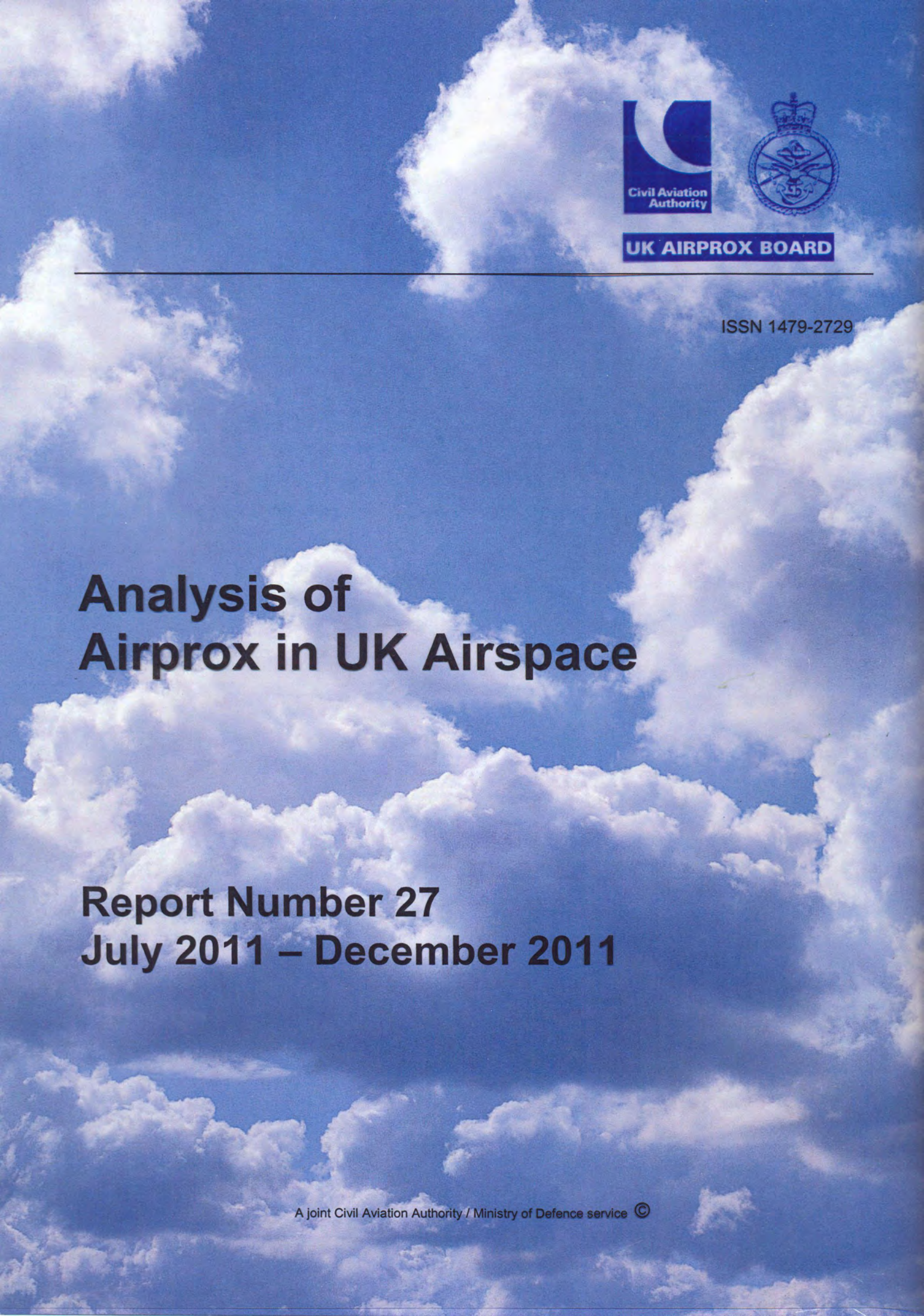

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Analysis of Airprox in UK Airspace

Report Number 27
July 2011 – December 2011

Twenty-Seventh Report by the UK Airprox Board:

‘Analysis of Airprox in UK Airspace’

(July 2011 to December 2011)

produced jointly for

The Chairman
Civil Aviation Authority

and

The Director General
Military Aviation Authority

CONTENTS

AIRPROX RESULTS FOR 2011

Number of Airprox

Figures 1 and 2 show the number of Airprox in 2011 and the monthly distribution. The spikes in numbers in July and October are almost certainly due to the good weather increasing the amount of activity and/or the ability of pilots to see other aircraft around them; over half the Airprox events involved private GA aircraft.

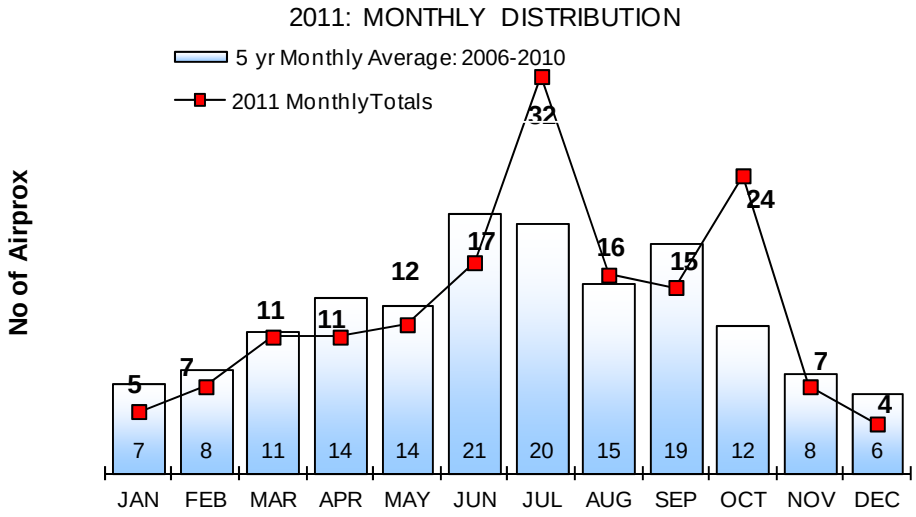


Figure 1. Monthly Distribution.

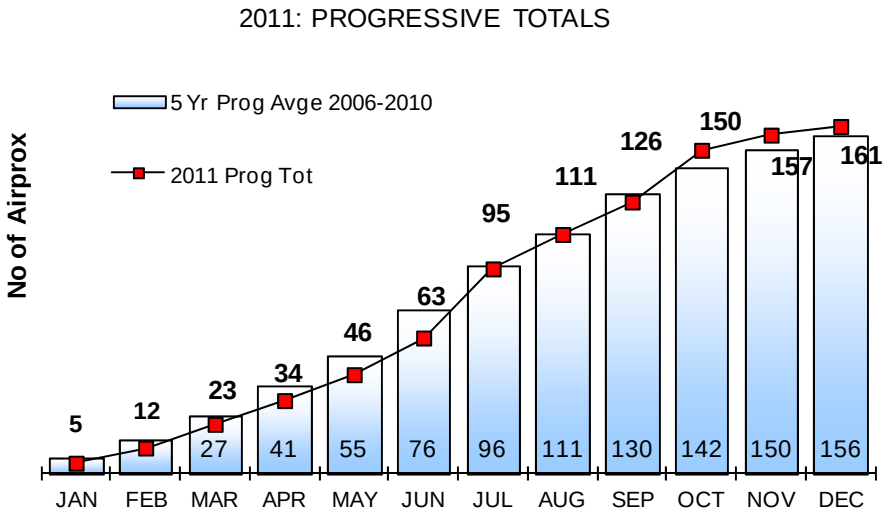


Figure 2. Progressive Totals.

Six other Airprox were reported but withdrawn before assessment. We would far rather pilots and controllers reported Airprox immediately and subsequently withdraw them than hesitate to report. An immediate report, preferably on the RT, alerts other pilots and controllers that an event has occurred thereby assisting their recollection of where they were

and what they were doing at the time. It also ensures that RT tapes are saved to assist with the subsequent investigation.

Trends by User Groups

Table 2 and Figure 3 show the breakdown between military and civil Airprox. 'Other' refers to ac that were not traced.

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Civil~Civil	109	87	109	99	95	93	93	74	63	73
Civil~Mil	77	67	69	74	46	38	38	36	54	50
Mil~Mil	31	23	22	8	12	12	17	30	34	26
Other	4	4	7	7	6	11	7	7	16	12
Totals:	221	181	207	188	159	154	155	147	167	161

Table 2. Trend by User Groups.

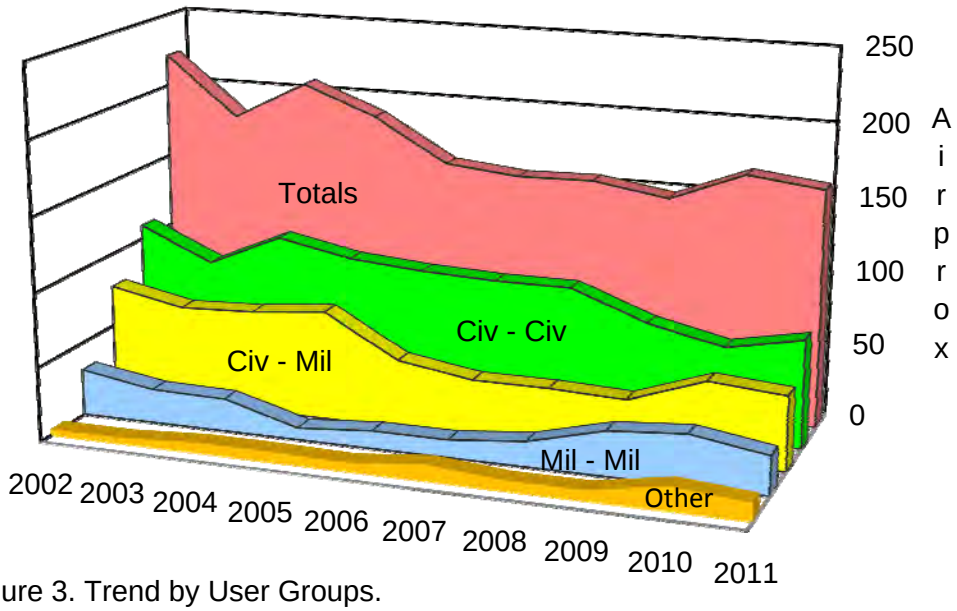


Figure 3. Trend by User Groups.

A further division by flight classification in Table 3 and Figure 4 reveals that GA aircraft were involved in at least 72% of the Airprox occurring in 2011; the GA percentage is actually higher because many of the 'others' are light aircraft and gliders that are almost certainly civilian.

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
GA~Mil	57	42	47	43	25	25	24	29	40	46
GA~GA	51	47	55	46	44	46	47	46	44	55
CAT~CAT	39	13	28	10	19	19	24	11	5	4
CAT~GA	19	27	26	43	32	28	22	17	14	14
CAT~Mil	20	25	22	31	21	13	14	7	14	4
Mil~Mil	31	23	22	8	12	12	17	30	34	26
Other	4	4	7	7	6	11	7	7	16	12
Total	221	181	207	188	159	154	155	147	167	161

Table 3. Trends by flight Classification.

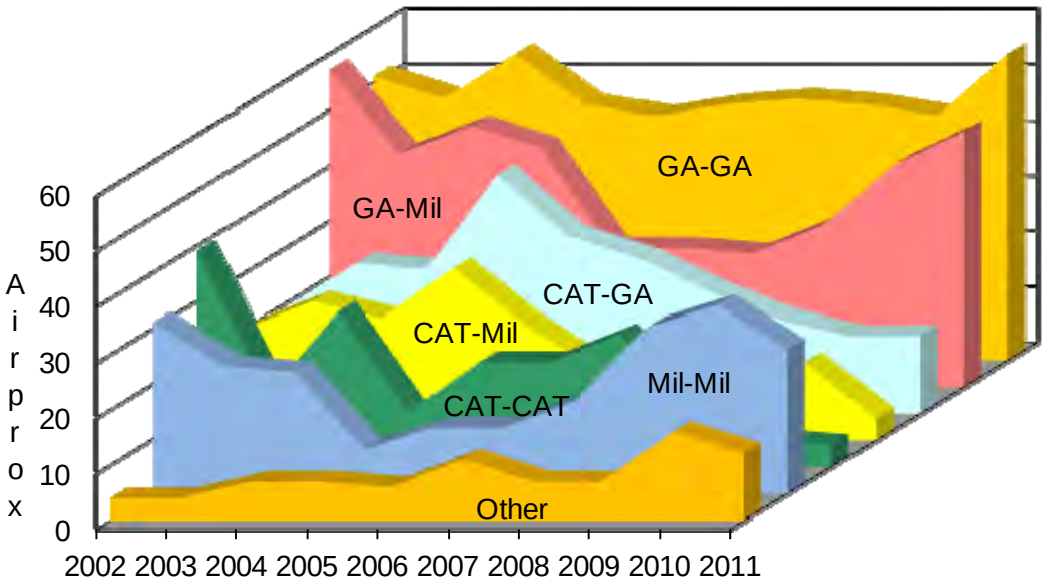


Figure 4. Airprox Trends by Flight Classification

Airspace

The breakdown of Airprox by airspace (Figure 5) shows a similar pattern to previous years. Flight time in Class G airspace below 3000ft should be minimised to minimise the risk of Airprox.

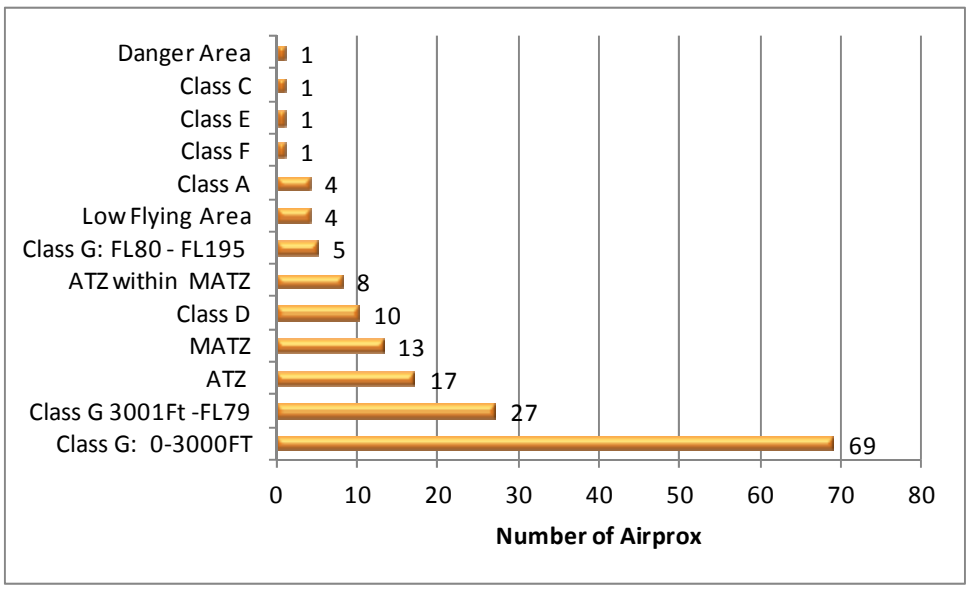


Figure 5. Airprox by Airspace.

Many of the Airprox in Class G airspace (including MATZs) involve aircraft marshalling for instrument approaches. Common threads include poor lookout while flying on instruments and an incorrect expectation by pilots operating under IFR that VFR traffic will avoid instrument patterns.

COMMERCIAL AIR TRANSPORT (CAT) SECTION

The number of Airprox involving CAT fell significantly during 2011 as shown in Table 4 and Figure 6. There was, however, one Airprox (2011085) assessed as risk-bearing; this was an encounter between a B757 and a glider in Class E airspace.

CAT Risk	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
CAT Risk A	1	0	1	1	0	0	0	0	0	0
CAT Risk B	7	12	7	7	6	5	2	1	0	1
CAT Risk C	70	54	67	78	68	60	58	33	33	18
CAT Risk D	4	0	4	1	0	0	1	1	2	0
CAT RISK E	0	0	0	0	0	0	0	0	0	3
CAT Total Airprox	82	66	79	87	74	65	61	35	35	22

Table 4. CAT Risk Data.

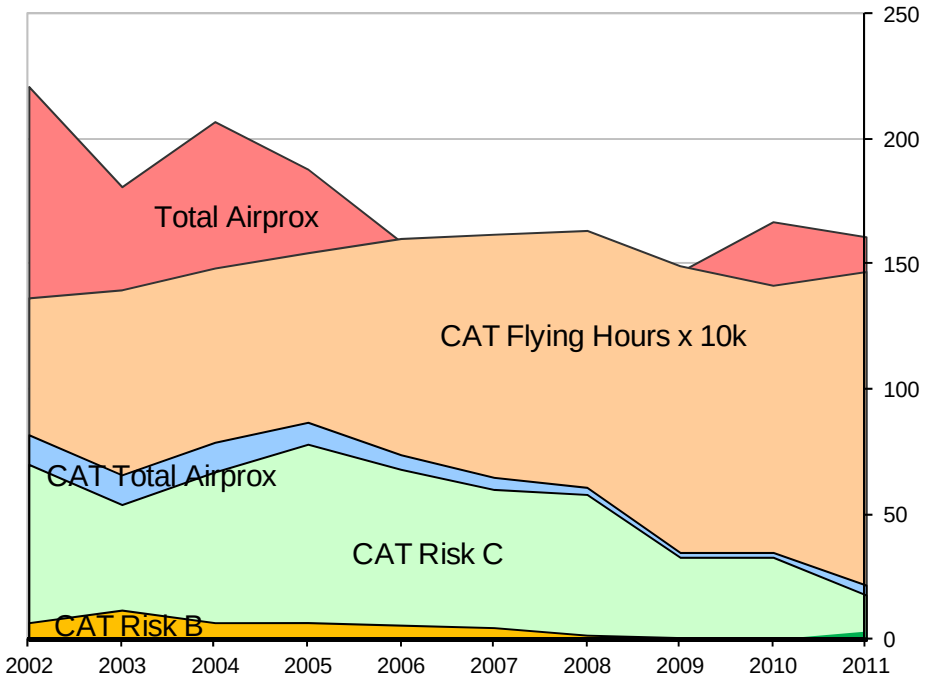


Figure 6. CAT Risk Distribution. **Note: Risk categories A and D are too small to appear on the chart – see Table 4.**

The reduction in CAT Airprox was accompanied by a small increase in the number of hours flown resulting a marked decrease in the overall rate of Airprox per CAT hour despite the slight rise in Risk-bearing Airprox rate, as shown in Table 5 and Figure 7.

CAT Rates	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
CAT Rate (Risk A+B)	0.59	0.86	0.54	0.52	0.37	0.31	0.12	0.07	0.00	0.07
CAT Rate (Risk A+B+C+D+E)	6.00	4.72	5.32	5.63	4.62	4.01	3.73	2.34	2.47	1.50
Hours x K	1,366	1,398	1,485	1,546	1,603	1,620	1,635	1,494	1,416	1,471

Table 5. CAT Airprox Rates.

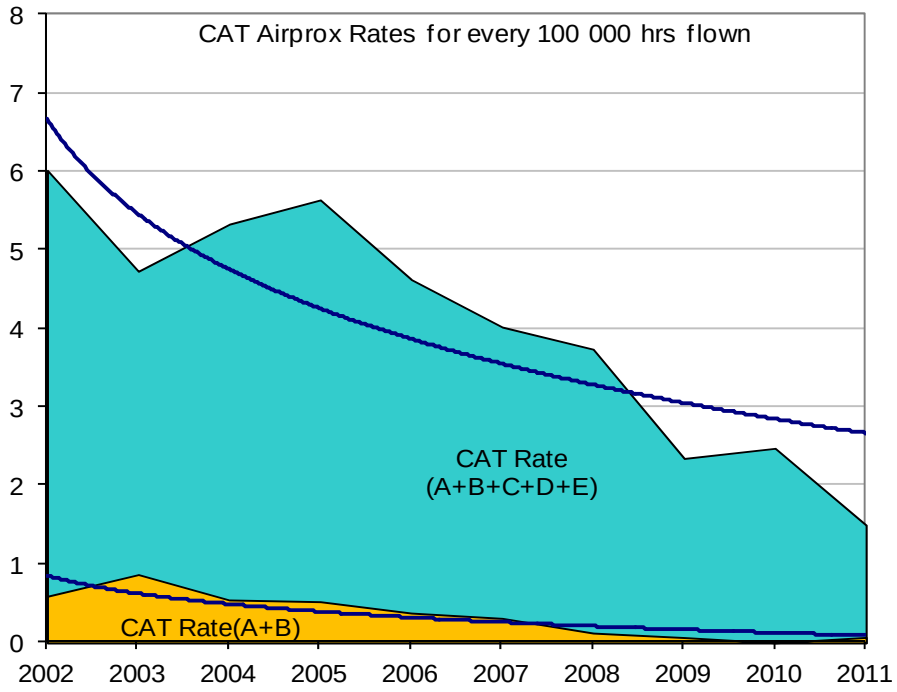


Figure 7. CAT Airprox Rates per 100 000 hours flown.

CAT Causal Factors

The top 10 causal factors assigned to CAT Airprox are shown in Table 6. Note that an Airprox can have more than one causal factor. By far the majority of TCAS Resolution Advisory (RA) warnings occur inside CAS and are not reported as Airprox; they are reported under the Mandatory Occurrence Reporting Scheme as TCAS RAs. However, TCAS RAs that occur outside CAS are usually reported as Airprox. Often these occur because pilots flying aircraft that are not TCAS-equipped do not have an appreciation of the ranges at which their flight path or flight vector can trigger a TCAS RA.

Ser.	Cause	Totals	Attributed to
1	SIGHTING/TCAS REPORT	8	PILOT
2	DID NOT SEPARATE/MISJUDGEMENT	8	CONTROLLER
3	CLIMBED/DESCENDED THROUGH ASSIGNED LEVEL	5	PILOT
4	NOT OBEYING ORDERS/ FOLLOWING ADVICE/ FROM ATC	3	PILOT
5	MISINTERPRETATION OF ATC MESSAGE	3	PILOT
6	INADEQUATE AVOIDING ACTION / FLEW TOO CLOSE	2	PILOT
7	CONTROLLED AIRSPACE CONFLICT IN VMC	2	OTHER
8	FIR CONFLICT	2	OTHER
9	UNDETECTED READBACK ERROR	2	CONTROLLER
10	PENETRATION OF CAS/ATZ WITHOUT CLEARANCE	2	PILOT

Table 6. CAT Airprox Causal Factors.

CAT Airprox by Airspace

Figure 8 shows the breakdown of CAT Airprox by airspace. Of the 7 Airprox that occurred in Class G Airspace, 6 occurred at or below 3000ft.

