his Tucano wider on the deadside to allow the other Tucano to join ahead. His aeroplane was then flown back to Initials to regain SA before re-joining the cct to land. He assessed the Risk as 'medium', but opined that ATC RT distraction was a relevant factor.

His aeroplane has a black and yellow colour-scheme and the HISLs were on.

THE PILOT OF TUCANO T Mk1 (B), reports he was on recovery to Linton-on-Ouse from Topcliffe, whilst in communication with Linton TWR on 240·825MHz. A squawk of A4506 was selected with Mode C on. TCAS 1 is fitted.

His aeroplane was positioned via Initials for a visual Run-in & Break to RW28RHC. At Initials, he reported his position on the TWR frequency, however, the controller was slow in responding and there appeared to be some confusion over the position of traffic in the visual cct. He attempted to gain visual contact with the traffic reported by TWR – 1ac on Final, 1ac between High and Low Key. He could not identify any ac between High and Low Key, so he slowed down to 180kt and converted his Run-in & Break to a normal 1000ft QFE cct join. He remained on the Deadside attempting to acquire the traffic, however, there was no sign of any ac on Final. Whilst he was still on the Deadside heading 280° another Tucano – (A) - performed, he thought, a Touch & Go and then climbed to their height. It was first seen 200ft away and to avoid it he turned slightly L to fly further into the Deadside. Minimum separation was 200ft but the Risk was 'low'. TCAS 1 enunciated a TA. It was at this stage that the Captain of Tucano (A) reported the Airprox. Extending to allow Tucano (A) to join the cct, this ac then climbed above cct height.

The subsequent cct was not without incident, as more ac were joining, and TWR was struggling with the position of the ac in the cct. The visual cct was very busy, and he believes the TWR controller lost SA, which contributed to the Airprox.

His aeroplane has a black colour-scheme with yellow flashes and all the lights were on.

THE LINTON-ON-OUSE AERODROME CONTROLLER (ADC) had just taken over the TWR position. [UKAB Note (1): HQ Air Cmd ATM SAFETY ANALYSIS advises this was about 18min before the Airprox occurred]. The A/D cct state was 1 on Final [another ac], 1 between High and Low key - Tucano (A) and 1 other joining via Initials - Tucano (B). The crew of Tucano (B) reported Initials at the same time as the inbound call was made for a short pattern cct (SPC), the radar traffic broadcast was given and the cct state given to Tucano (B). Tucano (A) reported going around as no clearance had been given due to another ac being on the runway, shortly thereafter the Captain of Tucano (A) reported an Airprox.

THE LINTON-ON-OUSE ATC SUPERVISOR (SUP) reports that he was situated in the ACR when the ADC rang to inform him of an Airprox in the visual cct, so he immediately made his way to the VCR.

Having not actually witnessed the Airprox he spoke to the reporting pilot of Tucano (A), the ADC and GROUND controllers and listened to the RT tape recordings. It was evident that at the time of the

Airprox, the crew of Tucano (A) had made two attempts at a PFL approach and having been previously baulked by another ac, had been told to continue approach, as once again another ac, which had been cleared to land, was ahead. At the same time Tucano (B) had joined the cct through Initials the ADC acknowledged a liaison call from the TALKDOWN controller about a SPC to land, subsequently making the broadcast on the Tower frequency. With Tucano (B) now Deadside, the Captain of Tucano (A) informed TWR that he was going around, whereupon he then called an Airprox against Tucano (B) on the Deadside.

HQ AIR BM ATM SAFETY ANALYSIS reports that the Unit has identified that the situation in the increasingly complex and busy visual cct was exacerbated by the handover of the operating position between the off-going controller and the ADC taking over the watch. This served to reduce the ADC's SA and will have contributed to the erroneous visual cct state passed by the ADC to the crew of Tucano (B). However, this erroneous cct information would not in itself have prevented the crew of Tucano (A) climbing into confliction with Tucano (B). Other than this erroneous information the actions of the ADC were appropriate to the situation.

[UKAB Note (2): The crew of Tucano (B) called TWR to join at 1453:22, whereupon the ADC responded "[Tucano (B) C/S] *Linton TOWER join runway 2-8 right-hand Q-F-E 1-0-0-6 2 in*" [the cct - Tucano (A) climbing for High Key and another ac downwind to land]. The first part of the response from the crew of Tucano (B) was unintelligible on the recording. The other ac in the cct reported downwind to land and a few seconds later the crew of Tucano (A) advised TWR at 1453:51, *"..High Key touch and go".* TWR replied 37sec later at 1454:28, *"..1 ahead* [the other ac to land] *surface wind 2-8-0 11 knots".* The other ac was cleared to land followed at 1455:26, by the crew of Tucano (A) reporting *"Low Key gear down"*. TWR responded 2 sec later, *"..continue approach"*, which was read back by the crew whilst awaiting the other ac to land and clear the RW. Some 11 sec later at 1455:41, the crew of Tucano (B) reported *"..initials".* Following a broadcast by TWR for the radar traffic executing a SPC and some 15secs after Tucano (B)'s Initials call, TWR responded to Tucano (B) at 1455:56, *"..two finals…correction one finals one between High and Low Key, surface wind 2-8-0 14 knots",* which Tucano (B)'s crew acknowledged with their C/S. Tucano (A) was not between High and Low Key but actually between Low Key and final for RW28RHC. Some 30sec later at 1456:26, the crew of Tucano (A) advised TWR, *"..going round [sic]",* that was acknowledged by TWR. A short while later at 1456:45, the crew of Tucano (A) commented, *"…we'll..come from the south and extend upwind to allow..the other aircraft* [Tucano (B)] *to join";* after TWR's acknowledgement, the pilot added *"…we might need to declare an Airprox…".* An Airprox was subsequently declared on RT in answer to the ADC's enquiry. Tucano (B) then reported downwind at 1457:24.]

The SFSO has highlighted that the onus of responsibility for collision avoidance in the visual cct is primarily with the joining traffic. Furthermore, the pilot of Tucano (B) reports being visual with Tucano (A) conducting, he thought a Touch & Go, then climbing to his level. The purpose of RT calls between ATC and AC is to build the SA of all concerned on the frequency and this, coupled with a visual scan, should have presented enough information to the crews of the two Tucanos to assimilate the relative positions of each other's ac. Consequently, given the busy visual cct and the aircrew's responsibility to visually identify the cct ac and to take appropriate action to sequence themselves accordingly, it is reasonable to suggest that there is little that the ADC could have done to avert this Airprox.

HQ AIR (TRG) comments that the inaccurate TI passed to the crew of Tucano (B) made their task of identifying cct traffic very difficult. Consequently, having not identified all the ac in the cct the pilot of Tucano B sensibly slowed down and changed his Run & Break to a normal cct join rather than continue into the cct at high speed. As soon as Tucano (A) was seen the pilot of Tucano (B) took suitable avoiding action minimising the actual risk of a collision.

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.

A controller Member who had previously been qualified at Linton-on-Ouse TOWER explained that the Linton aerodrome cct can be quite demanding for controllers with the mix of ac types leading to a very dynamic cct. Here, however, the cct did not seem abnormally busy with 2 'in' and 1 joining and it was clear to the Board that the catalyst to this Airprox was the erroneous positions of visual cct traffic passed by the ADC to the crew of Tucano (B) when they called at Initials inbound to join the cct. The Captain of Tucano (B) had reported that he had attempted to gain visual contact with the cct traffic whose position was reported by TWR to be 1ac on Final and 1ac between High and Low Key, but could not identify any ac - Tucano (A) - between High and Low Key. The RT transcript reveals that Tucano (A) was in another part of the sky between Low Key and final for RW28RHC, not yet having called final. The pilot of Tucano (B) reported that he had prudently slowed down and converted his Run-in & Break to a normal 1000ft cct join, however, pilot Members recognised that he had still not identified Tucano (A) before he entered the cct area. This was unwise. Pilots have a duty to see and avoid other ac in the cct and Military pilot Members believed the crew of Tucano (B) should have taken more robust action to search for the unseen ac, including asking for an update from the ADC when they could not see it. Whilst Tucano (B) remained on the deadside as the crew attempted to acquire the ac, they still flew on in to the aerodrome without any sign of the other ac, despite the crew of Tucano (A) subsequently reporting going around. Better airmanship would suggest flying much wider on the deadside, alternatively returning to Initials to sort it out might have been preferable. As it was the crew of Tucano (B) finally sighted Tucano (A) a mere 200ft away, erroneously perceiving that the ac had executed a touch & go. The Board concluded that the Cause of this Airprox was erroneous TI from the ADC, which resulted in a late sighting by the crew of Tucano (B). However, when they did see Tucano (A), Tucano (B)'s crew took appropriate action to avoid it and the Board agreed unanimously that no Risk of a collision had existed in these circumstances.

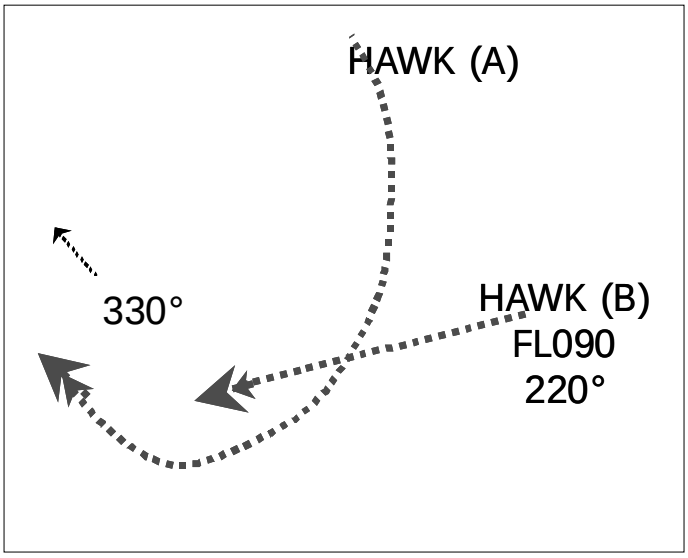
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Erroneous TI from the ADC, resulted in a late sighting by the crew of Tucano (B).

Degree of Risk: C.

AIRPROX REPORT NO 2010063

Date/Time:	28 May 2010 0957Z	
Position:	5253N 00331W	(3nm E Lake Bala)
Airspace:	Lon FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Hawk	Hawk
Operator:	HQ AIR (Trg)	HQ AIR (Trg)
Alt/FL:	NR	8500ft
	(RPS 1014mb)	(NK)
Weather:	NK CLAC	VMC CLAC
Visibility:	50km	20km
Reported Separation:		
	Est 200ft V	Est 2-300ft V
Recorded Separation:		
	400ft V/<0.1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE HAWK PILOT (A) reports flying a black ac on an aerobatics training sortie with HISLs and the nose light switched on, listening on the Valley VHF deconfliction frequency and squawking 7005 [aerobatics]; TCAS was not fitted. While pulling to level at base alt of 7000ft (RPS), during the final quarter of a looping manoeuvre above scattered cloud 3nm East of Lake Bala, using the valley as a reference (track of 150°/330°), another Hawk was seen in their right 4 o'clock about 3000ft above. Shortly after, the other ac [Hawk (B)] made contact with them on the frequency in use to report that they had passed extremely close.

During the post-sortie discussion it emerged that the Airprox had apparently taken place as they bottomed out of a loop and they estimated the miss-distance to be around 200ft. Although they were aware that a 'bounced pair' was operating in the area and saw the pair [low level] about 1 minute previously, they did not see the bounce until after it had passed; they assessed the risk as being high.

THE HAWK PILOT (B) reports flying a black ac as bounce for a 2-ship low level formation with HISLs and the nose light switched on; TCAS was not fitted After the simulated target run and the last planned bounce of the LL pair, he climbed to medium level in anticipation that the pair would do the same. Prior to his contacting the GCI controller as planned, the LL pair broadcast its intention to re-attack the target so he repositioned over the IP (the W end of Lake Bala) at 8500ft amsl to try to regain visual contact with the pair. Whilst flying straight and level, heading 220° at 300kt but with left wing down so that he could look below, a shadow passed over the ac. On rolling right an ac was seen 1000ft away in his 3 o'clock low position, heading away and recovering from what looked like a looping or dive recovery profile. Contact with the ac was established on the Valley ML common VHF frequency. He assessed the risk as being medium.

UKAB Note (1): Both ac show on the recordings of the Clee Hill and St Annes radars. At 0957 Hawk (B) is squawking 7000 with Mode C after it climbs out from low level 10nm NE of the incident position. It continues flying straight and level, at FL090, tracking 240° towards Hawk (A), which is indicating 7005 (aerobatics) and FL071, from its 0230 becoming 3 o'clock, initially 800ft above. At 0956:20 Hawk (A) commences a pull-up into a loop with Hawk (B) 2nm away in its 0330 at an unchanged level still closing from the left beam. As Hawk (A) reaches the top of the loop at FL148, Hawk (B) is 1.5nm away in its 9 o'clock still closing but now 5600ft below it; Hawk (A) then commences the descent at 0956:37. At 0956:54 the St Annes Radar (only) shows Hawk (B), at FL090 pass less than 0.1nm behind Hawk (A) at FL086, just before it bottoms out of the loop at 0957:02 at FL072.

HQ AIR (TRG) comments that both crews were concentrating on their tasks perhaps to the point where their lookout was reduced and they did not see each other until after the Airprox had occurred. In this case luck determined the minimum separation distance and safety was not assured. All RAF Valley based aircrew have been reminded of the importance to maintain a balance between task and achieving a good standard of lookout.

AIRPROX REPORT No 2010063

A review of 'bounce' aircraft maximum holding heights is being conducted to identify changes to prevent a reoccurrence of this Airprox.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The Board noted that both Hawks had been operating legitimately in Class G airspace and had an equal and shared responsibility to see and avoid other ac. Although, due to RAF Valley local warning procedures, the crew of Hawk (A) knew that Hawk (B) was in the general area, neither crew was aware of the close proximity of the other ac until after they had passed the CPA.

Both crews had been in relatively high workload situations and most likely concentrating on the major operational task at the time; Hawk (A) was recovering from a loop and Hawk B crew was looking downwards trying to locate the low-level pair they were 'bouncing' as Hawk (A) approached from above.

Although the separation between the aircraft was not achieved by the positive actions of either crew, it was sufficient to persuade the Board that, while normal safety standards had not been maintained, there was no risk of collision.

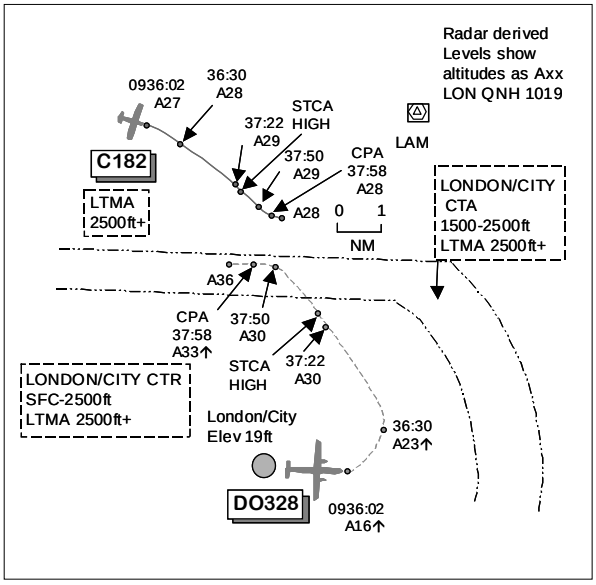
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Effectively non-sightings by both Hawk crews.

Degree of Risk: B.

AIRPROX REPORT NO 2010064

Date/Time:	5 Jun 2010 0938Z (Saturday)	
Position:	5136N 00004E (4nm SW LAM)	
Airspace:	LTMA	(Class: A)
	Reporting Ac	*Reported Ac*
Type:	DO328	C182
Operator:	CAT	Civ Pte
Alt/FL:	3000ft	2800ft
	(QNH 1019mb)	(QNH)
Weather:	VMC CLOC	VMC CLBC
Visibility:	>10km	NR
Reported Separation:		
	Nil V/<3nm H	Nil V/~1nm H
Recorded Separation:		
	500ft V/1·2nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE DO328 PILOT reports outbound from London/City IFR following a BPK4U SID and in receipt of a RCS from London on 118·825Mhz, squawking 5412 with Modes S and C. Heading 330° level at 3000ft QNH 1019mb at 250kt, TCAS generated a TA on traffic range 5nm at the same altitude (Mode C unverified) closing on a S'ly track. ATC gave an avoiding action L turn onto heading 275° and a TCAS RA 'climb' was received and both were actioned. The other ac was not seen visually but TCAS indicated it passed <3nm away at the same level. He assessed the risk as medium.

THE C182 PILOT reports en-route from a private strip to France VFR with another pilot and listening out with London Information, squawking 7000 with Modes S and C. Heading 100° at 130kt at 2800ft they both sighted a high-wing twin-engine ac about 1nm or more away at the same altitude which was climbing and heading generally W. No hazard was perceived and no avoiding action was required. They had had difficulty contacting London Information; they were extremely busy, and suffered an altimeter setting error. He assessed the risk as none. He explained that he initially attempted to contact London Info at BOV VOR to activate his FPL and make a mid-channel call but was not successful until over the channel. He remembered listening to the QNHs being passed from London Info on the frequency and setting the altimeter sub-scale but he could not recall whether these were local or regional settings. After discussing the difference between these settings post-flight with his ex-instructor he realised that it could amount to quite a bit. He admitted he might have made an error setting the altimeter sub-scale. His ex-instructor also explained that regional QNH is an extreme for the whole altimeter setting region and that it will always push ac higher which is good for terrain clearance but bad for airspace avoidance.

THE LTC NE DEPS CONTROLLER reports the DO328 departed London/City on a BPK departure climbing to altitude 3000ft. Shortly after the ac levelled-off, and whilst he was dealing with another ac, he noticed STCA had activated red. The DO328 was in conflict with an ac squawking 7000 indicating 3000ft. He immediately issued avoiding action and TI and shortly afterwards the crew reported they were responding to a TCAS RA. When clear of conflict he climbed the DO328 to 5000ft and the crew enquired about the other ac. He explained that it was unknown traffic and the crew stated they had not seen the other ac.

NATS INVESTIGATIONS reports that at 0935:27 the CAS Incursion Tool (CAIT) highlighted a 7000 squawk with Mode C indicating an altitude of 2600ft (CAS base 2500ft) at a position 7·5nm W of LAM. At 0935:42 the DO328 appeared on radar following departure from London/City on a BPK4U SID from RW09. The CAIT-highlighted ac, later identified as the subject C182, was indicating altitude 2700ft.

The DO328 flight established contact with TC NE Deps at 0936:17 and reported passing 2000ft climbing to 3000ft on the BPK4U. The controller instructed the crew to 'squawk ident'. The C182 was in the DO328's 10 o'clock

range 8·9nm. About 1min later at 0937:28 a high level STCA triggered as the C182 indicated further climb to 2900ft and the DO328 levelled at 3000ft, the C182 now in the DO328's 12 o'clock range 3·9nm. The following transmissions took place:-

ATC *"DO328 c/s avoiding action turn left immediately heading two seven five degrees".*

DO328 *"Left heading two seven five DO328 c/s"*.

ATC *"There's traffic in your twelve o'clock indicating the same level as you unverified squawking seven thousand"*.

DO328 *"That's copied DO328 c/s"*.

ATC *"It's in your two o'clock now range of about two miles"*.

DO328 *"Roger that and TCAS climb"*.

ATC *"Roger report back under my control"*.

DO328 *"Wilco"*.

Although the DO328 promptly undertook the lateral avoiding action and responded to the TCAS climb, separation reduced to 100ft/1·4nm at 0937:50 before these actions took effect. At 0938:17 the DO328 crew reported returning to 3000ft (having climbed to 3600ft as a consequence of the TCAS RA). The controller instructed the DO328 to climb to 5000ft and fly heading 345°. During the encounter the C182 turned back onto a SE'ly heading 5nm SSE of LAM, its Mode C indicating 2700-2800ft.

[UKAB Note (1): The CPA occurs at 0937:58, the C182 having turned L about 10° and indicating altitude 2800ft QNH 1019mb unverified with the DO328 passing 1·2nm to its SW on a W'ly heading climbing through altitude 3300ft QNH.]

Although the radar replay indicates that CAIT activated at 0935:28 – 2min before STCA, the Watch Manager's report states that neither the NE Deps controller, the NW Deps controller, nor the N Coordinator observed the CAIT alert. The controllers expressed some doubt about whether the CAIT activation actually showed on the TMA N radar positions – although it was evident on the Slave radar replay during the watch investigation. The radar replay was subsequently reviewed using the slave picture (controller's screen) for the TC NE & TC NW positions as well as the Debden, H23 and MRT radars. The CAIT activation was observed on all radar pictures and sources viewed.

It is not possible to determine why the TMA N controllers believed that CAIT did not activate but previous incidents have shown that TMA controllers do not always detect or assimilate CAIT activations as promptly as their Approach unit counterparts. The likely explanation for this scenario is that the TMA controllers are often subject to numerous CAIT alerts that require no action or are outside of their area of responsibility.

The radar replay (slave mode) for TMA NE was reviewed for the period 0900-1000 (the incident occurred at 0937). During this period, 16 CAIT alerts were visible on the NE Deps controller's radar picture. Eight of these alerts triggered and remained at 2600ft (only 2 ac climbed above this altitude to 2700ft). Ac with unverified Mode C indicating 2600ft in level flight do not present evidence to suggest that the ac has entered CAS where the base of CAS is 2500ft.

Ref: MATS 1

• Unknown Aircraft (Actions to be taken by a controller) – Sec 1, Chap 5, Para 15

• Level Assessment using Mode C - Mats 1, Sec 1, Chap 5, Para 10.31

The remaining CAIT alerts were associated with aircraft flying within the confines of an airfield CTA/CTR. The CAIT alert associated with the subject C182 was the only alert that required action by the NE controller.

Although CAIT was visible to the TC NE Deps controller, it was not observed. The failure to consciously see an object, even though it is in plain sight, is termed *inattentional blindness*. This occurs when our attention mistakenly filters away important information.

Studies have identified that one of the factors that can influence inattentional blindness is expectation. With so many CAIT alerts on the TMA positions, it is likely many TMA controllers have developed an expectation that the majority of CAIT alerts are for traffic operating outside of their AOR or at altitudes that do not provide evidence of an infringement. The effectiveness of CAIT is therefore possibly diminished for TMA controllers.

Upon the activation of STCA at time 0937:28, the controller issued a prompt and effective avoiding action heading instruction to the DO328 flight. TI was also passed. The DO328 crew reported responding to a TCAS Climb at time 0937:57. A TCAS download indicates that the DO328 received a TCAS RA at time 0937:41 – 9sec after the controller commenced passing the avoiding action instruction. The controller's actions provided a resolution in the lateral plane whilst the TCAS climb provided the vertical resolution.

The Initial Watch Management Investigation concluded that STCA activated "very late" and immediately triggered as a high severity (red) alert. A Swanwick Operational Procedures representative confirmed that the STCA triggered in an area of "High Sensitivity" introduced on 6th May 2010 to improve the alerting characteristics for conflictions between London City W'ly departures and Heathrow W'ly arrivals (OPNOT 07/10 refers). This would account for the immediate high severity alert. STCA triggered when the C182 and the DO328 were separated by 100ft/3·9nm – this was in accordance with the correct STCA parameters.

Recommendation: It is recommended that the CAIT vertical parameters be changed so that an alert is not triggered until Mode C indicates a 200ft deviation from the base of CAS (currently 100ft); airspace designated CTA/CTR to remain unchanged.

Closure: CAIT parameters are to changed wef. 13/01/11 and LTC controllers have been advised.

ATSI reports that it has reviewed the NATS Airprox report (APX-62270, 22 June 10), which contains details of the investigation undertaken by ATS Investigations, NATS Swanwick and concurs with the report's finding. No further investigation by CAA ATSI is deemed necessary.

NATS has confirmed to CAA ATSI that the recommendation regarding the variation of CAIT parameters is applicable for TMA airspace only. CTA/CTR parameters remain unchanged.

The CAA ATSD En Route and College Inspectorate have been made aware of this report, its content and subsequent recommendation.

Note (2): The UK AIP at ENR 1-7-2 Altimeter Setting Procedures Para 5.2.2 Outside Controlled Airspace and within Active TRAs states, 'In flight at or below 3000ft amsl, pilots may use any desired setting. However, pilots flying beneath a TMA or CTA should use the QNH of an aerodrome situated beneath that area when flying below the Transition Altitude. It may be assumed that for aerodromes beneath the same TMA or CTA, the differences in the QNH values are insignificant.'

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 appeared that the C182 pilot was not aware of the promulgated altimeter settings procedures for flights beneath TMAs or CTAs. However, Members questioned the pilot's pre-flight planning regime for, although using an RPS would exacerbate the vertical geometry and the track flown between the Luton and Heathrow CTRs required careful navigation taking due regard of ATZs en-route, that part of the route required him to remain below the LTMA. This would have been restricted to flying below 2500ft for about 40nm until clearing the LTMA base step 2500ft to 3500ft when E of the London/City CTR. The radar recording shows the C182 tracking generally SE'ly and for 2min prior to the Airprox the ac's Mode C was showing unverified 2700ft (tolerance ±200ft) and in a gradual slow climb reaching 2900ft approaching the CPA. The C182 pilot reported flying at 2800ft which placed the ac

within the Class A airspace of the LTMA for which an ATC entry clearance is required. This had not been requested and the ac's flightpath placed it in conflict with the DO328. These two factors had caused the Airprox.

Although the NATS CAIT highlighted the ac's presence, it was not 'seen' by the LTC NE Deps and it was only when STCA activated between the subject ac that the controller's attention was gained and he had promptly issued an avoiding action L turn away. The DO328 crew were aware of the approaching Cessna from the TCAS TA alert at range 5nm and they quickly actioned the avoiding action L turn and the subsequent RA climb. The C182 pilot saw the DO328 about 1nm away, whilst it was manoeuvring to avoid him, and which was, from his perspective, not in conflict. The robust actions taken by the NE Deps and DO328 crew allowed the Board to conclude that the any risk of collision had been quickly and effectively removed.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The C182 pilot entered the LTMA without clearance and flew into conflict with the DO328.

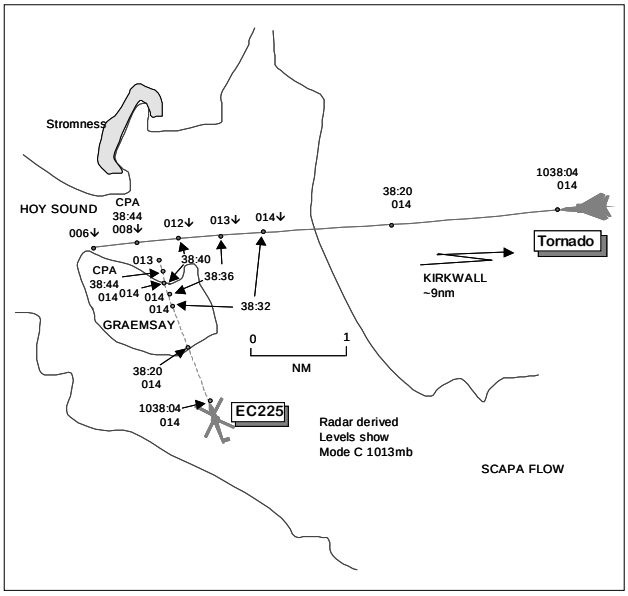
Degree of Risk: C.