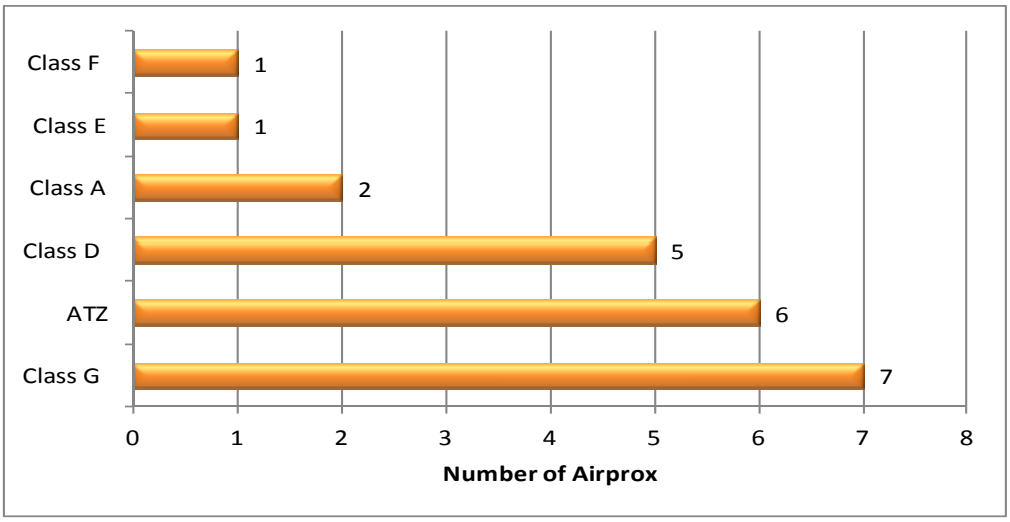


Figure 8. CAT Airprox by Airspace.

GENERAL AVIATION (GA) SECTION

From an Airprox perspective, 2011 was a bad year for GA. There was an increase in the number of Airprox involving GA aircraft and an increase in the percentage of GA Airprox assessed as risk-bearing (Risk A or B). Of most concern is the increase in Risk Category A events which are higher than at any stage in the last 10 years. Table 7 contains the data and Figure 9 shows the increase graphically.

GA Risk	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
GA Risk A	9	10	13	16	10	8	8	8	5	19
GA Risk B	58	38	42	41	36	30	31	20	25	27
GA Risk C	57	70	71	75	57	65	55	66	70	63
GA Risk D	3	0	4	1	0	0	4	1	2	2
GA Risk E	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8
GA Totals	127	118	130	133	103	103	98	95	102	119
All Airprox	221	181	207	188	159	154	155	147	167	161
GA/All Airprox	57%	65%	63%	71%	65%	67%	63%	65%	61%	74%
RiskA&B/GA Total	53%	41%	42%	43%	45%	37%	40%	29%	29%	39%

Table 7. GA Airprox Risk Data 2002-2011.

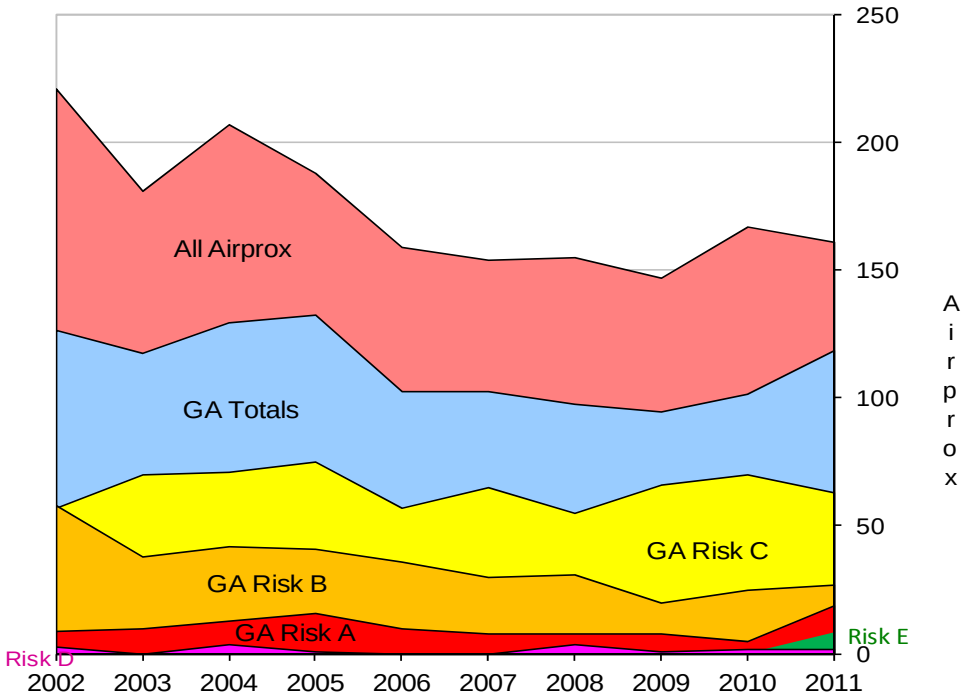


Figure 9. GA Airprox Risk Spectrum.

GA Airprox Rates

GA flying hours data are collected from a variety of sources and are revised as more accurate figures become available. Therefore caution is required when comparing 2011 with 2010. Nevertheless the figures in Table 8 and Figure 10 do allow a reasonably reliable comparison over the 10 year period.

GA Rates	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Rate for (A+B)	5.41	3.82	4.33	4.52	3.78	3.15	3.57	2.58	2.66	3.78
Rate for (A+B+C+D)	10.25	9.39	10.23	10.54	8.47	8.53	8.98	8.76	9.03	9.79
Hours flown x 1000	1,239	1,256	1,271	1,262	1,215	1,208	1,092	1,085	1,130	1,215

Table 8. GA Airprox Rates

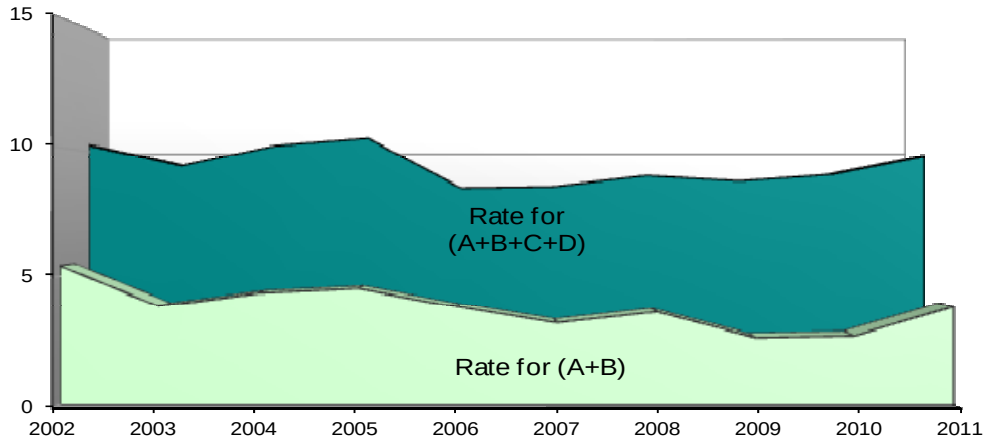


Figure 10. GA Airprox Rates per 100 000 Flying Hours.

GA Causal Factors

A total of 186 causal factors were assigned to the 119 Airprox involving at least one GA aircraft. Thirty five different causes were assigned; Figure 11 shows the 12 most common and the number of times they were assigned.

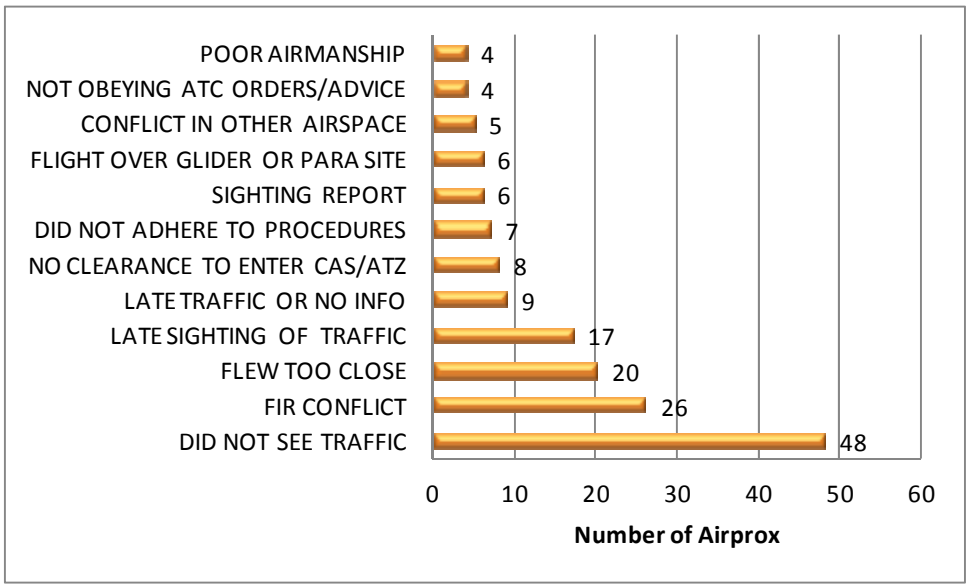


Figure 11. Most common GA Airprox Causes.

As usual, non-sightings and late sightings predominate. In addition to Airprox caused by pilots flying over promulgated and active glider or microlight sights, several of the "flew too close" Airprox were pilots flying too close to the circuit patterns of glider and microlight sites. It is perhaps not surprising that the majority of GA Airprox occur below 3000ft (Figure 12) but it is surprising how many pilots choose to cruise below 3000ft when they have the option of climbing higher. Regular GA Airprox factors include pilots operating under VFR coming into conflict with aircraft operating under IFR in instrument patterns, pilots requesting an ATS inappropriate to their task and pilots not reacting to traffic information.

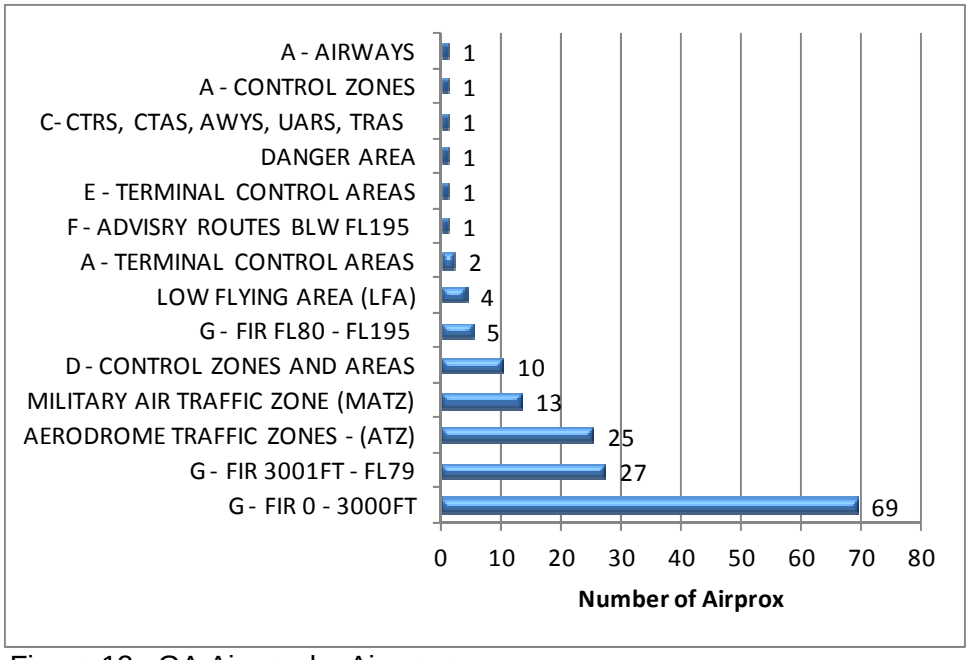


Figure 12. GA Airprox by Airspace.

MILITARY (MIL) SECTION

The number of Airprox involving at least one mil aircraft fell to 83 in 2011 from 98 in 2010. However, the number of risk-bearing mil Airprox increased as shown in Table 9.

Mil Risk	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Mil Risk A	14	8	5	10	7	2	7	8	7	9
Mil Risk B	33	35	26	27	17	15	15	23	18	21
Mil Risk C	59	48	58	48	35	35	34	38	70	44
Mil Risk D	2	1	4	0	1	0	0	1	3	1
Mil Risk E	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	8
Mil Totals	108	92	93	85	60	52	56	70	98	83
All Civ & Mil Airprox	221	181	207	188	159	154	155	147	167	161
Mil as % of Total	49%	51%	45%	45%	38%	34%	36%	48%	59%	52%
RB as % of Mil	44%	47%	33%	44%	40%	33%	39%	44%	26%	36%

Table 9. Military Airprox Risk Distribution.

Since the increase in annual mil Airprox in 2009 and 2010 was attributed in part to an improved reporting culture, it follows that the reduction in reports in 2011 may reflect a reduced readiness to report occurrences. The supporting evidence for this hypothesis is that the reduction in reported Airprox has reduced the percentage of non risk-bearing Airprox, suggesting that incidents perceived to be at the low-risk end of the scale are not being reported as readily. Figure 13 shows the risk distribution graphically; note the small number of Risk Category D events makes them difficult to see on the chart.

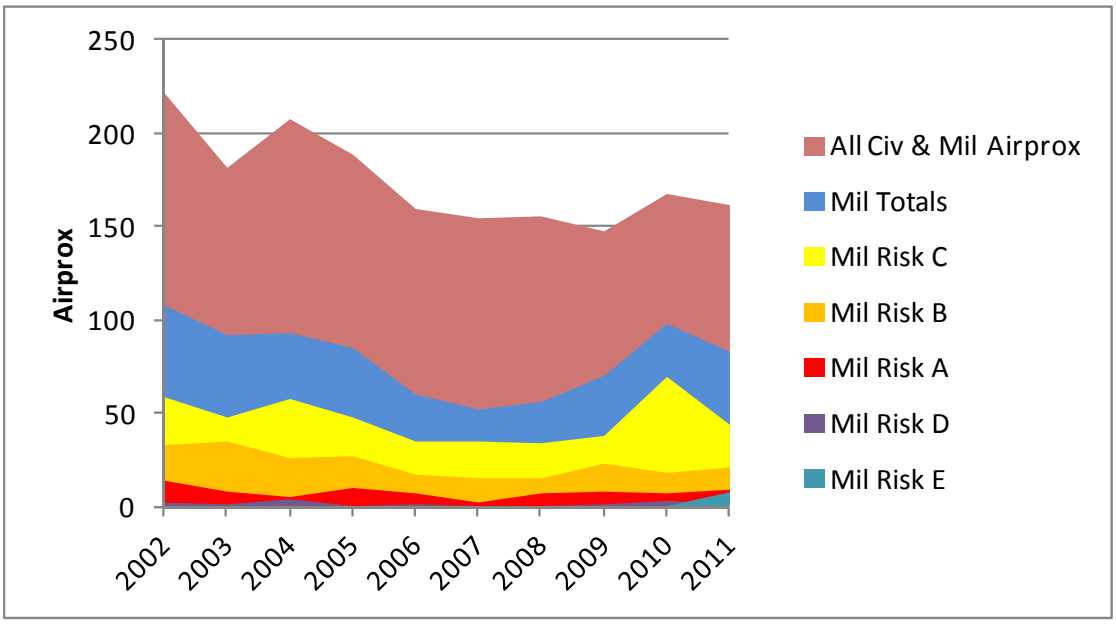


Figure 13. Military Airprox Risk Distribution.

Mil Causal Factors

The most frequent causes of Airprox involving mil aircraft are late sightings or non-sightings. The 12 most frequently assigned causes are in Figure 14. Common scenarios include the use of a Basic Service during instructional sorties and pilots in receipt of a Traffic Service not reacting to Traffic Information by manoeuvring away from the traffic in favour of maintaining course while attempting to gain visual contact; frequently a better course of action would

have been to turn away/ adjust heading to ensure safe separation in the event that the traffic is spotted late or after the closest point of approach.

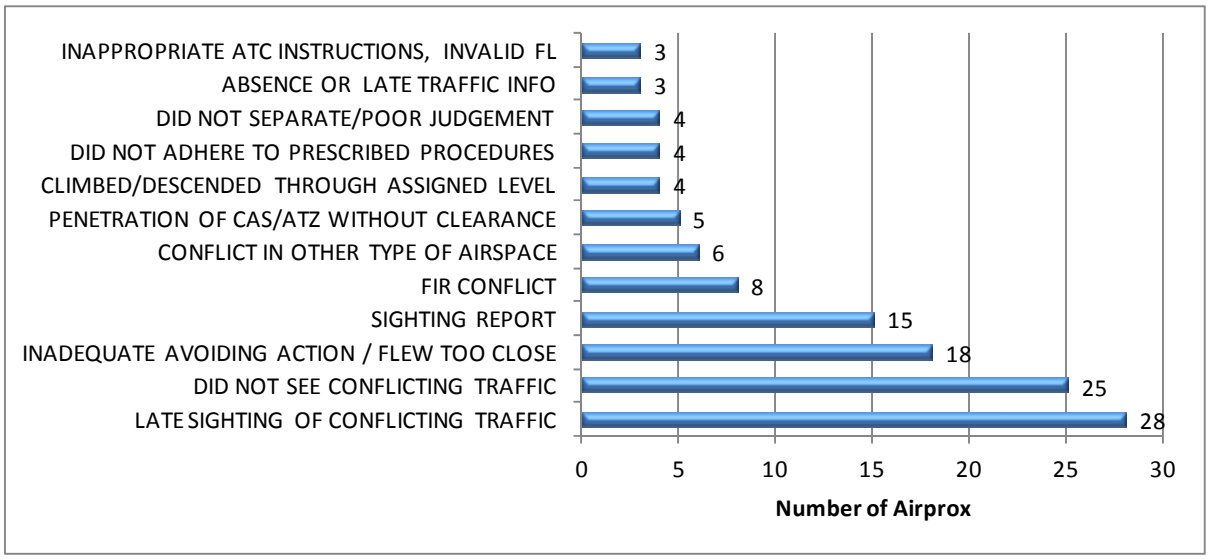


Figure 14. Mil Airprox Causes.

Turning to the airspace in which mil Airprox occur, comparatively few are reported in LFAs (Figure 15). Of the 30 mil Airprox assessed to be risk-bearing, 12 occurred outside the LFAs in the Class G airspace between 0-3000ft and 10 occurred in a MATZ or ATZ.

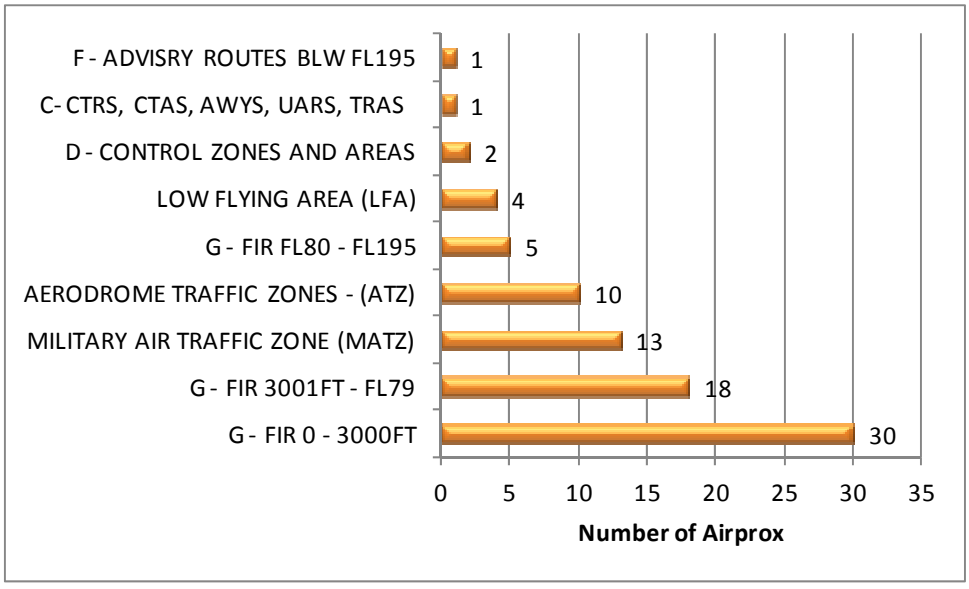


Figure 15. Mil Airprox Airspace.

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.

2010145 16 SEP 2010 involving a HAWK T MK1 and a LYNX Risk C

RECOMMENDATION:

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

ACTION: HQ AIR COMMAND

STATUS: OPEN

2011075 12 Jul 2011 involving a SAAB SF340 and x2 Tornados Risk C

RECOMMENDATION:

HQ Air Command is recommended to review the planning, co-ordination and execution of simulated attacks against targets in the vicinity of civilian airfields to ensure appropriate and effective deconfliction from civilian aircraft.

ACTION: HQ AIR

UPDATE: 9 Jan 2012. Accepted by HQ Air. Directive to Gps issued on 4 Jan requiring implementation.

STATUS: CLOSED

2011167 31 Dec 2011 involving an SF340 and a BE200 Risk C

RECOMMENDATION:

The CAA is recommended to issue a Safety Notice reminding controllers and pilots of the potential for confusion over the units of pressure, which could lead to incorrect altimeter subscale setting when the barometric pressure is below 1000hPa (or 30·00inHg).

ACTION: CAA

UPDATE: 18 Jun 2012. Accepted by CAA. Safety Notice SN-2012/009 issued 23 May 2012.

STATUS: CLOSED.

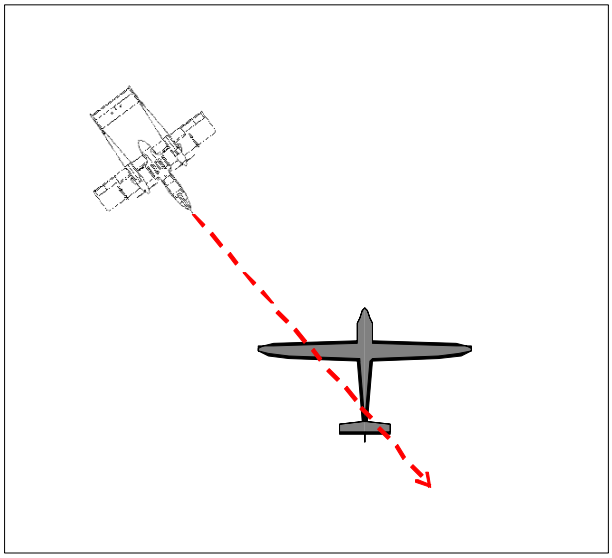
UKAB Abbreviations

aal	above aerodrome level
ac	aircraft
ACAS	Airborne Collision Avoidance System
ACC	Area Control Centre
ACN	Airspace Co-ordination Notice
ACR	Approach Control Room
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)
A/F	Airfield
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)
APR	Approach Radar Control(ler)
ARP	Aerodrome Reference Point
ASR	Airfield Surveillance Radar
ATC	Air Traffic Control
ATCC	Air Traffic Control Centre
ATCO	Air Traffic Control Officer
ATCRU	Air Traffic Control Radar Unit
ATIS	Automatic Terminal Information Service
ATM	Aerodrome Traffic Monitor
ATS	Air Traffic Service
ATSA	Air Traffic Service Assistant
ATSOCAS	ATSs Outside Controlled Airspace
ATSI	Air Traffic Services Investigations
ATSU	Air Traffic Service Unit
ATZ	Aerodrome Traffic Zone
AWACS	Airborne Warning and Control System
AWR	Air Weapons Range
AWY	Airway
BGA	British Gliding Association
BHPA	British Hang Gliding and Paragliding Association
BMAA	British Microlight Aircraft Association
BMFA	British Model Flying Association
BS	Basic Service
CANP	Civil Air Notification Procedure
CAS	Controlled Airspace
CAT	Commercial Air Transport
CAVOK	Visibility, cloud and present weather better than prescribed values or conditions
CC	Colour Code - Aerodrome Weather State
cct	Circuit
CFI	Chief Flying Instructor
CLAC	Clear Above Cloud
CLAH	Clear Above Haze
CLBC	Clear Below Cloud
CLBL	Clear Between Layers
CLNC	Clear No Cloud
CLOC	Clear of Cloud
CMATZ	Combined MATZ
CPA	Closest Point of Approach
C/S	Callsign
CTA	Control Area
CTR/CTZ	Control Zone
CWS	Collision Warning System
DA	Decision Altitude
DAP	Directorate of Airspace Policy CAA
DF	Direction Finding (Finder)
DH	Decision Height
DME	Distance Measuring Equipment
DS	Deconfliction Service
DW	Downwind
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
FOB	Flying Order Book
FPL	Filed Flight Plan
fpm	Feet per Minute
FPS	Flight Progress Strip
FW	Fixed Wing
GAT	General Air Traffic
GCA	Ground Controlled Approach
GH	General Handling
GMC	Ground Movement Controller
GP	Glide Path
GS	Groundspeed
G/S	Glider Site
H	Horizontal
hdg	Heading
HISL	High Intensity Strobe Light
HLS	Helicopter Landing Site
HMR	Helicopter Main Route
hPa	Hecto Pascals
HPZ	Helicopter Protected Zone
HQ Air	HQ Air Command
HUD	Head Up Display
IAS	Indicated Air Speed
iaw	In accordance with
ICF	Initial Contact Frequency
IFR	Instrument Flight Rules
ILS	Instrument Landing System
IMC	Instrument Meteorological Conditions
ivo	In the vicinity of
JSP	Joint Services Publication
KHz	Kilohertz
km	Kilometres
kt	Knots
L	Left
LACC	London Area Control Centre (Swanwick)
LARS	Lower Airspace Radar Service
LATCC(Mil)	London Air Traffic Control Centre (Military)
LFA	Low Flying Area
LFC	Low Flying Chart
LH	Left Hand
LJAO	London Joint Area Organisation
LoA	Letter of Agreement
LOC	Localizer
LTMA	London TMA
MATS	Manual of Air Traffic Services
MATZ	Military Aerodrome Traffic Zone
METAR	Aviation routine weather report
MHz	Megahertz
M/L	Microlight
MOD	Ministry of Defence
MRP	Military Regulatory Publication
MSD	Minimum Separation Distance
N	North
NATS	National Air Traffic Services

NDB	Non-Directional Beacon
NK	Not Known
nm	Nautical Miles
NMC	No Mode C
NR	Not Recorded
NVD	Night Vision Devices
NVG	Night Vision Goggles
OACC	Oceanic Area Control Centre
OAT	Operational Air Traffic
O/H	Overhead
OJTI	On-the-Job Training Instructor
Oo	Out of
OOS	Out of Service
PAR	Precision Approach Radar
PCAS	Portable Collision Avoidance System
PD	Practice Diversion
PF	Pilot Flying
PFL	Practice Forced Landing
PI	Practice Interception
PIC	Pilot-in-Command
PINS	Pipeline Inspection Notification System
PNF	Pilot Non-flying
PS	Procedural Service
QFE	Atmospheric pressure at aerodrome elevation
QFI	Qualified Flying Instructor
QHI	Qualified Helicopter Instructor
QNH	Altimeter sub-scale setting to obtain elevation when on the ground
R	Right
RA	Resolution Advisory (TCAS)
RAT	Restricted Area (Temporary)
RCO	Range Control Officer
RCS	Radar Control Service
RH	Right Hand
ROC	Rate of Climb
ROD	Rate of Descent
RP	Reporting Point
RPAR	Replacement PAR
RPS	Regional Pressure Setting
RT	Radio Telephony
RTB	Return to base
RVR	Runway Visual Range
RVSM	Reduced Vertical Separation Minimum
RW	Rotary Wing
RWxx	Runway xx, e.g. RW09
S	South
SA	Situational Awareness
SAP	Simulated Attack Profile
SAS	Standard Altimeter Setting
ScACC	Scottish Area Control Centre (Prestwick)
ScATCC(Mil)	Scottish Air Traffic Control Centre (Military)
SFL	Selected Flight Level [Mode S]
SID	Standard Instrument Departure
SMF	Separation Monitoring Function
SOPs	Standard Operating Procedures
SRA	Surveillance Radar Approach
SSR	Secondary Surveillance Radar
STAR	Standard Instrument Arrival Route
STCA	Short Term Conflict Alert
SUP	Supervisor
SVFR	Special VFR
TA	Traffic Advisory (TCAS)
TAS	True Air Speed
TC	Terminal Control
TCAS	Traffic Alert & Collision Avoidance System
TDN	Talkdown Control(ler)
TFR	Terrain Following Radar
TI	Traffic Information
TMA	Terminal Control Area
TP	Turn Point
TRA	Temporary Restricted Area
TRUCE	Training in Unusual Circumstances and Emergencies
TS	Traffic Service
TWR	ATC Tower
UAR	Upper Air Route
UHF	Ultra High Frequency
UIR	Upper Flight Information Region
UKDLFS	United Kingdom Day Low Flying System
UKNLFS	United Kingdom Night Low Flying System
unltd	unlimited
USAF(E)	United States Air Force (Europe)
U/S	Unserviceable
UT	Under Training
UTC	Co-ordinated Universal Time
UW	Upwind
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 2011066

Date/Time:	3 Jul 2011 1626Z (Sunday)	
Position:	5229N 00018E	(2nm N Littleport)
Airspace:	Lon FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Ventus Glider	OV10 Bronco
Operator:	Civ Pte	Civ Pte
Alt/FL:	3400ft(see Note (1)) (QFE 1020mb)	4000ft (QNH 1016mb)
Weather:	VMC CLBC	VMC CLBC
Visibility:	5nm	CAVOK
Reported Separation:	0ft V/100ft H	NK
Recorded Separation:	NK	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE VENTUS GLIDER PILOT reports soaring at 50kt on the Marham QFE of 1020mb [see UKAB Note (1)] in dark, overcast conditions in a white glider with no SSR fitted but listening out on Marham Ground when he saw a dark camouflage green, twin tail boom Bronco type ac with day glo panels, ½ nm away and approaching him. He rocked the wings of his ac to attract attention of the other pilot and then flew away from the other ac.

He assessed the risk as high and reported the incident to Lakenheath Radar.

UKAB Note (1): The Marham METAR was:

EGYM 031550Z 08004K 9999 BKN050 /// 23/11 1017mb

THE OV10 BRONCO PILOT reports during the cruise from Waddington to Kortrijk, 400ft below cloud at 4000ft, on the Lakenheath QNH of 1016mb and in receipt of a BS from Lakenheath Radar when he heard a glider pilot report that he had an Airprox with an ac fitting the description of his OV10 Bronco (twin boom with orange tips) reported to them. At the time of the incident he was heading 135° at 200kt at an alt of 4000ft, the glider pilot reported that he was at a height of 4700ft and that his ac had passed 100m away.

He did not see the glider despite that the visibility was unlimited, probably due to their vertical and lateral separation.

The pilot opined that while his Bronco is highly conspicuous, gliders are usually not, being white and with narrow fuselages and wings. Nevertheless a good look out in VMC had been maintained throughout and he thought that the reason that the glider was not seen could be attributed to: the vertical separation of at least 700ft; lateral separation (est at 100m by glider pilot); low conspicuity of glider ac in general.

THE LAKENHEATH RADAR CONTROLLER reports that the controller on duty was initially confused about which ac the glider pilot was referring to and at one point the glider pilot attempted to talk to the OV10. The controller thought an aircraft callsign XXX may have been the one the glider was referring to but it turned out not to be the case. In any event, the transcript is somewhat vague but the RT tapes were retained should they be required.

UKAB Note (2): A transcript of the Lakenheath RT was provided but it showed that, although there were several primary only contacts in the area, the glider was not identified by the controller. The transcript does, however, show that the glider pilot reported that, at the time of the incident, he was at 4100ft and the OV10 pilot reported level at 4000ft.

UKAB Note (3): The recording of the Debden Radar shows the OV10 squawking 0452 with Modes C and S tracking 140° towards a position 3nm N of Littleport where an intermittent primary only contact disappeared from cover at 1625:38. The OV10 passes through the point at 1626.11 at an alt of 4020ft.

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 air traffic controllers involved.

The Board noted that the reporting Ventus pilot's report was less than comprehensive, resulting in some aspects of the geometry of the incident being open to interpretation.

The gliding Member opined that the Ventus pilot could have considered operating on a frequency that would have provided him with more useful information; while Marham Gnd may be their SOP they are not in a position to provide any TI while clearly Lakenheath Radar might have been able to provide him a service and he would have heard other units operating on the same frequency.

Both ac were operating legitimately in Class G airspace where the RoA and the 'See and Avoid' principle apply. The glider pilot saw the Bronco in sufficient time to rock his wings and change direction to fly away from it and thus increase the separation (from the information available Members could not determine what heading he took up). Since the transcript revealed that the glider had entered a thermal immediately after the incident, climbing from 4100ft to 5100ft (Marham – elev 77ft – QFE 1017mb), the Board assumed that the pilot did not take vertical avoidance; the Bronco was at 4000ft (QNH 1016mb). Assuming the reports to be correct, the minimum vertical separation would have been just over 100ft increasing as the glider climbed. The Board agreed that the horizontal separation of 100ft reported by the glider pilot was probably an underestimate bearing in mind that he had time to take effective avoiding action; they could not however agree on an estimate.

A majority of Members considered that the Glider pilot's avoidance had removed any risk of collision.

Apart from the poor light conditions, Members could not explain why the Bronco pilot did not see the glider.

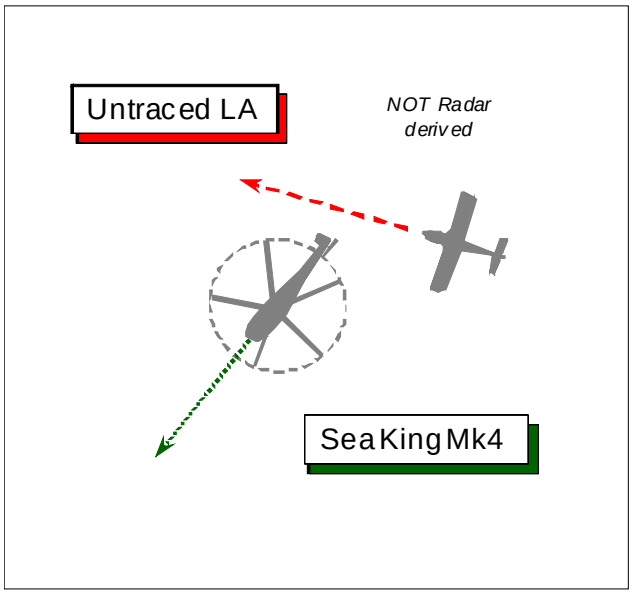
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A non-sighting by the Bronco pilot.

Degree of Risk: C.

AIRPROX REPORT NO 2011067

Date/Time:	1 Jul 2011 0909Z	
Position:	5104N 00234W (5nm NE of Yeovilton A/D - elev 75ft)	
Airspace:	MATZ/AIAA	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Sea King HC Mk4	Untraced LA
Operator:	HQ JHC	NK
Alt/FL:	1200ft QFE (1026mb)	NR
Weather:	VMC NR	NK NR
Visibility:	25km	NR
Reported Separation:	Nil V/150-200m H	NR
Recorded Separation:	Not recorded	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE WESTLAND SEA KING HC Mk4 HELICOPTER PILOT reports that he was executing a PAR to RW22 at Yeovilton and was in receipt of a Radar Control Service, he thought, from APPROACH (APP) on 295·075MHz. The helicopter colour-scheme is overall dark green, but the white HISLs and the nose lights were all on. Approaching 5nm Final, heading 220° at 70kt, level at 1200ft QFE (1026mb), a silver low-wing single-engine propeller-driven light ac (LA) passed about 150-200m astern of his helicopter at the same height from L - R. Although RADAR had primary radar contact on the unknown LA and was passing TI, he saw it late because the LA blended into the rising ground in the distance. The conflicting LA's flight path did not deviate throughout the encounter. He assessed the Risk as 'medium'.

An Airprox was later filed by telephone with ATC.

THE RADAR ANALYSIS CELL LATCC (MIL) (RAC) report that despite extensive tracing action, including contact with all aerodromes in the vicinity, the reported LA could not be traced.

UKAB Note (1): Subsequent to manoeuvring in the AIAA to the N of Yeovilton, the Sea King is shown intermittently on the Burrington Radar recording as an SSR contact only approaching 5nm Final for RW22 indicating 1000ft Mode C (1013mb), which equates to broadly 1390ft QFE (1026mb) before fading entirely. The unidentified LA is not evident at all on the radar recording.

UKAB Note (2): The Yeovilton AIAA is notified in the UK AIP at ENR 5-2-9, which promulgates intensive helicopter instrument flying training extending from the sfc to 6000ft ALT, with peak activity 0730-1500 UTC on Fridays in Summer. A LARS is available on 127·350MHz.

YEOVILTON ATC reports that the APP controller and RT voice recordings of the APP frequency support the sequence of events reported. The Sea King was vectored for a Short Pattern Circuit (SPC) PAR to RW22 at Yeovilton and was in receipt of a TS - not a RCS. The Sea King crew was instructed to descend to 1200ft QFE (1026mb), whereupon an intermittent radar contact was observed crossing the approach to RW27 at about 8-9nm E of the A/D before fading. The unknown contact then reappeared to the SE of the Sea King, about 4½ to 5nm away, tracking WNW'ly and was called as being intermittent, possibly spurious, with no secondary radar information. The contact then faded from radar again, before reappearing 2nm SE of the Sea King still tracking WNW'ly; its position was passed again to the Sea King crew. As separation decreased to 1.5nm, TI was called again along with an assessment that it would pass behind the Sea King, whose crew finally became visual with the conflicting LA at a range of 0.5nm as it passed astern.

The Approach controller was also monitoring the Yeovilton VHF LARS frequency throughout, but did not receive any radio calls from any LA that could have matched the position of the conflicting ac. The Sea King crew continued with the PAR to RW22 without further incident.

The APP controller fulfilled his responsibilities regarding the provision of a TS, keeping the Sea King crew fully apprised of the relative position of the unknown conflicting LA until it had passed behind, therefore, no advisory avoiding action was offered.

SATCO YEOVILTON commented that the Unit investigation, supported by the RT recordings, indicate that this was a late sighting of an unidentified ac. The APP controller more than fulfilled the conditions of a TS, updating the Sea King crew several times that there was a possible ac tracking towards them, although there was no supporting information to confirm the validity of the primary contact. There are several small aerodromes and LA landing strips in the vicinity of Yeovilton and, whilst most GA operators do call on the LARS frequency, there are still some that do not.

HQ JHC comments that the poor airmanship displayed by the LA pilot who chose to operate on the extended centreline of a busy airfield at around the same altitude as the glide path, undoubtedly made an Airprox much more likely to happen. This Command considers that a mid-air collision with a light coloured small ac is a very significant risk. This Airprox indicates that the light aircraft community is probably not fully cognisant of the flying operations at Yeovilton.

HQ NAVY COMMAND comments that Yeovilton has for many years had close liaison with the GA community in its vicinity and it is surprising that the LA flew within the DUA and AIAA without calling Yeovilton LARS and is certainly not the norm. The actions of the APP controller were correct, with the LA called to the Sea King crew several times. Once again though it is noted that the correct procedure for initial reporting of an Airprox was not followed; UK AIP (Mil and Civil) ENR 1.14 (3.2.1) states that 'an initial report of an Airprox by a pilot should be made immediately by radio to the ATS unit with which the pilot is in communication'. Aircrew should be reminded of the need to follow this procedure so that the correct actions can be taken by ATC as soon as possible. This issue has been added to the agenda at the next Senior Pilots Meetings of both RNAS Culdrose and RNAS Yeovilton.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included a report from the Sea King pilot, radar video recordings, together with a report from the ATSU involved and the appropriate operating authority.

This Airprox occurred outwith recorded radar coverage, which hindered tracing action somewhat and despite the best endeavours of the RAC the LA pilot could not be identified. Furthermore, in the absence of any recorded radar data, the Board's assessment could only be made on the basis of the Sea King pilot's account coupled with the ATSU's report.

It was clear that the untraced LA had been spotted by the controller and TI passed on three occasions under the TS, which finally enabled the Sea King crew to sight the LA as it passed clear astern. Members understood that a LA of small cross-sectional area approaching on a constant relative bearing would be difficult to spot, despite the reported good visibility. Moreover, the Sea King pilot reports that the LA blended into the rising background terrain hindering earlier visual detection by the crew. It may be that the untraced LA pilot, who was required by the 'Rules of the Air' to 'give way' in this situation, had seen the larger helicopter in sufficient time to alter his course and pass clear astern. However, it would have been better airmanship if the LA pilot had contacted Yeovilton on their LARS frequency whilst transiting through the AIAA adjacent to the MATZ. If he had, the LA pilot might well have benefited from a warning about the helicopter from ATC thereby giving earlier notice of the Sea King's presence that could also have mutually enhanced both pilots' SA. In the absence of his account, it was unclear if the LA pilot had definitely seen the Sea King. Therefore, based on the limited information available, the Board could only conclude that this Airprox resulted because the untraced LA pilot flew close enough to cause the Sea King crew concern.

The Board can only base its assessment on what had actually occurred and not what might have happened if circumstances had been slightly different. Nevertheless, this close quarters situation could have been prevented if the LA pilot had given the helicopter a wider berth. Despite the reported minimum separation, it seems that APP

maintained a good flow of TI to the Sea King pilot and no avoiding action was taken, nor did the helicopter pilot break off his approach. In the absence of recorded radar data it was not feasible to confirm the minimum separation as the LA passed astern of the helicopter and the Board debated whether there was sufficient evidence available to enable the Members to reach a meaningful conclusion on the Risk. The majority view prevailed here and it was concluded that there was no Risk of a collision in these circumstances.

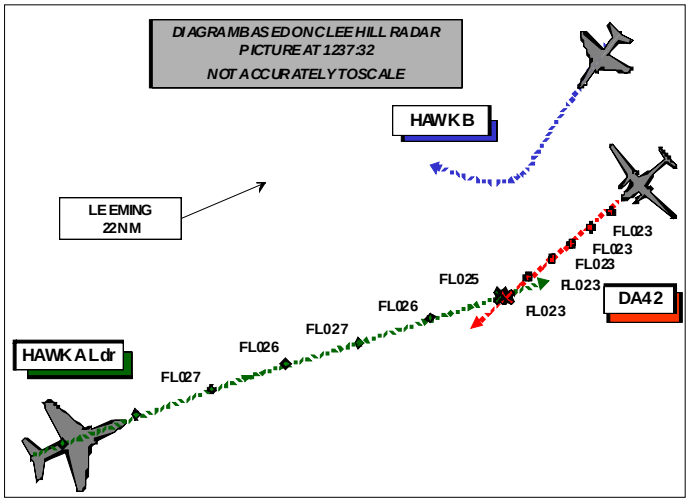
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The untraced LA pilot flew close enough to cause the Sea King crew concern.

Degree of Risk: C.

AIRPROX REPORT NO 2011068

Date/Time:	1 Jul 2011 1237Z	
Position:	5410N 00205W (22nm SW Leeming)	
Airspace:	London FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Hawk T1	DA42
Operator:	HQ Air (Ops)	Civ Pte
Alt/FL:	2900ft	3000ft
	(QFE 1022mb)	(QNH 1026mb)
Weather:	VMC	NR
Visibility:	50km	50km
Reported Separation:		
	0 V/300-400ft H	200ft V/500m H
Recorded Separation:		
	200ft V/<0.1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE HAWK T1 PILOT (HAWK A) reports that he was leading a formation of 2 black ac on an advanced training flight with all external lights switched on; they were heading 070° on recovery to Leeming at 380kt at 1000ft, squawking 7001 with Modes C and S but TCAS was not fitted. During the recovery he pulled up 30nm W of Leeming in order to listen to the ATIS and call APP. Once level at 2900ft on the Leeming QFE, both crew members saw another Hawk (Hawk B) in their 10 o'clock, slightly high in a right hand turn. They had yet to establish two-way communication with APP who was talking to another formation of Hawks. Whilst looking for other possible members of the formation, the handling pilot (front seat) looked forward and spotted a light-coloured twin-prop light ac ¾nm away, wings level on a reciprocal heading, about 300-400ft below them. To maintain separation and remain visual, he climbed slightly and once well clear turned 90° right to identify the other ac. The other ac appeared not to have deviated from its track and remained slightly lower than them.

He assessed the risk as being Medium.

THE DA42 PILOT reports flying a white twin-engine ac with TCAS fitted on private VFR local flight from Leeds/ Bradford with a passenger, squawking with Modes C and S; at the time of the incident he was in receipt of a BS from Linton LARS [actually Leeming - see controller's report]. He was in the position of the reported incident, tracking 310° at 160kt and at 3000ft amsl when he saw a contact on TCAS. His TCAS display indicated that an ac was on reciprocal heading, above him in straight and level flight; about 2sec later he saw 2 black military ac, with nose lights, in his 12 o'clock that he believed were on a local training exercise [Hawk A Ldr and No2]. As he was taught on his initial pilot training, he maintained a steady heading and alt since he did not think it necessary to climb or descend in order to avoid them. He thought that the military ac would take the necessary avoiding action if they needed to.

He assessed the risk as low.

THE LEEMING ZONE CONTROLLER reported that at the time he was bandboxing Topcliffe RAD/Dir which included monitoring the LARS freq, Topcliffe VHF for Bagby traffic and 3 UHF frequencies (which were quiet at the time of the incident). It was a med-low intensity session within the capacity of a controller who was familiar with operating both Leeming LARS and Topcliffe, which is not unusual. He was working 4 BS tracks; including the DA42 GH N of Leeds Bradford, an ac on a LARS transit to the W of Leeming and 2 tracks which free called inbound Bagby, resulting in a convoluted conversation with one track in particular whose C/S was difficult to ascertain. A number of ac were manoeuvring at low level to the W of Leeming and numerous primary contacts, believed to be gliders, were in the vicinity of Sutton Bank.

At about 1236 he passed TI to the GH ac to the W of Leeming (he believed to be the DA42 reported) and shortly after, updated the TI. The DA42 pilot replied that he had the other ac on TCAS and was also visual. Shortly afterwards, at about 1238, TI was passed to the DA42 pilot about another ac, also to the W of Leeming on a LARS transit. The DA42 then reported that he was visual with a Hawk [Hawk A No 2] that had gone underneath him and he would keep a good look out for further traffic.

The Hawk pilot reported the Airprox after landing.

BM SAFETY MANAGEMENT (abridged to avoid duplication) reported that this Airprox occurred between a Hawk (Hawk A Ldr) operating VFR on recovery to RAF Leeming, but not yet in communication with Leeming APP, and a DA42 conducting GH in the Vale of York under VFR and a BS from Leeming Zone.