AIRPROX REPORT NO 2010065

Date/Time: 9 Jun 2010 1039Z
Position: 5857N 00317W
(12nm W Kirkwall - elev 58ft)
Airspace: SFIR/UKDLFS (Class: G)

	Reporting Ac	*Reported Ac*
Type:	EC225	Tornado
Operator:	CAT	Foreign Mil
Alt/FL:	1500ft	1200ft
	(QNH 1017mb)	(Rad Alt)
Weather:	VMC CLBC	VMC CLBC
Visibility:	35km	>10km

Reported Separation:
200ft V/0·25-0·5nm H 500ft V/800m H
Recorded Separation:
600ft V/0·4nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE EC225 PILOT reports flying en-route to an oil rig (about 90nm NW of Kirkwall) on a direct track from Aberdeen, VFR and in receipt of a BS from Kirkwall Approach on 118·3MHz, squawking with Modes S and C. The visibility was 35km flying 500ft below cloud in VMC and the ac was coloured red/grey with anti-collision, nav, flood and strobe lights all switched on. Approaching Stromness [12nm W of Kirkwall] heading 350° at 148kt and 1500ft QNH 1017mb, they became aware of a pop-up ACAS contact appearing 5-10nm to the E. They very quickly became visual with an ac and within a few seconds an ACAS aural TA sounded and the contact turned amber. They believed the other ac to be on a constant bearing and growing rapidly in the windscreen. The apparent speed and direction placed the other ac in their 2 o'clock on a converging course, slightly below. The PF started a deliberate action to reduce speed and allow the ac to climb. The other ac was identified as a military fast-jet, possibly a Tornado. The Tornado rolled to the L and appeared to descend passing an estimated 0·5nm ahead and approximately 400ft below. The PNF made a report to Kirkwall stating there was conflicting military traffic, however the controller had no reports of such ac in the area. The military jet pilot then called stating he was on frequency and had seen their helicopter at 1nm. They later informed Kirkwall that they would be filing an Airprox. They assessed the risk as medium.

THE TORNADO PILOT reports flying a low-level training flight in Northern Scotland with a minimum altitude of 1000ft and he was monitoring the Kirkwall frequency, 118·3MHz, squawking with Modes S and C. The visibility was >10km flying 2000ft below cloud in VMC and the ac was coloured grey with nav, obstruction and anti-collision lights all switched on. In the vicinity of Scapa Flow the heading was changed to 240° and to 1200ft Rad Alt. When steady on heading in straight and level flight at 400kt a helicopter was seen in his 11 o'clock range 1nm on a N'ly course slightly above. He descended to 700ft Rad Alt, and crossed 800m in front of the helicopter and 500ft lower. After the avoiding action a wing rock was initiated to indicate to the helicopter pilot that he had been seen and avoiding action had been taken. The helicopter pilot then reported his ac to Kirkwall so he replied on the frequency with his c/s. He assessed the risk as none.

THE KIRKWALL ADC/APP provided a report but the information given has been fully captured in the ATSI report so the controllers report has not been included for the sake of brevity.

ATSI reports that the EC225 was being provided with a BS by Kirkwall Approach. ATC is not equipped with any surveillance equipment at the unit. The pilot of the EC225 reported his flight details to Kirkwall Tower/Approach at 1031. He was issued with the Kirkwall QNH and informed it would be a BS, with no reported traffic to affect. The pilot read back the pressure and ATC service. Some 6min later at 1039:00 the pilot reported, *"we just made visual contact with a fast moving like a Tornado in front of us and just in case you are aware of his position"*. The controller responded, *"no I had no information on that aircraft"*. After commenting about its position, a call was

received from the pilot of the military traffic, *"The aircraft is on frequency Tornado is call sign XXXX we were visual with the helicopter and sorry for t- for the er close contact we saw you one mile out"*. The pilot of the EC225 responded, *"Okay thanks a lot yeah we did get you on ACAS er at the last minute but er yeah took us by surprise thanks"*.

With Kirkwall having no information about the presence of the Tornado, it is assessed that there are no ATC causal factors to the Airprox.

UKAB Note (1): The Tornado was authorised into LFA14 between 1015-1100. The LFH strongly recommends that aircrew should contact Kirkwall whilst within 15nm radius of Kirkwall airfield owing to the large number of inter-island flights.

UKAB Note (2): The radar recording clearly captures the incident. Prior to the Airprox the EC225 has remained on a generally steady NW'ly track whilst the Tornado has routed 9nm to E of the helicopter tracking 020° before turning 3nm SW of Kirkwall Airport on to a generally W'ly track. At 1038:04 the EC225 is seen 3nm S of Stromness squawking 0040 (N Sea conspicuity code) tracking 340° at FL014 (1520ft QNH 1017mb) with the Tornado in its 0230 position range 4·2nm tracking 265° squawking 3702 (Lossiemouth assigned code) indicating the same level. Both ac continue on converging tracks and by 1038:32 separation has reduced to 1·2nm. The next sweep at 1038.36 shows the Tornado descending through FL013 (1420ft QNH) in the EC225's 2 o'clock range 0·8nm. Four seconds later vertical separation has increased to 200ft whilst lateral separation has decreased to 0·5nm, the EC225 still at FL014 with the Tornado in its 1230 position at FL012. The CPA occurs on the next sweep at 1038:44, the Tornado descending through FL008 having crossed ahead of the EC225 and now in its 1130 position range 0·4nm, 600ft above at FL014. The Tornado then diverges and levels at FL006 with the EC225 in its 7 o'clock range 0·7nm which indicates FL013.

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 thought that the Tornado pilot would have been better informed if he had called Kirkwall for a service. Although he reported listening out on the frequency he was unaware of the EC225's presence, probably because there had been no exchange of RT after the EC225 flight's initial call over 6min prior to the Airprox. With both ac being in Class G airspace, each crew had equal responsibility for maintaining their separation from other traffic through see and avoid, although under the Rules of the Air the Tornado had right of way. The EC225 crew had been aware of the Tornado to the E from their TCAS equipment but became concerned when it approached rapidly on a constant bearing at the same level. Approaching the CPA the crew elected to slow down and climb before they visually acquired the Tornado as it descended before passing 0·5nm ahead and 400ft below. The Tornado crew saw the helicopter at 1nm range, slightly later than ideal but a range thought to be reasonable by a Mil fast-jet experienced Member, and had quickly descended whilst they passed 800m ahead and 500ft lower. Members agreed that the actions taken by both parties had removed the risk of collision but the Tornado crew had flown close enough to cause the EC225 crew concern.

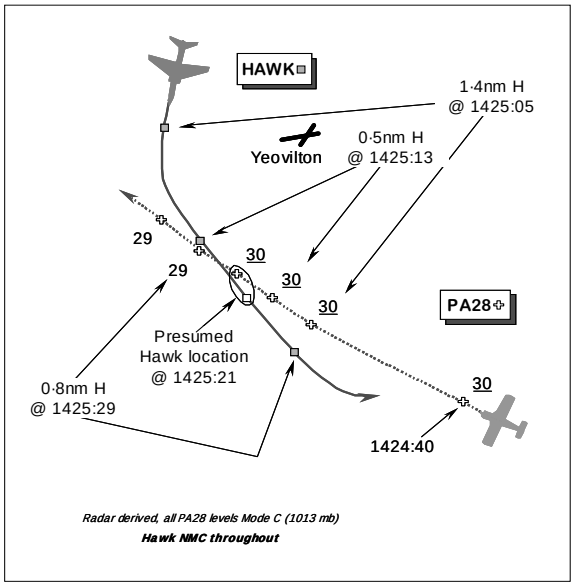
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Tornado crew flew close enough to cause the EC225 crew concern.

Degree of Risk: C.

AIRPROX REPORT NO 2010066

Date/Time:	2 Jun 2010 1425Z	
Position:	5059N 00238W (2nm S of Yeovilton A/D - elev 75ft)	
Airspace:	MATZ/FIR	(Class: G)
	Reporting Ac	*Reporting Ac*
Type:	Hawk T Mk1	PA28
Operator:	HQ Navy	Civ Pvt
Alt/FL:	3200ft	3000ft
	QFE (1020mb)	QNH
Weather:	VMC CLBC	VMC CLOC
Visibility:	15km	>10km
Reported Separation:		
	100ft V/nil H	100ft V
Recorded Separation:		
	Not recorded	



BOTH PILOTS FILED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE HAWK T Mk1 CAPTAIN, the PNF in the rear seat, reports he was conducting a local training sortie from Yeovilton and was operating in the visual cct to RW27 whilst in communication with TOWER on 375·575MHz. SSR was selected to off.

After rolling from a normal 1000ft visual cct the PF requested a climb to HIGH KEY - 4500ft QFE (1020mb) – for a PFL. An initial climb to 3000ft QFE was approved by TOWER before subsequent approval to climb to HIGH KEY. The PF called his position at HIGH KEY – but at only 3800ft QFE, his intentions being for a touch and go and was asked by TOWER to report when at LOW KEY. Whilst approaching LOW KEY his ac was in a LH turn at about 20° AoB through 120° at 180kt descending through approx 3200ft QFE some 800ft below cloud, when the ac captain suddenly saw a white civilian light ac pass 100ft directly beneath his Hawk, flying straight and level heading NW in the opposite direction. No avoiding action was taken because of the late sighting and he assessed the Risk as 'very high'. TOWER was informed on RT about the civilian ac and the controller subsequently advised them that it was a MATZ overflight at 3000ft. He added that because of his banked L turn, coupled with the PA28's direction of approach, the other ac was obscured by his ac's fuselage. Furthermore, the focus of attention in his cockpit was towards the RW.

The Hawk has a black colour-scheme; the red HISLs and nose light were all on.

THE PA28 PILOT reports that he was in transit under VFR from Bournemouth Hurn to Perranporth and was in receipt of a BS from Yeovil Radar – located at Yeovilton – on 127·35MHz and the assigned squawk of A0245 was selected with Mode C on.

Cruising level at an altitude of 3000ft, in VMC with an in-flight visibility of >10km, he had requested MATZ penetration from Yeovilton ATC that had been approved. Heading 295° at 100kt overhead Yeovilton, a Hawk was first seen 500ft away, before passing 100ft port abeam and above his aeroplane flying straight and level; there was no warning from Yeovil Radar. He assessed the Risk of collision as 'medium', but if the Hawk had been on a reciprocal heading, a collision was possible. No avoiding action was taken as the jet passed abeam. Despite being under BS, he stressed he was maintaining 3000ft in accordance with the MATZ penetration approval and opined that Yeovilton should have warned him of the Hawk's actions. The flight was continued but he had to divert to Plymouth due to bad weather at Perranporth. His ac has a white and purple colour-scheme; the HISL and anti-collision beacon were on.

UKAB Note (2): The Yeovilton 1350UTC METAR was: 360/04kt; Vis 9999; Cloud BKN 3000ft; QNH 1022mb BLU NOSIG. The Portland RPS 1400-1500UTC was 1018mb.

YEOVILTON ATC reports that the combined APPROACH/DIRECTOR (APP) had been closed up on console for about 1hr with low to moderate traffic intensity and had switched a Hawk pair to TOWER for a visual join on RW27. Some 5-10mins later the ADC rang to ask for HIGH KEY for a Hawk. After a cursory check of the radar display this was approved and the phrase 'local [TOWER] has High Key' shouted around the ACR. LARS had not passed TI to APP because the PA28 transit ac was correctly displaying a Mode A squawk with Mode C. Furthermore, because it was at 3000ft RPS it was above the MATZ and was not, therefore, technically a 'MATZ crosser'. Neither the LARS controller nor the Radar Supervisor heard the 'local has HIGH KEY' message. A subsequent replay of the Yeovilton ASR and voice recordings at the time of the request for HIGH KEY from the ADC, show the PA28 displayed about 1½nm S of Yeovilton, with Mode C information.

UKAB Note (3): Analysis of the radar recording is inconclusive as the Hawk is only shown as a primary contact (SSR off) for 3 sweeps over the period of the Airprox as it circles the aerodrome. The PA28 is clearly shown on a NW'ly course at 1424:40, maintaining a level cruise at 3000ft (1013mb), which equates to a height of about 3210ft QFE (1020mb) and therefore above the upper limit of the MATZ. First shown at 1425:05, the Hawk is 0·7nm W of Yeovilton in the PA28's 12:30 position at a range of 1·4nm. Horizontal separation between the two ac reduces to 0·5nm as the Hawk draws slightly L, but still ahead of the PA28. At the next sweep the Hawk is not shown at all; by interpolation the CPA, which cannot be determined, is presumed to have occurred with the jet passing just marginally to port as the ac crossed, as reported by the PA28 pilot. After the ac pass each other the Hawk is shown once again in the PA28's 7 o'clock, the latter having descended 100ft to an indicated 2900ft (1013mb).

SATCO YEOVILTON comments that this is a disappointing Airprox from the ATC perspective. Whilst it could be argued that this was a VFR encounter and that the onus was on the Hawk crew to clear their flight path in the Class G airspace above the MATZ before commencing the PFL, there was a procedure which should have given information to them on any traffic likely to conflict with their stated intentions. The ATC investigation has shown that the procedure was followed, but that APP did not notice the PA28 MATZ overflight nor did he get a positive acknowledgement from the LARS controller, who would have then alerted him to the presence of the MATZ overflyer. The question from the ATC perspective is why this information about the PA28 MATZ overflight did not reach the Hawk crew. The APP controller has confirmed he was fully aware of the procedure and he understood the reason why the ADC requests HIGH KEY, this understanding has also been tested amongst the other qualified controllers and all claim to be cognisant of the procedure and any required actions. APP claims he looked at the radar display but did not see the PA28; however, subsequent radar replays clearly show the ac displayed.

It appears there are Human Factors at work here. I suspect that there was an element of under arousal and of over familiarity, in that HIGH KEY is normally given to Local without any comment or restriction. This Airprox and the subsequent Safety Survey were the subject of lengthy discussions during a recent Safety Management Executive meeting. The main recommendation from the survey, that controllers be reminded of the relevance and importance of High Key requests, has been adopted; the other recommendations remain under review. In addition, the ATC Fixed Wing Liaison Officer will be discussing the procedure in detail with Naval Flying Standards Flight (NFSF) to ensure all parties are fully aware of what each other is intending to do and what they should be expecting from each other at all stages of the procedure; it is possible, though less likely, that this incident could have occurred whilst the Hawk was climbing to High Key.

Addendum:

The Safety Survey has now been submitted and whilst it was felt that overall the procedures in place are fit for purpose, it does make several recommendations that will enhance them. Firstly Yeovilton ATCOs will be reminded of the relevance and importance of High Key requests. Secondly when a Hawk is in the visual cct, traffic information will be passed to ADC for any traffic crossing through or over the MATZ at or below 5000ft. Finally all requests for High Key will be passed through the Radar Supervisor who will maintain an overview of both the APP and LARS positions. At RN Air Stations the Radar Supervisor's place of duty is in the ACR where they remain closed up for the whole period of their watch, therefore, this change of procedure will not necessarily read across to other military aerodromes where this isn't the case. Two other minor recommendations were made in the survey but these have not been adopted at this time. NFSF (FW) was consulted as part of the Survey process, as were CFS, RAF Valley and Boscombe Down.

HQ NAVY CMD endorses SATCO's comments. Whilst the circumstances leading to this AIRPROX are disappointing, the Unit should be commended for their thorough actions to mitigate the risk of further occurrences.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, radar video recordings, reports from the air traffic control unit involved and comment from the appropriate operating authority.

The Board commended the ATSU for their laudably frank report. It was plain they had identified a weakness in their local procedures and taken appropriate measures to reduce the potential for a recurrence by modifying their liaison arrangements between the ADC in the VCR and radar controllers in the ACR.

It was apparent that, despite both flights being in receipt of an ATS from controllers at the same unit, the APP controller had not been aware of the presence of the PA28 transiting overhead the aerodrome when he approved TOWER's request for the Hawk to climb for the PFL. The PA28 was evident on the Unit's radar recording and thus APP should have seen it before he approved the request for HIGH KEY and broadcast this in the ACR. Controller Members recognised that APP's message that 'local has HIGH KEY' had not reached the ears of LARS. Although this controller was only providing a BS to the PA28 pilot, LARS would undoubtedly have questioned the climb of a jet to HIGH KEY if he had known about it. Thus, unaware that local aerodrome traffic was going to climb out of the cct area in close proximity to his transit traffic, the non-squawking Hawk not being evident in the radar overhead, an opportunity was lost to forestall this close quarters situation and LARS was unable to warn the PA28 pilot about the Hawk, which the Board agreed was part of the Cause.

Following APP's approval, and without any knowledge of the PA28 transiting through the airspace between HIGH and LOW KEY above the normal cct area in the MATZ either, TOWER approved the Hawk pilot's PFL request. If the ADC had been aware of the PA28's transit from prior co-ordination, or had spotted the ac on the local Aerodrome Traffic Monitor (ATM) beforehand, then he might have been able to provide a warning. As it was the ADC had no knowledge of the PA28 until it was spotted by the Hawk pilot passing beneath his ac. The Board agreed that the Hawk pilot could reasonably have expected TI about ac known by ATC to be passing through the MATZ, or in the vicinity, and this lack of TI to the Hawk pilots was also part of the Cause.

Accepting that ATC should have played their part more fully in averting this Airprox, pilot Members emphasised the importance of lookout, both in the visual aerodrome cct and also whilst transiting Class G airspace. Ultimately, it was a pilots responsibility to 'see and avoid' other ac in this situation, with or without the assistance of ATC. A pilot Member noted that pilots in receipt of a BS should not expect TI as a matter of routine. Their lookout scan should be robust enough to see traffic in time to avoid it and even though the PA28 pilot had requested a MATZ penetration - but here was actually flying just above the MATZ - both ac were operating in Class G airspace where not all ac will be known to ATC. Notwithstanding the reasonable presumption that ATC was providing a service to both pilots and should have told them about each other, each had a duty to lookout and sight the other in time to effect appropriate separation. In this instance the Hawk PNF had not seen the PA28 until it passed 100ft directly beneath his Hawk; no avoiding action was taken because of the late sighting thus, in the Board's view, he was unable to affect the outcome and this was, effectively, a non-sighting. Similarly, the PA28 pilot took no avoiding action as the jet passed 100ft port abeam after first sighting it 500ft away he reports. The radar recording reflects that the PA28 descended marginally after the CPA and that the jet was turning head-on; since the Hawk was also descending on its PFL, it was not flying straight and level as the PA28 pilot thought. Taking all these factors into account, the Board concluded that this Airprox had been caused because TI was not passed to either ac leading to effective non-sightings by the pilots in both ac.

Turning to the inherent Risk, the Board is charged with assessing Airprox on the basis of what actually happened and not what might have occurred if the situation had been slightly different. The Hawk pilot looking from above had assessed the Risk as 'very high' and some Members agreed that with no positive action to ensure separation an actual risk of a collision had existed. Other Members took the view that even though neither pilot had sighted the other's ac in time to take positive action, the PA28 pilot reports that about 100ft of horizontal separation had existed as the Hawk passed abeam. Despite the absence of a radar contact on the Hawk at the moment they passed each other, this seemed to be supported by the radar recording which suggested to Members that although safety margins had been eroded significantly the two ac would not have collided. Following considerable debate, the Board voted to conclude that the safety of the ac involved had been compromised.

AIRPROX REPORT No 2010066

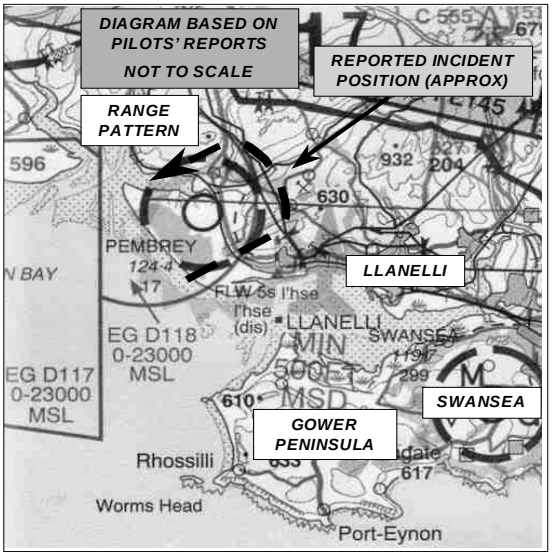
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: TI was not passed to either ac leading to effective non-sightings by the pilots in both ac.

Degree of Risk: B.

AIRPROX REPORT NO 2010067

Date/Time:	10 Jun 2010 1111Z	
Position:	5143N 00414W	(5nm E Pembrey Range)
Airspace:	Lon FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Tornado GR4	PA28
Operator:	HQ AIR (Ops)	Civ Pte
Alt/FL:	1340ft	1500 - 2300ft
	(QFE 1007mb)	(SWANSEA QNH)
Weather:	VMC CLBC	VMC CLBC
Visibility:	15km	unltd
Reported Separation:		
	200ft V/ 0 H	Not Seen
Recorded Separation:		
	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE TORNADO PILOT reports that he was operating as No2 in a pair of Tornado GR4 ac with all lights switched on and squawking 7002 with Mode C. They were operating in Pembrey Range conducting dive attacks on an LOA of 240° to Target 4. While in the left hand base turn for a 5° dive attack, climbing slowly through 1100ft and passing through a heading of 010° at 420kt they nearly collided with a light ac, thought to be a PA28. They first saw the light ac at a distance estimated as 300m; it had a white top surface with a blue underside, was in straight and level flight and was tracking 020° at 1400ft amsl. He took avoiding action by overbanking to 135°, pulling to 4G and they passed about 200ft below and slightly left of the ac. Both crewmembers had been looking into the turn and the PA28 had been obscured by the canopy arch.

He assessed the risk as being very high.

The unit retained the HUD tape but was not able to supply a copy in a form viewable by the UKAB.

THE PA28 PILOT reports that they were first made aware of the Airprox incident 4 months after the event. He was with another pilot and they both fly predominantly in the locality of their home base Swansea. That being the case detail of individual flights is hard to recall, especially if nothing occurs to make any flight particularly noteworthy.

When in the Pembrey area, he always makes a point of not flying below 1500ft, as there is a bird sanctuary on the estuary.

They were flying on the day of the incident and at the reported time. On that day they initially flew at varying heights round the Gower Peninsular [10nm SE of Pembrey] and then turned N over Llanelli [2nm SE of the incident position] to intersect the Towy Valley E of the town of Carmarthen where they turned up the Valley before heading over Ammanford towards Swansea, maintaining a listening watch with Swansea A/G and squawking with Mode C, he thought.

UKAB Note (1): The recording of the Burrington radar intermittently shows the 2 Tornados operating in Pembrey Range squawking 7002 with Mode C. No other ac can be seen in the area during the period.

HQ AIR (OPS) comments that the dimensions of a Danger Area do not protect the aircraft operating there and they will often manoeuvre outside of the protected area. Regardless of the level of workload when flying VFR all crews must maintain a good lookout and continuously clear their flight path, especially in the vicinity of an air weapons range.

UKAB Note (1): There was a 4 month delay in contacting the PA28 pilot, much of which was caused the by inaccurate/incomplete information being passed to the RAC that there were no Swansea based ac in the Pembrey area at the time. When eventually traced, the pilot was on holiday but responded promptly on his return.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, a radar recording, and a report from the Tornado operating authority.

The Board noted that the incident took place in Class G Airspace outside Danger Area D118 where both ac had an equal right to operate. The HQ Air Member briefed the Board that the small lateral dimensions of D118 are appropriate to the weapons cleared for use there; aircraft transiting close by the range are likely to encounter military aircraft joining, departing or conducting weaponry patterns outside the lateral boundary of the Danger Area.

Range weaponry training is a high workload exercise requiring aircrew to concentrate on acquiring and aiming at the target and conducting challenge and response checks. In this case the pilot reported that both crewmembers had been looking into the turn towards the target and had not seen the PA28 until after it emerged from behind the canopy arch. While accepting this, Members observed that the crew still had a responsibility to see and avoid other airspace users.

Members were surprised that the PA28 pilot, being locally based, was apparently not fully aware of the high level of military traffic in Pembrey Airfield/Range and Gower area. Recent experience is that the level of fast jet traffic using the range remains high and there has been a slight increase in the level of rotary wing traffic.

In this incident the PA28 pilot did not see the Tornado and the Tornado crew did not see the PA28 in time to take early avoidance; Members considered this to be the cause of the incident and further, a combination of this and the relative proximity of the two ac had led to a reduction of normally accepted safety standards.

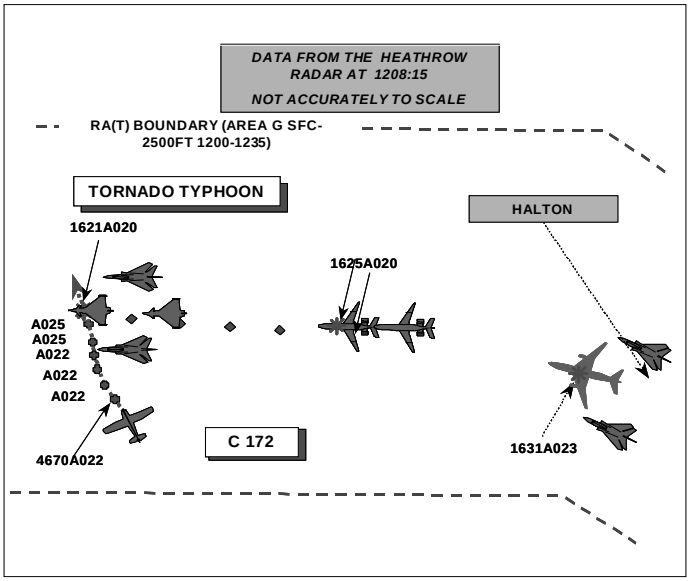
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Non-sighting by the PA28 pilot and a late sighting by the Tornado crew.

Degree of Risk: B.

AIRPROX REPORT NO 2010068

Date/Time:	12 Jun 2010 1208Z (Saturday)	
Position:	5147N 00048W (3m W Halton - elev 370ft)	
Airspace:	Lon FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Tornado F3	Cessna 172
Operator:	HQ AIR (Ops)	Civ Pte
Alt/FL:	2300ft (QNH 1016mb)	2400ft (NK)
Weather:	VMC CLBC	VMC CLBC
Visibility:	>10km	>10km
Reported Separation:	200ft V/100ft H	NR
Recorded Separation:	500ft V/0 H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE TORNADO F3 PILOT reports that he was in close formation with the leader of the lead section (2 Typhoons and 2 Tornado F3s) of a 30 ac extended formation participating in the Queen's Birthday Flypast in receipt of a TS from Luton Radar and squawking with Mode C. They had passed over London a few minutes previously but were still in a high workload situation, flying at 270kt and preparing to split the formation, when Luton Radar warned them of an unknown track at an unverified Mode C level [at an alt of 2200ft] directly ahead of them. At 1207 a formation pilot called the conflicting traffic estimated to be 2nm away just to the left of their track and in a turn. The intruder was a white high-wing light ac, which rolled out on a northerly heading on a direct collision course with his element so he called the formation to descend immediately.

The ac was then identified as a C172, passed slightly above and to the right of the formation (about 200ft above and 100ft to the right), close enough for the WSO to note the ac registration of the ac. If the descent had been made any later he would have to call an emergency formation break out manoeuvre requiring the separation of all the following elements.