At the time of the incident, Zone reports that they had 4 ac on freq under a BS and that their work and task-load was medium to low.

The DA42 contacted Zone at 1231:35 and was placed under a BS. At 1233:21 Zone passed TI to the DA42 on unrelated traffic, followed at 1236:17 by Zone passing further TI to the DA42 on an unrelated Hawk (Hawk B). At 1236:41 the TI on Hawk 2 was updated and the DA42 pilot reported, "*yeah visual, visual with that*". No TI was passed to the DA42 on Hawk A Ldr or No2.

At 1236:52 Zone began to transmit on Topcliffe VHF to Ac4, inbound to Bagby. The exchange of RT between Zone and Ac4 continued until 1237:24. There was then a gap of 28sec until Zone transmitted to Ac4 to recycle their SSR Mode 3A.

The pilot of Hawk A stated in his report that 'once level at 2900ft on the Leeming QFE, both crew members spotted another Hawk [Hawk B] in the left 10 o'clock, slightly high in a right hand turn'. Based upon the subsequent events and analysis of the radar replay, the ac spotted by the crew of Hawk A Ldr was Hawk B. On the radar recording, Hawk B can be seen in a right hand turn NW of the DA42 closing with it to about 0.6nm laterally and 400ft vertically.

The CPA with Hawk A Ldr was at 1237:32, with zero lateral separation discernable on the radar recording and 200ft vertical separation indicated. Hawk A Ldr freecalled APP at 1237:53, 21sec after the CPA. At 1238:14, Zone passed TI to the unrelated ac (Ac2) on both Hawk A Formation and Hawk B and continued to provide appropriate TI to all other ac in receipt of a BS.

Zone's actions in the period leading up to and following the Airprox demonstrate that he was aware of his duty of care under a BS and was discharging this by providing warnings when he perceived there to be a risk of collision. Therefore, the fact that he did not pass TI to the DA42 on Hawk A Ldr suggests that his attention was diverted elsewhere. Moreover, the fact that Zone passed TI to Ac2 on both Hawks indicates that this was the point where he re-focused his attention on that area of the display and, importantly, the first point where he saw Hawk A Ldr.

During and following the exchanges of RT at 1236:52 and 1237:24 between Leeming Zone and Ac4, it is reasonable to assume that Zone would have completed the FPS and waited for the ac to squawk the assigned SSR Mode 3A in order that he could validate and verify the SSR. It appears that these tasks may have precluded Zone from passing TI to the DA42 on Hawk A Ldr. However, the responsibilities of the crews of Hawk A Ldr and the DA42 to 'see and avoid' other traffic are clear. Moreover, as stated in the unit's internal investigation, it is reasonable to argue that Hawk A Ldr crew's relatively late sighting of the DA42 at ¾nm was as a result of their focus on gaining visual contact with other members of the other Hawk formation, having sighted only one ac. Fortunately however, Hawk A Ldr crew was able to sight the DA42 in time to take effective avoiding action.

Of greater concern is the DA42 pilot's statement that 'as per pilot training I maintained a steady heading and altitude. I didn't feel the need to climb or descend in order to avoid. Military ac would take the necessary avoiding action if required'. One interpretation of this statement is that the DA42 pilot believes that military ac will 'see and avoid' civil ac. This suggests either a misunderstanding by this individual pilot of the Rules of the Air and their applicability to aviators or, more worryingly, could suggest a failure of the training delivered by that pilot's flying school.

HQ AIR (OPS) comments that the delay by the Hawk A Ldr pilot in contacting Leeming APP may have contributed to the Airprox, in that there was no opportunity for the controller to give TI to him on either the other Hawk formation

[Hawk B] or the DA42. Hawk A Ldr pilot may have been devoting more attention to visual acquisition of the other formation and his lookout scan in other sectors could have been reduced. However, it seems that the DA42 pilot was aware of the Hawk's presence, firstly by TCAS and then visually, and should taken at least some avoiding action to prevent such a close encounter.

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.

Controller Members agreed that the circumstances of this encounter were such that, despite that the DA42 was on only a BS, Leeming Zone should have provided the pilot with a warning of Hawk A Ldr's presence since the ac were clearly on a collision course. Leeming App, on the other hand, although co-located did not have sufficient time or information to provide such a warning to Hawk A Ldr, but his heightened lookout for a possible wingman to Hawk B revealed the white DA42 directly ahead and slightly below him.

Members agreed that this had been a head on situation and the ANO Rule 10 applied which requires both ac to alter course to the right; needless to say this requires both pilots to see the opposing ac in time to do so. The Hawk pilot saw the DA42 at a distance he estimated to be ¾nm. At a closing speed of about 540kt this gave the Hawk pilot 5 sec to see assimilate and react to the DA42 by initiating a 'slight climb'. Members were perplexed as the Great Dun Fell radar recording [8 sec update rate] seemed to show the Hawk in a continuous slight descent [continuing even after the diagram above]. Mode C is accurate only to ±200ft and [in this case] only updates every 8 sec so small altitude deviations are sometimes not apparent on radar recordings. The DA42 pilot reported that despite having acquired the Hawks [A Ldr and 2] on TCAS he maintained heading and altitude as he thought that the military ac would take the necessary avoiding action if required. Members noted that the ANO is quite specific and in Class G airspace the respective pilots have an equal and shared responsibility to avoid each other; expecting other ac to initiate avoidance is imprudent since it is totally dependent on the other pilot seeing you in time to initiate avoidance and this is often not the case. Members thought it wise in a majority of encounters to assume that the opposing pilot has not seen you and react accordingly. Members could not determine whether the DA42 pilot had misinterpreted the ROA collision avoidance responsibilities and believed that military ac would avoid civil ones or had merely expressed himself poorly in his report. Another interpretation could be that he believed, in this case mistakenly, that the Hawk pilot's avoidance would be more timely and more effective than any he could initiate, or that sufficient vertical separation existed.

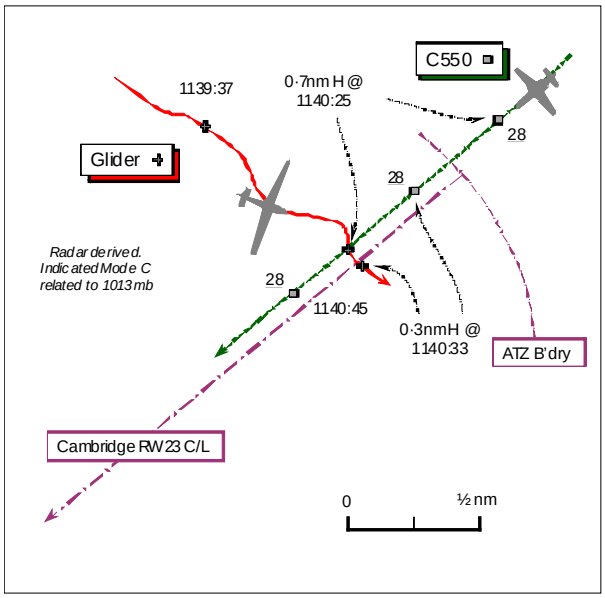
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict in Class G airspace resolved by Hawk A Ldr.

Degree of Risk: C.

AIRPROX REPORT No 2011069

Date/Time:	2 Jul 2011 1140Z (Saturday)	
Position:	5213N 00013E (2nm NE of Cambridge Airport - elev 47ft)	
Airspace:	London FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	C550B	Discus Glider
Operator:	Civ Comm	Civ Club
Alt/FL:	3000ft	3600-5000ft
	QNH (1020mb)	QNH
Weather:	VMC NR	VMC Clear Sky
Visibility:	10nm	20km
Reported Separation:		
	200-300ft V/nil H	500ft +V
Recorded Separation:		
	Not recorded	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE CESSNA CITATION II C550B PILOT (C550) reports he was inbound to Cambridge Airport at 160kt under IFR in VMC and in receipt of a 'Radar Control' service, he thought, from Cambridge ATC. Flying the LLZ course for RW23 level at 3000ft a glider appeared very close overhead about 200-300ft above his ac in what seemed like a diving turn with a nose-down attitude. The glider was not evident on his ac's TCAS and its pilot was not in RT contact with ATC. The glider was seen too late and was already astern before avoiding action could be taken. He reported the Airprox to TWR on RT.

UKAB Note (1): The RW in use at Cambridge was RW05; the C550B pilot initially requested an IFR approach to RW23 that was approved by ATC. Subsequently, the C550 was broken off from the instrument approach to RW23 and instructed to make an approach to RW05. It was whilst flying through, prior to commencing the approach to RW05, that the Airprox occurred.

THE SCHEMPP-HIRTH DUO DISCUS GLIDER PILOT, who may or may not be the reported glider pilot, reports he had departed from Gransden Lodge GS and was flying about 1nm N of Cambridge RW centre line at about 3600 – 5000ft QNH, turning to the R in a thermal at 50-55kt. His rear-seat passenger was in the process of passing him the radio frequency for Cambridge TOWER, but at this point he had not entered it into the radio, which in this two-seater glider can only be done by the front seat pilot.

During part of the turn he first observed a white ac about 1–1·5nm away. The ac was flying below his glider at about 3000ft, but at this point he was not aware of the ac type or its heading. Completing a 360° turn, he saw the white twin-engine private jet pass 500ft plus beneath his glider on the RW centre-line heading. He mentioned the jet to his colleague in the rear seat who had also observed the ac pass beneath them. Neither he nor his passenger heard the jet - even when it was below them. Watching the jet cross the centre-line of Cambridge airport without landing [threshold?], he did not consider this at any point to be a 'close contact' and assessed the Risk as 'light'.

FLARM is fitted to his glider, but he had not detected the twin-engine jet on this device beforehand. He has only seen vague details of the C550 pilot's account, but believes the C550 ac was at 3000ft on the centre line when its pilot saw a glider descending above the C550. However, as he had also observed other gliders in the vicinity he now believes he is not the glider pilot involved in this Airprox - just the only glider pilot who admits to seeing the jet!

THE CAMBRIDGE APPROACH CONTROLLER (APP) reports that the C550 had been cleared to the CAM at an altitude of 3000ft Cambridge QNH (1020mb) for a procedural NDB approach to RW05. Whilst in the Cambridge

overhead, the C550 pilot reported a white glider less than 100ft above, which appeared to be diving towards his ac. The Glider pilot had not contacted Cambridge APP and was unknown to ATC.

ATSI reports that the Airprox occurred in Class G airspace at 1140:41 UTC, 2.1nm to the NE of Cambridge Airport at 3000ft and above the Cambridge ATZ, which extends from the surface to a height of 2000ft above the aerodrome elevation of 47ft and is bounded by a circle 2½nm radius centred on the mid-point of RW23.

The C550 was an IFR flight inbound to Cambridge airport from St. Gallen-Altenrhein (LSZR). The glider involved in the Airprox is believed to be a Schempp-Hirth Duo Discus T glider, operating from Gransden Lodge, which is notified in the UK AIP as a Glider Launching Site, active from sunrise to sunset, where aerotows and winch launching take place to 3000ft above the site elevation of 254ft. Gliders operate daily from Gransden Lodge subject to Weather conditions.

Cambridge MATS Part 2, Section 1, Page 29, paragraph 10.4 Gliding sites, states:

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

There was no AIS NOTAM regarding any additional gliding event at Gransden Lodge.

The Cambridge APP controller was providing an Approach Procedural Service (PS) without the aid of survellance equipment. The Airprox occurred on a Saturday and the UK AIP promulgates the hours of Cambridge Radar, in Summer, as 0700-1800 UTC and by arrangement. No withdrawal of Radar service had been promulgated by AIS NOTAM. The ATSU reported that the provision of a radar service is subject to the availability of suitably qualified staff. After two similar Airprox occurrences [this and Airprox No 2011048] Cambridge ATSU are reviewing their procedures for promulgating the hours of availability of the ASR.

The 1120UTC Cambridge METAR is: 04004KT 330V130 9999 FEW032 19/09 Q1020=

At 1133:30, the C550 pilot contacted Cambridge APP and reported descending to an altitude of 4000ft. APP acknowledged the call, passing the QNH (1020mb) and requesting from the pilot, the type of service and approach that was required. RW05 was notified as the runway in use with a light and variable wind. In response the C550 pilot requested a DS and an ILS for RW23. The controller reported that radar was not available and agreed to provide a PS. The controller cleared the C550 to the CAM (NDB) in the descent to 4000ft QNH with no delay for a procedural ILS approach to RW23. [ATSI Note: The controller had approved an approach to the opposing runway that is equipped with an ILS].

At 1134:15, the radar recording shows the C550 at a position 11nm to the SE of the airfield. The C550 pilot requested permission to carry out a non standard direct entry from the SE of the airfield. The controller approved the procedure and gave the C550 further descent to 3000ft QNH. [ATSI Note: The pilot intended to approach the CAM (NDB) from the SE turning R to intercept the outbound QDR of 063° (CAT A,B) for the ILS/DME/NDB(L) approach to RW23.]

At 1136:42 the C550 pilot reported 3nm from the beacon turning outbound. The controller instructed the C550 pilot to report LLZ established and advised that TOWER was very busy with traffic using RW05 and that the C550 might have to break off the approach to RW23.

At 1137:30, before the Airprox occurred, the controller instructed the C550 pilot to cancel the approach and climb to an altitude of 3000ft. The controller then cleared the C550 to route to the CAM (NDB) to fly outbound for the NDB approach for RW05. The C550 reported level at 3000ft QNH (1020mb) and requested confirmation of a L turn back to the CAM. This was confirmed by the controller with an instruction to maintain 3000ft and report beacon outbound or field in sight. The pilot reported that he would complete the IFR approach.

[UKAB Note (2): At 1139:37, the radar recording shows the C550, 5·6nm NE of Cambridge inbound to the CAM (NDB). Also shown are two possible glider contacts: one tracking SE to the N of the centreline and crossing the RW23 approach at a range of 2·1nm. At 1140:25, the radar recording shows the primary contact – which might or might not be the glider seen by the C550 crew - converging with the C550 just before crossing the centreline, 2·1nm NE of the airfield, with the C550 inbound to the CAM (NDB) indicating 2800ft Mode C (1013mb) – equating

to about 3010ft QNH (1020mb). The distance between the two ac is 0·7nm. The contact is shown again at 1140:33, in the C550's L 11:30 at a range of 0·3nm, to the S of the centre-line. This contact then fades as the C550 passes just to the N of the last observed position.]

At 1140:25, the C550 pilot reported, "..[C550 C/S] *we have a glider which is er well it's obviously inside our IFR zone and well what is he a hundred feet above us now diving."* The controller responded, "[C550 C/S] *roger I..have that visual now from the control tower apologies he's not talking to us.*" The C550 pilot advised that he intended to file a report.

The C550 then completed an NDB approach for RW05 and during the approach procedure the pilot reported turning in early to avoid another unrelated ac 200ft above. The radar recording showed the closest range between these ac was 1.1nm with 300ft vertical separation.

The C550 was in receipt of a Procedural Service. The Manual of Air Traffic Services, Section 1, Chapter 11, Page 10, paragraph 6.1.1, states:

'A Procedural Service is an ATS where, in addition to the provisions of a Basic Service, the controller provides restrictions, instructions and approach clearances, which if complied with, shall achieve deconfliction minima against other aircraft participating in the Procedural Service. Neither traffic information nor deconfliction advice can be passed with respect to unknown traffic.'

ATSI recommended that Cambridge ATSU in consultation with the CAA ATSD Southern Regional Inspectorate, urgently review the provision and promulgation of the Unit's radar services. A number of recent Airprox events have occurred when pilots had an expectation that radar services would be available in accordance with the promulgated periods of availability. In these instances pilots were advised on initial contact, that radar was not available, often in circumstances when a number of gliders were operating in the vicinity of Cambridge Airport without controllers being aware of their presence.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilot of the C550 and a glider pilot, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controller involved and a report from the appropriate ATC authority.

Without positive radar evidence or Mode S data on the reported ac, tracing action can be problematic when endeavouring to identify a specific glider involved in an Airprox, especially when there are a number of them flying in the vicinity. In this case a degree of uncertainty persisted that could not be eradicated and which naturally affected the Board's assessment of Cause and Risk.

Here the RAC had traced the Duo Discus pilot that was operating in the vicinity at the time the Airprox occurred and whose report is included here. It is plain from his report that he saw the C550 fly along the centreline of RW23 westbound toward the CAM at 3000ft ALT. However, the Duo Discus pilot's reported operating altitude of 3600-5000ft does not closely correspond with the C550 pilot's comment on RT that it was "*..a hundred feet above us"* or his subsequent reported vertical separation of 200-300ft. The radar recording strongly suggests that the contact shown tracking across the centreline, moments before the C550 flew through was the Duo Discus, but without a positive identification or corresponding Mode C indication from the glider this could not be ascertained with certainty. Moreover, at the time of the Airprox the Duo Discus pilot report's he was turning R in a thermal, which is not evident on the recording. However, as the primary contact of the glider had faded from recorded radar coverage at the critical moment it was feasible that it might well have been executing a turn at the time. Members agreed that the identity of the reported glider was not confirmed, but it seemed most likely that it was the Duo Discus pilot's glider and the Board commended him for 'stepping up to the plate' and providing a frank and comprehensive account, which demonstrated a conscientious attitude to flight safety.

In the light of his remarks on the RT that "…*it's obviously inside our IFR zone...",* controller Members were concerned that the C550 pilot might not be fully cognisant of the nature of the surrounding airspace and his responsibilities for avoiding other VFR ac when flying IFR in the Open FIR. As Cambridge Airport is not afforded CAS outwith their ATZ, the highest level of radar service available to pilots operating in the 'see and avoid' environment of Class G airspace is a DS. To his credit, the C550 pilot had requested a DS, not the 'Radar Control'

Service he had mentioned in his account. It was unfortunate, therefore, that none was available due to the absence of any radar qualified controller being available 'on watch' at the time. Members were cognisant that this topic had featured in Airprox reports earlier this year and noted that the ATSU is reviewing their procedures for promulgating the availability of their ASR. This was an important point since, short notice unserviceability excepted, pilots should know with reasonable certainty beforehand whether they can expect a radar service to be available at their destination or not. Irrespective of the prevailing good weather, if Cambridge had provided a DS then the IFR C550 pilot could reasonably have expected appropriate deconfiction minima to be afforded against observed conflicting traffic. The Board was briefed that the ATSU is actively seeking to recruit radar-qualified controllers, which mollified Members somewhat.

As a general point the BGA glider pilot Member thought it unwise to be thermalling on the RW centerline to a regional airport and earlier contact with ATC to advise of the glider's presence would have been helpful. Nevertheless, the Board understood the Duo Discus pilot was soaring quite legitmately in Class G airspace when the C550 underflew his glider. Some Members percieved that this Airprox was the result of the glider pilot flying close enough to cause the C550 pilot concern, but as he reports flying no lower than 3600ft this would have been some 600ft above the C550's Mode C indicated level. However, the Duo Discus glider has a span of 20m, somewhat larger than the C550; at such a size, although perceived to be very close overhead, it might well have appeared to be closer than it actually was. The Board could not resolve this anomaly and the Member's concluded unanimously that this Airprox had been the result of a conflict in Class G airspace with no risk of a collision.

PART C: ASSESSMENT OF CAUSE AND RISK

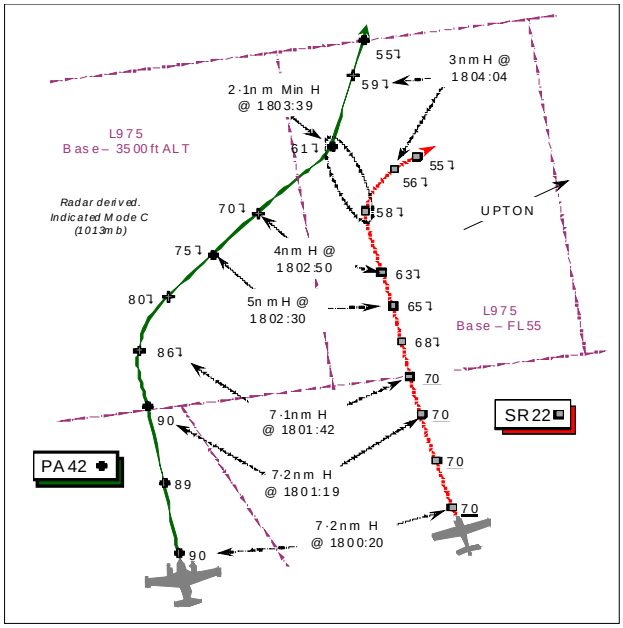
Cause: A conflict in Class G airspace.

Degree of Risk: C.

AIRPROX REPORT No 2011071

AIRPROX REPORT NO 2011071

Date/Time:	3 Jul 2011 1803Z (Sunday)	
Position:	5335N 00131W (8nm W of Upton)	
Airspace:	Awy L975	(Class: A)
Reporter:	Leeds RADAR	
	1st Ac	*2nd Ac*
Type:	PA42 IIIA	Cirrus SR22
Operator:	Civ Comm	Civ Pte
Alt/FL:	↓FL60	↓7000ft
	SAS	QNH
Weather:	VMC	VMC
Visibility:	>10km	NR
Reported Separation:		
	Leeds RAD: 300ft V/2·1nm H	
	NK	NK
Recorded Separation:		
	300ft V @ 2·1nm H	



CONTROLLER REPORTED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE LEEDS-BRADFORD AIRPORT RADAR CONTROLLER (LEEDS RAD) reports that she had just taken over control of the position when she gave SAC (Prestwick) FL60 as the initial level for an inbound PA42, released out of FL90, but not on the frequency. Doncaster ATC then rang and spoke to the ATS Assistant (ATSA) to pre-note an inbound SR22; however, the ATSA was unsure if the pilot wanted an IFR or VFR joining clearance.

At approximately 1801, she noticed an A6162 squawk – the SR22 - about 1nm S of L975 at FL70 heading N towards the airway. She called Doncaster APP and asked the controller to confirm they had coordinated the SR22 squawking A6162 through L975 at FL70, but the controller replied he was just going to call SAC. The Doncaster controller said that he would descend the ac to FL55 to pass clear beneath the airway. Leeds RAD then told Doncaster APP about the PA42 descending to FL60 to the W of the SR22.

Doncaster APP rang back about 1min later at 1802; the A6162 squawk had entered Class A CAS at FL66 and thanked them for their 'heads up'. At this point the PA42 was still not on her frequency and had turned onto a base-leg. She told the Doncaster controller that the PA42 was not on her frequency and suggested he turn his traffic R. She then rang SAC (Prestwick) and asked them to stop-off the PA42 at FL70 because of the SR22, but they were unable to do so as they had already transferred the PA42 to her frequency. Immediately she tried to contact the PA42 on the RT, but without any reply. SAC then told her they had no knowledge of the SR22 working Doncaster inside Class A CAS. The PA42 pilot called on the frequency and so she issued avoiding action to turn the PA42 away from Doncaster's SR22, stopping the PA42's descent at FL60.

Doncaster then called and told her the SR22, under their control, was being turned away from the PA42 and asked whether she was happy to take control of the SR22. Prescribed separation was eroded to a minimum of 2·1nm and 300ft.

THE PIPER PA42 CHEYENNE IIIA PILOT (PA42) reports he was inbound to Leeds-Bradford at 190kt from Oxford. The assigned SSR code was selected with Modes C and S on; TCAS is not fitted. From memory it was a good VMC day and he had been receiving radar vectors under IFR with either a RCS from Scottish CONTROL or a Radar Approach Control Service from Leeds APP towards their ILS. Also he considers he would have been inside CAS from the description given to him as to where the incident occurred. However, nothing was heard from any other ac or either of the radar controllers on the RT indicating that an Airprox had occurred. He was unaware

of this Airprox until contact was established by the UKAB through the ac operator. His ac is coloured white with red and blue stripes; the wing strobes and wingtip recognition lights were on.

THE CIRRUS SR22 PILOT reports he was inbound to Leeds-Bradford from Goodwood at 160kt. As the Airprox was not reported on the RT at the time, he regrets he has very little information. As far as he could remember he was flying either IFR, or VFR with a TS from Doncaster APP. As he approached Leeds, the Doncaster APP controller vectored him onto an easterly heading and then requested he 'contact' Leeds RADAR, which he did. He was under the impression he had been 'handed-over' to Leeds RADAR, however, on speaking to Leeds RADAR it seemed this had not happened. He did not see the other ac nor did he pick it up on TCAS, he thought. He is sorry for the lack of detail and he apologised for any inconvenience caused.

The ac has a white/grey colour-scheme and the landing light and 'strobes' were on. TCAS I is fitted; SSR Mode S was on.

THE SAC (PRESTWICK) MACC TACTICAL TRAFFIC MANAGER reports the PA42 was inbound to Leeds-Bradford and control and communication of the ac had been transferred to Leeds ATC when the Sector team became aware of the CAS Infringement Tool (CAIT) activating on a target squawking 6162, he thought, just entering CAS to the SE of the PA42 at FL70.

Subsequent phone calls between the Sector PLANNER, Doncaster and Leeds APPROACH established that the infringement was caused because of a late call and subsequent late identification of the SR22 by Doncaster ATC, although actually inbound to Leeds. The Doncaster and Leeds controllers resolved the confliction between the two ac.

THE DONCASTER APPROACH RADAR CONTROLLER (APP) reports that at 1800 UTC, he thought [actually at 1756:10], the SR22 pilot called Doncaster APP requesting a TS at 7000ft QNH (1017hPa). The flight was allocated a squawk of A6162 and the ac's position was 7nm S of Sheffield disused airfield. He advised the SR22 pilot he would pass on his details to Leeds ATC, although the pilot was unsure whether it would be an IFR or VFR join. As he was about to transfer the SR22 to Leeds he noticed traffic 5nm W at FL90, which he believed may have been traffic inbound to Leeds and passed TI. At this point Leeds called and asked if he had coordinated entry into L975 with SAC (Prestwick), which at this point he had not; he advised Leeds RAD that he would turn his SR22 E, descend it to FL55 and advise his intentions to SAC. The SR22 pilot was updated on the traffic and a turn onto 070° was given, which was acknowledged, but in his opinion the SR22 pilot was slow to take the turn. Shortly afterwards the TI was updated (now 3nm NW at a similar altitude); a further R turn onto 090° was given and the ac was observed turning R. He called Leeds RAD and advised that the traffic was now clear of confliction and being transferred to their frequency.

ATSI reports that the SR22 was on a flight from Goodwood to Leeds-Bradford Airport and was in receipt of a TS from Doncaster APP on 126·225MHz. The PA42 was on a flight from Oxford to Leeds-Bradford Airport and had been in receipt of a RCS from the SAC (Prestwick) NORTH Sector (SCOTTISH) on 136·575MHz before being transferred to Leeds RAD on 133·125MHz.

The Doncaster/Sheffield METAR for 1750UTC: 25008KT CAVOK 24/09 Q1017=

The Leeds-Bradford METAR for 1750UTC: 28012KT CAVOK 20/04 Q1017=

At 1755 the PA42 pilot called SCOTTISH in the descent to FL120 on a heading of 345°. The flight was given further descent to FL90. [The PA42 remained inside CAS throughout this incident]. The SCOTTISH North Sector was being operated by a PLANNING controller and a trainee TACTICAL controller with mentor. The Sector was described as 'not particularly busy' and workload 'average'. The TACTICAL OJTI recalled sitting between the trainee and the PLANNER with a good view of the situation display and flight progress strips. The OJTI and trainee were paying particular attention to Manchester departures – an area where the trainee needed greater scrutiny.

At 1755:20 the SCOTTISH PLANNING controller telephoned Leeds RAD to co-ordinate the inbound PA42. It was agreed that the flight would be transferred descending to FL60, routeing direct to the 'centre fix' (RW32) and released out of FL90. Both controllers during this conversation were male.

AIRPROX REPORT No 2011071

The SR22 pilot called Doncaster APP at 1756:10, requesting a TS. The ac was outside CAS and the pilot reported flying a heading of 350° and maintaining 7000ft QNH (1017hPa). (The UK AIP at ENR 1-7-1 stipulates that that Transition Altitude in that portion of uncontrolled airspace within which the SR22 was flying is 3000ft.) The Doncaster APP controller agreed to provide a TS and a squawk of A6162 was assigned. The SR22 pilot was asked if the ac was, "*inbound VFR"; he* replied, "*affirm*", but reported uncertainty over whether or not a VFR or IFR approach at Leeds-Bradford was required. Both pilots' written reports indicated that their flights were IFR in VMC.

Doncaster APP called Leeds RAD at 1758:30, asking if the unit had details on the inbound SR22. Leeds RAD had no details but noted that the ac was 'one of theirs'. Details and the position of the SR22 were passed and it was agreed that Doncaster APP would inform Leeds RAD of the type of approach required once it had been decided by the pilot.

At 1759:20 the Doncaster APP controller informed the SR22 pilot that the flight's details had been passed to Leeds RAD and the unit advised that the type of approach required was still to be determined. Traffic Information was also passed to the SR22, "*…on your left hand side…5 miles similar track descending through flight level 9-3 possibly a Leeds inbound*." The pilot reported having the traffic, "*on TCAS.*" The controller also stated that, once clear of the traffic, the SR22 would be transferred to Leeds RADAR.

The Doncaster APP controller updated the TI to the SR22 pilot at 1800:50, "*that traffic maintaining 9 west abea- in fact just descending out of 9 now you can squawk 7000 and continue with er Lee- in fact just standby got a feeling Leeds are on the phone*."

At 1801:00 Leeds RAD called Doncaster APP. The Leeds RAD controller enquired about 'the 6162 squawk' [the SR22] and asked if the ac had been given clearance through L975. Doncaster APP stated, "*I was just about to make that call or offer him descent."* Leeds RADAR then pointed out the PA42. Doncaster APP stated that traffic had been called [to the SR22 pilot] adding, "*I'll just drop him now below 55 I'll speak to Scottish*."

At 1801:20, Doncaster APP instructed the SR22 pilot to descend to FL55 adding, "*gonna keep you clear of the airspace there*." Also at 1801:20, SCOTTISH TACTICAL instructed the PA42 to descend FL60 and turn R heading 040°.

At 1801:46, Doncaster APP telephoned SCOTTISH, pointed out the SR22 and apologised for not calling earlier. The SCOTTISH controller acknowledged this information and stated, "*yer we've got that … no worries."* At the same time the SR22 entered airway L975, Class A CAS, at FL70, 10nm SW of UPTON where the base of CAS is notified at FL55 – the UK AIP ENR 3-1-1-30 (02 Jun 11) refers.

(ATSI Note: This call appears on the Doncaster Deskside recording. The conversation opens with "Hello Doncaster" (male Prestwick controller), "Hello Scottish" (Doncaster APPROACH controller). It was not possible to verify the identity of the Scottish Sector involved in this call. ATSI believe, by comparison to the North Sector frequency that the Scottish controller answering this call was *likely* to be the North TACTICAL controller. ATSI noted that the SAC (Prestwick) Unit report refers to *no* call being received on the North Sector. ATSI observed that the North Sector PLANNER's voice during this incident was female.)

[UKAB Note (1): See Part B. It was subsequently ascertained that Doncaster telephoned EAST Sector, instead of NORTH Sector.]

The SAC CAIT activated on the North Sector controller's situation display at 1801:53. The OJTI reported that neither he nor the trainee recalled observing the CAIT alert, albeit that in his opinion he believed 'CAIT was normally sufficiently obvious on the radar that attention is drawn to it'.

The North Sector PLANNER did not recall observing the CAIT alert. Take-over of the Sector had just been completed; however, a faulty headset and co-ordination on other, higher level traffic was cited as possible distractions. The PLANNER re-affirmed that CAIT was normally sufficiently obvious.

At 1802:10, Doncaster APP telephoned Leeds RAD to co-ordinate presentation of the SR22. Leeds RAD stated that the PA42 was not yet in contact with the unit, although it was observed that the PA42 had now turned onto the assigned heading of 040°. It was agreed that Doncaster APP would turn the SR22 R before transferring the flight to Leeds RADAR.

At 1802:30, Doncaster APP informed the SR22 pilot, "*just co-ordinating with Leeds not working that traffic yet which is now descending northwest of you if you can take up a easterly heading initially I'll keep you clear of the traffic and then further with Leeds very shortly just turn right onto heading of 0-7-0.*" At this time there was 5nm between the two ac as the PA42 descended through FL75 and the SR22 descended through FL65.

At 1802:32, SCOTTISH instructed the PA42 pilot to report his heading to Leeds RAD. At 1802:40 Leeds RAD telephoned SCOTTISH requesting that the PA42 be stopped-off at FL70, "*because of that Doncaster traffic there.*" SCOTTISH North Sector PLANNER stated that the PA42 had already been transferred. Both controllers for this conversation were female. Whilst the telephone line remained open Leeds RAD called the PA42 and was heard to establish contact with the PA42 pilot. Leeds RAD instructed the PA42 to fly heading 010°, after which the North controller was heard to say, "*I didn't know about the 6162 there*" - the SR22.

At 1802:50, Doncaster APP asked the SR22 pilot if he was visual with 'the traffic' [the PA42]. The SR22 pilot replied, "*looking*." The PA42 was in the SR22's 10 o'clock, range 4nm, 700 feet above. The PA42 was still tracking 040° and the SR22 was continuing on its heading of 345°. STCA activated on the Prestwick radar recording at 1802:51, with 3·9nm/700ft between the aircraft.

Doncaster APP passed further traffic at 1803:10, "*traffic now's..in your left 11 o'clock range 3 miles at flight level 6-7.*" The SR22 pilot replied, "*have traffic on TCAS, still looking*." This was followed by Doncaster APP asking the SR22 pilot if he had taken up the R turn.

The minimum distance between the two ac was 2·1nm and 300ft and occurred at 1803:39, as the PA42 was descending through FL61 and the SR22 was descending through FL58. The PA42 was directly in the SR22's 12 o'clock. The PA42 was commencing a L turn (under the control of Leeds RAD) and the R turn issued by Doncaster APP to the SR22 pilot was beginning to take effect. Neither pilot reported seeing the other ac. At 1804 Doncaster APP called Leeds RAD and co-ordination was agreed whereby the SR22 would be transferred to Leeds RAD on its heading. The SR22 levelled at FL55 at 1804:30 and was then transferred to Leeds RADAR. The SR22 still displayed the previously assigned code A6162.

The SR22 pilot called Doncaster APP whilst flying outside CAS and 5min 36sec from the boundary of CAS. The SR22 pilot reported that his flight was VFR. Leeds RAD had no details on the flight. There was no evidence available that the SR22 pilot solicited any form of clearance before entering CAS whilst inbound Leeds-Bradford.

Doncaster APP was in receipt of information that indicated that the SR22 would require either descent to avoid airway L975 or a clearance to enter the Class A CAS. Doncaster APP passed the SR22 pilot two sets of TI on the PA42, neither of which prompted the controller to take any action in respect of the SR22's flight profile. Some 46sec before the SR22 entered CAS the Leeds RAD controller prompted the Doncaster APP controller to take action in respect of the SR22. A descent was then given 26sec before CAS entry followed by a call to SCOTTISH. The SR22 pilot entered CAS whilst still in receipt of a TS from Doncaster APP.

Co-ordination had been agreed between Leeds RAD and SCOTTISH North Sector whereby the PA42 would be positioned towards the 'centre fix'. This co-ordination resulted in the PA42 being given a R turn which converged with the SR22. CAIT was active for 39sec before North Sector TACTICAL transferred the PA42 to Leeds RAD. The North TACTICAL trainee and mentor did not recall observing CAIT, most likely as their focus of attention was elsewhere on the Sector. However, it could not be determined if the PA42's position was assimilated on the situation display in relation to the active CAIT warning before the PA42 was transferred.

Leeds RAD was presented with a situation whereby two ac not under her control were converging in both azimuth and level. Both ac were 'known' to the Leeds RAD controller, however, 5nm or 1000ft separation was still required - the traffic was received by Leeds RAD with neither. It was also this Leeds controller who had warned Doncaster APP that the SR22 was about to enter CAS. Once Leeds RAD had established contact with the PA42, the ac was turned away from the SR22.

In summary, the SR22 pilot had allowed his ac to enter CAS without the appropriate ATC clearance. Doncaster APP allowed the SR22 to enter CAS without obtaining the appropriate clearance from the SCOTTISH North Sector or instructing the SR22 pilot to remain clear. The PA42 was transferred to Leeds RAD in accordance with the agreed release but in conflict with the SR22. The SCOTTISH North Sector controllers had not assimilated the unauthorised presence of the SR22 before transferring the PA42. There were various distracting factors on the

SCOTTISH North Sector that may have led to the SR22's entry into CAS not being assimilated by the controllers, but the exact reason for this could not be determined. Once communication had been established with the PA42 pilot, Leeds RAD turned the PA42 away from the SR22 and co-ordinated a hand-over of the SR22 from Doncaster APP.

Following the investigation of this Airprox: Leeds controllers have been instructed to no longer accept inbound aircraft routeing to the 'centre fix'. Formalisation of Leeds-Bradford/Doncaster co-ordination procedures has been proposed. Aircraft conflicts are to be incorporated into TRUCE training to improve controller use of avoiding action. For Doncaster controllers a Standards Bulletin has been produced reminding all controllers to instruct ac to remain outside CAS where appropriate.

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 was briefed on an additional piece of information from the NATS Ltd Advisor: it was explained that the telephone call from Doncaster to SAC (Prestwick) pointing out the SR22 at 1801:46, was actually to EAST Sector, whereas the PA42 was under the control of NORTH Sector. The eastern portion of the airway theoretically lay within EAST Sector's responsibility, however, operationally this airspace is delegated to NORTH Sector so EAST Sector would not hold a fps on the PA42. It seemed that Doncaster APP were not aware of this local delegation when they phoned EAST Sector, who should then have drawn the attention of NORTH Sector to the SR22 infringing Class A airspace. An Area Controller Member believed that EAST should have advised Doncaster that it was not their airspace and redirected the call. The NORTH Sector controller descended the PA42 to the level specified by Leeds RAD, and turned it onto a heading for the 'centre fix' into conflict with the SR22. A Member pointed out that 3nm radar separation minima was stipulated for use here by SAC controllers but they still had a responsibility to act if ac entered their airspace without clearance. Whilst focussing elsewhere in their Sector, the PA42 was thus transferred to Leeds RAD in accordance with the agreed release but it was clear the SCOTTISH NORTH Sector controllers had not assimilated the unauthorised presence of the SR22 beforehand. A military controller Member was concerned that CAIT had not been more effective and the topic of the conspicuity of the CAIT alert was discussed as some thought there might be a 'human factors' issue here. Nevertheless, the Board noted that the Sector controllers involved perceived the warning was normally sufficiently obvious; it seemed likely that on this occasion they were concentrating on another issue at the time.

Whereas the delegation of that piece of airspace may have caused some confusion with Doncaster APP phoning the wrong SAC Sector, Controller Members recognised that the call occurred over 5½min after the SR22 pilot's initial call requesting a TS. Therefore Doncaster APP had ample time to recognise that either a decent below the airway was necessary or to facilitate an appropriate clearance for the SR22 to penetrate Class A CAS. It seemed from the interrupted transmission to the SR22 at 1800:50, which included TI on the PA42, that it was not until Leeds RAD called asking about the Doncaster controller's intentions that any positive action was taken. When Doncaster APP instructed the SR22 pilot at 1801:20, to descend to FL55 the ac was indicating FL70 with just over 1nm to run to the southern boundary of L975. As it was the SR22 was allowed to enter L975, still under a TS, where Doncaster APP had no authority to provide an ATS within Class A CAS. Members pointed out that the SR22 could have been descended a lot earlier to remain clear and this lack of positive action was a significant factor which had led to the SR22's entry into CAS without a clearance. Moreover, the controller did not advise the SR22 pilot of the situation. The Board agreed that as Doncaster APP had allowed the SR22 to enter controlled airspace without clearance, this was a contributory factor to the Airprox with the PA42.

It was also evident that the SR22 pilot had neither requested that Doncaster APP obtain a clearance through L975 for him, or descended of his own volition to remain clear of the Class A airway. Pilot Members pointed out that his ac has a sophisticated navigational fit and it should have been abundantly obvious to the SR22 pilot that he was approaching the Southern boundary of L975. A controller Member pointed out that Doncaster APP had not instructed the SR22 to 'remain clear of CAS' and there was some sympathy with the SR22 pilot who might have incorrectly perceived that, as he was receiving a TS from Doncaster APP, who had finally issued a descent instruction to FL55 and also stated "*gonna keep you clear of the airspace…",* that all was in order. Ultimately, however, it was the SR22 pilot's responsibility to obtain any necessary CAS clearance along his route. Whilst he might reasonably expect Doncaster APP to assist him with that task, he had neither asked for a CAS entry clearance nor queried whether such a clearance was being obtained for him. Pilot Members were keen to stress

that it was the pilot's responsibility to instigate such action and to remain outside of CAS if no clearance has been obtained. The Board agreed unanimously, therefore, that the Cause of this Airprox was that the SR22 pilot entered controlled airspace without clearance.

The Board commended the Leeds RAD controller for her foresight and awareness; it was plain that she had identified the potential for a conflict at an early stage and had done everything possible to forestall a close quarters situation, including the early prompt to Doncaster. However, she was thwarted because both ac remained under the control of other ATSUs until the latter stages of the encounter. Despite 4 transmissions of TI from Doncaster APP, the SR22 pilot did not see the PA42 visually although it was displayed on his TCAS I. The passing of TI by the controller without earlier positive action to turn the SR22 away from the PA42 caused controller Members some concern; it was not until 1802:30, when both ac were well inside L975 and the PA42 was a mere 5nm away and 1000ft above the SR22 that Doncaster APP issued the instruction to the SR22 pilot "*..if you can take up a easterly heading initially I'll keep you clear of the traffic…just turn right onto heading of 0-7-0.*" However it was evident from the radar recording that this instruction did not have any effect until 1min and 9sec later when the SR22 is shown in the R turn. This was at the same time as the PA42 pilot called Leeds RAD, who promptly applied a L turn to the PA42 just as the two ac closed to the minimum range of 2·1nm. It was the combined effect of these complementary avoiding action turns that finally resolved the conflict and started to increase the horizontal separation between these two ac that were only 300ft apart in the vertical plane. For his part the PA42 pilot had little impact on the outcome apart from complying with the vectoring instructions issued by Leeds RAD when the flight called on the frequency. Without the benefit of TCAS but despite the prevailing good weather the PA42 pilot did not see the SR22 either, although it was evidently there to be seen. However, given the eventual separation the Board concluded that the avoiding action instructions issued eventually ensured that there was no Risk of a collision.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The SR22 pilot entered controlled airspace without clearance.

Degree of Risk: C.

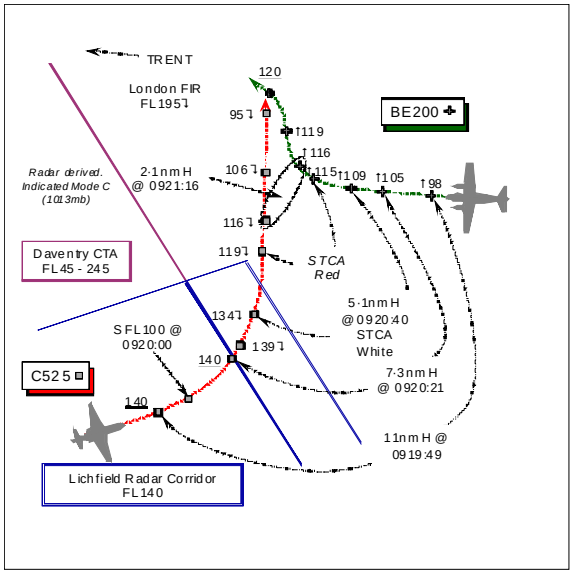
Contributory Factor Doncaster APP allowed the SR22 to enter controlled airspace without clearance.

AIRPROX REPORT No 2011072

AIRPROX REPORT NO 2011072

Date/Time: 8 Jul 2011 0921Z
Position: 5259N 00104W (8nm E of ROBIN)
Airspace: London FIR (Class: G)
Reporter: SAC (Prestwick) SE RADAR

	1st Ac	*2nd Ac*
Type:	BE200 King Air	Cessna C525
Operator:	HQ Air (Trg)	Civ Exec
Alt/FL:	↑FL120	↓FL140
Weather:	VMC NR	VMC NR
Visibility:	NR	30nm
Reported Separation:	1000ft V/½nm H	4nm H
Recorded Separation:	Nil V @ 2·1nm H 0·3nm Min H @ 2900ft V	



CONTROLLER REPORTED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE SAC (PRESTWICK) SE RADAR CONTROLLER (SE RAD) reports LJAO requested use of the Lichfield Radar Corridor (LRC) for a C525 eastbound at FL140, which was granted. The C525 was close to exiting the LRC when the BE200 King Air crew free-called on the Sector frequency requesting an airways join at TRENT at FL120. The CAS joining clearance was issued and the flight offered a TS, which the pilot accepted. As the C525 left the LRC he noticed it turn N toward the BE200 with FL100 displayed on Mode S as the crew's selected flight level (SFL). He passed TI to the BE200 crew and observed the C525 commence a descent. Updated TI was passed to the BE200 crew before upgrading the radar service to a DS as he believed that there was a real risk of collision between the 2 ac without avoiding action being proffered. The pilot accepted his avoiding action instruction and vertical separation was restored shortly afterwards, although deconfliction minima were not achieved. However, he felt that it was his responsibility to provide avoiding action otherwise he believes that only providence would have prevented the ac from missing each other.

THE SAC (PRESTWICK) SE PLANNER (SE PLAN) reports the C525 had been cleared through the LRC eastbound at FL140 when the BE200 crew checked in on frequency to join CAS E of TRENT at FL120. The C525 was observed leaving the LRC and turning northbound, pointing at the BE200, both ac outside CAS. The C525's Mode S SFL displayed FL100, which put it in confliction with the BE200 15nm away. At this point SE RAD passed TI. He called LJAO CENTRAL TACTICAL (CEN TAC) but there was no reply for 5-6 seconds. At the same time an incoming call was received from an outside line. Thinking that the call might be from the controller working the C525, the call to LJAO CEN TAC was ended and the incoming call answered, which turned out to be another LJAO controller asking for a joining clearance on a different ac, who was told to call back later. A call was made again to LJAO CENTRAL using the 'Priority' function. When the landline call was answered the ac were about 5nm apart with STCA flashing white and the C525 already at a similar level to the BE200. The LJAO controller stated that the pilot of the C525 had visual contact with the BE200 and was descending through its level. SE RAD upgraded the BE200's ATS to a DS and avoiding action was given with a R turn. STCA flashed red; he believed the separation was 2nm and 100ft at the closest point. The confliction was resolved when the C525 descended to FL80 clear of the BE200.