The element No3's mission tape shows that at 1205 the formation was in receipt of a TS from Luton Radar and were flying at 2300ft on the QNH of 1016mb when Luton Radar transmitted, *"C/S formation be advised 7000 contact 3 miles southwest of Halton westbound at 2200ft not verified"* and Leader responded, *"Got contact just northeast at 4000ft, looking for the other."* The tape also recorded a sequence of calls starting at 1207 from the traffic to Luton, Luton Radar replying and a change of controller and a garbled transmission stepped on by internal calls from elements. It then records the following sequence: C/S 2 *"Got him left 11.30...garbled",* C/S 4 *"C/S suggest we climb",* Leader *"Let's go down, let's go down".* At 1207:55 *"C/S Lead, just passed Halton. Light aircraft at 2300ft. All elements step down by 300ft"*. At 1208 Luton Radar transmits, *"C172 C/S, First of the flypast below you now" and* the C172 pilot responds *"Roger, apologies for that."*

The incident was reported at the time and he assessed the risk as being high.

THE CESSNA 172 PILOT reports flying a private flight from Denham to Wellesborne squawking 7000 with Mode C and monitoring Luton Radar. He was in the cruise and had just passed over the Chilterns, monitoring closely the activity at Halton, as it had been NOTAM'd as having intense gliding activity, when he heard the Luton controller talking to the formation. The Controller stated that he had an unverified contact 5nm ahead of the formation at 2400ft; the formation leader replied that he had the contact visual. He immediately told the controller that he was on frequency and that he was probably the unverified contact. The controller then requested that he use a Luton squawk, which he did, but as he was changing the code a different controller instructed him to climb immediately to 2500ft.

He panicked a little at an unfamiliar voice and asked briefly to descend as he thought he might climb into cloud but no one acknowledged the call. On regaining his composure he immediately commenced a climb to ~ 2700ft and realised that the cloud was higher than he initially thought. This all took place in a few seconds and he saw the formation pass behind and below him. He assessed the risk as being Medium.

He continued with Luton until he was over Stow in Buckinghamshire when the Luton controller asked if they were still on frequency, which he confirmed and was then given a 7000 squawk was told to change to his en-route frequency.

After landing at Wellesbourne he checked his data and realised that had read the NOTAM but for whatever reason assimilated the restriction times to be local rather than UTC.

He totally accepts responsibility and realises the danger in which he placed the formation and his own ac and apologised for his error, requesting that this be relayed to all the crews involved.

ATSI reports that the incident took place at 1208:15, 18.5nm SW of Luton Airport and 3nm W of Halton. This position was within the RA (T) that was active from 1200 to 1235, extending from the surface to 2500ft amsl. The RA (T) Areas F and G were established to facilitate the passage of the large formation of ac departing the London CTR, routeing NW to Halton and then turning west towards Brize Norton. The formation was in receipt of a TS from LTC Luton INT DIR (Radar) and the reporting Tornado was the formation No2. The C172 was on a VFR flight from Denham to Wellesbourne Mountford.

The Luton weather was reported as:

METAR EGGW 121150Z 03007KT 360V060 9999 FEW026 SCT046 15/09 Q1016=

At 1200:00, as RA (T) Areas F and G became active, radar recording shows the C172 tracking NW, within RA (T) Area F, 12nm SE of Halton. The C172 was displaying a squawk of 7000 with Mode C indicating A2200ft. At 1206:12, as the formation tracked NW, Radar passed TI to it, *"Er (formation) C/S just be advised sir there is li-a seven thousand er about three miles southwest of Halton westbound two thousand two hundred feet but not verified".* The formation leader replied, *"Okay looking I have a contact just northeast at four thousand looking for the southwest contact."* At 1205:28 radar recording shows the C172 tracking NW passing from RA (T) Area F to Area G and indicating A2200ft.

At 1206:46 two aircraft called together. A departure was instructed to climb 5000ft and then Radar asked, *"and the other station calling Luton"*. At 1207:06 the C172 called *"er Luton (C172) C/S a one seven two from Denham er we're just tracking to Westcott I think we're your traffic you were reporting on the seven thousand squawk*", Radar replied *"er squawk four six seven zero please use your full callsign"* and at 1207:14 the pilot replied, *"four six seven zero er (C172) C/S".* At 1207:34 Radar advised, *"(C172) C/S you're into the er restricted airspace I suggest you climb immediately above two thousand five hundred feet there's fast military traffic that's two miles to the east of you proceeding westbound two thousand four hundred feet".* At 1206:50 the C172 pilot replied *"er we'd like to descend if we can …… or er stay at this altitude due cloud".* At 1207:57 the radar recording shows the C172 and formation leader 1.1nm apart and closing. In response to the potential conflict, the formation leader transmitted, "*(formation) C/S just passed Halton west light aircraft two thousand three hundred feet all elements step down by three hundred feet".* At 1208:07 the C172 pilot advised*, "(C172) C/S visual and over two thousand five hundred (C172) C/S".* The radar recording shows the two ac 0.5nm apart and closing, with the C172 indicating A2500ft and the formation leader at A2000ft. Radar then advised, *"(C172) C/S roger the first of the aircraft is gonna pass below you now*" and the C172 pilot makes an apology. At 1208:52 formation is transferred to Brize radar.

While operating within the notified RA (T) Area G, the formation was in receipt of a TS from Luton Radar. The C172 was not in receipt of an ATC service and infringed the restricted airspace. Luton Radar provided the formation with TI on the unknown contact. When the unknown C172 called and was identified, Luton Radar suggested an immediate climb to above 2500ft and passed TI on the lead formation. The formation leader instructed all elements of the formation to step down by 300ft and the C172 commenced a climb to above A2500ft.

CAP493, Manual of Air Traffic Services Part 1 (11/03/10), Section 1, Chapter 11, page 5, paragraph 4, states:

4.1 Definition

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.

4.5 Traffic Information.

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.

4.6.1 Whether traffic information has been passed or not, a pilot is expected to discharge his collision avoidance responsibility without assistance from the controller. If after receiving traffic information, a pilot requires deconfliction advice, an upgrade to Deconfliction Service shall be requested. The controller shall make all reasonable endeavours to accommodate this request as soon as practicable and provide deconfliction advice at the earliest opportunity.

UKAB Note (1): The recording of the Heathrow radar (and others) shows the event clearly, as shown in the diagram above, with the C172 squawking 7000 with Mode C.

HQ AIR (OPS) had nothing to add.

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.

The Board noted that the C172 pilot had checked the NOTAMs but Members were unable to come to any conclusion as to why he had assimilated the RA (T) activation times as being local rather than UTC, which is always used in NOTAMs.

Members commended the C172 pilot for squawking with Mode C, which had allowed Luton Radar to see his ac with its alt displayed and provide timely TI to the formation leader, who in turn initiated avoiding action. Further, the C172 pilot was listening out on the Luton Radar frequency and on hearing the formation, immediately identified himself to the controller who gave him avoiding instructions.

Aided by the TI provided by Luton and information calls from other formation members, the formation leader saw the infringing C172 about 2nm away and descended the formation at the same time as the C172 was being advised to climb above the RA (T) by Luton Radar. The C172 pilot saw the formation about 4-5nm away and the pilot climbed soon after being advised to do so by Luton, further ensuring that there was no risk of collision and that there was 500ft vertical separation when the ac crossed.

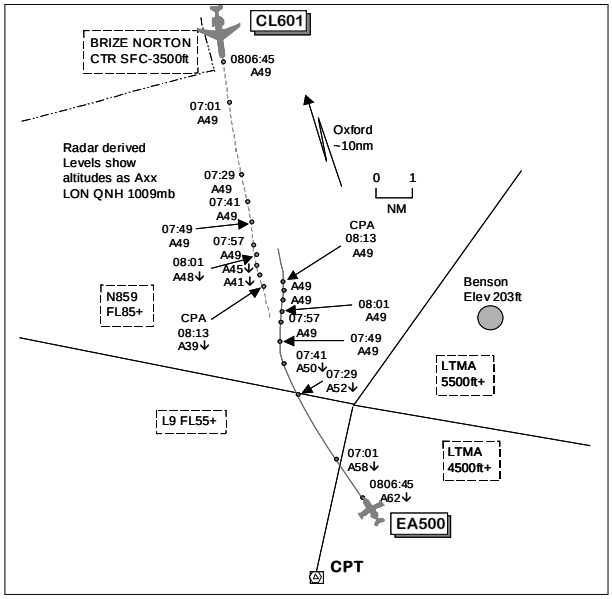
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The C172 pilot infringed the RA (T) and flew into conflict with the military formation.

Degree of Risk: C.

AIRPROX REPORT NO 2010069

Date/Time:	11 Jun 2010 0808Z	
Position:	5138N 00115W (8nm N CPT)	
Airspace:	Oxford AIAA	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	CL601	EA500 Eclipse
Operator:	Civ Comm	Civ Pte
Alt/FL:	FL50	FL50
Weather:	IMC KLWD	IMC KLWD
Visibility:		
Reported Separation:		
	NR	Not seen
Recorded Separation:		
	1000ft V/0·6nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE CL601 PILOT reports outbound from Oxford on a positioning flight to Farnborough IFR. Clearance was obtained from Oxford Tower before take-off for a standard RW01 CPT departure, which involves a climb to FL50 via the Oxford O/H and then a transfer to Brize for a radar service. Wx conditions at the time were OVC 900ft with N'ly wind of 10kt. They departed RW01, made a L turn as usual to route back through the O/H and then direct CPT. Very quickly they entered cloud and became completely IMC with no visibility whatsoever. They contacted Brize and requested and received a TS squawking 3710. As usual they were displaying TCAS at a range of 25nm and they noted a few ac, which were also pointed out by Brize, none of which were deemed to be a threat and the climb was uneventful. About 15nm N of CPT level at FL50 a TCAS contact suddenly appeared ahead of their track at about 10nm; this contact did not drift into the TCAS display from the edge as expected but suddenly appeared as if a transponder had just been switched on. It was his habit to scan the TCAS display very frequently when in such conditions so he saw the exact moment when this contact appeared. He commented to his co-pilot "look at that" and immediately zoomed in the TCAS range to 10nm. He was the PF so already had his finger hovering over the Touch Control Steering (TCS) button ready for a possible RA. At the same time he saw the contact, Brize also gave them a traffic alert about the same new contact, Brize stating it was 5nm ahead and descending through their level. Both he and the co-pilot noted the contact was indicating 100ft above them and showing a down arrow so they believed it would keep descending below their level. He couldn't tell if the contact was coming towards them or flying slowly in the opposite direction but for sure they were getting closer. The other ac levelled at FL50, the same level as them, and was now getting closer, perhaps 2nm or less. He was just about to take avoiding action when they received a TCAS RA commanding a descent, which he duly did. As he initiated a rapid descent he thought he heard Brize try and give them avoiding action but he wasn't sure. They descended to FL35 and observed the other traffic on their display passing O/H before they then climbed to FL50 and continued onto Farnborough without further incident. He was satisfied that they had reacted in a timely and correct manner as per their SOPs. He had a lot of experience flying in uncontrolled airspace (especially around Oxford) and understood the risks involved. With hindsight he thought given their direction of flight they should have been at FL55 (odds +500ft) but FL50 seems to be the standard level used when transiting towards CPT. He assessed that this had been a 'close one' with a serious risk of collision which, thanks to TCAS and training, was avoided.

THE EA500 ECLIPSE PILOT reports that he was not aware of being involved in an Airprox inbound to Oxford IFR. He was contacted 2·5 weeks post incident and could not recall any incident during this flight or that his TCAS generated a TA. Having been told that the other ac had manoeuvred following a TCAS RA he has asked for his TCAS system to be tested without delay. He recalled that he had been in communication with London and then Oxford Approach squawking an assigned code with Modes S and C. He was kept at FL50 after CPT as Oxford Approach stated there was departing traffic. At the time he was flying in cloud and did not see any other ac. As

he approached the OX Approach asked if he could make a descent for the approach so he requested a RH orbit – on the safe side of the holding pattern – to lose height. This was agreed and he was asked he could make the approach from his current position, which he did without a problem. He was fully aware of the heavy traffic situation at Oxford during weekdays and was used to having to hold so working with ATC in the way he did was not unusual. He was also aware of the handover procedures from London to Oxford Approach.

HQ 1Gp BM SM reports that owing to the late notice provided to the ATSU of this Airprox and the availability of unit ATC staffs, this analysis has had to be completed without reference to reports from Brize LARS and the Supervisor. Consequently, this analysis has had to rely solely on the LARS tape transcripts and the CLH radar replay.

The CL601 was pre-noted by Oxford Kidlington Approach (OXF APP) to LARS at 0756:03, outbound from Oxford Kidlington, routing towards Farnborough. OXF APP stated during the pre-note that the CL601 was, "looking for five [FL50] but actually I might stop at four for the moment." No mention was made of any reason for the capped level. At 0803:13 OXF APP contacted LARS stating that they, "may see [traffic] coming from the south at flight level five zero on a zero-six-five-four squawk [the EA500]." There is no formal, or suggested, request made by OXF APP for coordination. At this point, the EA500 is approximately 38nms SE of BZN at FL121 and almost certainly beyond the edge of LARS's surveillance display.

At 0804:20 the CL601 flights called LARS, *"Brize hello it's CL601 c/s climbing flight level four zero er turning towards the overhead of Oxford and then Compton"*. LARS replied, *"CL601 c/s Brize Radar identified climbing flight level five zero what type of service do you require?*" It is unclear whether the controller forgot that the CL601 was initially climbing to FL40 mistakenly saying FL50, or whether they used the wrong word to instruct the flight to climb to FL50. Given that the CL601 crew read back an instruction to climb to FL50 and that this was not challenged by LARS, this suggests that the controller's intention was to issue a climb to FL50. Although OXF APP had stated that Brize "may see [traffic] coming from the south," at the point that LARS issued the climb the radar replay shows that there was no traffic to affect the climb, with the EA500 31·8nm SE of the CL601, descending through FL103. The CL601 subsequently requested and was placed under a TS.

At 0805:48 LARS commenced a pre-note on the CL601 to Farnborough APP, with LARS stating at 0806:22 that they were, *"watching that Oxford one coming off at CPT to see what he's gonna do."* At this point, the EA500 is approximately 17nms SSE of the CL601, descending through FL71. The conversation between Farnborough APP and LARS finished at approximately 0806:38.

At 0806:47 LARS passed TI to the CL601 on the EA500, correctly describing the EA500's position as, *"...left eleven o'clock one-three miles crossing left right, at flight level six zero descending."* This was acknowledged by the CL601 crew. At 0807:29 LARS contacted OXF APP requesting TI on the EA500, receiving the response that the ac was, *"He's descending to join visually zero-one right."* At this point, the EA500 is approximately 7nm away indicating FL52. LARS asked OXF APP to confirm that the EA500 was continuing their descent, to which OXF APP replied, *"Yes."* OXF APP then re-affirmed at 0807:37 that the EA500 is *"He's continuing visually."* Not only will this conversation have enforced in the mind of LARS that the EA500 crew were continuing their descent, thereby easing the confliction, but that they were also operating VFR and would therefore be able to effect their own separation.

Immediately after this conversation at 0807:40 LARS updated the TI to the CL601, *"CL601 c/s previously called contact left eleven o'clock six miles opposite direction at flight level five zero descending"*. The CL601 crew replied that they could see the conflicting traffic on TCAS (0807:47) adding that it appeared level. This prompted LARS to offer, *"CL601 c/s do you require avoiding action?"* However, no reply was received. At this point the EA500 bears approximately 170° at a range of 3·3nm. At around 0807:57 with around 2·3nm separation, the EA500 appears to increase the rate of turn in the slow R turn that they had been following. It is not known whether this was prompted by becoming visual with the CL601, but on the basis that after the CPA the ac appears to resume a more N'ly direction, this appears possible. At 0808:07 (the next sweep of the radar) with around 1·1nm separation, the CL601 has commenced a descent to avoid the EA500.

CAP774 states that under the terms of a TS 'whether traffic information has been passed or not, a pilot is expected to discharge his collision avoidance responsibility without assistance from the controller' and that the responsibility for upgrading the service to a DS rests with the pilot. Despite this, in trying to provide the CL601 with the best service possible, LARS immediately asked the CL601 whether they required avoiding action. The CL601 crew

does not respond immediately to this transmission, responding 24sec later that they were, *"...clear of conflict returning five zero."* Whilst it is unclear from the tape transcript whether the CL601 received a TCAS RA, it is clear from the pilot's response that they manoeuvred vertically to avoid the confliction.

In the absence of a report from LARS the following is supposition; however, from an ATM perspective, this situation presented them with a moral dilemma as to whether to issue avoiding action having offered it, in the absence of agreement from the CL601. Shortly after LARS asked the CL601 whether they required avoiding action, the R turn started by the EA500 begins to become evident on radar, hence the risk of collision is reducing. Under the terms of a TS, LARS had clearly fulfilled their obligations and their training will have underlined the importance of allowing aircrews time to assimilate information and act accordingly. BM SM Spt contends that LARS acted correctly in not issuing further instructions in the absence of a response from the CL601. LARS complied with the terms of the TS, but used sound professional judgement to extend beyond this remit by offering avoiding action and then allowing the crew time to resolve the situation.

Given the traffic picture presented to LARS at the point that the CL601 flight first called, it would be wholly inappropriate to suggest that LARS could have limited the CL601 to FL40, as per the pre-note from OXF APP and as a result of the TI about the EA500, "coming from the south at flight level five zero." Under the terms of a TS, LARS acted appropriately throughout and extended beyond their remit in offering deconfliction advice when they perceived the seriousness of the developing situation.

THE OXFORD APP reports that the incident was not reported to ATC at the time and had no recollection of the incident. After looking at the fpss it appeared that the EA500 was estimating CPT at 0822 and the CL601 departed at 0803. An acceptance level of FL50 was allocated to the EA500 and the CL601 was restricted to FL40 against that ac under a radar service from Brize Radar. Subsequently the EA500 elected to make a visual approach. The APP was not aware at what time or where the incident occurred.

ATSI reports the Airprox occurred at 0808:14, in Class G airspace, 12·6nm SSE of Oxford Airport and 8·5nm NNW of Compton VOR (CPT). The Canadair CL601 was making an IFR positioning flight from Oxford to Farnborough via CPT. The Eclipse EA500 was inbound IFR to Oxford from Pontoise (LFPT) via CPT. Oxford Approach (APP) and Tower (ADC) were operating as separate positions, with both controllers seated at the same desk. Oxford Approach provides an Approach Procedural Control Service without the use of surveillance equipment. A radar service can be provided by RAF Brize Norton LARS, in accordance with a Letter of Agreement (LOA). ATSI had access to RT transcription, radar recordings and written reports. The area surrounding Oxford is a complex traffic environment, with a varied combination of activity in Class G airspace. The unofficial met observation for Oxford was reported as: EGTK 110810Z 36005-10KT 9999 BKN010 OVC012 13/11 1009=

At 0747:55 the CL601 flight called Oxford Tower requesting start for Farnborough in receipt of ATIS information 'C' and QNH 1009mb. The CL601 pilot confirmed that he was happy for a handover straight to Farnborough and at 0756:03 a clearance was requested from Brize LARS, "*(CL601)c/s Challenger C L sixty- two on board……looking for five but actually I might stop at four for the moment he's only going Compton to Farnborough but he wants radar to radar if he can please he'll be off zero one…".* Brize LARS asked if Oxford had a partial airways clearance and Oxford APP confirmed that the ac was not entering CAS, *"No they won't he's not entering. He's going under isn't he radar to radar."* Brize Radar asked for confirmation of the c/s and gave departure instructions, *"(CL601)c/s….is cleared for a standard Compton your stop flight level four zero request five zero with me inbound to Farnborough squawk three seven one zero".* This was read back by APP as, *"three seven one zero one two four decimal two seven five".* Brize responded with, *"that's correct"* and Oxford added, *"Flight level four zero thank you".* This incorrect read back caused APP to assume that the CL601 would maintain FL40. At 0759:55 ADC passed this clearance to the pilot of the *CL601, "Brize clears (CL601)c/s for a standard Compton departure climb flight level four zero squawk three seven one zero onward clearance with Brize Radar one two four decimal two seven five".* The pilot gave a correct read back. The standard Compton departure is not a published procedure and the pilot requested confirmation that the standard departure from RW01 is a L turn through the O/H and then direct to CPT. This was confirmed by ADC.

Simultaneously, at 0802:00, APP advised LARS that the CL601 was about to depart, ADC gave the CL601 flight take-off clearance and LTC (S Coordinator) requested a level for the inbound EA500. FL50 was allocated, with QNH 1009, frequency 125·325MHz and in response the LTC (S Coordinator) confirmed that the EA500 would be released out of FL70. At 0803:13 APP passed details of the inbound EA500 to Brize Radar, *"and just for information you may see coming from the south at flight level five zero on a zero six five four*

squawk…….(EA500)c/s". This was acknowledged with, *"Okay"* and at 0804:01 the outbound CL601 was transferred to Brize LARS. The written report from the pilot of the CL601, states that a TS was requested from Brize Radar.

At 0806:12 the EA500 flight called Oxford APP passing CPT descending to FL50 and the details were passed to Benson Radar, who indicated that they had no traffic to affect. At 0807:02 Oxford APP asked the EA500 pilot if he required the NDB100 for circling or the NDB to RW01. The pilot confirmed that he would prefer circling and requested the visibility. APP passed the latest Wx, *"At the moment we have in excess of ten kilometres with cloud broken at one thousand feet overcast one thousand three hundred feet".* The pilot then requested to join base leg for RW01 and was cleared for a visual join, R base for RW01. CAP493, Manual of Air Traffic Services, Part 1, (11/03/10) – (MATS Pt1), Section 3, Chapter 1, page 12, paragraph 12.1, states: 'To expedite traffic at any time, IFR flights, either within or outside controlled airspace, may be authorised to execute visual approaches if the pilot reports that he can maintain visual reference to the surface and: a) the reported cloud ceiling is at or above the level of the beginning of the initial approach segment; or, b) the pilot reports at any time after commencing the approach procedure that the visibility will permit a visual approach and landing, and a reasonable assurance exists that this can be accomplished.'

APP incorrectly approved the visual approach when the cloud ceiling was below the beginning of the initial approach segment for the instrument procedure. This is not considered to be a factor in the Airprox. APP still assumed that the CL601 is climbing to FL40 and did not coordinate the descent with Brize Radar.

At 0807:29 Brize LARS called, *"Hello it's Brize zero six five four".* Oxford responded, *"He's descending to join visually for zero one right hand".* Brize asked "*He's he's co- continuing his descent is he"* and Oxford answered *"Yes he's going to descend ok".* Brize LARS acknowledged with *"Roger thank you……..".* At 0807:40 APP, in the belief that the CL601 was climbing to FL40, passed incorrect TI to the EA500 flight, *"(EA500)c/s traffic is a Challenger climbing FL40 working Brize he's on a 3710 squawk at this time remain outside the Brize Control Zone".* Under a PS, APP could not pass accurate TI on the CL601 as the flight was no longer in communication with Oxford and the intentions of the CL601 at this point were unknown to APP.

At 0807:57 the radar recording shows both ac maintaining altitude 4900 ft (FL50 based on QNH 1009 and 1mb equal to 27ft) and 2·3nm distance apart, on reciprocal tracks. Shortly afterwards at 0808:13, at the CPA, the radar recording shows the CL601 has descended to altitude 3900ft (FL40), passing 0·6nm W abeam the EA500, indicating altitude 4900ft (FL50).

Brize LARS had initially issued a clearance for the CL601, "...*stop flight level four zero request five zero with me…".* Oxford APP gave a partial read back *"Flight level four zero.."* and mistakenly presumed that the CL601 was climbing to maintain FL40, when in fact the ac had climbed to FL50, whilst in receipt of a service from Brize Radar. MATS P1, Section1, Chapter 10, Page 2, paragraph 4.1, states: 'Great care must be taken when co-ordinating aircraft that are climbing or descending, or are expecting further climb or descent, to ensure that accurate information is given and that any agreement takes account of the actual or proposed flight profile and/or cleared level.'

The poor read back of clearance by Oxford APP combined with the use of non-standard phraseology during the telephone conversations between the two units contributed to a misunderstanding by Oxford APP. MATS Pt1, Appendix E, Page 2, paragraph 1.1, 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.'**

Neither, Oxford APP or Brize LARS requested co-ordination or agreed any course of action that would have resolved the potential conflict earlier. Oxford APP was providing a PS to one flight and Brize LARS a service to the other. Both units were aware of the inbound and outbound IFR ac.

The EA500 was in receipt of a PS from Oxford Approach, who could not effectively achieve the deconfliction minima because the CL601 was no longer participating in the PS. No agreement or plan had been coordinated to ensure that separation would be assured. MATS Pt1, 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.'

TI on the inbound EA500 had been passed to Brize LARS before the CL601 was transferred to them. Oxford APP had an expectation that Brize LARS, with the benefit of surveillance equipment, would be in a position to determine if coordination was required. MATS Pt, Section1, Chapter 10, Page 1, states: 'Traffic information passed between ATS personnel is information about aircraft that is relevant to the provision of an air traffic service. The purpose of traffic information is to enable the recipient to determine whether or not any action is necessary to achieve or maintain the required separation between the subject aircraft. For example, after receiving traffic information, a controller may consider it necessary to issue avoiding action or may request co-ordination with respect to the traffic.'

It is probable that Oxford APP had planned that the outbound would climb to FL40 and offered FL50 to the inbound. An agreed course of action was not coordinated with Brize LARS who gave an initial restriction FL40 but added 'request climb five zero with me'. APP gave an incorrect read back and a misunderstanding occurred. In the complex airspace surrounding Oxford, the added benefit of the radar surveillance, provided by Brize and Benson, serves to enhance the flight safety environment. However the radar provision is subject to these radar units' own operational requirements and controller workload capacity. The procedural nature of the service provided by Oxford requires that inbounds are transferred early. ATSI considers it essential that Oxford MATS Part 2 provides tactical and coordination procedures sufficient to ensure that separation between Oxford IFR ac, inbound and outbound, is not compromised. It is therefore recommended that:

Oxford Airport review tactical and coordination procedures for inbound and outbound IFR ac.

Controllers are reminded of the importance of using correct and precise standard phraseology.

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.

It was clear to the Board that Brize LARS and Oxford APP were providing incompatible ATC services and were working, effectively, in isolation. That said, the two controllers had exchanged information but neither elected to agree formal coordination, which led to assumptions being made and erroneous information being passed. The APP's mindset was that the CL601 was climbing to maintain FL40 and would be separated from the EA500, which had been allocated FL50. However, the CL601 was not working APP and therefore it was not participating traffic; APP would have needed to agree a course of action with LARS to ensure separation. However, there was no requirement for LARS to provide separation to the CL601 whose pilot requested and had been provided with a TS. LARS climbed the CL601 to FL50 and the crew was given TI on the EA500 from APP whilst LARS had watched it approaching CPT from the SE. There was no requirement for LARS to inform Oxford APP about the CL601's climb to FL50, and he did not do so; however, had this information been passed onto Oxford APP, it would have changed APP's SA on the developing situation. LARS passed TI to the CL601 crew when separation was 13nm with the EA500 descending through FL60. LARS then queried with APP the intentions of the EA500 and was told that it was descending to join visually for RW01 with a RH cct. This was an assumption by APP for, in the procedural environment, APP would not have been aware that it had levelled at FL50 unless the controller had asked for the EA500 pilot to report a passing level having been cleared to descend. This erroneous TI had led LARS to believe that the EA500 would be descending out of confliction and this was relayed to the CL601 crew in updated TI with 6nm separation. The CL601 crew queried this 'descent' with LARS, informing the controller that TCAS showed the EA500 had levelled-off at the same level. Pilot Members considered that flying in IMC under a TS was unwise and that a DS should have been requested, either from the outset but certainly when the potential confliction had been highlighted by LARS' TI. LARS were unaware of the CL601's in-flight conditions and had only passed TI, as required under the TS, but had quickly asked whether avoiding action was needed on receiving the updated level information on the EA500. This service 'upgrade' offer was not taken up as the CL601 crew was reacting to the TCAS RA descent.