THE BE200 KING AIR PILOT, a QFI, reports he had departed from Cranwell under IFR on an instructional sortie to join CAS on track TRENT, calling Scottish CONTROL on 134·425MHz to obtain his airways joining clearance. After gaining his CAS clearance, he thought flying level at his assigned joining level of FL120 [but actually still climbing] in VMC approaching a position 25nm E of TRENT heading 275° at 240kt, Scottish advised him that there was another ac descending out of the LRC – the C525 - that was potentially on a collision course. Shortly

thereafter, the Scottish controller advised that the C525 was still on a conflicting course descending to FL100. The controller then upgraded the TS to a DS and issued an avoiding action R turn instruction onto 360° to avoid the other ac, which was first displayed on TCAS bearing 240° at a range of 5nm, 2000ft above their level. As he started the turn in compliance with avoiding action instructions TCAS enunciated a TA. The C525 was not in sight, but his TCAS now indicated that the other ac was in their 7 o'clock about half a mile away and 1000ft above his level but still descending. This was the only TCAS warning he received. Once clear of the traffic the controller turned him back towards TRENT and advised that the C525 crew had reported being visual with his BE200 and elected to continue their descent remaining clear. The Scottish controller asked if he wished to file an Airprox, but he declined on the basis that the C525 crew was visual with his BE200 and had avoided visually. Moreover, he had only received a TCAS TA and no RA was enunciated. The Scottish controller stated on the RT that he would not file as he had been content but subsequently, he heard that the controller had reported an Airprox. He assessed the Risk as 'low'. The assigned squawk was selected with Modes C & S on; the HISLs were on.

He opined that this is the third occurrence of this nature that has happened to him in the last few years whilst en-route from Cranwell to join CAS at TRENT. The main factor, in his opinion, was that traffic exiting the LRC had been given a clearance to descend despite there being conflicting traffic, inbound to join CAS flying steady and level beneath. If the ac leaving CAS was held above the joining traffic until the conflict was past then these situations would not occur.

THE CESSNA CITATION 525 PILOT (C525) reports he was in transit from Guernsey to Doncaster and had routed through the LRC under a RCS from London MILITARY on 128·70MHz. A squawk of A6402 was selected with Mode C; enhanced Mode S and TCAS is fitted.

Exiting CAS at the eastern end of the LRC he was 'cleared' by the controller direct to Doncaster and 'cleared' to descend from FL140 to FL100. Near the NE corner of the LRC turning L through 080° to 350° at 320kt he became aware of traffic 15nm away, initially from his TCAS before he saw it visually. As there was no chance of losing visual contact on the low-wing twin – the BE200 – he increased his rate of descent to pass with the best possible margin - he estimated with 4nm horizontal separation. No TAs were enunciated by TCAS. Had he not been visual, he would have stopped descent at FL130 to let the other aircraft pass. As there was no risk of collision he did not bother the London MILITARY controller with the details.

THE LJAO CENTRAL SECTOR TACTICAL CONTROLLER (CEN TAC) reports that the C525 was transiting the LRC at FL140 inbound to Doncaster. It was deemed unnecessary to allocate the track to LJAO NE and it was prenoted direct with Doncaster for a visual recovery. When asked, the C525 pilot advised that he would require a TS on leaving CAS and requested descent. The flight was descended initially to FL100, 2nm before the end of the LRC and a TS applied thereafter. The C525 crew then asked for a direct track to Doncaster, which was approved. Subsequently, she called traffic at a range of 5nm crossing R - L indicating FL108. The conflicting traffic – the BE200 - indicated that it had a Mode S SFL of FL120. The C525 pilot initially asked for updates on the traffic but then called visual with the climbing BE200 as soon as TI had been passed. Reaffirming that he was visual with the traffic the C525 pilot requested further descent and as the C525's Mode C was indicating below the climbing traffic she issued further descent to FL80. Instructing the C525 pilot to select the allocated Doncaster squawk the flight was told to switch to Doncaster ATC.

BM SAFETY MANAGEMENT reports that this Airprox occurred between the C525 operating VFR in VMC in receipt of a TS from the LJAO CEN TAC controller and the BE200 operating IFR in VMC in receipt of an ATS from SAC (Prestwick) SE RAD.

The BE200 departed Cranwell to join CAS on-track TRENT at FL120. At 0919:24, the BE200 crew selected their assigned GAT SSR code, also displaying Mode S information. The ac's Mode C indicated FL92 climbing; Mode S displayed a SFL of FL120.

[UKAB Note (1): At 0917:17, the C525 crew advised, *"And er we can take own navigation to the centre fix* [at Doncaster] *when you er can permit us",* to which CEN TAC responded, *"roger standby".* With 3½nm to run to the boundary of Class A CAS (the promulgated LRC boundary is not co-incident with the eastern edge of the Daventry CTA and extends 2nm into Class G), at 0919:44, the C525 crew was instructed by CEN TAC to, *"..descend flight level 1 hundred"*, which was read-back by the C525 crew. At this point, the BE200 was 11.8nm NE of the C525 climbing through FL97. Moments later at 0919:54 the C525 crew advised, *"..just in the left turn now for senny????"*

[probably for Doncaster], to which CEN TAC replied 4sec later at 0919:58, "[C525 C/S] *roger and clear of controlled airspace Traffic Service",* which was acknowledged. The C525 did not exit Class A CAS until 0920:21.]

At the point that CEN TAC gave tacit approval for the L turn, the BE200 was climbing through FL99, 10.3nm NE of the C525, maintaining FL140. The C525's Mode S SFL indicated a change to FL100 at 0920:00. CEN TAC passed accurate TI to the C525 crew on the BE200 at 0920:41, stating, "*traffic 12 o'clock 5 miles crossing right to left..indicating flight level 1-0-8 climbing*." The C525 pilot replied on RT that they were visual with the BE200 just after 0920:48 adding in his written report that 'in the turn to the north, I became aware of the traffic initially on TCAS, then visually'. Whilst descending through FL129 at 0920:54, the C525 pilot requested further descent, which was granted to FL80 and acknowledged by the C525 pilot, who re-iterated that they were visual with the BE200.

Co-incident with the activation of a high severity red alert by STCA at 0921:06, the turn taken by the BE200 crew in response to the deconfliction advice from SAC SE RAD is evident on the radar recording.

Cap 774 Ch 3 Para 6 states:

'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.'

After discussing the incident with the BE200 pilot the LJAO SUPERVISOR reports that the pilot stated that they were VMC but that the turn issued by SE RAD put them in a *'belly-up profile*' to the C525 '*significantly reducing their ability to see it*.'

At the point when the instruction to descend to FL100 was passed by CEN TAC to the C525 crew, the BE200 and C525 were on diverging flight paths. However, the L turn towards Doncaster introduced the confliction between the BE200 and C525. Based upon LJAO's investigation, CEN TAC either did not assimilate the C525's course to Doncaster or did not appreciate where the ac would route in relation to the BE200. That said, CEN TAC passed accurate and timely TI to the C525 crew who reported visual with the BE200. Moreover, it is clear from the C525 pilot's report that they were visual with the BE200 early enough for them to discharge their collision avoidance responsibilities. Whilst the decision by CEN TAC to permit the C525 to route own navigation was arguably not 'good practice', it was not a causal factor in this Airprox.

Based upon extrapolation of the respective ac's tracks before SE RAD issued the BE200's avoiding action turn and without the potential intervention of TCAS, the CPA would have been at 0921:34, with horizontal separation of about 0·1nm and vertical separation of 1100ft existing. The C525 pilot states that they increased their ROD to 'pass with the best possible margin,' the extrapolation suggests that, the addition of horizontal deconfliction by the C525 pilot might have been appropriate.

We would conclude that this Airprox occurred as a result of the difference in perception between SE RAD, who believed that a collision risk was evident; whereas the C525 pilot believed that he had provided adequate separation against the BE200.

ATSI reports that at 0904, LJAO Central contacted the SAC SE Sector (SE PLAN) to request co-ordination for the C525 (squawking A6402) to cross the LRC eastbound at FL140. Co-ordination was agreed at FL140. At the time, the C525 was passing W of Gloucester, heading N at FL190.

The SAC MATS Part 2, Page SEa-43 describes the LRC:

'The Lichfield Radar Corridor is 12nm wide and the centreline based on the Coningsby (CGY) TACAN 252 radial. The primary crossing level is FL140 with FL150 reserved as an alternate/additional tactical level. The corridor is established to permit LJAO controllers to vector aircraft through the Daventry CTA in the vicinity of PEDIG. LJAO is the only military unit authorised to use the Radar Corridor'.

The BE200 crew established communication with SE RAD at 0918:27. At the time, the C525 was within the LRC at FL140, passing N of East Midlands Airport, 22nm WSW of the BE200. The pilot of the BE200 was instructed to squawk A6020, *"when you're finished with your previous agency"* and reported climbing to FL120 requesting to join airways at TRENT. The controller replied, *"you are clear to join controlled airspace on direct track for TRENT*

maintaining Flight Level 1-2-0 and you can expect a Traffic Service...". The pilot read back the level and ATS correctly. When the BE200 was passed TI shortly afterwards (not concerning the C525), the pilot confirmed he was good VMC.

At 0920, as the C525 was approaching the eastern edge of the LRC, SE RAD passed TI about it to the BE200, *"there's also military traffic currently in your 10 o'clock range 10 miles left to right its 2 thousand feet above you're cleared level".* As soon as the pilot acknowledged the information, the controller responded, *"that traffic now showing descending down to Flight Level 1 Hundred it's fast moving 10 o'clock range 8 miles left to right it looks like you're on a constant bearing".* The radar recording shows the C525 still maintaining FL140 but its Mode S SFL was indicating FL100. At 0920:37, the controller transmitted to the BE200, *"Yeah* [C/S] *to avoid that traffic now I suggest you take avoiding action turn..right onto a radar heading of..3-3-0 degrees".* The pilot responded, *"Right 3-3".* The radar photograph shows that both ac are in Class G airspace. The BE200 is tracking W, passing FL107. The C525 is 6nm SW of the BE200, passing FL138 and turning L towards the N and the BE200. This TI was updated at 0920:49, *"Yeah* [C/S] *traffic 9 o'clock range 5 miles left to right still indicating drif- descending down to Flight Level 1 Hundred".* The pilot reported in the turn.

During this period, SE PLAN, realising the developing situation, telephoned LJAO CENTRAL to establish their intentions with the C525. Whilst waiting for CENTRAL to answer this call, the outside line rang. Thinking this might be from LJAO CENTRAL, he answered the incoming call. However, as this was from another LJAO position, the call was ended. SE PLAN then telephoned LJAO CENTRAL using the Priority function. By the time he was able to discuss the situation with the appropriate LJAO controller, the subject ac were about 5nm apart. It was established that the C525 was visual with the BE200.

Realising that the subject ac were still closing in confliction and not yet being aware that the C525 was visual with his traffic, SE RAD decided to change the type of ATS provided to the BE200 crew. The following transmission was made at 0920:59, "[BE200 C/S] *just upgraded to a..deconfliction service I'm not going to be able to completely deconflict you but climb now if you can expedite your climb up to Flight Level 1-2-0 turn right onto radar heading 0-1-0 degrees with avoiding action turn".* The pilot read back the message. The radar recording, timed at 0921:00, reveals that the horizontal distance between the two ac had reduced to 3.5nm. They were on conflicting flight paths, with the C525 descending through FL126 and the BE200 climbing through FL112. The distance between the subject ac continued to decrease. The C525 remained on a northerly track whilst the BE200 made its R turn. At a range of 2.5nm the BE200 was climbing through FL115 and the C525 descending through FL119 [STCA triggered high severity red, at 2.1nm the levels of the two ac crossed, both ac indicating FL116]. Vertical separation then increased with the C525, subsequently, passing 0.3nm behind the BE200, with vertical separation of 2900ft indicated.

Not only was the BE200 being provided with a TS by SE RAD but also it is understood LJAO CEN TAC was providing the C525 with the same service after it had left CAS. A TS is defined in MATS Part 1, Section 1, Chapter 11:

'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. 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, 3000 ft 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. 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'.

On this occasion SAC SE RAD, initially, recommended a turn to the BE200 pilot that would route it away from the C525. However, realising that the two aircraft were on quickly conflicting tracks he took positive action and changed the ATS provided to a DS, albeit that the pilot had not requested any change.

'A DS 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. 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. The deconfliction minima against uncoordinated traffic are:

• 5 NM 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. (Note: Mode C can be assumed to have been verified if it is associated with a deemed validated Mode A code.)'

The SE RAD controller decided that the best way to resolve what he believed would be a very close encounter between the subject ac, was to change the ATS being provided from a TS to a DS. He then issued an avoiding action turn to the BE200, together with an expeditious climb rate. Although this did route the BE200 away from the C525 and prevented their radar returns from merging, it reduced the possibility of the BE200 crew observing the other traffic. SE RAD was unaware that the C525 crew had sighted the BE200 until after he had issued the avoiding action instructions; had he been aware beforehand, he would have continued to provide a TS.

HQ AIR (TRG) comments that whilst this was a relatively benign incident, it could have been prevented only by increased coordination between the respective ATSUs. The TI provided enabled the crews to acquire each other on TCAS and visually in order to deconflict safely 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, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

It was plain that the SE RAD controller believed that he should proffer avoiding action to the BE200 when he spotted the C525 had turned L onto a new course and descended towards the BE200 joining CAS, resulting in a potential conflict outside the boundary of his Sector in Class G airspace. This was an uncommon occurrence insofar as the reporting SE RAD controller had proactively upgraded the radar service afforded the BE200 crew to a DS. Whilst some might say that this was 'overcontrol', SE RAD acted with the best of intentions and the BE200 crew had accepted it. Members stressed that they would not discourage controllers from providing avoiding action if it was the most appropriate way to resolve a close quarters situation. Members also noted that the controller prioritised sensibly by issuing the avoiding action before declaring the change of service. Moreover, in addition to his attempts to effect some horizontal separation between the ac, the controller had provided a good flow of TI which, coupled with the ac's TCAS, kept the BE200 crew closely apprised of the geometry of the situation. Whilst the point had been made that the subsequent avoiding action turn placed the BE200 crew 'belly-up' to the C525, a civilian area controller Member believed there was no scope to turn the BE200 the opposite way and that SE RAD's appreciation of the geometry of the situation had been correct. The Board commended the controller for his initiative and conscientious application of the ATS provided to the BE200 crew. However, the controller was plainly unaware at the time that after exiting Class A CAS the C525 pilot had acquired the BE200 visually at range and was taking his own VFR separation.

This Airprox illustrated the benefits of the displayed Mode S SFL, which had significantly improved SE RAD's SA. This Mode S SFL was also available to CEN TAC from the BE200's SSR and it would have been evident to the LJAO controller that the ac was climbing up to FL120, with an obvious potential for a conflict to develop when the C525 exited the LRC and descended through the BE200's level. Members considered that CEN TAC could have been more proactive and a level-off at FL130 until clear of the BE200 co-ordinated with SE PLAN, as suggested by the BE200 pilot, would have prevented this Airprox. Liaison with SAC SE Sector about the C525's descent beforehand would also have allayed SE RAD's concerns here, for it was evident from the ATSI report that if he had been aware that the C525 PIC was taking his own separation on the BE200, then SEC RAD would not have proffered the avoiding action turn and would have continued to provide a TS. However, it was not until SE PLAN called CEN TAC that this was ascertained, which led some Members to suggest that this Airprox was the result of a controller perceived conflict.

The LJAO RT transcript confirmed that CEN TAC had not approved the C525 pilot's earlier request to take up his own navigation for Doncaster under the RCS that pertained, although the BM Safety Management report had suggested the controller might not have appreciated the C525 pilot's route would take it close to the BE200 before the jet flew into close quarters. Members noted that it was after the C525 pilot's unilateral declaration that he was, *"..just in the left turn now.."* that CEN TAC was slightly premature in placing the C525 under a TS, for the radar recording revealed that the ac had not crossed the lateral boundary of the Daventry CTA into Class G airspace. Some Board Members considered that the controller's response could be taken as tacit approval of the pilot's request to continue under his own navigation as suggested within the BM Safety Management report. However, whilst this was not good practice, the Board concluded it was not fundamental to the Cause. Following this turn, which placed the C525 directly in conflict with the BE200, CEN TAC passed accurate and timely TI to the C525 crew who almost immediately reported visual contact with the BE200. However, it was also clear that the crew did not commence their descent from FL140 until after they had exited the CTA. Having cleared CAS and with the BE200 in sight, the C525 pilot elected to descend rapidly beneath it. It was this descent to a level beneath the BE200, directly in conflict with the latter, which had been the catalyst to SE RAD's concerns and reaction. This was not meant to imply criticism of the C525 pilot and CAT pilot Members stressed that the C525 pilot was acting legitimately in taking his own visual separation against the BE200 in Class G airspace, where he afforded considerable vertical separation. This led the Board to conclude that this Airprox had resulted because the C525's flight path caused the SAC SE RAD controller concern.

Turning to the inherent Risk, it was plain that the BE200 pilot had complied with SE RAD's R turn instructions and had identified the C525 on his TCAS. Thus cognisant of the 'threat' he monitored the C525's descent as he turned, but the TA he received placed the C525 1000ft above his ac at 7 o'clock still descending. Although the two ac were only 2·1nm apart when the C525 pilot descended through the level of the climbing BE200, 2900ft of vertical separation was achieved at the closest point as the C525 crossed 0·3nm astern clear below the BE200. Moreover, the BE200 crew received good TI from SE RAD and their TCAS had not enunciated an RA. Furthermore, since the encounter occurred in Class G airspace where 'see and avoid' prevails and the C525 pilot was visual with the BE200 throughout, some Members considered that normal standards had been maintained and the Airprox should be classified as an 'E' – reportable but, following analysis, so benign as to be considered a non-event. However, other Members considered that there were sufficient unusual and non-standard factors for the event to be assessed as a 'genuine' Airprox, albeit that no risk of collision existed. A vote was required and, by the narrowest of margins, the latter view prevailed.

Post Meeting Note: During the Board's assessment of this Airprox, the promulgated dimensions and rational for the extensions of the Lichfield Radar Corridor into Class G airspace, in line with all other RCs, was discussed. After further discussion between DAP and BM Safety Management outwith the meeting, it was concluded that further review of this topic was warranted.

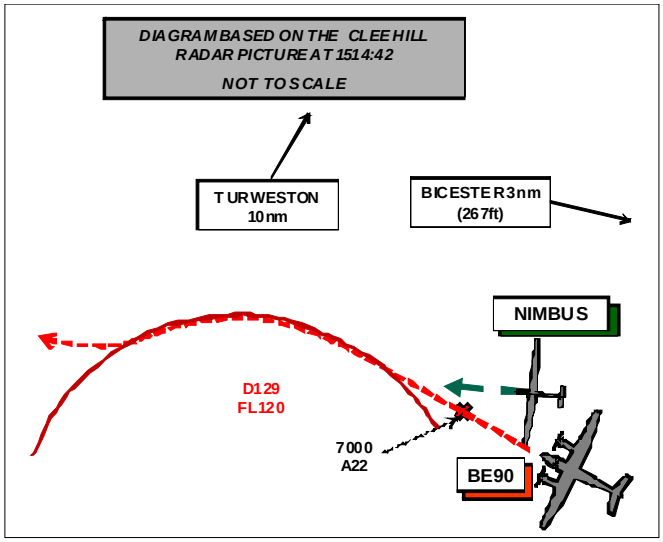
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The C525's flight path caused the SAC SE RAD controller concern.

Degree of Risk: C.

AIRPROX REPORT NO 2011073

Date/Time:	10 Jul 2011 1515Z (Sunday)	
Position:	5155N 00111W (3nm WNW Bicester)	
Airspace:	Oxford AIAA	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Nimbus 3 Glider	BE90
Operator:	Civ Pte	Civ Pte
Alt/FL:	2500ft QNH (1011mb)	NR
Weather:	VMC CLBC	NR
Visibility:	20nm	NR
Reported Separation:	0ft V/50-100ft H	200ft V/1.5nm H
Recorded Separation:	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE NIMBUS 3 GLIDER PILOT reports soaring in a white glider while listening out on a gliding frequency. While he was just to the N of D129, heading 270° at 55kt, a BE90 flying over the W edge of Bicester Town, overtook him very close to his L wing at the same height. [2nm SW of the centre of Bicester Glider Launch Site]. He first saw the BE90, which was brown with 'cheat' lines, 50-100ft away just behind his L wing tip and overtaking him, but it had passed before he had time to react.

He assessed the risk as being Medium and reported the incident to the CFI on landing.

The glider pilot believes that the BE90 pilot showed a lack of judgement in flying at speed over a town very close to two gliding clubs, on a Sunday afternoon in summer.

THE BE90 PILOT report was submitted almost 4 months after the event following several prompts by the Secretariat. He was flying a private VFR flight to Turweston in a white ac with red and black stripes, squawking with Modes C and S and TCAS was fitted. He recalls seeing a white glider about 1.5nm away and made a gentle turn to the L to avoid it. He considers that the event was not an Airprox suggesting that the glider pilot had been startled by his ac.

ATSI reports that the Airprox was reported by the pilot of a Nimbus Glider who was not in receipt of an ATC service.

Although the radar recordings show no returns corresponding to an ac at the position and time of the reported incident, at 1513 a contact is seen displaying A7000 at alt 2300ft, approximately 6nm SE of Upper Heyford. The ac routed W along the N boundary of D129 (South of Upper Heyford) and then departed the area to the W. The ac continued its flight until appearing to manoeuvre for a landing at Turweston aerodrome at 1523.

UKAB Note 1: The recording of the Clee Hill radar showed a contact believed to be the BE90 as stated in the ATSI report above, tracking along the N edge of D129 at an alt of 2200ft, passing close to the reported incident position at 1514:42. An intermittent primary only contact can be seen in the area of the reported incident but it disappears just after 1514:23. The track of the BE90 (indicating A22, heading 290°) passed very close to the last seen position of the contact at 1514:35.

UKAB Note (2): The BE90 that landed at Turweston is predominantly white with 2 dark coloured 'cheat' lines.

UKAB Note (3): Bicester is promulgated as a Glider Launch Site, HJ, (winch/ground tow and tug/motor glider) up to 3000ft aal site elev 267ft.

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 appropriate ATC authority.

Members were satisfied that the BE90 identified was the one involved in the Airprox despite the significantly differing pilots' estimates of the separation.

The Board was disappointed that it took the BE90 pilot almost 4 months to submit a report as, due to the time elapsed, it most likely reduced its accuracy significantly and thereby probably the overall accuracy of the investigation.

Members also noted that the incident occurred in an area that is severely limited by local airspace constraints, is busy, particularly with gliders, and presents a choke point to ac transiting N to S or vice versa at lower levels. Although Members considered it wise to avoid the area they understood that in some circumstances this is not possible. If it is necessary to fly through the area, it is prudent to moderate ones airspeed to provide more time to see and avoid other traffic. When reviewing the pilots' reports, Members noted that the glider pilot reported that the BE90, which he described accurately, was very close and appeared from behind his left wingtip as it overtook him. Although the BE90 pilot reported that he saw a glider, Members agreed that it was most likely not the reporting ac, but another Weston or Bicester launched ac in the area. In good weather which is conducive to soaring with white cumulus cloud, gliders are notoriously difficult to see, particularly when viewed head or tail on (the glider pilot reported heading 270°); however pilots should anticipate them and avoid areas such as this where they are known to congregate. Although the BE90 had TCAS fitted, the glider was not SSR equipped and would not have been displayed. A Member familiar with Bicester/Weston on the Green operations informed that the Board that the latter is very busy, particularly at weekends, with mixed parachuting/gliding and some other GA movements, and it is commonplace for parachutists and more likely their dropping ac to operate right up to the extremities of the Danger Area; that being the case it is wise for ac not operating therein to give it a wide berth.

It was noted that although under the RoA, although the glider had right of way, the principle only works if pilots see (in time to avoid) the opposing ac; in this case neither did. Some Members thought that the glider pilot could have done more to improve his lookout in 'blind' areas particularly when on a straight and level glide.

Although the separation could not be determined accurately, since neither pilot saw the opposing ac

in time to initiate any avoidance, Members agreed that in this incident, safety had not been assured.

PART C: ASSESSMENT OF CAUSE AND RISK

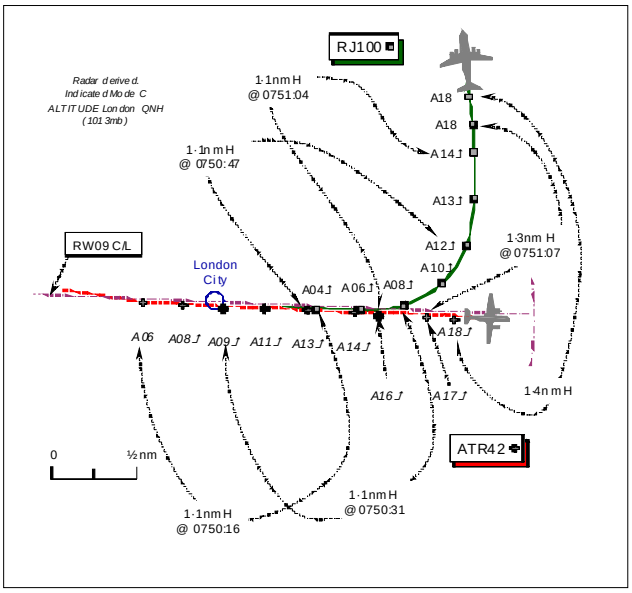
Cause: Probably a non-sighting by the BE90 pilot and effectively a non-sighting by the Nimbus pilot.

Degree of Risk: B.

AIRPROX REPORT No 2011074

AIRPROX REPORT NO 2011074

Date/Time:	5 Jul 2011 0750Z	
Position:	5130N 00004E (London City Airport - elev 19ft)	
Airspace:	ATZ/CTR	(Class: D)
	Reporting Ac	*Reported Ac*
Type:	RJ100	ATR42-300
Operator:	CAT	CAT
Alt/FL:	400ft↑ agl	600ft↓ QNH (1013mb)
Weather:	VMC CLOC	VMC CLOC
Visibility:	10km	10km
Reported Separation:	Nil V/1·5nm H	Not seen
Recorded Separation:	100ft V@1·1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE RJ100 PILOT reports he was departing from London City airport bound for Zurich under IFR in VMC and in communication with TOWER on 118·075MHz. The 1st Officer in the RH seat was the PF.

After a backtracking ac had vacated the RW, they were cleared for an immediate take-off from RW09. About ½nm on climb-out on RW track heading 096° at 126kt passing 400ft agl, TWR issued an urgent L turn onto a heading of 360°. At this point he noticed a solid blue TCAS target at their height 1·5nm astern; neither a TA nor RA was enunciated by TCAS. Thereafter they were handed over to Thames RADAR on 132·70MHz who, at their request, stated the reason for the avoiding action manoeuvre. The other ac was not seen, he assessed the Risk as 'low' but his workload as 'high' during the initial climb-out.

THE ATR42-300 PILOT reports he was inbound IFR to London City from Isle of Man Airport in VMC, in receipt of a radar (sic) service from London City TOWER (TWR). As PIC he was the PF. Established on the LLZ to RW09 at around 5nm, TWR advised the crew to expect a late landing clearance, with an RJ100 lined up for RW09 but still awaiting take-off clearance. Heading 094° at 100kt, whilst he was descending through 700ft QNH, the RJ100 had been cleared to take-off and was accelerating on RW09. Passing 650ft, no landing clearance had been received from TWR, who was engaged in a conversation on RT with an ac on the ground. Passing 580ft, the RJ100 was just rotating, but still no landing clearance had been issued with ATC still in conversation with another ac. At 500ft, at about 1nm Final with no landing clearance received, he commanded a go-around and executed a missed approach, which was notified to TWR passing around 850ft in the climb. Assessing the Risk as 'medium', he stated his workload was very high whilst performing a go-around in busy airspace. The pilot noted that the RJ100 was 'not seen' after the go-around was initiated and was relying on ATC vectors for avoiding action. The ac has a green and white livery; the HISLs were on. TCAS is fitted with enhanced Mode S; neither an RA nor TA was enunciated.

THE LONDON CITY AIRPORT TOWER CONTROLLER (TWR) reports that the RJ100 was lined up on RW09, with the previous landing ac backtracking to vacate at 'D'. The ATR42 was the next inbound and the gap was tight, but not particularly so. The weather was CAVOK, so there were no visibility issues. The RJ100 crew was instructed to 'Hold Position and be ready immediate when instructed'; the ATR42 crew was instructed to continue the approach and expect late landing clearance. Both pilots confirmed their instructions. As the backtracking ac was vacating the RW he checked the inbound ATR42's progress. The gap was still fine, so he cleared the RJ100 crew for an immediate take-off. After barely a moment's hesitation the RJ100 rolled and the ac approached rotation he started transmitting to the ATR42. As the RJ100 rotated he cleared the ATR42 to land whilst turning his head to check that ac's position. The ATR42 was in a nose-up attitude and obviously climbing. As he finished

the transmission, the ATR42 pilot stated he was already going around. Assessing the situation, as the RJ100 was climbing through about 200ft he decided to allow the ATR42 to continue on a standard missed approach. Therefore, he instructed the ATR42 pilot to 'continue straight ahead to altitude 2000ft', which the pilot read back. He then passed an avoiding action L turn to the RJ100 crew onto a heading of 360°, which the RJ100 pilot read back. As he watched the turn generate separation he called Thames RADAR on the landline. The Thames controller was happy to take both ac on their current headings and cleared altitudes. Both flights were therefore transferred correctly. After the ATR42 completed a successful second approach, he queried the pilot on the reason for his missed approach. The ATR42 pilot advised that as he had reached 500ft in the descent, had not been cleared to land and could see the departing RJ100 had not yet rotated; he elected to execute a missed approach.

ATSI reports that the Airprox occurred at 0750:15, within the Aerodrome Traffic Zone (ATZ) of London City Airport, Class D airspace. The London City ATZ consists of a circle, radius 2nm, centred on Runway 09/27 and extending to 2000ft above the aerodrome elevation of 19ft.

The RJ100 was departing from London City RW09; the ATR42 was inbound and established on the ILS for RW09. The controller was operating AIR and Ground Movements Control (GMC) combined (TWR).

The London City 0750UTC METAR: 09004KT 060V130 CAVOK 18/13 Q1013=

Prior to the Airprox the RJ100 crew was waiting for departure at RW09 holding point 'Alpha'. An Embraer E190 was established on final, followed by the ATR42 with 7nm spacing. At 0746:44, the E190 was cleared to land. At 0747:17, after the landing E190, the controller instructed the RJ100 crew to line up and wait RW09 assessing the gap between arrivals was adequate to allow the departure. The E190 landed long and at 0747:51, the controller instructed the ac to backtrack the runway and vacate at 'Delta' for the main apron. Shortly afterwards at 0748:06, the E190 crew was instructed to expedite the backtrack.

At 0748:21, the ATR42 crew contacted TOWER and the controller replied, "[ATR42 C/S] *City TOWER good morning to you continue approach 0 9 you are number 1 there will be a departure ahead expect a late landing clearance."* The pilot replied, *"Continue approach ????* [ATR42 C/S]".

The controller then passed a departure clearance to an outbound aircraft on the apron.

At 0749:14, once the E190 had vacated the runway, the RJ100 crew was cleared for an immediate take off, "[RJ100 C/S] *the surface wind is 0-8-0 degrees at 4 knots Runway 0-9 is cleared for immediate take off"* and the pilot replied, *"Clear for take off niner* [RJ100 C/S]". Although the pilot did not repeat the clearance for 'immediate', the controller indicated that the ac started to roll within 2 to 4 seconds and was satisfied that the ATR42 would be given the late landing clearance as planned.

At 0749:30, as the inbound ATR42 was passing an altitude of 1200ft. The controller passed a start clearance to an ac on stand.

From 0749:41 to 0749:52 the controller advised the E190, which was approaching the apron, that there may be a short delay going on to stand. Radar recordings shows the ATR42 passing an altitude of 600ft.

The written report from the ATR42 pilot indicated that as the aircraft reached 650ft, the controller was engaged in an RT conversation with an aircraft on stand. At 580ft the RJ100 was rotating and the controller was still in conversation. At 0749:56, radar recordings show the ATR42 indicating an altitude of 500ft on short final and at this point with no landing clearance, the pilot initiated the go around.

At 0749:58, the controller gave the ATR42 crew a landing clearance, "[ATR42 C/S] *clear to land surface wind is 0-8-0 degrees 4 knots."* The pilot responded, "[ATR42 C/S] *going around."* The controller instructed the ATR42 to continue straight ahead to altitude 2000ft and this was acknowledged correctly. The ATSU report indicated that the controller had both ac in sight and provided 'reduced separation in the vicinity of the aerodrome'.

At 1750:12 the controller transmitted, "[RJ100 C/S] *avoiding action when able turn left immediately heading 3-6-0 degrees acknowledge."* The pilot replied, *"Left heading 3-6-0 turning left now* "[RJ100 C/S]". (It was noted that the phraseology used to give avoiding action gave no information regarding the conflicting traffic and the RJ100 crew was probably not aware of the reason for the avoiding action.)

At 0750:21, radar recording shows the ATR42 had crossed the runway threshold indicating an altitude of 800ft, the RJ100 indicating an altitude of 600ft climbing on the runway centreline. The minimum spacing between the two aircraft was 1.1nm, which was maintained as the RJ100 crew turned L onto the northerly heading. From 0751:07, separation increased as the tracks diverged. After the RJ100 was transferred to Thames RADAR, the pilot requested the reason for the urgent avoiding action and subsequently made an Airprox report.

The controller was content with the 7nm spacing of arrivals and considered the gap sufficient to allow the safe departure of the RJ100 with the ATR42 on final, advising the ATR42 pilot to expect a late landing clearance. As the RJ100 rolled and the ATR42 was approaching short final, the controller was transmitting a start clearance, followed by information to the E190 about a delay on stand. This was a crucial point from the ATR42 pilot's perspective. The controller could have kept RT to a minimum prior to the issue of the late landing clearance. However, the controller remained satisfied with the situation, anticipating that a late landing clearance would be provided. As the ATR42 pilot approached 500ft without a landing clearance, the pilot elected to initiate the go around. With both ac in sight, the controller utilised 'reduced separation in the vicinity of the aerodrome', before he decided to issue avoiding action.

The ATSU indicated that as a result of similar reported incidents at other airports when separation had been compromised, the subject of avoiding action had been included as a 'Hot Topic', in controller emergency training – TRaining in Unusual Circumstances and Emergencies (TRUCE) - using advanced Aerodrome Traffic Monitor (ATM radar) procedures. Controllers have been encouraged to act quickly in order to establish the separation minima. The Manual of Air Traffic Services Part 1, Section 1, Chapter 5, Page 1, Paragraph 1.1.3, states:

'Surveillance systems may also be used to provide the following, whether or not the aircraft has been identified:

a) Information on the position of aircraft likely to constitute a hazard;

b) Avoiding action'

Although the controller was using 'reduced separation in the vicinity of the aerodrome', the controller immediately issued avoiding action in order to resolve the confliction and increase the separation. However the controller omitted to pass the RJ100 crew TI regarding the conflicting traffic. The incident occurred as a result of the controller passing avoiding action to provide increased separation between the two ac, without passing appropriate TI. This resulted in the RJ100 pilot becoming concerned about the close proximity of the other aircraft.

The ATSU reported that the controller realised that avoiding action was not strictly necessary, even if the RJ100 crew had not made an immediate left turn.

ATSI Recommendation:

CAA ATSI recommends that the ATSU review their TRUCE training requirements for the provision of avoiding action, in order to ensure that controllers use correct phraseology appropriate to the circumstances.

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 a report from the appropriate ATC authority.

It seemed that the RJ100 crew had departed as expeditiously as feasible when their 'immediate' take-off clearance was issued by TWR. Therefore, apart from prompt compliance with TWR's instructions, the RJ100 crew had little impact on what occurred, although the PIC, as the pilot initiating the Airprox, was concerned at the lack of TI or amplification following TWR's robust avoiding action L turn instruction. The catalyst of this Airprox was the late landing clearance to the ATR42 crew following the RJ100's take-off and the ATR42 Captain's decision to execute a go-around into a missed approach. A controller Member opined that a missed approach might be initiated at any point and controllers should be prepared for them. Nevertheless having pre-warned the ATR42 crew that their landing clearance would be issued at a late stage, it was unfortunate that TWR should choose such a moment to enter into a lengthy transmission with the E190 on the ground; a military controller Member perceived that TWR had not suitably prioritised his actions. However, TWR had been content with the landing interval, albeit close, had forewarned the ATR42 crew and had issued the landing clearance as soon as he had finished transmitting to

the E190: the late landing clearance transmission commencing at 0749:58, a mere 2 sec after the radar recording revealed that the ATR42 was passing 1nm final indicating 500ft. Some controller Members thought that combining TOWER and GROUND Movements Control (GMC) onto one operating position might be an issue, but the Board was briefed by the NATS Ltd Advisor that there was no alternative at this point due to the unserviceability of the GMC RT frequency. Consequently, the Board recognised that the interval between the PIC of the ATR42 deciding to initiate a go-around and the controller starting to transmit the late landing clearance was indeed minimal. A pilot Member suggested that the ATR42 pilot's go-around was perhaps actioned a modicum too early. However, another CAT pilot Member emphasised that the 5½° glide-path flown at London City is a steep approach and can be quite challenging; when no landing clearance had been received at 1nm/500ft he understood why the ATR42 Captain felt compelled to command a go-around. The Board agreed that this was the PIC's decision alone and any criticism of his decision was unjustified. Such events are not unusual, civilian controller Members opined, and it was evident that horizontal separation of 1·1nm had been maintained between the two ac as the RJ100 departed and turned L onto N in compliance with TWR's instruction, thereby safely vacating the 'climb-out' for the ATR42 proceeding straight ahead. All this was closely observed by TWR and in accord with his remit to effect 'reduced separation in the vicinity of the aerodrome'. The Board was briefed that the controller's recent TRUCE training had figured large in his prompt decision to issue avoiding action to the RJ100 crew, but the absence of any explanation for the instruction had caused the RJ100 crew concern; they would probably have been reassured by receiving TI about the ATR42. The Board concluded that this Airprox had resulted because the RJ100 pilot was concerned at receiving avoiding action shortly after takeoff. Whilst submission of the Airprox by the RJ100 pilot was entirely reasonable, it had been shown that standard procedures had been applied, separation had been maintained and the Board concluded that normal safety parameters had not been breached.

PART C: ASSESSMENT OF CAUSE AND RISK

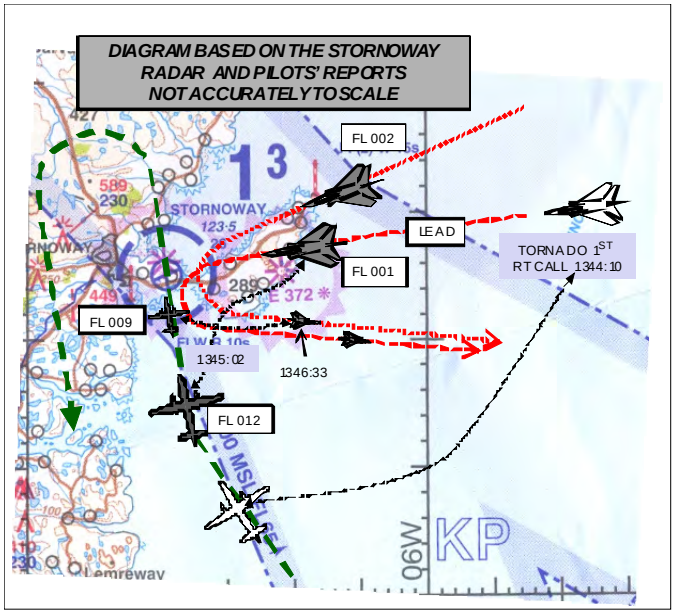
Cause: The RJ100 pilot was concerned at receiving avoiding action shortly after takeoff.

Degree of Risk: E.

AIRPROX REPORT No 2011075

AIRPROX REPORT NO 2011075

Date/Time:	12 Jul 2011 1346Z	
Position:	5810N 00610W (2.5nm S Stornoway - elev 26ft)	
Airspace:	Scot FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	SF340B	Tornado GR4
Operator:	CAT	HQ Air (Ops)
Alt/FL:	1100ft↓	600ft
	QNH (1025mb)	RPS (1018mb)
Weather:	VMC	VMC
Visibility:	60km	20km
Reported Separation:		
	0ft V/0.5nm H	1000ft V/1.5nm (Ld)
		0 V 1.5nm H (No2)
Recorded Separation:		
	300ft V / 1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE SF340B PILOT reports flying a scheduled passenger flight to Stornoway in receipt of a Procedural Service (PS) from Stornoway APP and squawking 7000 with Modes C and S; TCAS was fitted. While heading 360° at 130kt on the instrument approach, 4xTornado ac called ATC to say they were E of the airfield. ATC advised them that a SF340 ac was on a visual final approach to RW36 and to remain to the E. At 1100ft on the approach they saw 2 grey Tornado ac straight ahead and coming towards them. A few sec later they had a TCAS RA climb command quickly followed by a monitor vertical speed command; the Tornado was then seen to pull up and away from them aggressively but they informed ATC they were going around due to the TCAS commands. They climbed to 2000ft and elected to turn left downwind to try and remain visual with ac and as they approached late downwind position they then saw two black Hawk ac underneath them also manoeuvring aggressively so they advised ATC of the other ac; ATC was not aware that they were there. ATC advised them to continue downwind at 2000ft until advised, which they complied with.

The military ac knew they had gone around due to TCAS RA, but still continued to attack their target (one Tornado acknowledged the fact that they had to go around).

On departure they spoke to Scottish ATC and were informed that there were in fact a total of 14 military ac close to them at the time of the incident.

He assessed the risk of collision as being high and reported the incident by radio to Stornoway APP.

UKAB Note (1): There were 4 Hawk ac engaged on the same exercise attacking another target to the SW of Stornoway. The radar recording showed them to be at low level throughout. Three min after the Airprox, while the airliner was downwind following the go-around, one of the Hawks flew 1600ft below it and another crossed 2nm ahead 1300ft below; none of the other Hawks came within 3nm of it. The second pair of Tornados conducted their attack at 1347:44 after the SF340 had gone around. Just after the Airprox there were 11 military ac within 25nm of the SF340 but the radar showed that only the 4 identified above namely 2 Hawks as above and the 2 Tornados involved came within 3nm of it.

THE TORNADO GR4 (A) PILOT (Formation Leader) reports that he was leading a formation consisting of 4 Tornado GR4s, tasked as part of an [large] exercise to simulate attacking a target on Stornoway airfield [exact position given – 0.2nm brg 290° from RW36 threshold].

During the planning process they were informed by the Exercise Planning Staff deployed to the Exercise base, that there were no planned movements at Stornoway during the time allocated to carry out the simulated attack.

[UKAB Note (2): A report was requested from the Exercise Planning Staff but was not forthcoming since the officer who planned that part of the Exercise has been posted overseas and was not contactable.]

The GR4 crews planned to attack in 2 pairs split by 2min 30sec and briefed the leading elements of both pairs (Tornado's A and C) to contact Stornoway APP prior to commencing the attack.

At 1344:10Z he contacted Stornoway APP; during the initial contact call he [Tornado (A) pilot] overheard the reporting SF340 being cleared to land on RW36. He then informed Stornoway of the planned attack and that the first pair of ac was 1 minute out, with the second pair following 2min 30sec later, with all ac remaining to the E **of the RW** and this was acknowledged by Stornoway APP. Immediately after Stornoway APP transmitted an area broadcast repeating the information the GR4 leader passed.

He prosecuted his attack heading 262° at 470kt and 600ft and at 1345:16Z at a point 2.1nm E of the target commenced a 4G turn to the left onto heading 110°. At 1345:35Z Tornado (A) heard on the RT that the SF340 had a TCAS RA and was going round. He was visual with the SF340 and assessed that there was no risk of collision.

At 1345:45Z he informed Tornado (B) that he (Tornado B) was clear of the SF340 and passed the information to the following pair (Tornados (C) and (D)).

All times and positions taken from ac post flight video analysis.

THE TORNADO GR4 (B) PILOT reports that he was the northerly ac of the pair (Tornados A and B) and was not in contact with Stornoway ATC; his leader was in contact and had informed the APP controller of the formation simulated attack plan. At 1344:52Z while he was 7.1nm from the target Tornado (B) commenced a climb from 600ft/500kt to 1500ft/460kt. At 1345Z he prosecuted the simulated attack on heading 243°. At 1345:20Z he commenced 1.5G L turn onto 083° maintaining a minimum of 1.3nm from the target [verified by the unit on the mission tapes]. At 1345:45Z his leader informed them that he was clear of the SF340. At 1345:50Z Tornado (B) confirmed in cockpit that he was visual with the SF340 and assessed no risk of collision, maintaining a min separation of 1.5nm.

UKAB Note (3): In a subsequent telephone conversation with the UKAB Secretariat, the Lead Pilot of the Tornado formation reiterated that he was pre-briefed by the Exercise Planning Staff that they had called Stornoway, who had agreed the attack and that there were no planned civil movements at the agreed time; the attack on Stornoway was co-ordinated with other ac (the Hawks) and both elements were 'on time' as given by the exercise planners. The leader also stated that his initial RT call to Stornoway was later than he would have wished; this was because immediately before the attack at Stornoway he had been engaged by a formation of fighters just to the E and was fully engaged in evading them.