Simultaneously with this exchange between LARS and the CL601 flight, APP, whose SA had not been updated during any of the exchanges with LARS, was passing erroneous TI to the EA500 pilot stating that the CL601 was climbing to FL40. This information may have led the EA500 pilot to maintain FL50 instead of descending for his approach to Oxford, the pilot being unaware from his TCAS equipment of the CL601's proximity. This anomaly could not be explained considering the geometry of the encounter apart from the TCAS equipment being u/s. Pilot Members wondered what type of approach the EA500 pilot was planning to carry out, having been cleared by APP for a visual join onto R base for RW01 when the cloud ceiling was below the level of the beginning of the initial approach segment for the instrument procedure, contrary to MATS Part 1, whilst the ac in flying IFR in cloud in IMC. Whether there had been some confusion between what the pilot wanted and what APP cleared the flight to do was not clear; however, the onus was on the EA500 pilot to inform APP if he could not comply with the ATC instruction issued.

Members noted the CL601 Capt's observations when he saw the EA500 suddenly appear in confliction on his TCAS display. However, the recorded radar clearly shows a continuous radar return on the EA500 squawking an ORCAM assigned code tracking NW'ly and descending within CAS towards CPT. While the Board could not explain the late appearance of the EA500 on the CL601's TCAS, the CL601 crew had seen the approaching EA500 about the same time that LARS had passed TI, had monitored the deteriorating situation and had taken robust avoiding action following the TCAS RA. Although SOPs had led to frequency/ATSU split seen in this incident, Members agreed that both Brize LARS and Oxford APP had, in isolation, discharged their responsibilities but that this been an entirely avoidable Airprox, where coordination would have nipped the incident in the bud. Removing the ATC aspects from the equation and with both flights flying under IFR in IMC, the Board agreed that this incident had been a conflict within Class G airspace and the robust actions taken by the CL601 crew had quickly removed the risk of collision.

Members endorsed the ATSI recommendations that Oxford Airport review tactical and coordination procedures for inbound and outbound IFR ac and that controllers are reminded of the importance of using correct and precise standard phraseology.

PART C: ASSESSMENT OF CAUSE AND RISK

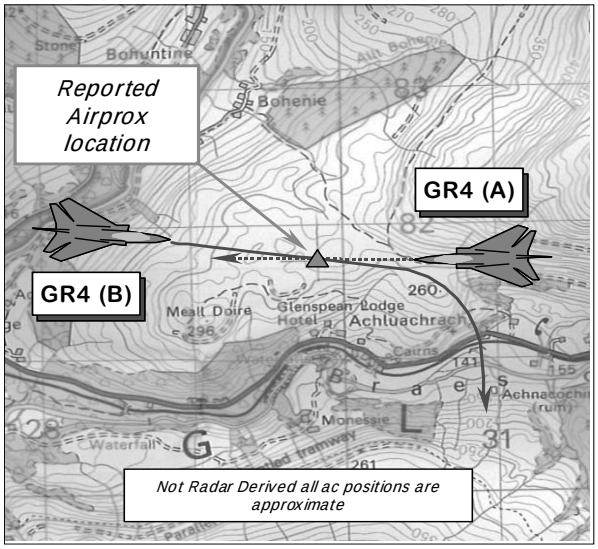
Cause: A conflict between IFR traffic in IMC in Class G airspace.

Degree of Risk: C.

AIRPROX REPORT No 2010070

AIRPROX REPORT NO 2010070

Date/Time:	11 Jun 2010 1324Z	
Position:	5654N 00448W (1½nm E of Roybridge)	
Airspace:	UKDLFS LFA14	(Class: G)
	Reporting Ac	*Reporting Ac*
Type:	Tornado GR4	Tornado GR4
Operator:	HQ Air (Ops)	HQ Air (Ops)
Alt/FL:	320ft agl	250ft RadAlt
Weather:	VMC CLBC	VMC CLBC
Visibility:	50km	40km
Reported Separation:	50ft V/nil H	½nm H
Recorded Separation:	Not recorded	



BOTH PILOTS FILED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PILOT OF TORNADO GR4 (A) reports flying as the wingman of a two-ship formation during a VFR low-level training sortie, whilst monitoring the LFS frequency and so not in receipt of any ATS. A squawk of A7001 was selected with Mode C; neither TCAS nor any other form of CWS is fitted. The ac is camouflaged grey but the HISLs were on.

He was flying in a 1min trail using the Terrain Following Radar (TFR) at 320ft agl in VMC with a BKN layer above at 2000ft and an in-flight visibility of 50km in light drizzle, when a radio call was received from his leader informing them of a jet flying in the opposite direction also at low level, which he acknowledged. Approaching a position about 1½nm E of Roybridge in Glen Spean [Lat & Long of 56°54' N 004°48'W given] heading 270° at 420kt, they immediately saw a single Tornado GR4 in their 1 o'clock about 100m slant range ahead, approximately 50ft below his ac, heading in the opposite direction. Unable to react in time, no avoiding action was possible as the other GR4 passed about 50ft vertically below, flying straight and level, with a 'high' Risk of a collision and cleared into his 7 o'clock. He immediately pulled up to 700ft agl whilst scanning for a possible wingman as the other ac made a hard R turn and departed to the S. No wingman was seen. He stressed that there had been no perceived movement 'in the canopy' before the other ac was sighted. The sortie was continued without further incident.

THE PILOT OF TORNADO GR4 (B) reports he was listening out on the LFS frequency whilst turning E out of the Great Glen at 420kt, whereupon he gained tally on another Tornado GR4 about 3nm ahead and L of the nose. Flying at 250ft RadAlt, he and his navigator began to look for a No2 in the normal positions they expected a wingman to be relative to a lead ac, but none was seen so he positioned his ac to pass the Tornado GR4 they could see [GR4 (A)'s leader] with around ½nm horizontal separation. Waggling his ac's wings to acknowledge to the other ac that he was 'tally' [visual] no response was observed from the GR4 [GR4 (A)'s leader]. About 1min later, as his ac was turning R, another Tornado GR4 [GR4 (A)] was observed in the mirrors crossing astern on a similar track to that of the first. He estimated the separation in the mirrors against this second ac [GR4 (A)] to be about ½ nm and the Risk 'low'.

A squawk of A7001 was selected with Mode C; neither TCAS nor any other form of CWS is fitted. The ac is camouflage grey but the white HISLs were on.

UKAB Note (1): This Airprox occurred outwith recorded radar coverage.

HQ AIR (OPS) comments that this confliction occurred between ac operating independently within the LFS. Both were aware of the likely presence of a wingman but unfortunately were unable to gain visual contact until after they

had passed. TCAS or another form of cooperative CWS would undoubtedly have helped to improve SA and aid an earlier visual acquisition. Work is in progress to equip the Tornado GR4 with a CWS.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac and comment from the appropriate operating authority.

Members agreed that the difficulties of visual acquisition were the crux of this Airprox and the Board was cognisant of the work under way to equip the Tornado GR4 with a CWS. The crew of GR4 (A) was evidently unable to sight GR4 (B) in sufficient time to take avoiding action, despite their leader's warning. Flying in 1nm trail, at a closing speed of 14nm/min allowed little time for a full visual scan after the lead crew's heads-up. The small cross-sectional area of the grey GR4 – head-on – with no crossing motion to draw attention to it evidently masked its presence until the last moment. The pilot's candid comment that he was unable to react in the time led the Board to conclude that this was, effectively, a non-sighting by the crew of GR4 (A).

Despite looking for the other ac the crew of GR4 (B) did not see GR4 (A) before the conflict arose. When the crew of GR4 (B) sighted GR4 (A)'s leader, they recognised the possibility of a wingman being in the vicinity. However, the crew was unable to spot GR4 (A) for the very same reasons as their colleagues in the other Tornado. Unaware of the proximity of the other jet above them until it was first seen in the pilot's rear-view mirrors as they turned, this was once more, effectively, a non-sighting by the crew of GR4 (B).

Having determined the Cause to be, effectively, non-sightings by the crews of both ac, Members considered the inherent Risk. As the pilot of GR4 (B) only saw GR4 (A) in his mirrors afterwards, Members leaned towards the pilot of GR4 (A)s view of the geometry and separation as being potentially more reliable. Without the benefit of a radar recording the geometry could not be independently verified but there was no reason to doubt the veracity of the separation quoted by the pilot of GR4 (A) – that he flew 50ft vertically above GR4 (B). With neither crew involved able to affect the outcome of this very close quarters encounter beforehand, any separation that did exist was purely fortuitous. Therefore, on the basis of the pilots' frank accounts, Members agreed unanimously that there had been a Risk of collision.

PART C: ASSESSMENT OF CAUSE AND RISK

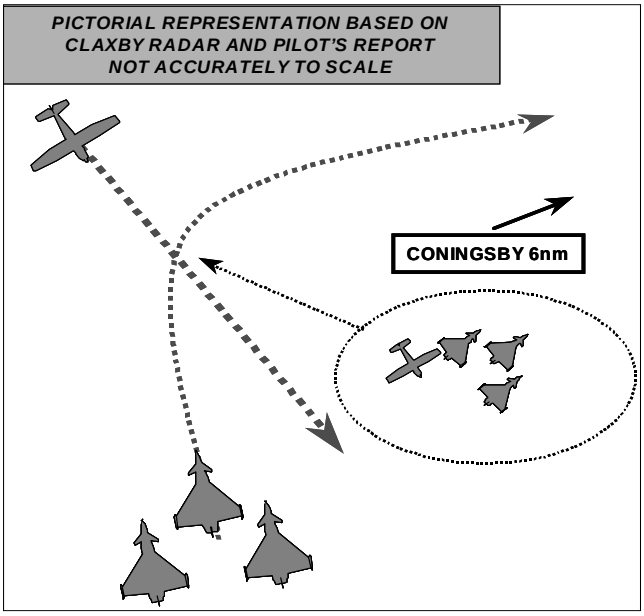
Cause: Effectively, non-sightings by the crews of both ac.

Degree of Risk: A.

AIRPROX REPORT No 2010071

AIRPROX REPORT NO 2010071

Date/Time:	12 Jun 2010 1237Z (Saturday)	
Position:	5306N 00017W	(6nm W Coningsby)
Airspace:	London FIR	(Class: G)
	Reporting Ac	*Reporting Ac*
Type:	Typhoon x 3	C150
Operator:	HQ Air (Ops)	Civ Pte
Alt/FL:	2000ft	2000ft
	(QFE 1024mb)	(RPS)
Weather:	VMC CLBC	VMC CLBC
Visibility:	40km	30km
Reported Separation:		
	0V / 100-200ft H	200ft V/ 100m H
Recorded Separation:		
	100ft V/ 0.2nm H	



BOTH PILOTS FILED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE TYPHOON FORMATION No2 PILOT reports that 3 Typhoons in 'vic' formation were returning to base after participating in the Queen's Birthday Flypast. They were recovering through initials for RW07 at RAF Coningsby and were in receipt of a TS from Coningsby ATC; no TCAS was fitted but the No2 ac had a crew of two. They were 6nm out turning right through 040° at 2000ft QFE and 300kt and had just been handed over from APP to TWR when they had a close encounter with a civilian light ac. The ac approached from their 10 o'clock at the same alt and it was not reported by ATC; it was a white, single-engined type with a red top surface and it passed about 100-200ft behind them. They assessed the risk of collision as being medium to high. At the time the two wingmen were focused on maintaining position and, although a formation is relatively hard to manoeuvre, a turn away was initiated.

THE C150 PILOT reports flying a private flight with a passenger inbound to Cromer from Scampton, in a white and maroon ac without TCAS. The flight was one of a number of part-prepared and filed standard routes. [A map was provided]. On the evening of 9 June 2010, the NOTAMS were printed from the Website for a narrow and direct route. In the event on Saturday [12 Jun], an overland route via Sutton Bridge was flown. The navigation warning for Coningsby was not seen in the NOTAMs; however, in accordance with Scampton SOPs, when airborne Waddington ZONE was contacted for a MATZ penetration and a BS. They were cruising level at 2000ft on the Barnsley RPS and 80kt, squawking as directed with Mode C and when abeam Waddington, a MATZ crossing of Coningsby was also requested; the Controller immediately responded instructing them to squawk 7000 and free-call Coningsby on APP [VHF]. In response to his initial call to Coningsby, the controller requested that they avoid the airfield by 6nm and 10000ft vertically. They therefore turned right onto a Southerly track to comply with this instruction thus remaining at least 6nm from the airfield. A heading change to parallel track was initiated when overhead the E edge of Ruskington [6nm to the W of Coningsby and the Eastern edge of the **Cranwell** MATZ]. Almost immediately a 3-ship formation of military fast jets, later identified as Typhoons, was seen in the upper part of their windscreen very close in their 1 o'clock position and slightly above; he assessed collision angle as being 140°. He immediately pushed the nose down to avoid them and his passenger only caught a glimpse of the nearest ac passing slightly higher as it emerged on their starboard side; he anticipated wake vortex problems but none materialised. Shortly afterwards, the controller advised "nothing further to conflict - contact Marham on 124.15". This request was somewhat surprising as the service is normally provided out to 30nms and 3 calls to Marham indicated they had closed.

He did not report the incident on the radio but did so later and resubmitted when he was made aware that the Typhoons had also reported the incident, assessing the risk as being high.

UKAB Note (1): The recording of the Claxby radar shows the incident clearly. At 1236:00 the C150, squawking 1757 tracks 150° towards the CPA at a level of FL022; meanwhile the Typhoons are 3nm in its 12 o'clock descending through FL030 on a reciprocal track. They continue to close, the C150 still at FL022 and the Typhoons descending until they are displaced by 0.6nm at the same level, when the Typhoons commence a right turn inbound Coningsby passing just ahead of the C150. The CPA is at 1236:33 and the separation is as shown above.

UKAB Note (2): The transcript does not show any inter-formation dialogue regarding the C150 by the Typhoons. The formation transfers from APP to TWR at 1237:22 [after the ac cross at 1236:33]. On transfer to TWR the Typhoon leader first mentions the presence of 'a light aircraft' at 1238:36 but TWR suggests that it was unknown but might in the Cranwell cct. Both APP and TWR frequencies are very busy.

HQ AIR BM Safety Management reports that a formation of 3 Typhoons was returning to RAF Coningsby for a pre-arranged Families' Day. They were under a TS and had been released 'own- navigation' for a timed arrival while a C150 was routeing to the W of RAF Coningsby VFR under a BS.

Although the Typhoons had been released own-navigation to facilitate their timed arrival, they were still subject to a TS. Although another ac squawking 7000 was called to the Typhoons twice, at no time was TI passed on the Cessna. The APP controller was making many liaison calls to TWR regarding the co-ordination of flypasts (as seen from the transcript). Furthermore, the late call of another formation, the subsequent control instructions and the liaison required, increased significantly the controller's workload, distracted him from his primary task and reduced his ability to scan the radar effectively.

Best practice during Families' Days which involve timed arrivals and the pressure that this creates, requires careful consideration of manning in order to provide effective display liaison and coordination.

HQ AIR (OPS) comments that there was a break down in the TS provided to the Typhoon formation which meant the C150 went unreported, unfortunately it was also not detected by the lead pilot's visual lookout scan. ATC Manning levels for events such as Families' Days needs to be carefully considered as the tasks associated with their coordination can easily saturate even the most competent of controllers if personnel numbers are insufficient. They also questioned the wisdom of transiting such a busy piece of airspace under a BS, although the ability of a C150 to avoid a formation of 3 fast jets would be at best limited, which would be better than nothing.

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 were concerned that despite both pilots/crews being in receipt of an ATC service, the Typhoons a TS and the C150 a BS, neither was warned of the impending (head on) conflict with the other ac. Further, the C150 had not intended to route through the area of the airfield approach but was, in effect, asked to do so by Coningsby APP. While taken in isolation the request to remain clear of Coningsby by 6nm (or 10000ft) was reasonable, Members agreed that the controller should have foreseen that this would most likely mean that the C150 would route to the W of the airfield and through the approach lane, as any other alternatives were not viable. Since the C150 called APP on VHF before the Typhoons were on frequency (UHF) there was no way that the Typhoon Leader could determine from RT transmissions that the C150 might be in the area. Following the instruction to 'free-call' Coningsby, the C150 pilot called APP on the published VHF frequency. At that time APP was controlling the Typhoon formation on UHF but simultaneously transmitting on a different VHF frequency (DIR). That being the case the C150 pilot would not have heard any transmissions made by APP to the Typhoons.

In sum neither pilot/crews could have been aware of the presence of the other ac from any ATC action, therefore lookout was the only means available for them to avoid the conflict. While some controller Members reasoned that in Class G airspace 'see and avoid' should take primacy, others said that when in receipt of an ATC service there is an understandable expectation that they will assist.

In addressing the lookout issues Members noted that 2 of the 3 Typhoon handling pilots would have been concentrating largely on closing to and maintaining close formation. Also the leader would have been busy lining up smoothly with the RW centreline and achieving his timed arrival; Members considered, however, that he also had a significant lookout responsibility. The C150 was level at 2000ft and the formation, although initially above and descending, was levelling at 2000ft just before commencing the right turn onto the centreline and, since the C150 should have been visible to them, the leader's non-sighting was part of the Cause. Members debated whether or not the C150 pilot's sighting of and reaction to the formation had been early enough for him to change the ac flightpath. Although there were differing opinions, a majority agreed that it had not and therefore his was an 'effective non' rather than a 'late' sighting.

Since in effect none of the pilots involved saw the opposing ac in time to take effective and timely avoiding action, it was agreed that there had been an erosion of normally acceptable safety standards.

A GA Member commented that the C150 pilot's checking of the NOTAMs pertaining to his flight had not been adequate in that he had done this check too early (3 days before the incident) to reveal any late changes. Also the 'filtering' criteria had not been correct for the route he actually flew, rather than the one he previously planned some time earlier. In other respects his planning and execution had been good and by understanding and applying correctly other procedures he had learned about the increased weekend activity at Coningsby while airborne and adhered to the NOTAMed avoidance.

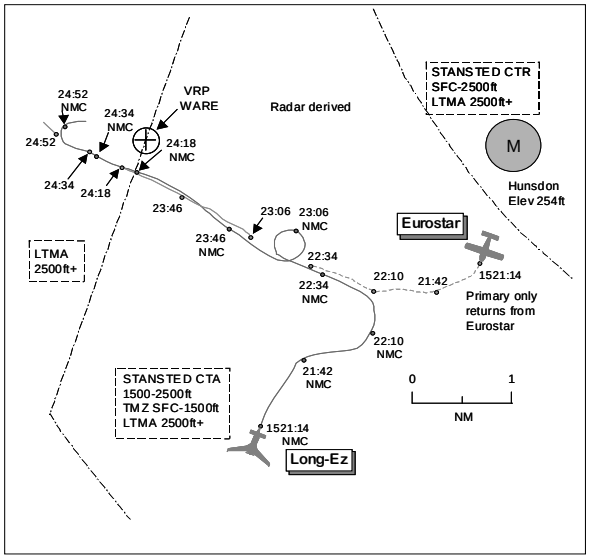
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: In the absence of TI to the Typhoon formation or a warning to the C150 pilot, a non-sighting by the Typhoon Leader and effectively a non-sighting by the C150 pilot.

Degree of Risk: B.

AIRPROX REPORT NO 2010072

Date/Time:	5 Jun 2010 1523Z (Saturday)	
Position:	5148N 00001E (~2nm SE Ware)	
Airspace:	LFIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	EV97 Eurostar	Rutan Long-Ez
Operator:	Civ Pte	Civ Pte
Alt/FL:	850ft (QNH 1018mb)	1250ft
Weather:	VMC CLBC	VMC CAVOK
Visibility:	50km	>10km
Reported Separation:	10ft V/50ft H	500ft V&H
Recorded Separation:	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE EV97 EUROSTAR PILOT reports flying en-route from Hunsdon airfield [8nm SW Stansted] to Bourn VFR with another PPL-holder and listening out on the Microlight common frequency 129·825MHz; no transponder was fitted. The visibility was 50km flying 4000ft below cloud in VMC and the ac was coloured silver; no lighting was mentioned. He departed the cct to the S and on reaching the A414 he turned R onto heading 290° at 80mph. He was cruising at 850ft QNH 1018mb to comply with the TMZ entry/exit rules for non-transponder fitted ac into and out of Hunsdon. After turning onto heading 290° he handed over control to the other pilot for the rest of the flight. Some 3min later he suggested that they could track to the N of Ware, 10° R turn needed, or continue on their present track routeing to the S. The PF elected to continue on track negating the need to turn. Some 15sec later they were overtaken by a very fast white coloured Rutan Long-Ez on their starboard side, about 10ft above and 50ft distant; its speed well over 110mph. The Long-Ez then made a climbing R turn and disappeared behind them. A few minutes later the same ac returned and flew alongside about 100ft away at the same height before it rolled L then R and then did a climbing R turn away, departing to the NE. He thought he might see the ac's registration letters but although he could see the whole underside of the Long-Ez no markings were visible. He was concerned that had they turned when he suggested they would certainly have been hit by this ac. He assessed the risk as high.

THE RUTAN LONG-EZ PILOT reports flying a local sortie from North Weald VFR and monitoring the Farnborough frequency 132·8MHz and Essex Radar on 120·625MHz squawking 7010 [aerodrome traffic pattern conspicuity code] with NMC. The visibility was 10km in CAVOK VMC and the ac was coloured white; no lighting was mentioned. To the W of Stansted CTR whilst under the CTA stub and within the TMZ flying at 1250ft and 125kt he saw an Evektor Eurostar tracking NNW'ly about 3-4km ahead. He believed he recognised this ac as one owned by pilots/CFIs, with whom he had flown, from a local airstrip. He overtook the silver coloured Eurostar to the R and above it, separated by 500ft, and was visual contact with it throughout. He orbited to their R, having slowed down on the first pass to 90kt, he passed the Eurostar again for a second time to their R, again by 500ft or more. He believed there was never a risk of collision but he may have startled the Eurostar pilot as he approached from behind and above. Even if the Eurostar pilot had commenced rapid manoeuvring, his vertical and horizontal separation was sufficient to maintain a good margin of safety between them. He contacted Essex owing to traffic density and because his track took him over Hunsdon and right up to the CTR boundary and was given an assigned squawk 0202 but was not informed of an Airprox being filed; the Eurostar flight was not heard on any of the local frequencies. He opined that given the restrictions within the TMZ flying below 1500ft and the proximity of Luton and Stansted CTRs and with multiple ac and powered paragliders known to operate, this area is very restricted. He is investigating the fitting of a small TCAS system and to upgrade to Mode S to perhaps avoid such incidents from occurring as well as making his presence known to other flights by monitoring microlight frequencies used in the Ware area.

AIRPROX REPORT No 2010072

ATSI comments that the Essex Radar frequency was analysed and the Long-Ez pilot called at 1535:50, just over 12min post Airprox, stating he was on squawk 7010 at 1000ft in the Stansted stub near to Hunsdon inbound to N. Weald. The controller issued a discrete code for identification purposes and then informed the pilot that with only Mode A he should have called for transit of the TMZ. The pilot was then told to squawk 7010 and to contact N. Weald.

UKAB Note (1): The ANO Rules of the Air Regulations 2007 Rule 8 Avoiding aerial collisions Para (2) states, 'An aircraft shall not be flown in such close proximity to other aircraft as to create a danger of collision.' (3) 'Subject to sub-paragraph (7) [not applying to police ac], an aircraft shall not fly in formation unless the commanders of the aircraft have agreed to do so.'

UKAB Note (2): The recorded radar does not capture the CPA as the EV97 Eurostar fades from radar; however, the geometry of the encounter can be verified. At 1521:14 a primary-only return, believed to be the Eurostar, is seen 1·25nm S of Hunsdon tracking 190° whilst the Long-Ez is 2·75nm to its SW, squawking 7010 NMC tracking 030°. The Eurostar then commences a R turn and by 1521:42 is seen tracking W'ly whilst the Long-Ez is turning R onto a track of 080°, separation 1·5nm. At 1522:10 the Long-Ez is seen to be turning L through 350° with the Eurostar in its 11 o'clock range 0·4nm tracking 295°. The Long-Ez then turns onto a similar heading and closes to 0·2nm behind the Eurostar before the Eurostar fades after the radar sweep at 1522:34. Just over 30sec later the Long-Ez is seen turning in an orbit through heading 100° 1·8nm SE of Ware VRP when the Eurostar re-appears on radar tracking 295° 0·4nm to its W. The Long-Ez rolls out onto a similar track to that of the Eurostar and closes to 0·2nm at 1524:18. The Eurostar fades for 3 radar sweeps, re-appearing as a pop-up contact at 1524:34 in the Long-Ez's 12 o'clock range 0·1nm. Thereafter the Eurostar fades again before it appears again at 1524:52 still tracking 295° whilst the Long-Ez is turning through heading 030° just over 0·1nm to its NE. From there the Long-Ez diverges to the NE before tracking SE'ly towards North Weald.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, copy CD of the relevant RT frequencies, radar video recordings and a reports from the appropriate ATC.

It was noted that the Long-Ez pilot did not comply with the requirements for entry into the TMZ. Listening out was of no use; a positive call to either Farnborough or Essex/Stansted was required, as the ac was not fitted with Mode C. However, this element had not contributed to the Airprox. The EV97 pilot was complying with the exemption granted to ac operating to and from Hunsdon. Members expressed concern that the Long-Ez pilot had, on the spur of the moment, elected to carry out a close fly-past of the Eurostar, believing he knew the pilot onboard. An experienced pilot Member opined that making a snap decision in the air without any pre-planning or prior consideration of the potential hazards was poor airmanship and a recipe for unforeseen consequences to fall out of the actions taken. This manoeuvre had undoubtedly startled the Eurostar pilot as the Long-Ez had approached unseen from behind and passed close-by with a faster airspeed. The opportunity was there earlier for the Eurostar pilot to see the Long-Ez, when the ac were approaching each other on opposite direction tracks but, for whatever reason, Long-Ez's initial approach from the SW went unnoticed. Although the Eurostar pilot was concerned about the Lonz-Ez pilot's manoeuvres, Members agreed that the Long-Ez pilot was always in a position to manoeuvre his ac further away should it be necessary, which allowed the Board to conclude that any risk of collision had been effectively removed.

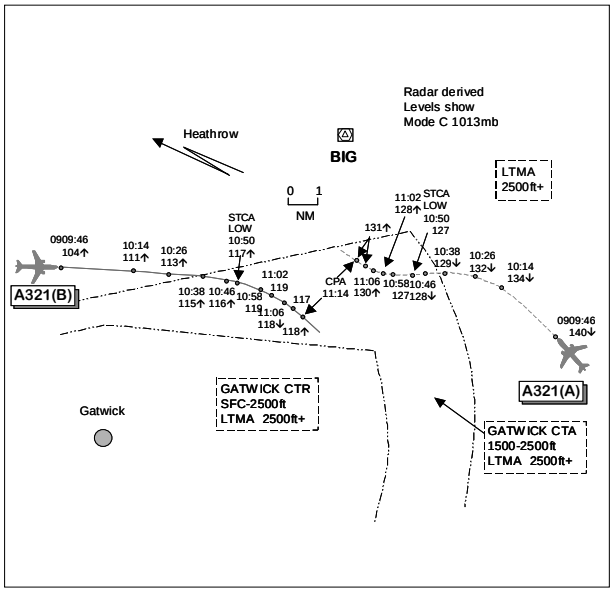
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Long-Ez pilot flew close enough to the Eurostar to cause its pilot concern.

Degree of Risk: C.

AIRPROX REPORT NO 2010073

Date/Time:	28 May 2010 0911Z	
Position:	5114N 00001E (6nm S BIG)	
Airspace:	LTMA	(Class: A)
	Reporting Ac	*Reported Ac*
Type:	A321(A)	A321(B)
Operator:	CAT	CAT
Alt/FL:	↓FL100	FL118↑
Weather:	IMC	VMC CLOC
Visibility:	NR	10nm
Reported Separation:	800ft V/NR H	800ft V/10nm H
Recorded Separation:	1300ft V/2·8nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE A321(A) PILOT reports inbound to Heathrow IFR on radar heading 270° descending to FL100. ATC issued heading of 330° and then a 'stop decent now' before TCAS generated an RA 'climb' demanding >1000fpm. The RA guidance was followed and the other ac passed with an estimated separation of 800ft vertically and he assessed the risk as low.

THE A321(B) PILOT reports outbound from Heathrow IFR heading 085° at 310kt and climbing to FL170. Passing FL118 they received a TCAS TA followed by an RA 'descend' before ATC issued 'stop climb FL120 turn R heading 180°. The RA guidance was followed and the turn was commenced, the other ac was not seen visually but passed ahead and to their L by an estimated 800ft vertically and 10nm laterally. He assessed the risk as none.

THE LTC BIG CONTROLLER reports A321(B) was following a DVR SID and was on a radar heading to pass behind the A321(A), which was inbound to BIG and had already been transferred to Heathrow INT. A321(A) made an unexpected L turn before reaching BIG whilst descending through about FL140; this placed the ac head-on. A321(B) was passing FL114 and was instructed to turn R heading 180° and stop climb FL120. Separation was maintained but the A321(B) crew reported a TCAS RA

THE LTC HEATHROW INT reports the A321(A) flight called on frequency descending to FL80 and was instructed to leave BIG heading 270°. After a few seconds it became apparent that the crew had taken the heading of 270° straight away, which placed the ac in conflict with the climbing A321(B) which was working TMA S. According to the Mode S information A321(B) was going to climb through the A321(A)'s level, so he gave avoiding action to A321(A); no separation was lost. Later when listening to the RT replay neither his UCE, Safety Manager or himself were able to tell whether the A321(A) crew had read back their initial clearance correctly. It wasn't apparent whether he had used an abbreviated read back of 'Biggin 270' or 'heading 270'.

ATSI reports that the Airprox occurred on 28 May 2010 involving A321(A) inbound to the BIG VOR for an arrival at London Heathrow and A321(B) on a DVR4G departure from London Heathrow; the Airprox occurred approximately 3nm S of BIG VOR at FL120.

The A321(A) flight called the LTC BIG frequency (120·525MHz) at 0904:50 (UTC). The BIG sector was manned by a single controller and was bandboxed with the LTC TIMBA sector. A321(A) was passing FL190 for FL150 - in accordance with the Standing Agreement between LAC S17 and the BIG sector - and had approximately 39nm to run until BIG. Replay determined that the ac was 'own navigation', routeing TIGER – BIG, although this was not mentioned on the RT.

AIRPROX REPORT No 2010073

The A321(B) flight, a departure from London Heathrow RW27L, called the BIG frequency at 0906:13, passing altitude 2800ft for altitude 5000ft. The flight was instructed to squawk ident and at 0907:07 BIG instructed A321(B) to, "*climb flight level eight zero*". The flight was then instructed to continue on its present heading, the heading was 140°. At 0908:27 A321(B) was instructed to, "*climb flight level one seven zero*", and this was read-back correctly. Immediately after issuing this instruction BIG cleared A321(A) to descend to FL100, which was also read-back correctly. FL100 was the release level to INT as there was a Category A flight operating at FL090 in the vicinity of OCK and BIG VORs.

At 0909:10 A321(B) was instructed to turn L on to a heading of 095°. The BIG controller's next transmission, at 0909:17, was to A321(A) to, "*contact Heathrow 119·72* [sic]". At this time the ac was passing FL147 in the descent.

ATSI Note (1)- MATS Part 1 Appendix E (Attach) Page 6 para 3.4.5 states 'All six figures shall be used when identifying frequencies irrespective of whether they are 25KHz or 8·33KHz spaced' therefore the correct identification of the frequency for Heathrow INT is 119·725.

Between 0908:48 and 0909:30, whilst A321(B) was below FL100, the ac was observed to climb at a rate of between 3000 and 4000fpm, speed 250kt. However, on passing FL100, the ac's speed began to increase and the rate of climb dropped to between 1000 and 2000fpm.

A321(A) flight called the LTC Heathrow INT (N) frequency (119·725 MHz) at 0909:48 stating, *"A321(A) c/s down flight level one hundred*". INT was operating as both the INT N and INT S controller at the time. INT instructed A321(A) to, *"leave Biggin heading two seven zero degrees*". The A321(A) pilot replied, "*heading two seven zero degrees A321(A) c/s*".

At 0910:14 A321(A) commenced a LH turn into A321(B)'s 12 o'clock at a range of 13·4nm. A321(A) was passing FL134 in the descent and A321(B) was passing FL111 in the climb.

At 0910:16 BIG adjusted the heading of A321(B) R onto a heading of 105°. Immediately after the pilot's read-back, at 0910:25, BIG instructed A321(B) to "*make a right hand turn now heading one eight zero degrees*". After the pilot's read-back BIG instructed A321(B) to, "*stop your climb flight level one two zero*". The pilot read-back the amended level and re-iterated the R turn onto 180°.

At 0910:38 INT instructed A321(A) to "*turn right heading three three zero degrees avoiding action*". This was read-back by the A321(A) pilot. INT then instructed A321(A) to, "*stop descent*". By 0910:46, the ac were on reciprocal tracks, in each other's 12 o'clock at a range of 6·9nm, A321(A) was passing FL128 (SFL100) and A321(B) was passing FL116, SFL still indicating FL170.

Low-Level STCA activated at 0910:49. Mode S downlinked RA messages indicate that A321(B) received a 'Descend' RA at 0910:50 and at 0910:52 A321(A) received a 'Climb' RA.

[UKAB Note (1): The radar recording at 0910:50 shows A321(A) levelling-off at FL127 with A321(B) climbing through FL117 and commencing a R turn.]

At 0910:58 INT transmitted to A321(A): "*just confirm it's avoiding action right heading three three zero degrees*". [UKAB Note (2): Minimum vertical separation of 800ft occurs at this time with the ac 4·6nm apart, with both ac in level flight, A321(A) at FL127 and A321(B) at FL119.]

At 0911:01 High-Level STCA activated. At the same time the R turn of A321(B) began to take effect with the ac at FL119, SFL now indicating FL120. A321(A) was still tracking W and now climbing through FL128, SFL indicating FL100.

[UKAB Note (3): The next sweep at 0911:06 reveals A321(A)'s R turn beginning to take effect with the ac climbing through FL130 with A321(B) descending through FL118. Four seconds later the ac close to 3nm with A321(A) passing FL131 with A321(B) level at FL117. The CPA occurs on the next radar sweep at 0911:14 with the ac passing port to port separated by 2·8nm, A321 (A) showing FL131 with A321(B) climbing through FL118.]

The required minimum separation in LTMA airspace is 3nm horizontally or 1000ft vertically.

At 0911:16 BIG instructed A321(B) to turn L onto a heading of 085°. After reading-back the new heading the pilot stated that, "*we had a TCAS descent now coming back flight level one two zero*". BIG acknowledged this and then cleared the flight for further climb to FL170. Shortly after A321(B) was transferred to LAC S15.

At 0911:17 INT instructed A321(A) to descend to FL100. After reading-back the clearance the pilot informed the LL INT controller, "*we had a TCAS RA*". This was acknowledged by INT and A321(A) was then vectored for an arrival to RW27R.

It is standard practice on the BIGGIN sector to instruct W'ly DVR departures to fly a SE'ly heading to enable climb through ac descending into the BIG VOR hold. The departures can then be turned back towards DVR when separation against the inbound traffic is assured, either by vectoring so the departure goes behind the inbound, or a level change has been achieved.

As A321(B) was passing FL085, with a slow speed and high ROC, BIG turned the departure onto a heading of 095°, which was in front of the arriving A321(A)'s trajectory as it passed through FL148. This was a solution that required the controller to monitor the flight paths of the departure and arrival as separation was not assured until a level change had been achieved.

The pilot of A321(A) incorrectly read back the 'leave BIG heading 270 degrees' instruction issued by INT as 'heading 270' and this was not detected by the controller. A321(A) then turned head-on to A321(B). At this point the high ROC of the departure had decreased as its speed increased.

When both controllers assimilated the ensuing situation neither used the correct form of avoiding action phraseology, which is: "(callsign) Avoiding Action. Turn/Climb immediately (instruction) (traffic information)" – MATS Part 1 Appendix E (Attach) page 11.

A321(B)'s turn onto 180° was not seen to take effect until 36sec after the instruction had been given and A321(A)'s turn took 29sec to take effect. In addition INT instructed A321(A) to, "stop descent" without specifying a level; this is non-standard phraseology.

Both ac received complementary RAs at approximately 0910:50, which was after they had been given turn instructions. However, neither pilot announced on the RT that they were responding to a TCAS RA until the encounter was over.

ATSI Note (2): The UK AIP ENR 1.1.1 Para 5.6.6 states 'A pilot who has deviated from an air traffic control instruction or clearance in response to an RA shall: a) As soon as possible, as permitted by flight deck workload, notify the appropriate ATC unit of the RA, including the direction of any deviation from the current ATC instruction or clearance'.

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.

The Board agreed that the instruction issued to the A321(A) crew by the INT to 'leave BIG heading 270' was explicit but, for whatever reason, the crew misunderstood the instruction and turned immediately onto the heading, which was a part cause of the Airprox. The NATS Advisor informed Members that, although the master RT recording clearly revealed that the A321(A) crew had read back 'heading 270', the desk-side replay was not at all clear, as highlighted by the Heathrow INT post incident; the issue of RT clarity desk-side is being investigated by NATS Engineering. The Board agreed that INT had not assimilated the incorrect read back and this was a second part cause. Members commented that if any received transmission is unclear at the time, the controller should always challenge the crew to repeat it.

Turning to risk, both INT and BIG controllers noticed A321(A)'s early turn and both issued timely and complementary avoiding action R turns to both flights ahead of STCA activating. Although both ac were apparently slow to turn - the ATC turns were given before TCAS RAs were received - the early intervention by ATC was in good time, with both crews following their complementary RAs and the ac turning out of confliction with no loss of separation. Members were disappointed that neither crew made an appropriate RT call advising that they

were responding to TCAS RAs, only informing the respective controllers afterwards. Nevertheless, all of these factors when combined were enough to allow the Board to conclude that any risk of collision had been effectively removed.

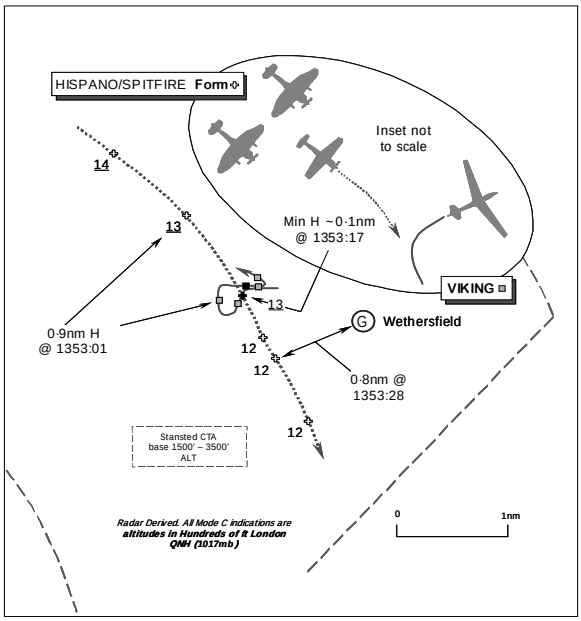
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The A321(A) crew misunderstood their instructions and the LTC Heathrow INT did not assimilate the incorrect read back.

Degree of Risk: C.

AIRPROX REPORT NO 2010074

Date/Time:	19 Jun 2010 1353Z (Saturday)	
Position:	5158N 00031E (Vicinity of Wethersfield Glider Launching Site Cct)	
Airspace:	London FIR	(Class: G)
	Reporting Ac	*Reporting Ac*
Type:	Viking T1 Glider	Hispano Form
Operator:	HQ Air (Trg)	Civ Comm
Alt/FL:	1200ft	1200ft
	QFE	QNH
Weather:	VMC CLBC	VMC CLBC
Visibility:	7km	10km
Reported Separation:		
	200-250ft V/Nil H	400-500ft V
		500-1000m H
Recorded Separation:		
	~0·1nm H	



BOTH PILOTS FILED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE VIKING T Mk1 GLIDER PILOT, a gliding instructor, reports launching from Wethersfield on a basic training sortie in VMC and at the time of the Airprox was teaching a cadet the effects of controls, rolling R into a gentle R turn. Crosswind for RW33 in a LH cct at 50kt, at a height of 1200ft aal, the ac Captain spotted what appeared to be some birds in the distance. Only seconds later, as the glider turned through 050°, it became apparent that the birds were actually a formation of ac heading towards their glider at a range of about 1nm. To avoid confusing the other pilots about their intentions, they continued their right turn with the intention of steadying on 090° to maintain sight of the approaching aircraft while flying away from their flightpath. Unfortunately the formation approached much too quickly to be able to manoeuvre the glider off any collision course and they passed the glider only 10secs after the instructor first spotted them. The formation ac lost some height and passed about 200-250ft beneath the glider with a 'very high' Risk of collision. There was no indication that the pilots of the other ac had attempted to take avoiding action. No RT call was made during the Airprox as the ac Captain's primary concerns were to fly the glider and watch the conflicting ac. However, another pilot from Wethersfield made a call on 129·975Mhz to warn of the formation ac flying through. The student felt nervous after the Airprox and the Captain was also feeling unsettled, so they returned to the airfield as soon as the conflicting formation was clear. The Airprox was reported immediately to the OC, who had also observed the incident from the control caravan.

UKAB Note (1): The UK AIP at ENR 5-5-1-7 promulgates Wetherfield Glider Launching Site as active from Sunrise to Sunset (HJ) on Saturdays. Glider launching by winch may be encountered up to 2000ft above the site elevation of 321ft amsl.

THE HISPANO HA-1112 MIL (BOUCHIN) [LICENCE BUILT MESSERSCHMITT BF109] PILOT reports leading a dissimilar formation of three camouflaged historic fighter ac, which, in addition to his ac, included two Supermarine Spitfires. They were not in receipt of any ATS but a squawk of A7010 was selected with Mode C on.

Departing from Duxford under VFR at 180kt, he was leading the formation around the Stansted CTR. Flying at an altitude of 1200ft beneath a cloud-base of 3000ft there were heavy showers around but he was maintaining VMC and was some 5km clear of cloud with an in-flight visibility of 10km. Turning his formation to fly through the gap between Wethersfield and the Stansted CTR, heading 150° the white glider was seen in a gap above and ahead of the formation at a range of about 1000m. The formation was turned slightly R and descended to increase the separation. Minimum vertical separation was 400-500ft; horizontal separation was 500-1000m as the glider passed to port (E). He assessed there was 'no threat' and the Risk 'none'.

THE VIKING GLIDER PILOT'S unit added that subsequent to the Airprox, Essex Radar and Farnborough Radar were contacted by telephone in an attempt to trace the other ac involved, but it could not be confirmed whether they were in receipt of an ATS from either Unit. Southend ATC confirmed that a formation was routeing from Duxford to the S Coast for an airshow.

One of the formation pilots contacted the VGS to explain that they had to avoid a rain shower near Finchingfield [about 1½nm SSW of Wethersfield] which lead them to fly closer to Wethersfield glider launching site than they had intended. The formation had been aware that the VGS was active and had seen the glider. It was suggested that the Spitfire in the leader's 7 o'clock had moved away from the glider towards the Spitfire in the 5 o'clock position. The operating frequency of Wethersfield was given to the formation pilot so that a call can be made; they will in future avoid the site by a bigger distance.

UKAB Note (2): The Stansted Radar recording displays the track of a glider intermittently that is perceived to be the subject Viking glider, as the Hispano/Spitfire mixed formation leader approaches the vicinity from the NW indicating 1400ft unverified Mode C London QNH (1017mb). The Viking contact manoeuvres in a similar manner to that reported – turning R easterly – and passing ahead of the formation lead from R – L as the latter descends to 1300ft London QNH passing 0·1nm SW of the Viking at a position about 1nm WNW of Wethersfield Glider Launching Site when the Airprox occurred at 1353:17. The formation lead, now indicating 1200ft London QNH, makes a slight alteration of course before passing 0·8nm abeam Wethersfield at the closest point and clearing to the SE.

HQ AIR (TRG) comments that as the formation planned to fly close to the Wethersfield glider launch site it was disappointing that they did not have the Wethersfield operating frequency that would have given them an opportunity to make a call about the formation's weather avoid and enabled information to be exchanged. As the crews involved saw each other with sufficient time prior to the CPA they could formulate their actions to reduce the actual risk of collision. It is worthy of note that a member of the formation contacted the VGS to discuss the incident and explained first hand what they were trying to do. This has enabled those involved to have a better understanding of the occurrence and the formation now has the Wethersfield operating frequency.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, radar video recordings and a report from the appropriate operating authority.

Although momentarily mistaken, it was apparent from the Viking glider pilot's report that she had realized the true situation almost immediately when the 3ac formation was acquired approaching from the NW about 1nm away. The radar recording reflects that this was probably as soon as could reasonably be expected given the glider's right turn and overall geometry of the situation, but it gave the glider pilot little opportunity to manoeuvre away from the historic ac formation. Pilot Members agreed that the decision to stay predictable was a sensible reaction; however, it was stressed that it is often helpful to apply bank in these circumstances to display the largest possible aspect to the approaching pilot and thereby enhance the white glider's conspicuity against the background terrain. Nevertheless, the glider pilot's R turn through 050° onto E had some value as avoiding action and expeditiously displaced the Viking glider away from the formation's flightpath. The Board concluded therefore that, despite the close quarters and limited ability to fly away from the threat, the glider pilot's actions had contributed to resolving the conflict.

Constrained in his ability to manoeuvre by the CAS above and the CTR to the SW, the Hispano HA-1112 formation leader had placed his formation in a difficult situation whilst avoiding rain showers in the vicinity. Whilst the formation had flown closer to Wethersfield Glider Launching Site than the leader might have wished under normal circumstances, it was clear he was entirely cognisant of his formations proximity to the Glider Launching Site and associated flying activity. It is never a good idea to fly close to a glider site where the winch cable provides an additional danger, but the Board agreed that, having spotted the Viking glider 1000m away, the Hispano HA-1112 formation leader took prompt and appropriate action to avoid it, by descending and turning to pass astern. The Board concluded, therefore, that this Airprox was the result of a conflict in the vicinity of Wethersfield Glider Launching Site, resolved by the Hispano HA-1112 formation leader and the Viking glider pilot.

The absence of any Mode C data from the Viking glider prevented determination of the actual vertical separation that obtained here and the pilots' accounts differed somewhat: the Viking pilot estimated it was 200-250ft, whereas

the formation leader suggested it was 400-500ft. It might be that the formation pilots had the better view whilst they descended astern of the Viking glider, as it cleared to port. With the Viking glider in view the formation elements took action to maximise what horizontal separation there was by closing up it would seem; however, the radar recording reflected that the formation leader was somewhat over optimistic about the actual horizontal separation, which measured against his ac, was in the order of 0·1nm – broadly 200yd. Although it might have been a close call, the Board agreed unanimously that the avoiding action taken by the Hispano HA-1112 formation leader, coupled with the Viking glider pilot's predictable flight path ensured that any Risk of a collision was effectively ameliorated.

PART C: ASSESSMENT OF CAUSE AND RISK

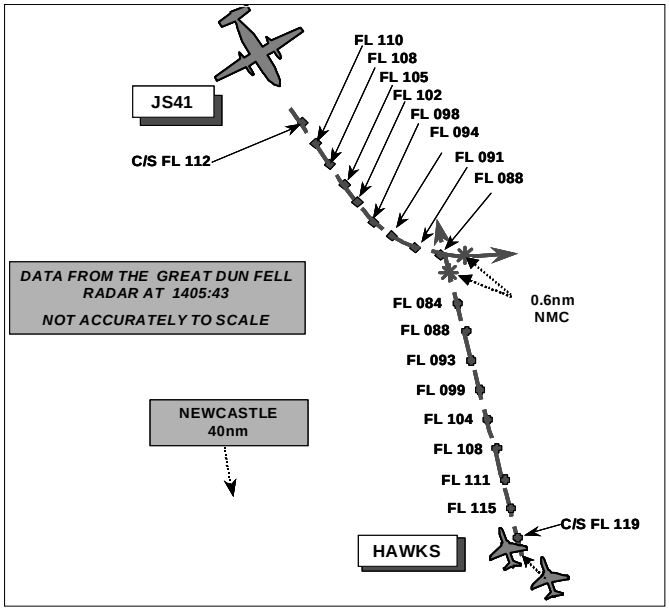
Cause: Conflict in the vicinity of the Wethersfield glider launching site resolved by the pilots involved.

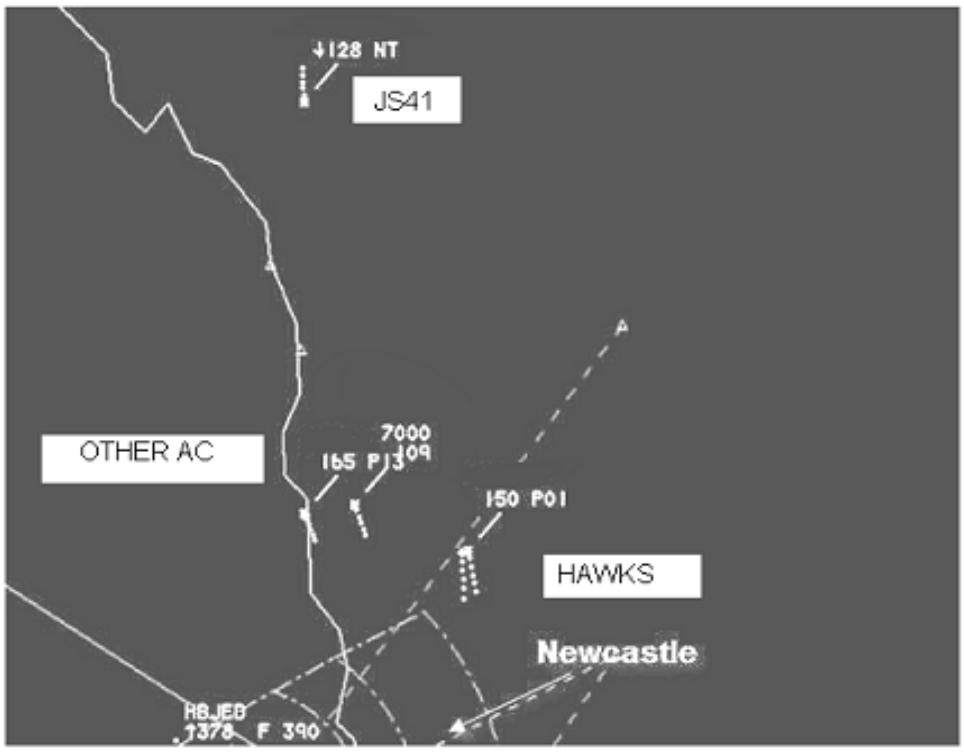
Degree of Risk: C.

AIRPROX REPORT No 2010075

AIRPROX REPORT NO 2010075

Date/Time:	24 Jun 2010 1406Z	
Position:	5545N 00140W (40 NM N Newcastle)	
Airspace:	Scottish FIR (Class: G)	
	Reporting Ac	*Reported Ac*
Type:	Jetstream 41	Hawk X 2
Operator:	CAT	HQ AIR (OPS)
Alt/FL:	FL90	FL90
Weather:	VMC CLAC	VMC CLAC
Visibility:	>50km	40km
Reported Separation:	Not Seen	1000ft V/1nm H
Recorded Separation:	NR V / 0.6nm H (See UKAB Note (1).	





Time 1403:30

UKAB Note (1): On the sweep of the CPA the Mode C of both ac drops out. On the sweep before the CPA (8 sec) the JS41 indicates FL088 and the Hawks FL084 and on the sweep after the JS41 087 and the Hawks FL078. Therefore, by interpolation, the vertical separation was about 600ft.

UKAB Note (2): The incident shows clearly on the recording of the Great Dun Fell Radar, a snapshot at 1430:30 of which is shown above.

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE JETSTREAM 41 PILOT reports flying a scheduled passenger flight under IFR in receipt of a DS from ScACC, squawking as directed with Modes C and S. While about 50nm N of Newcastle flying at 240kt they were given a Southerly heading due to military traffic that had been called by the controller. They then were given 3 or 4 incremental heading changes of 10° to the left and then told to descend from FL100 to FL70 and to expedite decent. A short while later an 'Avoiding Action' instruction was given to turn left onto a heading of 090° and, as they passed through FL90, still in the turn, a descending TCAS RA was issued with 'Adjust Vertical Speed', commanding a reduction in their vertical speed. This was carried out in accordance with company SOPs. They were unable to acquire visually the other ac and exact headings and flight levels could not be recalled as they were concentrating on reacting to the TCAS. He reported the incident on the radio and assessed the risk as being low.

THE HAWK PILOT reports that he was leading a formation of 2 Hawks on a Nav training flight with students in the rear seats, squawking as directed with Mode C. They were transiting N for a planned low level entry at Boulmer and were under TS from ScACC (Mil). TI was passed regarding a JS41 ac in the descent to Newcastle. While in the descent at M0.7, with the No2 closing to close formation for a cloud penetration, they saw the ac about 2nm away at the same level in their 1 o'clock position and clearing to their right. It was visually assessed that there was no collision risk and neither they nor the JS41 took avoiding action as the formation was passing well behind and about 1000ft below the Jetstream. They continued their descent to low level uneventfully and assessed the risk as being none.

The ScACC (Civil) Controller reports that he took over the TAY Sector at about 1400 while the JS41 was receiving a DS so he continued to provide that service to the ac, which was about to descend into Newcastle. Shortly thereafter the pilot requested a descent and he cleared it to FL100, the level he coordinated with Newcastle; simultaneously he passed TI on opposite direction traffic consisting of 3 ac, one at FL165 (squawking 6131), one at FL150 (the Hawks) and one squawking 7000 indicating FL109 (unverified). As the JS41 descended he decided to turn it left to take it away from the unknown ac (squawking 7000 at FL109). At the time the Hawks were behind that ac maintaining FL150 and were working a military console. The Hawks then started to descend and TI was given to the JS41.

The Hawks then became a likely conflict so he passed further TI and cleared the JS41 to a lower level of FL70, which he coordinated with Newcastle, in order to descend it below the Hawks.

Other ac were calling on the frequency and he did not have time to call the military controller, so he was unaware what type of service was being given to the conflicting Hawks. He initially passed a turn of 20° degrees to left and then upgraded it to avoiding action with further left turn on to 090° and again updated the TI. The conflicting traffic was seen to be descending at a greater rate than the JS41 so he stopped the JS41's descent as the conflicting traffic passed below it by about 600ft and passed TI. As the ac passed, the JS41 reported receiving a TCAS vertical RA in the same direction as he had given but the crew was not visual with the Hawks. He then gave the JS41 further TI, turned it back towards Newcastle and transferred it to them.

The ScACC (Mil) Controller reports that he had taken a silent internal handover of a formation of 2 Hawks that were in the descent from FL150 to FL050 on a TS. On his first transmission to the Hawks he passed TI regarding the JS41 at '11 o'clock, 20 miles opposite direction'. He was then called by another ac climbing out of low level in the Rannoch area for a transit back to Lossiemouth. He then returned his attention to the Hawks passing further TI on the JS41 at 'left 11 o'clock 5 miles'. The Mode C of each ac was similar; however, the Hawks were descending quicker than the JS41. He then got a STCA red conflict alert so he called the traffic again; the position was left 11 o'clock 1 mile 200ft above.

At this point he was surprised to see that the JS41 had turned left towards the Hawks and went over the top of them by 200ft [he assessed]. At this point the Hawk leader called visual with the JS41 as it passed overhead and he then asked for a DS, which he gave, but by then the confliction had passed.

TAY sector then called and asked if he was working the Hawks. He replied that he was and he [the ScACC Civ Controller] said that he was reporting the incident. At 1406 the Hawks went en-route.

When he first took over the Hawks he thought that the JS41 would come just within 5nm [before the heading changes] so he called the traffic to them. He assumed that if the JS41 were receiving a DS then TAY would have

called to coordinate it, as normally they are very quick to do so. He always felt that the ac would pass down each other's left hand side until the JS41 turned left towards the Hawks, so the thought of stopping off the Hawk's descent was discarded and, as he had called the traffic several times to the Hawks, he assumed they were happy to continue.

ATSI concurred the most comprehensive NATS report, which is summarised below.

THE NATS REPORT indicates that, although the incident highlighted the limited time both controllers had to initiate co-ordination and that there was a difference in understanding as to the responsibilities for its initiation.

The investigation indicated that, had co-ordination taken place prior to the descent of the Hawks, there would have been an opportunity to prevent the incident, but circumstances prevented that co-ordination from being achieved.

The Military controller's focus for resolution of the incident was based on the fact that he was providing a TS to the Hawks and he was satisfied that, although he might not achieve 5nm, there was sufficient spacing between the ac to allow for TI only if there was a problem, then TAY Sector would initiate co-ordination.

TAY Sector controller was attempting to achieve the DS minima of 5nm or 3000ft against 3 opposite-direction tracks. His initial plan to take the JS41 laterally away from the unknown and conflicting ac squawking 7000 at FL109 and to go underneath the Hawks that [at that time] were maintaining FL150, was sound until the Hawks began to descend at a greater rate than the JS41.

He was then faced with a situational 'fait accompli' since he did not have sufficient spacing (less than 7nm) between the two conflicting ac to achieve 5nm.

In summary, both the civil and military controllers provided their respective services as required. The civil controller (providing a DS) attempted to provide 5nm lateral deconfliction from two [other] tracks and 3000ft vertically from the Hawk formation but their unexpected and rapid descent resulted in that plan being thwarted. The military controller provided a TS as required and was expecting the JS41 to pass to the W of the formation (albeit separated by slightly less than 5nm) and not to turn left towards it. Although there was about 80sec available to react to the changing situation, there would have been time to initiate co-ordination; however, other calls, attempts to resolve the developing conflict and an expectation that the other controller would initiate the co-ordination resulted in no contact being made between the controllers until after the event

No 'Personnel' causal factors were identified in the report since none could be attributed to military controller, civil controller or any of the aircrew involved; they considered that all the action taken by the controllers was both in accordance with the rules and appropriate under the circumstances. The lack of co-ordination, however, was considered to have contributed.

The primary causal factor was considered to be an interaction outside CAS where two controllers attempted to follow their responsibilities but where the circumstances still resulted in an Airprox.

The following systemic factors were identified:

a. Conflicting ac operating different agencies with different services.

b. Hesitation regarding co-ordination or agreement initiation responsibilities [Causal Factor 4]

HQ AIR BM ATM Safety Management reports that NATS report covers many of the issues surrounding this Airprox and HQ Air BM SM accepts the findings with the following observations:

a. Although 'neither party attempted to coordinate the conflicting tracks' is an accurate reflection of what occurred, it was the responsibility of the civil controller, at the time holding executive control of the JS41 under a DS, to achieve separation or co-ordination.

b. Causal Factor 4 gives concern. There should be no doubt that a controller vested with the executive authority to control a flight under a DS should not wait to receive a course of action to resolve any confliction. Regardless of the service being provided to the conflicting traffic [the other ac], that controller must take action to avoid any

confliction by providing avoiding action or initiating coordination. In this case, the late descent of the Hawks reduced the planning time available to the civil controller, which in turn hindered his ability to resolve the situation by avoiding action alone.

The procedural fail-safes within this Airprox worked on this occasion. The Hawks were VFR, receiving a TS and, with the aid of the accurate TI passed by the military controller, became visual with the JS41.

Any move to amend the current guidelines to military controllers regarding burden of responsibility to coordinate traffic could lead to further confusion. If this situation had been reversed, current guidelines would mean the military controller would instinctively seek resolution to the confliction and not assume the other controller would carry out coordination or avoiding action.

HQ AIR (OPS) has no comment since the Hawks were in sight of the JS41 and avoided it by a suitable margin.

UKAB Note (3): A Deconfliction service is defined in CAP 774 as:

A Deconfliction Service is a surveillance based ATS where, in addition to the

provisions of a Basic Service, the controller provides specific surveillance-derived

traffic information and issues headings and/or levels aimed at achieving planned

deconfliction minima, or for positioning and/or sequencing. However, the avoidance

of other traffic is ultimately the pilot's responsibility.

CAP 774 also defines the deconfliction minima as:

The deconfliction minima against unco-ordinated traffic are:

• 5 NM laterally (subject to surveillance capability and regulatory approval); or

• 3,000 ft vertically and, unless the SSR code indicates that the Mode C data has

been verified, the surveillance returns, however presented, should not merge.

(Note: Mode C can be assumed to have been verified if it is associated with a

deemed validated Mode A code. The Mode C data of aircraft transponding

code 0000 is not to be utilised in assessing deconfliction minima).

And states the following caveat:

High controller workload or RTF loading may reduce the ability of the controller to

pass deconfliction advice and the timeliness of such information. Furthermore,

unknown aircraft may make unpredictable or high-energy manoeuvres.

Consequently, it is recognised that controllers cannot guarantee to achieve these

deconfliction minima; however, they shall apply all reasonable endeavours.

AIRPROX REPORT No 2010075

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.

Despite that there was no risk of collision in this incident, Members found determination of the cause challenging as there were differing opinions regarding the responsibilities of controllers when controlling ac in Class G airspace. All agreed however, that both ac had an equal right to operate there and consequently the pilots had an equal and shared responsibility to avoid other ac. Both pilots had elected to make use of an ATC service to assist them with their responsibility. The Hawk leader requested a TS and expected to be informed of other ac to aid his visual acquisition and enable him to take visual avoidance. In providing this service, the ScACC (Mil) controller passed accurate TI, first indicating that the JS41 was descending and flying in the opposite direction to the Hawks and then identifying it had turned L towards the Hawk formation. This enabled the Hawk leader to see the JS41 and assess that there was no requirement for avoidance action. One controller Member was uncertain about when the Hawk Leader first saw the JS41 [the time of the "Tally" call on the transcript and the pilot's report confirm that this was at about 2nm], as it seemed that this had been just as or after it commenced its turn onto E and he regarded this as being late; most other Members, however, disagreed. Despite that the actual separation had been less (in both planes) than the Hawk pilot estimated, it was of the order of 600ft vertically which the HQ Air (Ops) Member reminded the Board, is more than the IFR separation required in some circumstances; Members agreed that it had been reasonable. Although a more positive breakaway might have prevented the (passive) TCAS RA, the HQ Air (Ops) Member also pointed out that the No2 Hawk was still closing into close formation on the Leader and therefore a positive break away was inadvisable. It was pointed out that IFR traffic, whether civil or military, cannot expect any priority over VFR operations when routeing through Class G airspace and the Rules of the Air for Collision Avoidance, i.e. the 'See and Avoid' principle applies.

The JS41 pilot being on an IFR CAT flight, sought greater separation from other ac and so the pilot asked for a DS where the controller attempts to provide 5nm or 3000ft separation from other traffic [UKAB Note (3)]. One civil controller Member opined that in practice this is hard to achieve but another disagreed saying that his unit do it routinely and do not encounter any procedural difficulties. Further, there was disagreement regarding the option to coordinate and an apparent difference between civil and military procedures; a civil controller stated that the coordination responsibility was mutual, but the military viewpoint was that the responsibility lay solely with the controller providing the DS who is required to endeavour to achieve either 5nm or 3000ft deconfliction minima, whereas one providing a TS does not.

Although the radar picture above illustrated that the civil controller was not faced with a straightforward problem to resolve, it seemed to Members that there were 2 potentially viable alternative solutions: namely to turn the JS41 to the W of the approaching 'wall' of ac or to attempt to coordinate directly with the military console controlling the Hawks (displayed on his radar screen). Notwithstanding this however, the Controller's selected course of action would most likely have provided the deconfliction minima he was seeking but this was dependant on the Hawks not descending, which unfortunately they did at 1403:33, immediately after the radar snapshot above. Although the controller had already passed the JS41 pilot a left turn (onto 170°) 16sec before the Hawk's descent was first visible, the 2nd turn (onto 160°) was 25sec after the descent commenced and the 'avoiding action' turn onto 090°' at 1404:57 (the 4th left turn) when the JS41 (FL105) was just 300ft below the Hawks (FL108). A Member observed that after the first turn, which was understandable, the 3 subsequent ones exacerbated the situation rather than resolving it. Another Member opined that the ScACC civil controller might have expected that his military counterpart would anticipate the need to position the JS41 for an approach to Newcastle, since its squawk indicated that to be its destination, and consequently request the Hawk formation to stop its descent. A military controller Member opined that the initial assumption that the Hawks would not descend had been injudicious since military ac frequently descend in that area in order to enter low level near Amble. He also pointed out that there was no onus on the military controller as he was providing a TS [see HQ Air BM SM report], which the TAY Sector controller could have deduced since the Hawks did not turn away. Following the extensive discussion a majority of Members agreed that the actions of the military controller had been appropriate.

Excepting that the civil controller did not achieve the deconfliction minima that he was attempting to, the Hawk formation was not descending when he formulated his plan, which was otherwise workable and, had the Hawks not descended, the JS41 would have been separated [UKAB Note (3)] from both the unknown ac squawking 7000 and the subject Hawks. Members noted that the TAY Sector controller was working traffic in CAS and Class G

Airspace simultaneously. A controller Member opined that, if the controller's workload was such that he did not have the capacity to make a coordination call, then the sector was undermanned and he could have exercised the option to downgrade the Service provided to the JS41. Although it could be argued that he did not modify the plan sufficiently when it became apparent that the Hawks had started to descend, in the 80sec available he was also dealing with another ac and most Members thought his actions understandable. A Member suggested that it might be advantageous if all the ac in the area had been on the same frequency. After the Meeting it was pointed out by HQ Air that, although there is a MoU between Aberdeen and ScACC (Mil) regarding the handling of IFR traffic departing to the S through Class G Airspace, since the JS41 was not an Aberdeen departure and this would not have applied.

In assessing the cause of the incident, Members noted that although the deconfliction minima desired were not achieved (resulting in the JS41 receiving a passive TCAS RA), due to assumptions subsequently revealed to be incorrect, they agreed with the NATS investigation which found that there had been no 'personnel' causal factors. That being the case, Members somewhat reluctantly agreed that this incident had been a conflict between 2 ac operating legitimately in class G airspace.

The FOI Advisor reminded the Board of FOD COM 33/2009 regarding guidance on risk assessments for operators of CAT flights outside CAS.

The Director informed the Board that he would be discussing this incident and other similar ones with the CAA and MoD as part of his periodic review.

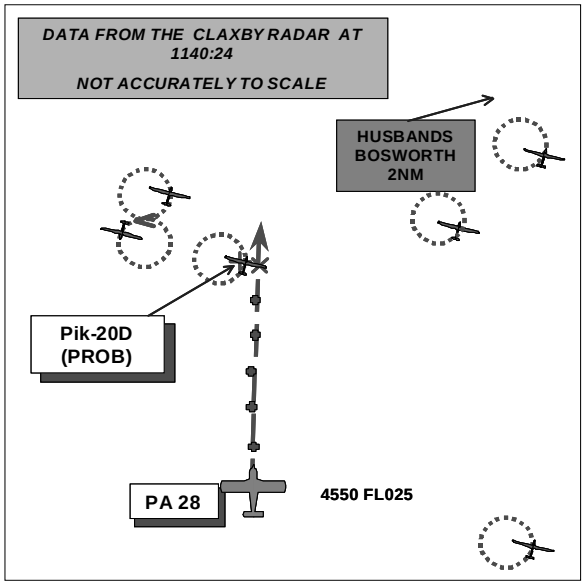
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict in Class G airspace between IFR and VFR traffic.

Degree of Risk: C.

AIRPROX REPORT NO 2010076

Date/Time:	27 Jun 2010 1140Z (Sunday)	
Position:	5224N 00106W (5km SW Husbands Bosworth)	
Airspace:	Lon FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Pik-20D	PA28
Operator:	Civ Club	Civ Pte
Alt/FL:	2100ft (QFE 1000mb)	3000ft (QNH)
Weather:	VMC CLBC	VMC CAVOK
Visibility:	15km	30km
Reported Separation:	25ft V/20m H	500ft V/1nm H
Recorded Separation:	NR V/0.1nm H (See UKAB Note (1)).	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE Pik-20D PILOT reports that he had just released from an aerotow to 2000ft QNH (1000mb) for a competition flight, behind a Chipmunk; he had turned left as is normal procedure and joined another circling glider just to the E of the release position. After one turn of 360° at 50kt and again passing through E, a PA28 (Reg given) passed immediately behind him at 2600ft QNH traveling from S to N. The PA28 was not seen by the reporting pilot, or by the other glider pilot who was 100-150ft below him, until it passed very close to them when they both saw the ac. The white and blue PA28 did not deviate from its Northerly track and he also took no avoiding action as it was too late and the PA28 was then departing to the N. His ac was not ACAS or SSR equipped.

His starboard wing would have obscured the approach of the PA28 as he was in a 40° bank left turn so his glider would have presented a partial plan-form to the PA28. The event was NOTAMed as high glider activity and there were in excess of 40 gliders and up to 7 tug ac in the area. He considered transiting the area at 2500ft i.e. the normal aerotow release height so close to and upwind of the Airfield is not good airmanship.

He reported the Airprox to the Midland Regional Competition Director by Radio, assessing the risk as being high, and continued the flight. He attached a Data-Logger file of his ac and the glider below him.

THE PA28 PILOT reports flying a private VFR flight from Booker to Full Sutton, at the time in receipt of a BS from East Midlands, squawking as directed with Mode C, tracking 360° at 3000ft QNH and 100kt; ACAS was not fitted. While 10nm N of DTY he changed heading 20º to the W to avoid Husbands Bosworth, turned on his landing light and saw several gliders about 5nm ahead. His 2 passengers were both qualified pilots and were also keeping a good lookout and both were satisfied that their new track would keep them clear of Husband Bosworth airfield and all the gliders they saw.

However, just after this they became aware of a glider passing left to right about 200ft below them [probably the reporting ac]. He assessed the risk as being low.

UKAB Note (1): At 1139:00 the PA28 [identified by its elementary Mode S] can be seen on the recording of the Claxby radar, 7nm SSW of Husbands Bosworth, squawking 4550 (East Midlands) tracking N at FL025 (2650ft amsl). There are many primary only contacts to the S and SSE of the airfield but none directly on its track. At 1140:16, 4 primary contacts pop up in the PA28's 1030, the closest at ½ nm and the furthest at 1½ nm. At 1140:24 the PA28 at FL025 passes 0.1nm to the E of a primary contact 4nm SE of Husbands Bosworth, ¼nm SW of the reported position. That being the case there is little doubt that the primary contact is either the reporting ac or the one below.

UKAB Note (2): The gliding competition was NOTAMed as follows:

(H1993/10 NOTAMN

Q) EGTT/QWGLW/IV/M /W /000/055/5226N00103W005

A) EGTT B) 1006190000 C) 1006272359

D) SR-SS

E) MAJOR BRITISH GLIDING ASSOCIATION (BGA) GLIDING COMP INCLUDING X-COUNTRY ROUTES. MAIN ACTIVITY WI 5NM RADIUS PSN 5226N 00103W (HUSBANDS BOSWORTH AD, LEICESTERSHIRE). UP TO 50 GLIDERS AND 8 TUG ACFT MAY PARTICIPATE. GLIDERS WILL NORMALLY OPR BLW THE INVERSION LVL OR BTN THE TOPS OF ANY CU CLOUDS AND 500FT AGL. AFTER LAUNCH MOST ACFT MAY BE CONCENTRATED DOWNWIND OF THE SITE OR ON THE FIRST LEG OF THE X-COUNTRY RTE. FOR INFO ON ROUTES FOR THE DAY AND LIKELY ETD CONTACT GLIDER CONTEST CONTROL TEL 01858 881582. RTF CONTACT 127.575MHZ. AUS 10-06-0066/AS2.

F) SFC G) 5500FT AMSL)

ATSI reports that the Airprox occurred at 1140 in class G airspace, at a reported position of 3nm SW of Husbands Bosworth gliding site. The glider pilot's reported level was 2100ft QNH 1000mb, (2586ft on QNH 1018mb with 1mb equal to 27ft). The forecast Barnsley RPS for the period was 1012mb. The reason the glider pilot used a setting of 1000mb is not known.

The radar recordings for the period show a number of intermittent contacts manoeuvring in the vicinity of Husband Bosworth. The East Midlands Radar (Radar) controller was not aware that an Airprox had occurred; consequently no report was received from him or the unit. ATSI had access to RTF and radar recordings and the pilots' reports.

The East Midlands weather was:

METAR EGNX 271120Z 21006KT 170V250 9999 FEW042 25/12 Q1018=

At 1133:11 the PA28 pilot contacted East Midlands Radar and advised that he was en-route from Wycombe Air Park to Full Sutton in Yorkshire via the DTY and GAM at alt of 2800ft on the QNH of 1018mb and requested a BS and zone transit. Radar advised the PA28 to remain outside CAS until cleared and issued a squawk 4550 with QNH 1018mb. At 1133:59 the radar recording shows the PA28 transponder code change from 7000 to 4550, 38nm SSE of East Midlands Airport and 13.9nm to the SSW of Husband Bosworth gliding site. At 1135:37 Radar advised the PA28 that it was well S and outside the range of East Midlands radar. Radar agreed to provide a BS only, reminding the pilot to remain outside CAS until cleared.

At 1140:21, as the PA28 approached the reported Airprox position, radar recording shows the PA28 to be 3nm SW of Husband Bosworth gliding site, indicating FL025 (2635ft on QNH 1018mb with 1mb equal to 27ft). The recording also shows an unknown ac displaying a 7000 squawk, without mode C, 1.6nm NW of the PA28, tracking W. Also shown in the vicinity is a very weak and intermittent primary contact, but this very soon fades from radar coverage. At this point the Radar controller gives the PA28 clearance to transit the Eastern control area of East Midlands not above altitude 2500ft VFR; the pilot acknowledges the clearance but makes no mention of any other ac in the vicinity. The PA28 then continues N without further incident.

The PA28 was in receipt of a BS from East Midlands Radar. Manual of Air Traffic Services Part 1, Section 1, Chapter 11, page 4, paragraph 3, 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'.

AIRPROX REPORT No 2010076

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, radar recordings, a report from the air traffic controller involved and a report from the appropriate ATC authority.

A GA specialist Board Member suggested that the PA28 pilot had not assimilated the intensity of the gliding traffic in the Husbands Bosworth area when he planned his flight. In his opinion, although planning to avoid a gliding site by 2nm is normally adequate, on the day of a major competition such as this one, it was not. On discussing why the PA28 pilot, although aware of the gliding activity, had not opted to avoid it by a larger margin, Members noted that the NOTAM could have portrayed the situation more clearly (the main glider concentration was upwind of the launch site not downwind as stated in the NOTAM). The gliding Member undertook to discuss standardised NOTAM text for competitions with the BGA.

The gliding Member also informed the Board that the glider pilot would have been in a busy phase of flight just before departing on his cross-country flight and also that while thermalling, his ability to lookout would have been restricted by his angle of bank.

Members pointed out that the PA28 pilot was completely entitled to fly in that area, was aware of the gliding activity at Husbands Bosworth and made provision for it; however, they agreed that it would have been wiser to avoid the area by a larger margin.

That being the case, and since the incident took place in Class G airspace, the Board agreed that both pilots had an equal and shared responsibility to see and avoid other ac. Members agreed that the glider pilot had not seen the PA28 until it was too late to take any avoiding action. When assessing the miss-distance they noted the significant disparity in the two pilots' estimates, one being very close and the other being 1nm. The most likely explanation, they agreed, was that the PA28 had seen another similar glider in the same area rather than the reporting glider. Therefore, since neither pilot had seen the other ac in time to take any avoiding action and the miss-distance had been of the order of that reported by the glider pilot, Members agreed unanimously that there had been a risk that the ac would have collided.

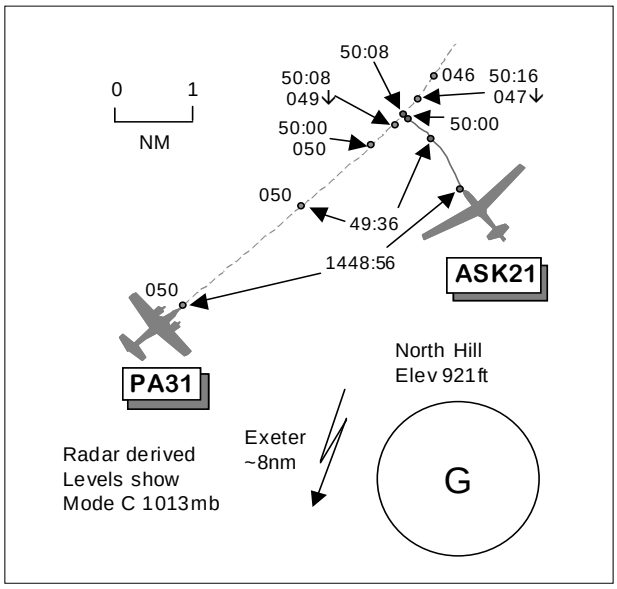
PART C: ASSESSMENT OF CAUSE AND RISK

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

Degree of Risk: A.

AIRPROX REPORT NO 2010077

Date/Time:	27 Jun 2010 1450Z (Sunday)	
Position:	5056N 00318W (5nm NNW North Hill G/S - elev 921ft)	
Airspace:	LFIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	PA31	ASK21
Operator:	Civ Pte	Civ Club
Alt/FL:	FL50	2500-3500ft (QFE)
Weather:	VMC CLBC	VMC CLBC
Visibility:	10km	50km
Reported Separation:	300ft V/Nil H	500ft V/Nil H
Recorded Separation:	<0·1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PA31 PILOT reports flying solo in the cruise at FL50 heading 050° at 180kt and in receipt of a TS from Exeter, squawking an assigned code with Modes S and C. The visibility was 10km flying 1000ft below cloud in VMC and the ac was coloured white/orange with nav and strobe lights switched on. There seemed to be a lot of gliding activity and he was given a series of traffic warnings, the latest being on 2 contacts "12 o'clock and 2 o'clock, height and type unknown". He spotted the one to his R (surprisingly) at the same level and probably about 1nm away but the other was not seen until a white glider appeared in his RH windscreen about 200m away flying straight and level at or slightly above his level. He took immediate avoiding action by diving his ac, estimating he passed 300ft below it, assessing the risk as high. He thought that he saw the second glider late as it was in the blind spot caused by the rib which divides the LH and RH windscreens. Also, his attention dwelt on the glider to the R rather than immediately resuming his scan for the as yet unseen one. He was surprised by the number of gliders that day at that altitude. He thought that the radar service provided by Exeter was of a high standard and believed that the controller repeated the call on the glider that was not seen initially. He offered 2 further observations. First, gliders are hard to spot so it would be safer if they were obliged to carry Mode C transponders so that ATC can better assess the risk of confliction. During this 1hr 15min flight he thought he probably received warnings on about 20-30 ac, most of which he never saw; this 'crying wolf' fosters inattention in the pilots so warned. Second, in order to mitigate blind spots when looking out, he has been reminded by this incident to move his head and not just his eyes in this and similar ac.

THE ASK21 PILOT reports flying dual on a local sortie with another pilot from North Hill and in communication with North Hill Radio on 129·9MHz. The visibility was 50km flying 500-1000ft below cloud in VMC and his ac was coloured white with green nose and wing-tips; no transponder was fitted. Heading 330° at 60kt and between 2500 and 3500ft QFE, he thought, he was flying a steady course between thermals on a good soaring day between North Hill and junction 27 on the M5 motorway (5nm NW of North Hill). They both became suddenly aware that a fast-moving light ac had passed underneath their glider by about 500ft having approached from the Exeter direction. It passed from behind their port wing and they first saw it when it was slightly ahead and to the R of the glider's nose.

ATSI comments that the PA31 was en route from Plymouth to an airstrip near Peterborough. The pilot contacted Exeter Approach just before 1442, already squawking the Exeter squawk 0424. The flight was placed on a TS and the pilot confirmed maintaining FL50. TI was issued some 3min later at 1445:40, *"PA31 c/s unknown in your half past eleven at five miles right to left slow moving no height information"*. The pilot reported looking. Shortly afterwards at 1446:15, further information was issued, *"PA31 c/s they're numerous primary contacts all unknown to me in your one o'clock between eight and thirteen miles probably gliders as North Hill is active*." The PA31 pilot replied, *"Er we're looking PA31 c/s."* At 1448:55 the TI was updated *"PA31 c/s two unknown primaries in your half*

past twelve both at four miles probably gliders no height information"; again the pilot replied, *"Er looking PA31 c/s"*. About 30sec later at 1449:35 the pilot was informed, *"PA31 c/s one of those unknowns is now in your half past twelve at one and a half miles"*. After the pilot reported visual, shortly afterwards, the controller continued, *"...roger in fact there's a pair there"*. Initially, the pilot reported sighting one but not the other before he then reported visual with both, just after 1450:00.

The MATS Part 1, Section 1, Chapter 11, Paragraph 4, defines a TS: '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.'

On this occasion, the Exeter controller passed appropriate and timely TI to the PA31 pilot, about the unknown ac he could observe on his radar display.

UKAB Note (1): Met Office archive data shows the Exeter METAR as 1450Z 27/06/10 EGTE 271450Z 18009KT 140V230 9999 FEW045 25/14 Q1018=

UKAB Note (2): The Burrington radar recording at 1448:56, when Exeter Approach passed updated TI to the PA31 flight, shows the PA31 4·25nm NW of North Hill tracking 050° level at FL50 with a primary return, believed to be the ASK21 glider, in its 1230 position range 3·8nm tracking 330°. The ac continue to close on a line of constant bearing, separation reducing to 1·8nm at 1449:36 when the TI is again updated. At 1450:00, just as the PA31 pilot reports seeing the second glider as well, the ASK21, separation is 0·5nm. Eight seconds later the PA31 is seen commencing a descent passing FL49 with the ASK21 just L of its 12 o'clock range 0·2nm. On the next sweep at 1450:16 the ASK21 is not seen whilst the PA31 is descending through FL47 0·25nm NE of the ASK21's last seen radar return. Taking into account the ASK21's speed up to the Airprox, it is estimated the ac passed within 0·1nm of each other during the incident.

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.

A gliding Member advised that it was not unusual to find gliders at such height, flying below but up to the cloud base, during the summer months. Given that this encounter occurred in Class G airspace, both pilots had equal responsibilities for maintaining their own separation from other ac through see and avoid. Exeter Approach gave good TI to the PA31 pilot, which supplemented his lookout, and it facilitated him acquiring the subject ASK21, albeit late, a part cause of the Airprox. This was possibly owing to the glider initially blending into the cloud backdrop but may have been exacerbated by obscuration by the ac's structure, which the pilot alluded to. Members concurred with the pilot's 'lesson learnt' of moving ones head to mitigate the risk from known blind spots. The ASK21 pilot only saw the PA31, as it appeared just ahead, below and diverging, having already passed, which was effectively a non-sighting, another part of the cause. Although the PA31 pilot's sighting had been late, his prompt and robust action was enough to allow the Board to conclude that the risk of collision had been quickly and effectively removed.

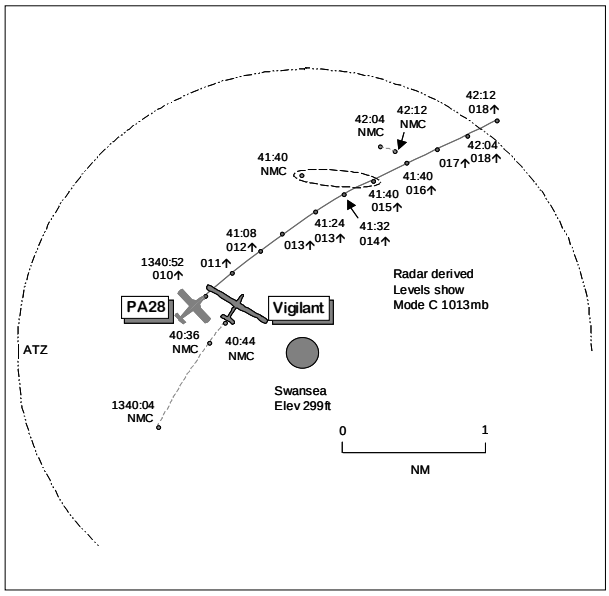
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Effectively a non-sighting by the ASK21 pilot and a late sighting by the PA31 pilot.

Degree of Risk: C.

AIRPROX REPORT NO 2010078

Date/Time:	27 Jun 2010 1342Z (Sunday)	
Position:	5137N 00404W (1nm N Swansea - elev 299ft)	
Airspace:	ATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Vigilant	PA28
Operator:	HQ AIR (Trg)	Civ Club
Alt/FL:	1000ft	↑
	(QFE 1009mb)	(QNH)
Weather:	VMC CLBC	VMC NR
Visibility:	20km	>10km
Reported Separation:		
	100ft V/10m H	NR
Recorded Separation:		
	100ft V/<0·1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE VIGILANT PILOT reports flying a local sortie from Swansea VFR and in receipt of an A/G service from Swansea on 119·7MHz squawking 7000 with Mode C, he thought. The visibility was 20km flying 1000ft below cloud in VMC and the ac was coloured white with day-glo wing panels and HISLs were switched on. He was a Grade 1 pilot conducting a Gliding Induction sortie to the SW of Swansea before he recovered to the cct for RW22 RH cct by joining downwind and making the call "downwind full stop" at the appropriate position. Approaching the mid-point downwind heading 050° at 60kt and 1000ft QFE 1009mb he saw a PA28 which had just taken off make a sharp R turn placing the ac behind and below him. This was observed by the A/G operator who advised the PA28 pilot about the position of his Vigilant; the PA28 pilot confirmed he was visual with the Vigilant. The PA28 passed from R to L behind and then climbed on a parallel course to his W before it made a sharp R turn and flew across and above his ac, estimating it passed within 100ft vertically from the rear LH side of his ac. The PA28 made no course corrections at any time prior to or during this incident which he reported to the A/G operator. The PA28 continued in a NE'ly direction crossing the extended FAT for RW22. He assessed the risk as medium.

THE PA28 PILOT reports flying with another pilot and a passenger and departing Swansea for Shobden VFR and in receipt of a BS, he thought, from Swansea on 119·7MHz, squawking with Modes S and C. The visibility was >10km in VMC and the ac was coloured white/blue; no lighting was mentioned. Having completed his power checks at holding point A [mid point of RW] he was 'cleared' to enter and backtrack RW22 whilst an Autogyro flight behind him called ready for departure from the intersection and subsequently took-off before him. Parachuting was taking place to the S of the field and there was plenty of other traffic. He was cleared for take-off RW22 at his own discretion and at 500ft he turned R and continued to climb. As his heading for Shobden was 048° he turned towards downwind but initially onto 020°, to widen his cct outside that of the Vigilant, before turning onto to 040° at 80kt. He caught up a Motorglider [the subject Vigilant], which had joined downwind to land RW22 and continued to climb through cct height. His co-pilot maintained sight of the Vigilant whilst he concentrated on his lookout ahead. He was advised of other traffic and had 3 ac in sight; the second was another Motorglider late downwind and a third was on final. After he departed the zone to the NE he also saw another ac crossing from R to L, which he avoided by climbing above it. He was contacted by Swansea at Shobden and was told that both ATC and the pilot of a military trainer, presumably one of the Motorgliders, had filed an Airprox. He was unsure which of the ac he saw was flown by the reporting pilot.

THE PA28 CO-PILOT reports that whilst climbing and turning R, having flown clear of the Autogyro, onto a heading parallel to the RW he saw a Motorglider downwind ahead, to the R and above. They continued climbing and remained on heading passing well clear and to the L of the Motorglider, which by this time was abeam the RW22 threshold. He was visual continuously with this ac and with another Motorglider well ahead in the cct, which was by then on final. He recalled that both of these ac were practising ccts. He thought no more of what was to him,

an unremarkable situation. When the ac was established at 2000ft just outside the zone he saw an ac approaching from their R so he warned the pilot and they avoided by climbing above it. He was not sure which of the ac was flown by the reporting pilot but if it was the Motorglider downwind he thought its pilot might not have been aware of their PA28 turning downwind and climbing behind them until they passed above and to their L. He had seen all four ac throughout and had made appropriate information comments to the pilot to aid his decision-making.

THE SWANSEA AIR GROUND OPERATOR reports the PA28 departed RW22 initially following a RH cct pattern. He asked the pilot if he was visual with a Vigilant downwind and he replied that he was. The PA28 continued the climb on the downwind leg and passed over the top and L to R of the Vigilant within close proximity before departing the cct to the NE through the RW22 approach without making radio calls as to his intentions. The subject Vigilant pilot reported that the PA28 had just passed O/H within 100ft and that appropriate reporting action would be taken.

Unofficial Wx observation for Swansea was surface wind 240° 12KT 8Km SCT020 OAT 20°.

ATSI reports that Swansea Airport provides an Air/Ground Communications Service (AGCS), callsign Swansea Radio. CAP452 describes an AGCS. Of particular importance: 'Personnel providing an AGCS shall ensure that they do not pass a message which could be construed to be either an air traffic control instruction or an instruction issued by Flight Information Service Officers (FISOs) for specific situations'.

An ATZ (Class G) is notified in the UK AIP for Swansea. Its dimensions are a circle radius 2nm centred on longest notified runway (04/22). The vertical limits are surface to 2000ft aal (aerodrome elevation 299ft).

When the PA28 flight requested to taxi for departure on its flight to Shobdon, the pilot was informed the runway in use was 22, RH cct, and was passed the QNH, which was all read back correctly. When the ac reached holding point Alpha, the pilot reported ready for departure and requested to backtrack the RW. It was suggested that he should hold position due to traffic on base leg, shortly turning final.

[UKAB Note (1): The RT transcript timings do not correlate with the recorded radar, the RT timing is approximately 1 min ahead of the radar timing.]

Shortly afterwards, at 1334:44, the Vigilant reported at 2700ft, at Oxwich Bay (approximately 4nm SW of the airport), for rejoin. The pilot was advised of the RW and circuit direction and issued with the QFE. He reported, *"…we're coming downwind for Two Two"*.

Once the ac in the circuit was clear of the RW, the pilot of the PA28 was advised there was no known traffic to affect his backtrack. Thereafter, after a departing Autogyro had cleared the departure path, which the pilot of the PA28 had previously reported visual with, he was informed, at 1338:13, *"…no known traffic to affect your departure"*. The PA28 pilot reported departing. Shortly afterwards 2 ac reported RH downwind i.e. a light ac late downwind, followed by another Vigilant, who reported visual with the traffic ahead. At 1339:32, the subject Vigilant reported downwind for Two Two full stop, which was acknowledged.

The AGCS operator, noticing that the PA28 was turning R towards the downwind position, asked the pilot *"…are you visual with the traffic err in just in front of you and right hand side"*. This message referred to the subject Vigilant. The PA28 pilot reported *"…we have the traffic in sight"*. Less than one minute later at 1340:30, the pilot of the Vigilant commented, *"I had an aircraft just go right above me erm on late downwind"*. He estimated the distance from his ac as less than a hundred feet. The AGCS operator later confirmed that he thought that this was consistent with what he had observed. The view from the control room to the RW22 RH cct is unobstructed. It appeared to him that the PA28 passed behind the subject Vigilant and then turned R to pass O/H it in the late downwind position. In view of the very basic service provided by an AGCS, the operator did well to try and establish whether the PA28 was visual with the subject Vigilant downwind.

HQ AIR (TRG) comments that the departure profile flown by the PA28 pilot appeared non-standard to the Vigilant pilot and resulted in the A/G operator advising the PA28 pilot of the Vigilant traffic. The separation distance throughout this incident was controlled by the PA28 pilot and as he had the Vigilant in sight throughout there was little risk that a collision.

UKAB Note (2): The recorded radar does not capture the CPA as the Vigilant fades from radar whilst the PA28 passes the Motorglider in the downwind leg. The radar recording at 1340:04 shows a 7000 squawk NMC, believed to be the subject Vigilant, 1·1nm SW of Swansea tracking 040° before it fades after the sweep at 1340:44 when the ac is 0·6nm WNW of Swansea downwind RH for RW22. On the next sweep at 1340:52 the PA28 is first seen 0·2nm NW of the last radar paint of the Vigilant, the PA28 indicating FL010 (1180ft QNH 1019mb or 880ft QFE 1009mb). The PA28 tracks generally NE'ly and reaches FL013 (1180ft QFE 1009mb) at 1341:24. A single SSR only response is seen at 1341:40, believed to be from the Vigilant, 1·2nm N of Swansea with the PA28 0·5nm to its E climbing through FL015 (1380ft QFE). Thereafter the PA28 tracks 065° and is about to leave the ATZ at 1342:04 climbing through FL018 (1680ft QFE) 1·9nm NE of Swansea. At the same time the Vigilant reappears 0·6nm to its W tracking 120° on base leg RW22.

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/Ground operator involved and reports from the appropriate ATC authorities.

The Board discussed whether it would have been possible for either of the pilots on board the PA28 to have maintained continuous visual contact with the Vigilant during their 'climb-through' on the downwind leg. The radar recording indicates that at some point the Vigilant would have probably disappeared under the PA28 as they apparently crossed over it tracking NE'ly, the Mode C data indicating the ac was climbing through cct height just to the NW of the aerodrome. That said, the majority of the Members accepted the PA28 pilots' perspective, believing that although the ac passed closer than ideal - a wider margin would have been better - the PA28 pilot had been content with the chosen separation distance. However this close passage had caused concern to the Vigilant pilot prompting him to file an Airprox report. Notwithstanding the 'miss distance' reported by the Vigilant pilot and A/G operator, the Board believed that, on the balance of probability, the visual contact maintained by the pilots on board the PA28 effectively removed any risk of collision.

PART C: ASSESSMENT OF CAUSE AND RISK

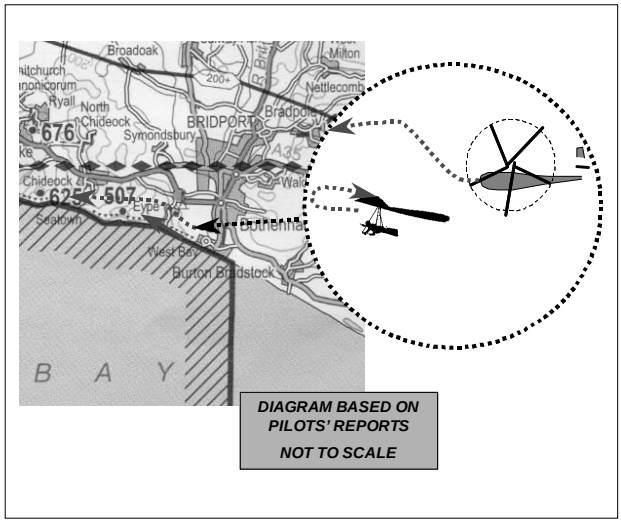
Cause: The PA28 pilot flew close enough to cause the Vigilant pilot concern.

Degree of Risk: C.

AIRPROX REPORT No 2010079

AIRPROX REPORT NO 2010079

Date/Time:	22 Jun 2010 1310Z	
Position:	5043N 00247W (BRIDPORT)	
Airspace:	Lon FIR	(Class: G)
	Reporting Ac	*Reporting Ac*
Type:	Paraglider	Merlin
Operator:	Civ Pte	HQ JHC
Alt/FL:	400ft (N/K)	800ft- (Rad Alt)
Weather:	VMC CAVOK	VMC CAVOK
Visibility:	15nm	>10km
Reported Separation:	NK	300ft V/ 1nm H
Recorded Separation:		



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PARAGLIDER PILOT reports flying a brightly coloured paraglider with no lights, radio or SSR, cliff-soaring along the S Dorset Coast near Bridport at about 400ft amsl and at 20kt. There were other paragliders in the area. A dark coloured helicopter appeared from his blind area, behind and above. The helicopter may well have judged his rotor downwash would pass well inland of these paragliders but that day the wind strength he experienced above Thornecombe Beacon some 15min earlier was weak and only just significant enough to allow him to reach a maximum height of 600ft (around 70ft above the beacon). The helicopter pilot took some avoiding action but then climbed above several other paragliders and continued in a Westerly direction immediately above the paragliders. He assessed the risk as being Medium and provided a photograph of the event.

He considers that pilots should be advised to avoid paragliders a wide margin downwind and not fly above them where they cannot be seen.

Later on the same day a Lynx helicopter travelling along the coast eastwards saw the paraglider activity and diverted his track to pass well inland, before returning to the cliffs having safely passed them.

THE MERLIN PILOT reports conducting a training flight in a dark green ac with strobes and nav lights switched on. The event occurred during a low level transit to Bodmin Moor in an area where the flight was authorised to 50ft msd in LFA 2. However in that area the Capt elected to maintain 500-1000ft msd in the vicinity of the coast, due to potential bird activity and the high number of built up areas. In the lead up to the event the ac was at 800ft agl and tracking West at 140kt. The paragliding activity was spotted at a distance of about 1.5nm so the Captain elected to climb immediately to well above 1000ft agl and route North (downwind) of the activity. At all times the crew of 5 maintained 'eyes out' and were confident that more than adequate separation was maintained throughout.

The event was not discussed further, as the crew did not consider it to be an Airprox.

UKAB Note (1): The incident took place below the base of recorded radar cover.

UKAB Note (2): The photographs provided show the weather to be CAVOK and the Merlin to be an estimated 250m N of the cliff-line.

UKAB Note (3): The incident took place just on the boundary of DGD012, which was active at the time up to 3000ft. Plymouth Mill provides a DACS but they have no record of any contact with the Paraglider(s). It is understood that it is common for paragliders to operate on the cliff-line in that area and the RN accepts this to be outwith the Danger Area.

HQ JHC comments that it appears that the Merlin pilot was visual with the paragliding activity in sufficient time to take appropriate avoiding action but that it was not deemed adequate by the reporting paraglider. Conversely, the (unverified) avoiding action of the Lynx helicopter was more to the satisfaction of the reporting paraglider. It may be that the size of each helicopter may have influenced the perception of the paraglider. The apparent discrepancy between the actions of the two helicopter pilots may be attributable to a difference in each (helicopter) pilot's perception of the distance required to avoid disturbing the paragliding activity. In both cases there appears to be a low risk of collision.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac and a report from the Merlin operating authority.

The Board noted that paraglider sites are not promulgated on Military Low Flying Charts since paragliding activity can be encountered at almost any suitable hill or cliff location, depending on the weather and wind conditions. This site, like other similar cliff locations, is a location favoured by paragliders when there is an onshore breeze since it generates good 'lift'. Although in this instance, as witnessed by the photograph provided by the paraglider pilot, the Merlin was far enough away (vertically and probably horizontally) for there to be only a minimal risk of the paraglider experiencing any noticeable downwash or wake turbulence, being a large helicopter it was nevertheless close enough to cause the paraglider pilot concern.

PART C: ASSESSMENT OF CAUSE AND RISK

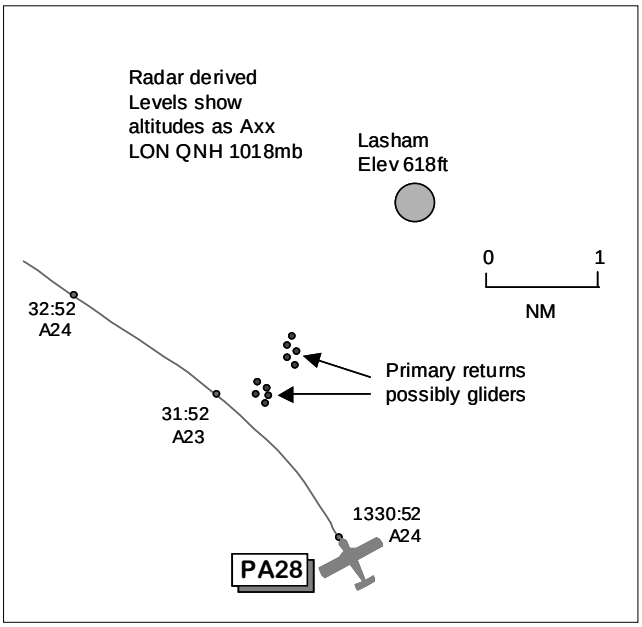
Cause: The Merlin flew close enough to the paraglider to cause its pilot concern.

Degree of Risk: C.

AIRPROX REPORT No 2010080

AIRPROX REPORT NO 2010080

Date/Time:	30 Jun 2010 1332Z	
Position:	5109N 00105W (2·5nm SW Lasham - elev 618ft)	
Airspace:	LFIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	DR400+K13 combination	PA28
Operator:	Civ Club	Civ Pte
Alt/FL:	2600ft↑ (QNH)	2500ft (QNH)
Weather:	VMC CLBC	VMC CLBC
Visibility:	20km	>20km
Reported Separation:	100-200ft V	Not seen
Recorded Separation:	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE DR400 PILOT reports towing a K13 glider from Lasham and in communication with Lasham Ground on 131·025MHz; no transponder was fitted. The visibility was 20km flying 1000ft below cloud in VMC and the ac was coloured black/yellow; no lighting was mentioned. About 2-3nm SW of Lasham heading 240° climbing through 2600ft QNH, he thought, at 60kt the K13 instructor pilot pointed out traffic, simultaneously with him noticing, a PA28 about 0·5nm away to his L on a converging course. He waited to see what avoiding action the PA28 flight would take but when he saw it was maintaining course he reduced power to reduce his ROC – he needed to maintain 60kt with the glider under tow – and passed 100-200ft beneath the PA28. He was aware that abrupt avoidance was to be avoided if possible whilst aero towing. He attempted to contact Farnborough to report the Airprox but was told to standby and he then had to change back to Lasham frequency during his approach back into Lasham. He assessed the risk as high.

THE PA28 PILOT reports that he was unaware of being involved in an Airprox until contacted by UKAB. He was flying en-route from the Channel Islands to Beverley VFR and in receipt of a BS from Farnborough on 125·25MHz, squawking an assigned code with Mode C. The visibility was >20km flying 1000ft below cloud in VMC and the ac was coloured blue/silver/grey; no lighting was mentioned. He had routed initially to Bembridge and then E of Portsmouth to avoid a restricted area. He rejoined his planned track (Bembridge to O/H Sywell) about 14nm S of Lasham and then changed from Solent Radar to Farnborough. At the time he was heading 010° cruising at 2500ft QNH at 95kt. It was always his intention to avoid the immediate area of Lasham and track to the W to avoid any gliding activity. Farnborough advised him of gliding activity around Lasham, which he acknowledged informing ATC that he was routeing to the W to avoid the area; he believed this course change occurred about 5nm S of Lasham. He was visual with several gliders in the area that did not pose any risk. He routed to the W edge of the Odiham MATZ stub and rejoined his original planned track 12nm N of Lasham. He did not see the glider tug with a glider under tow.

THE FARNBOROUGH LARS W CONTROLLER reports that he was acting as an OJTI to a trainee at the time of the incident. It was only much later on that a Lasham tug pilot telephoned ATC stating that he was filing an Airprox against an ac that LARS W had worked during the period. He had no particular memory of any outstanding relevant event during that period.

ATSI reports that the PA28 flight contacted Farnborough LARS (West) at 1328, requesting a BS. After initially being requested to standby, at 1329:58 the pilot was asked to pass his message. He reported at 2500ft, approximately 5nm S of Odiham, again requesting a BS. This service was agreed and the flight was issued with a Farnborough squawk 0436. At 1331:00, after the pilot reported squawking 0436, the controller transmitted,

"caution intensive gliding around Lasham". The pilot commented, *"we're going to detour round to the west er we are visual with some of the gliders"*. Approximately 3min later, the pilot of the subject DR400 contacted the frequency and was requested to standby and told he would be called back shortly. However, not receiving a further response, the pilot reported, about 2min later, returning to the Lasham frequency.

In the meantime, the pilot of the PA28 had requested to cross the Odiham MATZ stub and this was approved, avoiding the ATZ. No further comments were made to or from the PA28 pilot, about the vicinity of any gliding activity, until it left the frequency at 1351. The radar at 1330:53, at the time the PA28 was establishing contact with Farnborough, shows the aircraft, tracking NNW, 3·2nm SSW of Lasham. Thereafter, it makes a L turn and remains at least 2·5nm from the airfield.

[UKAB Note (1): The Airprox is not captured on recorded radar as the DR400 and K13 glider combination does not show at all.]

The Farnborough MATS Part 2, Page APR 4.3, states, with reference to Lasham, 'Aircraft on a LARS track that is on own navigation may continue over Lasham at the pilot's own risk. Best practice would be to warn the pilot'. On this occasion, the controller did warn the pilot of activity at Lasham and the pilot advised routeing to its W. The controller also complied with the procedures for the provision of a Basic Service: 'A Basic Service is an ATS provided for the purpose of giving advice and information useful for the safe and efficient conduct of flights. Basic Service relies on the pilot avoiding other traffic, unaided by controllers. 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 ATZ, and the pilot remains responsible for collision avoidance at all times. 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'.

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.

Both pilots had equal responsibility for collision avoidance within this Class G airspace by maintaining a thorough lookout scan and taking appropriate action if necessary. It was clear that the PA28 pilot had avoided the Lasham O/H and had received a warning from LARS W of the gliding activity, and although he saw gliders in the immediate area he did not see the DR400 combination, which was a part cause of the Airprox. The DR400 tug pilot reported seeing the approaching PA28 0·5nm away, which Members thought was a late sighting and another part cause. The opportunity for both pilots to see each other's ac was there for some time prior to the Airprox. The DR400 would have been approaching from below but within the PA28 pilot's field of view, although the dark coloured DR400 may have blended into the dark background of the surrounding countryside. Conversely the PA28 would have been sky-lined throughout the DR400 combination's climb-out. The Board understood the dilemma facing the DR400 pilot and agreed that his sighting and subsequent action of reducing his ROC whilst maintaining visual contact with the PA28 had been most effective in removing any risk of collision.

PART C: ASSESSMENT OF CAUSE AND RISK

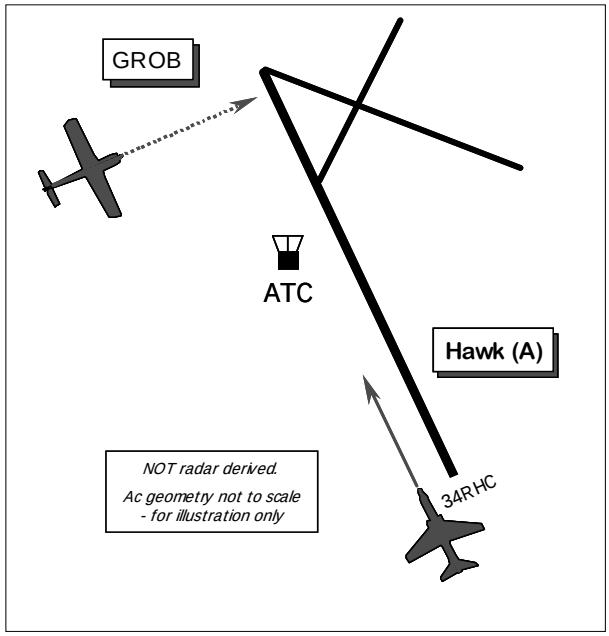
Cause: Non-sighting by the PA28 pilot and a late sighting by the DR400 pilot.

Degree of Risk: C.

AIRPROX REPORT No 2010085

AIRPROX REPORT NO 2010085

Date/Time:	29 Jun 2010 1430Z	
Position:	5418N 00132W (Visual Circuit to Leeming RW34RHC - elev 132ft)	
Airspace:	Leeming MATZ	(Class: G)
	Reporting Ac	*Reporting Ac*
Type:	Hawk T Mk1	Grob Tutor II
Operator:	HQ Air (Ops)	HQ Air (Trg)
Alt/FL:	500ft	500ft
	QFE (1012mb)	QFE (1012mb)
Weather:	VMC CLOC	VMC CLOC
Visibility:	20km	NR
Reported Separation:		
	50ft V/Nil H	20-50ft V/Nil H
Recorded Separation:		
	NR	



BOTH PILOTS FILED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE HAWK T Mk1 PILOT - HAWK (A) - reports that he was flying in a mixed traffic cct to RW34RHC at Leeming – active with his Hawk and 1 Tutor [flown by a solo student], whilst in communication with Leeming TOWER (TWR) on 368·925MHz. SSR was selected to standby.

He executed an overshoot [sic] from 200ft during the Final turn due to the runway being occupied by the solo Tutor on a Touch & Go. Positioning his ac to the Deadside and levelling at 500ft QFE, he was aware of another Hawk joining Deadside at 1000ft that had already passed through Initials. He was also aware of another Grob cleared by TWR to join the cct via an overhead join and subsequently to enter the light ac (LA) hold. His lookout was initially concentrated into the cct to gain visual contact on the other Hawk (which had passed overhead) and then to assess spacing on that traffic and the solo Tutor that had just completed its touch and go. Heading 340° at 200kt, as he transferred his lookout back to the forward sector, the joining Tutor was seen close aboard less than 50m away in the front L quadrant, crossing at the same height from L - R on a perpendicular flight path. He assessed there was a 'high' Risk of collision and initiated a maximum pull to 'break' the collision. At the same time the Tutor was seen to bunt aggressively as it passed directly underneath his ac. The separation between the 2 ac was assessed as about 50ft vertically and nil horizontally.

The ac has a black colour scheme and the landing light and HISLs were on.

THE GROB TUTOR II PILOT (GROB) reports he was conducting a student instructional sortie and as the Captain of the ac he was occupying the LH seat. Returning to his base at Leeming from the NW he had requested a visual rejoin whereupon APPROACH (APP) requested that he maintain FL40 due to an IFR departure from RW34 that would not be above FL30. He maintained FL40, as requested, and became visual with the departing traffic [an HS125]. The controller then asked if he was visual with further traffic on recovery into the cct, to which he responded, 'negative'. Still maintaining FL40, he then contacted TWR and requested an overhead join - part of his instructional sortie profile - although he explained to his student that they would probably not be able to complete the overhead join due to other traffic. To his surprise, TWR cleared them to join from the overhead and asked him to report Deadside descending. He positioned his ac to cross over the threshold to RW34 at 1800ft QFE and called "Deadside descending". When halfway along the Deadside in the descent to circuit height, TWR advised that there was a fast-jet joining the cct and instructed the other Tutor pilot in the cct [a solo student] to fly not above 500ft. As a second Hawk crew called to join, he was descending through approximately 1100ft QFE. TWR then requested that he join the LA hold (500ft on the live side). This is an abnormal procedure as ATC would

normally usually ask LA to join the LA hold from the live side. The RT was busy at this stage, and he was unsure of how to achieve the transition from the Deadside through the RW34RHC centreline to the LA hold on the Liveside; he assumed that ATC wished him to be at 500ft crossing the upwind end of RW34RHC (instead of the normal 800ft for an overhead join) and then fly straight into the LA hold. Therefore, he continued his descent on the Deadside to achieve this. At the same time, the Hawk already established in the cct went around from Final, it's pilot declaring that he was remaining at 500ft Deadside (he assumed to provide vertical separation against the Hawk joining). Immediately, he warned his student that there was a possible conflict and to lookout to the R, the 'threat' being to starboard behind his student and canopy arch. Still in the descent aiming to cross the upwind end of RW34RHC at 500ft QFE, heading 090° at 100kt, he became aware of a Hawk in his peripheral vision at less than 200yd away; he instinctively bunted and pushed -2g to break the collision. The Hawk pilot appeared to pull at the same time and both ac separated as he passed 20-50ft vertically beneath the Hawk with a 'very high' Risk of collision. He did not declare an Airprox to ATC at the time as he did not wish to alarm his ab-initio student. However, once he had landed he contacted ATC and the Hawk pilot in order to discuss the occurrence.

THE LEEMING AERODROME CONTROLLER (ADC) reports that the weather conditions were Colour Code BLU and he conducted a routine hand-over with the outgoing ADC. Before 1330Z, the traffic intensity in the visual circuit to RW34RHC had been low. At about 1325Z, a Tutor flown by a solo student pilot was in the visual circuit [not the subject Grob Tutor], the student's instructor being present in the VCR. The solo Tutor student was given as much priority as possible with the intention of causing the least disruption to his sortie, within the extant rules. The crew of an HS125 then requested departure, but was subject to a release call from APP, so the crew was initially instructed to line-up and wait, whilst a release was requested from APP. During the same landline call with APP, the subject Grob and another Hawk [Hawk (C)] were pre-noted as recovering visually. The HS125 crew was passed a climb-out restriction of FL30 against the ac in the overhead not below FL40 [the subject Grob] and was subsequently cleared for take off, conducting a normal departure before being transferred to APP.

The solo Tutor student was instructed to operate not above 500ft QFE due to the inbound fast jet traffic. Then the crew of Hawk (A) executed a join through Initials, requesting a low-break. The low-break was denied due to the presence of the solo Tutor already in the visual circuit and the crew of Hawk (A) was passed the position of the cct traffic. The Hawk (A) crew reported on the break for a Touch & Go and was informed they had 1 ac ahead, the solo Tutor student who then reported Finals and was given a clearance for a Touch & Go. The subject Grob crew then called requesting an overhead join and were asked their height, which was 4000ft descending, so they were instructed to report deadside descending and passed the visual cct state. [UKAB Note (1): The TWR transcript reflects that at 1330:11, the ADC cleared the Grob crew to *"..join overhead runway 3-4 right-hand Q-F-E 1-0-1-1..",* before requesting their height.] Reporting Final, Hawk (A) was initially instructed to Continue, but a short time later was given a clearance for a low approach not below 200ft, but the pilot subsequently reported going around.

Another Hawk crew [Hawk (B)] reported ready for departure, but was instructed to line-up & wait behind the solo Tutor student conducting a Touch & Go. As the solo student climbed away, he was instructed to operate not above 500ft QFE on his next cct because of the jets, which he acknowledged. Hawk (A) crew reported Downwind for a Touch & Go and the subject Grob crew reported Deadside descending in quick succession. Just after the Grob crew was passed the position of all the visual circuit traffic [UKAB Note (2): At 1351:55 TWR advised the Grob Crew *"..one downwind, one upwind, one on for departure"*] a third Hawk crew [Hawk (C)] requested to join the cct. Following Hawk (B)'s clearance to take-off, the Grob crew was asked if they would accept entry into the LA Hold, which was agreed and to report established. During this time, a broadcast was made of the new QFE – 1012mb. The crew of Hawk (A) reported Finals and was instructed to Continue against the departing Hawk (B). At this point, the third Hawk [Hawk (C)] reported at Initials requesting a Low-Break; this was also denied due to the Tutor traffic, the position of visual circuit traffic and that on the runway for departure being given. As Hawk (B) departed, the crew of Hawk (A) was issued a clearance for a Touch & Go but shortly afterwards reported going around [maintaining 500ft], followed by the solo student reporting downwind low-level for a Touch & Go. Hawk (B) was transferred to APP before the crew of Hawk (C) reported on the Break for a Touch & Go and was passed 1 ac ahead. The Grob crew reported entering the LA Hold and Hawk (C) subsequently reported going around. The crew of Hawk (A) reported downwind to land and subsequently did so following a normal clearance. At no stage did either Hawk (A) or the Grob crews report any incident or concerns on RT to TWR during the period.

UKAB Note (3): This Airprox occurred outwith recorded radar coverage.

SATCO LEEMING comments that in parallel with the Ops Wg review of the Leeming Flying Order Book (FOB), the current rules with respect to multi-type ops within the visual cct have been re-briefed to all controllers. Whilst

the visual cct is operated on a 'see & avoid' basis, Unit controllers have been directed to review the levels of TI offered to crews operating in the visual cct.

OC OPS WG LEEMING reports that the Unit conducted a full investigation into this Airprox. The following contributory factors were identified:

The Grob pilot was flying an overhead join, a procedure rarely practised at Leeming, which, whilst acknowledged, was not detailed in the FOB. Lacking defined geographical references, it proved difficult for FJ aircrew unfamiliar with the procedure to anticipate the subject Grob's positioning.

Given the disparity in speed and height profiles, the FOB limits the number of ac in the visual circuit to 3 when there is mixed FJ/Piston traffic. On this occasion the ADC permitted a fourth ac [Hawk (C)] to join the visual circuit.

It is conceivable that both the pressure to complete the recovery profile and the imminent arrival of the fourth ac into the visual circuit distracted aircrew from the primary task of ensuring safe separation.

It was noted that the FOB currently requires fast-jet crews recovering to Leeming to call APP at a range of 20nm; the ADC's action range to address visual circuit traffic is 15 miles. There are circuit diagrams in the FOB, but no geographical depiction of the visual circuit and light aircraft hold.

Following the investigation of this Airprox the following actions have been implemented at Leeming:

Overhead Join. The overhead join procedure offers no material training benefit to UAS/AEF students. Given the identified shortfalls in the procedure, it has been suspended forthwith and the FOB amended accordingly.

Deconfliction. The SFSO has been tasked to brief every flying unit on the specific responsibilities for de-confliction within the visual circuit.

The ADC is responsible for providing information and instructions to achieve a safe, orderly and expeditious flow of traffic and assist pilots in preventing collision between aircraft flying within the visual circuit area.

Aircrew, particularly when joining and flying the visual circuit, are responsible for spatial de-confliction and must maintain full SA.

FOB. The FOB was amended to include:

An additional Annex detailing the geographic position of the visual circuit, the light aircraft hold and the local avoid areas.

Clarification of a maximum of two dissimilar types allowed in the visual circuit at any one time.

Instruction that FJ ac on recovery are to call APP by 15nm, consistent with the ADC's action range for the assessment of the visual circuit.

HQ AIR BM ATM SAFETY MANAGEMENT reports that Leeming undertook a wide-ranging investigation following this Airprox. As stated in OC Ops Wg's report, given the disparity in speed and height profile of the jet and piston ac in the visual cct at Leeming, the FOB limits the number of ac in the visual cct to 3 when mixed FJ/piston flying is taking place. On this occasion, the ADC permitted a 4th AC, Hawk (C), to join the visual cct.

OC Ops Wg states that although the overhead join procedure was rarely practised, it was acknowledged as a Leeming procedure yet did not appear in the FOB. This lack of information relating to overhead joins and specifically how to route from Deadside to Liveside, forced the Grob pilot to adopt a course of action that he considered best. This included a further descent to 500ft QFE, arguably to mirror the height of the solo Tutor student who had been restricted by TWR to 500ft because of the imminent arrival of the next recovering Hawk (C). However, the arrival of Hawk (C) caused the pilot of Hawk (A) to remain at 500ft QFE on the Deadside to provide vertical de-confliction, which, having executed a go-around from his approach, placed the Hawk in confliction with the subject Grob crossing at the upwind threshold.

The use of an overhead join can be viewed as a system induced violation, where the ADC was placed in a situation where the controller was expected to provide a service to ac joining through the overhead, yet the procedure itself had not been integrated into the wider visual cct operation. Furthermore, SATCO Leeming confirmed that the Controllers' Order Book contained no reference to overhead joins or how to manage an ac transitioning from Deadside to Liveside, nor were there any specific training objectives related to such.

The ADC correctly restricted the two Hawks from conducting a low-break due to the presence of the solo Tutor student in the low-level cct, but did not recognise the potential risk for a confliction between the subject Hawk and Grob once the former crew had stated that they would remain at 500ft QFE on the Deadside.

Best practice would suggest that as the Grob pilot had not reported established in the LA hold at the point that the crew of Hawk (A) had reported at 1332:49, *"..going around maintaining 5 hundred feet",* that TWR should have broadcast a warning about the presence of the subject Grob, whose pilot had earlier reported at 1331:52, *"..deadside descending."* The fact that TWR did not broadcast such a warning suggests that the ADC felt no need to do so, or that the controller had lost SA as to the position of the Grob and did not perceive the risk of a confliction. Comments from SATCO Leeming support this view insofar as from the ADC's operating position in the VCR the controller is unsighted on ac routeing W - E across the upwind end of RW34 as they pass through a 'blind spot' above the Tower. Given the lack of visual cues and the system induced lack of familiarity with the procedure, specifically the movement of the Grob from the Deadside to the Liveside, the ADC was unable to recognise the Risk of confliction between the subject ac and was ill-equipped to deal with the situation.

This occurrence is a classic example of a series of latent failures awaiting an active trigger – the acceptance by the ADC of the 4th ac into the cct – Hawk (C).

HQ AIR (OPS) comments that the non-standard actions of both incident pilots attempting to be helpful unfortunately contributed to this AIRPROX. Hawk (A) should have flown a standard go around and subsequent circuit pattern. Hawk (C) had the responsibility to integrate into the circuit and avoid established circuit traffic, this is much easier if established circuit traffic follows normal procedures, Hawk (A)'s unpredictable action could have had adverse effects on Hawk (C)'s joining profile. The Tutor's chosen method of circuit join (not in the flying order book) and his subsequent decision to cross to the LA hold at 500 combined with Hawk (A)'s non-standard actions brought the 2 ac into confliction. Prohibition of overhead joins at Leeming will prevent a recurrence.

HQ AIR (TRG) comments that this incident was so serious the Unit conducted an investigation into this Airprox that revealed several areas where things could have been done better and subsequently has taken appropriate action to reduce the risk of this incident happening again. The ADC accepting the 4th ac into the circuit contributed to the Airprox but there is also a responsibility on the aircrew in the cct to maintain the cct pattern and separation with other ac in the cct, likewise joining ac are to integrate into the cct pattern safely.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The HQ 22Gp pilot Member explained that whilst the Unit might consider that the overhead join procedure offered no material training benefit to UAS/AEF students, that was not the Command's view. Whilst its use was not commonplace at operational fast-jet units, the overhead join is in common usage at civilian aerodromes and when flown correctly is another valuable and recognised cct joining method, enabling pilots to join high and sight all the other cct ac before descending to cct height on the deadside and entering the cct via the upwind threshold. Whilst military fast-jet pilots would have been taught an overhead join at some stage in their training, the HQ Air fast-jet pilot Member agreed that it would have been used little operationally and pilots might therefore not be particularly familiar with it, especially if no detail was available in the Unit FOB – see AP3456 extract within the Post Meeting Note below. Therefore, military pilot Members understood why the pilot of Hawk (A) might not have been intimately familiar with the Grob pilot's positioning to join from overhead and then transit through to the LA hold in accord with the ADC's instructions. There was, therefore, potential for confusion, but it seemed to the Board that the crew of Hawk (A) was more concerned about the fast-jet joining through Initials behind them – Hawk (C) – rather than the slower piston-engine Grob joining from overhead.

The fast-jet pilot Member explained that the Grob pilot was responsible for gaining visual contact on all notified cct traffic before he descended on the deadside or crossed at the upwind end, crossing the approach end well above any cct traffic. Therefore, the Grob pilot should have been visual with Hawk (A) before crossing the upwind end and should not have committed to crossing into the liveside before he was. In his view, the pilot of Hawk (A) could reasonably expect that joining pilots will not join the cct until visual with all of the cct traffic. A CAT pilot Member concurred that the Grob pilot joining the cct must give way to ac already established in the cct and it was emphasised that this was a visual cct, which demanded that all pilots look-out and sequence themselves in the pattern with due consideration for other traffic. The lesson to aircrew here is that you must give the circuit a wide berth until visual contact is obtained with all traffic established in the pattern.

This also applied to the pilot of the Hawk (C) joining through initials who was responsible for visually identifying all cct traffic before entering the pattern and maintaining his own separation accordingly. In the Board's view, the pilot of Hawk (A) should not have levelled his ac at 500ft because of Hawk (C) joining behind him, which unknown to the pilot of Hawk (A) at the time, placed his ac in conflict with the Grob, whose pilot had elected to descend to 500ft, unannounced, because he perceived that was what the ADC wanted him to do to join the LA hold on the liveside. Whilst accepting this was a busy traffic situation, because the ADC had elected to permit a 4th ac to join, if the Grob pilot was at all confused as to what was required of him he could have asked. However, the Grob pilot could not have anticipated that the Hawk pilot would also level his ac at 500ft QFE and it was providential that the Grob pilot heard the RT call and was alerted to look out for Hawk (A). This resulted in the conflict at the upwind end of the runway with the Grob about to cross on to the live side because both the Grob pilot and the pilot of Hawk (A) were flying non-standard cct procedures. The laudably candid account from the pilot of Hawk (A) revealed that he was looking for Hawk (C) joining rather than the Grob ahead, which he only spotted 50m away when he transferred his scan forward, which the Board agreed was a late sighting on his part. Furthermore, the Grob pilot was not well placed to see Hawk (A) at this point – cross-cockpit behind his student and the canopy arch – he only became aware of a Hawk in his peripheral vision he reports less than 200yd away - and a late sighting on his part also. The Board concluded, therefore, that this Airprox had resulted from late sightings by the crews of both aircraft.

Turning to the inherent risk, it was fortunate that the Grob pilot elected to bunt to -2g to avoid the Hawk, whose pilot fortunately pulled when the Grob was seen close aboard at the same height. This instinctive avoiding action only achieved a reported separation of 50ft, which convinced several members that an actual Risk of collision had existed. However, the overwhelming view of the Members was that each crew had seen the other ac just in time to take action that whilst robust, was effective in forestalling a collision, but at these distances the Board agreed safety had indeed been compromised.

Post meeting Note: Extract from AP3456 - The Circuit – Overhead Join.

The airfield should be approached at a height of 1000ft above circuit height, and circuit speed should be achieved before reaching the airfield boundary. The pilot should cross onto the deadside of the airfield from a position overhead the runway threshold, and commence a descending curved let-down on the deadside of the airfield, aiming to re-cross the runway over the upwind end, at circuit height and circuit speed. During the curved descent, particular attention should be given to lookout.

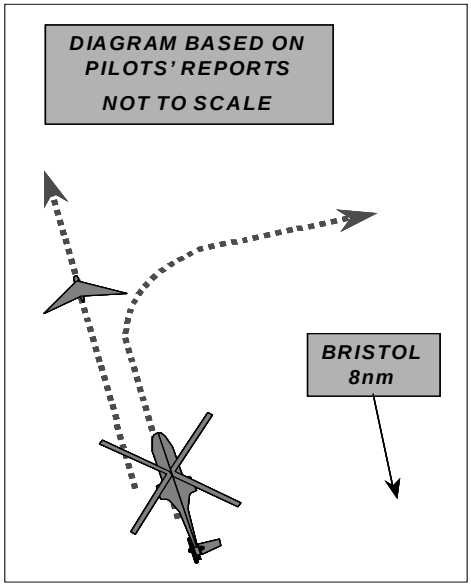
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Late sightings by the crews of both aircraft.

Degree of Risk: B.

AIRPROX REPORT NO 2010106

Date/Time:	28 Jun 2010 1539Z	
Position:	5129N 00252W (3nm N CLEVEDON VRP)	
Airspace:	Lon FIR	(Class: G)
	Reporting Ac	*Reporting Ac*
Type:	MICROLIGHT	PUMA
Operator:	Civ Pte	HQ JHC
Alt/FL:	1200ft (QNH)	1000ft (RPS)
Weather:	VMC CBLC	VMC CAVOK
Visibility:	25nm	10km
Reported Separation:	0ft V/30m H	200ft V/200m H
Recorded Separation:	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE MICROLIGHT PILOT reports flying a flexwing microlight with no SSR fitted, on a private flight from Bodmin to Broadmeadow Farm Microlight Flying Club (near Hereford) at 50kt, in good VMC and listening out on the microlight frequency. While heading 359° to the W of Bristol, despite wearing a headset he heard a noise and, on looking behind his ac, he saw a green Puma helicopter about 30m away at the same height. The Puma pulled up in his 4 o'clock position, stayed there for a few sec and then dropped away to his right, as he turned left away from it. He reported the incident by letter to the BMAA and thence to the UKAB.

He assessed the risk as being low.

UKAB Note (1): The report was received almost 2 months after the incident. The reported time of the incident was 3hr 21min in error.

UKAB Note (2): The pilot provided a map of his route. The track was tangential to the Western edge of the Bristol CTR. The position of the Airprox was indicated as being over the Bristol Channel, 8nm NW of Bristol (the CTR is 5nm radius).

THE PUMA PILOT reports that he submitted this report following the submission of an Airprox by a microlight pilot. He was on a training flight in transit from Benson to Gloucester at 1000ft, some 10nm to the W of Bristol Lulsgate, heading 010° at 120 kt and in receipt of a BS from them. He was asked by the controller if he could identify a microlight ac that had just infringed Bristol's CTR and was departing the area to the W. The reported position of the microlight was in the vicinity of their planned track and so he agreed to assist.

After some 5min his crew spotted the microlight 300m away, vertically displaced by some 200ft [below i.e. 800ft agl] and horizontally displaced by about 200m to their R. He attempted to see the microlight's registration but it was plain-white in colour with no apparent makings or lighting and so he turned away to the right from the abeam position and reported the lack of markings to ATC.

He does not consider that there was any risk at any time.

UKAB Note (3): A photograph of the microlight shows it to be predominantly white in colour with the registration on the (flex) wing (only) in standard size black letters.

ATSI reported that the incident was reported to have occurred, 3nm N of Clevedon, a VRP situated 5nm NW of Bristol Airport at 1900 (UTC).

AIRPROX REPORT No 2010106

The [reporting] microlight pilot's report was received some time after the event and consequently, the RT recordings of the event were no longer available.

The Flexwing microlight was on a flight from Bodmin Airfield to Broadmeadow Farm Microlight Flying Club while the Puma helicopter was on a VFR flight from Weston Helicopter Museum, which is situated 8.8nm SW of Bristol Airport and was inbound to Gloucestershire Airport. The Bristol Radar Controller was asked to provide a report some time after the incident and believes that the incident might have occurred much earlier. The Bristol ADC observed a microlight passing 3nm W of the airfield, tracking N and reported the sighting to Radar. The Radar Controller observed that the traffic was within the Bristol CTR and was able to track the aircraft Northbound.

At 1732 (UTC) the Puma Helicopter departed VFR, from Weston Helicopter Museum. A BS was agreed and the Puma was allocated a squawk of 5056. The Puma tracked NE and because the microlight was believed to have infringed the Bristol CTR, the Radar Controller asked the Puma pilot to assist in identifying the microlight. The Radar controller relayed the position of the microlight ac and this resulted in the Puma pilot sighting a white microlight, with no visible registration marks.

At 1740:01 the Clee Hill radar replay shows the Puma, 9.3nm to the NNW of Bristol Airport, indicating a Mode C altitude of 900ft, in a right turn with an intermittent contact to its NW. The Radar Controller continued to track the microlight until it disappeared from radar cover, NNW of Newport [16nm NNW of Bristol] when she considered that no further tracing action could be achieved.

The Puma helicopter was VFR in receipt of a BS.

CAP493, Manual of Air Traffic Services Part 1 (11/03/10), 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.

The Bristol International METAR was:

EGGD 281720Z 26011KT 9999 FEW025 19/07 Q1022=

UKAB Note (4): The recording of the Clee Hill Radar shows an unidentified and very intermittent primary only contact pop up at 1731:55, 3.5nm NW of Bristol Airport (inside the CTR), then disappear. At 1733:54 a contact squawking 7000 at FL009, presumed to be the Puma, first appears just to the W of Weston tracking NE. It continues to track NE, below the Bristol TMA and the primary presumed to be the Microlight reappears 7nm NNW of Bristol for 2 sweeps; at 1738:08 the Puma turns left towards the Microlight's last seen position, but it does not reappear. At 1539:19 the Puma (FL011) turns right apparently breaking away to the E. Although the Microlight contact is very intermittent, there is little doubt that it was at least 1½ nm inside the Bristol CTR. (The W/NW/N boundary of the CTR is more or less coincident with the M5 motorway, which in turn is just over a mile to the E of the coast).

UKAB Note (5): Both the Controller and the Puma pilot were subject to respective regulations as follows:

Controller:

MATS Pt 1 Ch 2 Sect 1 17.1 and 17.2

17 **Search Action**

17.1 The senior controller is to institute search action if the identity of an aircraft, which

has been involved in an incident or has apparently infringed legislation, is not known.

17.2 Data is to be examined, other units consulted and every means used consistent with

safety in an attempt to identify the aircraft. ATS surveillance systems should be used to track the aircraft until it has landed and the track and time correlated with movement at the appropriate aerodrome. If necessary, the aircraft's position indication may be transferred to another unit to enable tracking to be continued.

Puma Pilot:

JSP 550 R110.110, Formation Flying and R110.115 Flying in the Company of Civil Aircraft pertain. In these circumstances the Puma was not permitted to 'formate on' or 'fly in the company' of the Microlight.

Comment was requested from **HQ JHC** but was not forthcoming.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, radar recordings, reports from the air traffic controller involved and a report from the appropriate ATC authority.

The HQ Air (Ops) Member informed the Board that there are several other relevant, but classified, regulations governing interception and shadowing of civil ac which ensure that, when tasked, such activities are conducted in a manner that ensures the safety of both civil and military ac. He also informed the meeting that helicopters are not permitted to conduct these tasks and that he could not be certain of the safety aspects as, to the best of his knowledge, no trials involving microlights have been conducted.

The GA Member stated that, in common with other small ac, flexwing microlights should always be avoided by a wide margin by larger ac.

There was little doubt that the Microlight had previously infringed the Bristol CTR but at the time of the incident was well outside it. It was not clear to Members whether the Controller had acted in accordance with the regulations in MATS Part 1. However, civil controller Members agreed unanimously that Bristol APR had been over-zealous in seeking the assistance of the Puma to identify the microlight after any potential danger had passed. In reacting to the controller's request, apparently in contravention of JSP 550 regulations, the Puma pilot had also acted unwisely and, although there was never any risk of the ac colliding, his chosen flightpath caused the microlight pilot concern.

Members noted that the Microlight pilot had reported the incident and the attempt to visually identify the infringing ac, although correctly marked, had not been successful; it followed therefore that the incident was unnecessary. In the view of the Board this incident would have been better investigated as an airspace infringement rather than an Airprox.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Puma pilot flew close enough to the Microlight to cause its pilot concern.

Degree of Risk: C.

2010048	15/05/10	Slingsby Cadet v Rockwell 114	Saltby Airfield	C	166
2010049	13/05/10	Typhoon v Untraced Glider	3nm ENE Coningsby	B	168
2010050	09/05/10	Robinson R44 v Untraced Model Ac	3½nm E Cambridge	D	170
2010051	30/04/10	B737-800 v A319	17nm SSE WAL	C	174
2010052	20/05/10	Lynx Mk9A v Tornado GR4	4nm SE Dishforth	C	177
2010053	19/05/10	Grob Tutor II v Grob Tutor II	076° Church Fenton 9nm	C	180
2010054	24/05/10	AS365 v Hawk	14nm ESE OTR	C	185
2010055	30/05/10	KA6 v H500	0.5nm ESE Edge Hill/Shennington Glider Site	C	189
2010056	31/05/10	Sea King v Robin	0.5nm E Boulmer	B	191
2010057	26/05/10	DHC-8-311 v Super Lynx	1½nm SE Newquay Cornwall Airport	C	194
2010058	30/05/10	ASK13 v PA28	O/H Lasham	B	199
2010059	03/06/10	VC10 v PA28	8nm W Brize Norton	C	202
2010060	21/05/10	AH64 Apache v Untraced Glider	5nm S Swindon	C	206
2010061	24/05/10	Alpha Jet v LynxAH7	7nm W Boscombe Down	A	208
2010062	27/05/10	Tucano T Mk1 v Tucano T Mk1	Linton-on-Ouse A/D Cct	C	212
2010063	28/05/10	Hawk v Hawk	3nm E Lake Bala	B	215
2010064	05/06/10	DO328 v C182	4nm SW LAM	C	217
2010065	09/06/10	EC225 v Tornado	12nm W Kirkwall	C	221
2010066	02/06/10	Hawk T Mk1 v PA28	2nm S Yeovilton A/D	B	223
2010067	10/06/10	Tornado GR4 v PA28	5nm E Pembrey Range	B	227
2010068	12/06/10	Tornado F3 v Cessna 172	3nm W Halton	C	229
2010069	11/06/10	CL601 v EA500 Eclipse	8nm N CPT	C	232
2010070	11/06/10	Tornado GR4 v Tornado GR4	1½nm E Roybridge	A	238
2010071	12/06/10	Typhoon x3 v C150	6nm W Coningsby	B	240
2010072	05/06/10	EV97 Eurostar v Rutan Long-Ez	2nm SE Ware	C	243
2010073	28/05/10	A321 v A321	6nm S BIG	C	245
2010074	19/06/10	Viking T1 Glider v Hispano Form	Vicinity Wethersfield Glider Launching Site Cct	C	249
2010075	24/06/10	Jetstream 41 v Hawk x2	40nm N Newcastle	C	252
2010076	27/06/10	Pik-20D v PA28	5km SW Husbands Bosworth	A	258
2010077	27/06/10	PA31 v ASK21	5nm NNW North Hill Glider Site	C	261
2010078	27/06/10	Vigilant v PA28	1nm N Swansea	C	263
2010079	22/06/10	Paraglider v Merlin	BRIDPORT	C	266
2010080	30/06/10	DR400 + K13 Combination v PA28	2.5nm SW Lasham	C	268
2010085	29/06/10	Hawk T Mk1 v Grob Tutor II	Visual Cct to Leeming RW34 RHC	B	270
2010106	28/06/10	Microlight v Puma	3nm N Clevedon VRP	C	275