UKAB Note (4): The Exercise was the subject of ACN 2011-07-0218, AL1 and an associated NOTAM as follows:

Q) EGPX/QWELW/IV/BO/W/000/550/5849N00331W103

CQWI FIGHTER AREA OF RESPONSIBILITY NORTH. INTENSE AERIAL ACTIVITY

WI AREA BOUNDED BY 5940N 00130W-5910N 00100W-5747N 00100W-5740N

00131W-5740N 00258W-5819N 00553W-5950N 00602W-5940N 00130W. LARGE

FORMATIONS OF FAST JET ACFT WILL CONDUCT HIGH ENERGY MANOEUVRES AND

MAY NOT BE ABLE TO COMPLY WITH RULES OF THE AIR. NON-PARTICIPATING

AIRCREW ARE STRONGLY ADVISED TO REMAIN CLEAR OF THIS AREA. ROUTINGS

AIRPROX REPORT No 2011075

THROUGH THE UIR OF THIS AREA MAY BE TACTICALLY AVBL ON REQUEST

FM PRESTWICK CONTROL OR SHANWICK OCEANIC. CTC 01309 617964 OR

07917 506038.

AUS 11-07-0218/AS 3

LOWER: SFC

UPPER: FL550

FROM: 12 JUL 2011 12:15 **TO:** 12 JUL 2011 15:15 H3279/11

Although the ACN was addressed (electronically) to the Airport Operator's Head Office for onward distribution to all their aerodromes, it was not received by them and therefore was not forwarded to Stornoway, who had no knowledge of it (although they received the NOTAM). CAA AUS were unable to determine why HIAL did not receive the ACN but undertook to investigate.

ATSI reports that at the time of the Airprox the ac involved were in contact with Stornoway Tower/Approach (APP); the unit is not equipped with surveillance equipment. The controller described his workload as medium/high. The airport is situated in Class G airspace, with an ATZ circle of radius 2.5nm, centred on RW18/36, from surface to 2000ft aal (aerodrome elevation 26ft).

The SF340, inbound to Stornoway on an IFR flight, contacted ATC at 1335, the pilot reporting that he had copied the weather and was descending to FL85, 44nm from the airport. The controller confirmed the provision of a PS, cleared the flight direct to the Stornoway (SAY) NDB, which is situated on the airport and requested the pilot to report at 25DME; two minutes later the SF340 was cleared to FL65. Subsequently, when the pilot reported at 25 DME E of SAY a descent to 3000ft on QNH 1025mb was issued. Following a report at 19nm the SF340 was instructed to descend to alt 2000ft and the pilot was requested to report at SAY taking up the hold or visual.

At 1341:39, the SF340 pilot reported *"visual with the field request visual approach"* The flight was cleared for a visual approach to RW36 to report right base and at the time, the pilot reported passing 3300ft. Two minutes later the SF340 pilot reported on R base RW36. The radar photograph shows the ac 6.9nm SSE of the airport passing FL012 (1500ft on QNH 1025mb). Before the controller was able to reply a call was made by the pilot of one of the subject Tornados [Tornado (A)]. The radar photograph shows them to be low level about 11nm E of the airport, with a GS of initially around 500kt. (They, subsequently, maintained high speed (460kt) as they routed towards the airport.) After clearing the SF340 to land, the controller requested the Tornado pilot to pass his message and he replied, *"Two Tornados currently one minute out to the east for an attack one going through the overhead recovering to the left and you've got another pair two and a half minutes later further reattacks after that".* The controller responded *"roger I've got a SAAB Three Forty just er joining right base er for runway Three Six".* (The SF340 was then 5.5nm from the airport and the lead Tornado was 8nm E of the airport). The Tornado pilot replied *"Copied er our ????? plan ????? ????? ????? cross at ????? hundred feet now ????? east of the field"*. This message was acknowledged. As can be seen above, the transmissions from the Tornado were distorted and there were several unintelligible words.

(During their investigation of the Airprox, the local ATSU believed that the Tornado pilot had stated, on initial contact, that they would not be routeing through the overhead. Additionally, in the follow up message, it is thought that he had said that they would be up at 1500ft to the E of the field).

Approximately twenty seconds later, at 1345:13, the controller transmitted *"Stornoway ????? broadcast there's er four Tornados approaching the airfield shortly low level Stornoway out"*. (The SF340 was passing 1300ft on final approach to RW36 at 4nm and the lead Tornado was 2.5nm E.) At 1345:34, the pilot of the SF340 reported *"climbing away with a RA"*. The radar recording shows the SF340 passing 1100ft, 3.3nm S of the airport. The lead Tornado was 0.9nm SE of the airport, 2.8nm from the SF340, turning L climbing through 600ft and the second Tornado was about 2nm behind at 1400ft.

The pilot of the SF340 commented that *"those Tornados just got a wee bit too close for us"*. The controller reported *"got them both you both in sight at all times"*. The Tornado pilot confirmed he had been visual with the SF340.

The radar recordings show the leading Tornado remained over 2nm from the SF340 and at least 400ft below it, as the SF340 stopped its descent at 1000ft before climbing. At 1345:57, the second Tornado was in a L turn 1nm from the SF340, which was 2.6nm S of the airport i.e. just approaching the ATZ boundary. The former ac was at 1500ft and the latter was passing 1200ft. The SF340 climbed straight ahead to 2000ft, before positioning left hand downwind for RW36. Further military traffic was then seen in its vicinity.

The SF340 was being provided with a PS by Stornoway. This service is defined in the MATS Part 1, Section 1, Chapter 11:

'A Procedural Service is an ATS where, in addition to the provisions of a Basic Service, the controller provides restrictions, instructions and approach clearances, which if complied with, shall achieve deconfliction minima against other ac participating in the Procedural Service'. Additionally, 'A Procedural Service shall only be provided by controllers at ATC units with CAA approval to provide such a service. Controllers at ATC units that do not have surveillance information available may routinely apply Procedural Service to pilots of ac carrying out IFR holding, approach and/or departure procedures without the need to first elicit the pilots' requirements. The controller shall provide traffic information, if it is considered that a confliction may exist, on ac 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 SF340 was carrying out a visual approach at the time of the Airprox. The MATS Part 1, Section 3, Chapter 1, states:

'Outside controlled airspace, IFR flights in receipt of any of the UK FIS may be authorised to conduct a visual approach. Responsibility for the provision of deconfliction advice and traffic information continues to be dictated solely by the service being provided. Continued ATS provision is subject to the following: a) Procedural Service. There is no requirement for controllers to change the level of service provided'.

The Tornados were being provided with a BS, albeit the controller did not stipulate on the frequency the type of service being provided. The Stornoway section of the UK Air Pilot, Page AD 2-EGPO-1-7 states, under the title 'Air Traffic Services Outside Controlled Airspace':

'During notified hours of ATC service, a procedural service will routinely be applied to IFR flights. Pilots will be expected to accept Level, Radial, Track & Time allocations that may require flight in IMC. A basic service will be routinely applied to VFR flights. A pilot may request another service if considered more appropriate'.

The MATS Part 1, Section 1, Chapter 11, defines 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'.

The Air Navigation Order, Rules of the Air Regulations ,'flight within aerodrome traffic zones' (Rule 45) states that:

'If the aerodrome has an air traffic control unit the commander shall obtain the permission of the air traffic control unit to enable the flight to be conducted safely within the zone'.

Although no specific permission was granted on the frequency to enter the ATZ, it was apparent to both the crews and the controller that the ac would be entering the ATZ. The controller replied to the Tornado's initial call by issuing TI about the SF340 on base leg. It is noted that the Stornoway Controller did not instruct the Tornados to remain E of the airport or clear of the RW36 approach. However, it is believed that the Tornado pilot did report that they would be staying to the E of the airport. This intention was stated in the Tornado pilot's report. The radar recordings show that both Tornados did enter the Stornoway ATZ. At the closest, one of the Tornados flew at a distance of 0.9nm from the airport but only as it was turning away. Although the Tornado did not mention visual contact with the SF340 on the frequency, his subsequent report confirms a first sighting/radar contact at 3.5nm.

As the controller considered that the SF340 was on a critical stage of flight, he decided to make a general broadcast of the position of the military traffic rather than one addressed directly to the flight. In his subsequent report, the SF340 pilot commented that ATC had alerted him to the fact that the ac would remain to the E of the airfield at all times.

Stornoway stated that they had not received any paperwork relative to the military exercise [See UKAB Note (4)]. They confirmed however that they had received a telephone call from Lossiemouth and agreed to the Tornados approaching the airfield, subject to any civil traffic. It has not been possible to confirm the estimate given about the military activity but the unit think it is possible that they arrived later than expected [See UKAB Note (3)]. The SF340 was operating in accordance with its published schedule. The controller was made aware of the proposed military activity when he took over the position.

UKAB Note (5): The recording of the Prestwick combined radar shows the incident. The SF340 approaches RW36 from the S squawking 7000 with Modes C and S, initially tracking 320° to intercept the C/L at 5nm and at FL012 (QNH 1025mb = 1560ft). Meanwhile the pair of Tornados is approaching from the E, tracking W at low-level; at 1345:03 when the SF340 is 5nm on the C/L they are in 3nm battle formation with No2 to the N and lead just ahead also 5nm out. (At 1344.10 when they commenced initial call to Stornoway APP they were 13.5nm out). The Tornados proceed inbound, leader at low level and No 2 'popping' to 1500ft. Both ac proceed inbound, leader entering the ATZ at FL003 (~600ft agl) in hard L turn onto SE. No2 also enters the ATZ at FL012 (1500ft) before also turning away to the SE passing briefly through the projected track of the SF340. The SF340 can be seen commencing a climb (from FL008) in reaction to the TCAS RA at 1345.53. The combined (processed) radar shows both the Tornado leader and No 2 following totally unpredictable tracks with severe track jitter so the Stornoway single source SSR was also reviewed. This broadly confirms the reported separation in the ATSI report above and confirms the CPA was with Tornado No2 and that the minimum separation was 300ft and 1nm. Since the radar picture is complex and differs depending on the radar source viewed the diagram above was constructed using a variety of data and reports.

Due to an e-mail problem the HQ AIR (OPS) comment was not received in time to include it.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both GR4s and the SF340 ac, transcripts of the relevant RT frequencies, radar recordings and reports from the appropriate ATC and operating authorities.

The HQ Air Ops Member apologised for not having provided timely comment. He informed the Board at the meeting that in his view this incident occurred because of a breakdown in communication during the planning and coordination phase of a major exercise. Further it was disappointing that the Tornado formation leader chose to continue the simulated attack profile at Stornoway despite having been informed that there was CAT traffic on approach to the airfield. A safer option would have been to call 'knock it off' and avoid the ATZ once it became apparent that the area was not, as they had been led to believe, clear of civilian traffic.

The Secretariat explained to the Board that the Exercise Planning Staff had not provided a report since the officer who planned that part of the exercise had been posted overseas. The Board agreed that although this report would have provided useful background material, in the event it had not been part of the cause of the the incident. The DAP Advisor explained that following their internal checks, the ACN had been correctly written, amended and processed. The e-mail address of HIAL had been re-checked and was the same as that used on previous occasions. That being the case, the non-receipt by HIAL could not be explained. This too, the Board agreed, although an important issue in its own right, had not contributed to the cause of the incident.

A Member familiar with airline operations in the Highlands and Islands pointed out that Stornoway is a relatively busy airport with movements throughout the day and, critically, is not radar equipped; therefore all approaches are procedural and offer no protection from non-participating traffic. With this in mind, in his view, Stornoway is not a suitable target for exercise attacks; the DAP Advisor agreed. It was pointed out, however, that this exercise (and many others) is deliberately sited in the North of Scotland to minimise nuisance and resulting complaints and there are no military airfields that can be used as targets in the West and North of Scotland. Members agreed that although the plan had correctly been to avoid civil movements and it had appeared sensible to the Tornado crews at the time, since the SF340 was operating precisely in accordance with its published schedule, the planning and coordination had not worked as intended. The Board also found it disappointing that there were apparently no

records of the agreement for the attack by Stornoway ATC, or any other telephone call(s) between them and the Exercise Planners at (deployed to) Lossiemouth.

Members considered the part played by the SF340 pilots, the controller and the GR4 crews in turn.

It was agreed that the SF340 pilot had played no part in the cause of this incident; he had acted correctly and exactly as specialist Members expected. His reaction to the TCAS RA had been appropriate and the go-around was the safe option when faced with the situation presented to him. In common with the Controller, his SA had been degraded by the unclear RT sequence (i.e. whether the Tornado planned to fly through the overhead or to remain to the East of the field).

Controller Members agreed that the Stornoway APP Controller had been faced with an unenviable situation, exacerbated by his not being in possession of timely, full or accurate information about the Tornados attack or their full intentions. Part of this had been breakdowns in the information flow chain from the Exercise (mission) Planner at one end and the duty controller at the other; due to incomplete information Members were not able to establish where these breaks had occurred. From the ATSI report it appeared that the controller had not fully assimilated the Tornado pilot's message at 1344:25, "*two Tornados one minute out to the east for an attack one going through the overhead recovering to the left and you've got another pair two and a half minutes later further reattacks after that";* the controller remained under the impression that none of the aircraft would fly overhead the airfield. He was not assisted by the next transmission from the Tornado at 1344:50 (6.1nm East of the field) which was garbled, "*copied our ????? plan ????? ????? ????? cross at ????? hundred feet now ????? east of the field" was garbled.* (Only following subsequent detailed analysis does it appear that *"east of the field"* referred to his current position not his intentions.) The result was that the controller did not know the Tornado crews' intended track or timing, but believed they would remain east of the field. Since he was unsure how close they would come to the Saab, he was not in a position to know whether to instruct them to remain clear to the East or alternatively to instruct the SF340 to break off its approach. A Controller Member opined that the APP controller should have displayed more positive control and instructed the Tornados to remain clear of the ATZ, if only due to his uncertainty about the safety of the situation.

Members were unanimous that, although the Lead Tornado crew were not told the SF340's range from touchdown, as soon as they became aware of its position on right base for RW36, they should have realised that there was a potential confliction and aborted the attack for both pairs of aircraft. They should have then remained well clear and re-evaluated the situation. Further, Members considered that the No2 ac (which most likely was being flown by the supervisor) should also have been on the Stornoway APP frequency rather than on a tactical one. A Military fast-jet Member opined that even on the most important exercise or tactical check involving such an attack on any airfield, it is imperative to establish clear 2-way RT and gain a positive and unambiguous clearance for the attack profile. This will almost always involve one or more ac climbing from low level to say 1000ft in order to accomplish this. The transcript showed that Tornado leader first tried to establish communication at 1344.10; at that time the radar recording shows the ac to be commencing a left turn onto its final inbound track at FL001 (400ft) and 13.4nm out. When communication was positively established 20sec later, after the turn, the ac was at 300ft and 9.6nm; although the ac remained at 3/400ft throughout this communication sequence lasting a total of 50 sec, the (Stornoway) transcript shows the first call (starting at 1344:25) "*two Tornados one minute out to the east for an attack one going through the overhead recovering to the left and you've got another pair two and a half minutes later further reattacks after that"* to have been received clearly.

The subsequent garbled transmissions from the Tornado leader to Stornoway did not clarify the situation to the controller who responded, "(*Callsign) formation in er roger*". Members agreed that the Tornado Leader thought that he had communicated his position and intentions clearly and that he had received the controller's approval for his attack taking him through the overhead. The Controller's broadcast (1345:13) that 4 Tornados were approaching from the east at low level would have reinforced the Lead Tornado crew's perception that the controller had approved their entering the ATZ. Members also agreed that the controller had believed that the Tornados would remain clear of the C/L to the East of the airfield and therefore he did not need to instruct them to remain clear.

The radar recording and pilots' reports show that Leader was first Tornado to turn towards the SF340 and he had therefore caused the TCAS RA; No2 who also turned towards the SF340 but remained about 1nm East of the C/L. Had an RA not already been enunciated, Members believed that this manoeuvre would also have generated one.

Members agreed that since both Tornados had been visual with the Saab and its pilot saw (both) the Tornados, albeit at a slightly later stage, there had been no risk of collision; this was confirmed by the SF340 pilot reacting appropriately to his TCAS RA.

Having said that, it was agreed unanimously that this had been a needless incident that could have been prevented initially by better panning and communication. Accepting these deficiencies, the incident could have been stopped in the air had either the Tornado crew aborted the attack or the APP Controller refused the Tornados permission to conduct it, as soon as the potential conflict with the airliner became apparent.

Members proposed that a recommendation be made to HQ Air to review Exercise procedures.

PART C: ASSESSMENT OF CAUSE AND RISK

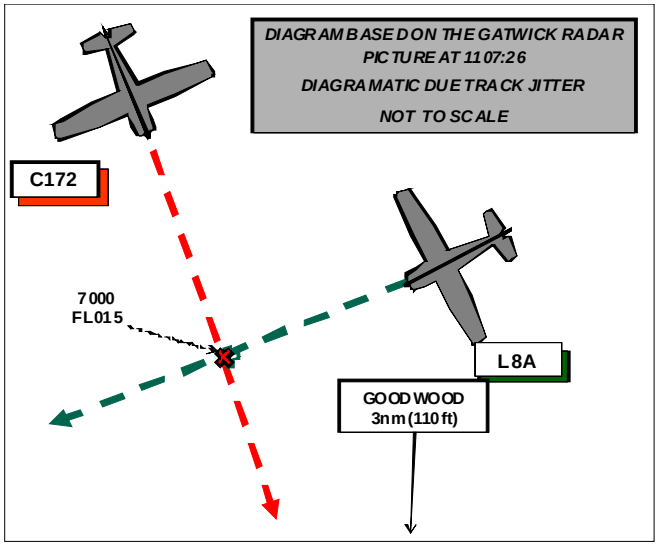
Cause: In prosecuting a simulated attack on a target inside the Stornoway ATZ, the GR4s flew close enough to the SF340 on the approach to generate a TCAS RA.

Degree of Risk: C.

Recommendation: HQ Air Command is recommended to review the planning, co-ordination and execution of simulated attacks against targets in the vicinity of civilian airfields to ensure appropriate and effective deconfliction from civilian aircraft.

AIRPROX REPORT NO 2011076

Date/Time:	10 Jul 2011 11075Z (Sunday)	
Position:	5055N 00046W	(3nm N Goodwood)
Airspace:	Lon FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Luscombe 8A	Cessna 172
Operator:	Civ Pte	Civ Pte
Alt/FL:	2000ft	1600ft↓
	QNH (1018mb)	QFE
Weather:	VMC CAVOK	VMC NR
Visibility:	35km	>10km
Reported Separation:		
	100ft V/200m H	NR
Recorded Separation:		
	NR V/0 H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE LUSCOMBE 8A PILOT reports flying a pleasure flight, from a farm near Horsham to Sandown, I.O.W. in a white ac with a belly strobe switched on, in receipt of a BS from Farnborough radar (West) but no transponder was fitted. He was tracking about 250° at 90kt from Billingshurst and when he was between Cocking & Singleton (North East of Goodwood horse racing track) at 2000ft QNH, he looked to his right, through RH door window and saw an ac less than 200m away and slightly lower. He pulled back on the control stick but probably did not achieve much more separation before the ac crossed. The other ac which he thought might have been a white C152/172 with a dark blue stripe, continued on its track of about 160°. He thought that the ac might be Goodwood based and he did not see it until very late, as he it came from his rear RH quarter. He reported the incident to Farnborough after landing and assessed the risk as being high.

He remarked that he is conscious of the importance of a good lookout and will continue to look for methods of improving his scan.

THE CESSNA 172 PILOT reports flying on a private flight from Denham to Goodwood in a white ac with blue stripes, squawking 7000 with Modes C and S. The flight was flown at about 2000ft on the London QNH and after leaving Denham ATC he transferred to Farnborough and was given a BS and routed just to the SW of the Farnborough overhead, direct to Goodwood; Farnborough terminated the service when they were about 12nm from Goodwood and he transferred to Goodwood ATC. As their cct traffic was light he requested to join R Base for RW24. At the time of the reported Airprox he was conducting a gentle descent heading 160° to position as advised. Both he and his passenger, who is also a PPL holder, were keeping a careful lookout for possible cct traffic, and listening to the local ATC for reports of other ac but neither of them saw the Luscombe ac which reported the Airprox (or any other ac) so he could not assess the risk. Their ac is of the high wing type, so visibility upwards, particularly when in a descent, is difficult. They did not hear the Luscombe report the incident on the Goodwood ATC frequency and were only aware of the incident when contacted by RAC.

ATSI reports that the radar recordings used for the investigation of the Airprox were sourced from the Gatwick radar head, which is not supplied to Farnborough.

The C172 established communication with Farnborough LARS (West) at 1042 on transfer from Farnborough LARS (North), the pilot reporting 10nm from WOD and he was instructed to squawk 0432 and place on a BS. The ac continued to route via WOD and overhead Farnborough Airport, towards its destination, Goodwood aerodrome.

At 1102:28, the Luscombe L8A (L8) contacted the Farnborough (West) frequency. The pilot's attempt to establish communication was broken, so he was requested to pass the message again. Consequently at 1103:00, the pilot reported, *"heading for Sandown out of Slinfold Wellcross Farm* [near Horsham] *two thousand feet one zero one*

eight QNH no transponder Basic Service" and the controller confirmed the provision of a BS. The radar photograph shows the C172 tracking S at 2200ft and a primary radar return tracking SW, believed to be the L8, is 7.3nm to its SE. No further RTF transmissions were made to, or received from, either ac until 1104:30, when the C172 was instructed to, *"squawk seven thousand freecall Goodwood..."* At that time the C172 was at 2100ft, 9.2nm from Goodwood, with the primary return 5.1nm SE of it.

The radar recordings show the subject ac continuing on conflicting tracks, coming into close proximity at 1107:26.

[UKAB Note (1): Although the primary return believed to be the L8 shows severe track jitter, they coincide at 1107.26.]

The West Controller reported that the returns from the L8 were intermittent and at the time of the Airprox it was not showing on the radar display. No transmissions were made to the L8 until 1115, when the pilot was asked to report his position but no response was received.

Although the C172 pilot did not request a BS or read back the service as required on the West frequency, the service was probably a continuation of the service being provided on the North frequency and the pilot confirmed in his report that he was aware that he was receiving a BS.

The MATS Part 1, Section 1, Chapter 11, Pages 4/5, defines a BS:

'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. Controllers may allocate SSR codes to ac in receipt of a Basic Service. The issuance of such a code does not constitute the provision of a surveillance 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 recordings, reports from the air traffic controllers involved and reports from the appropriate ATC authorities.

The Board noted that this incident took place in Class G airspace where 'see and avoid' is the principal method of collision avoidance; in this case the two pilots had an equal and shared responsibility to avoid each other but under the RoA the Luscombe, having the C172 on its right, should have given way to it; this however, is dependant on the pilots seeing each other's ac and in this case neither did so in time to take any effective avoidance.

When trying to analyse the conspicuity aspects of the incident, Members noted that both ac had been flying at similar speeds, closing on a line of constant bearing and with little or no relative movement, making them difficult for their respective pilots to detect or, it was proposed they had possibly been in each other's blind areas. A GA Member reminded pilots of the importance of manoeuvring their ac and/or moving their head to minimise 'blind' areas particularly when flying through congested areas. He also reminded that flying at unusual alts can reduce the probability of ac conflicting at the same height; 2000ft for instance is well used but few pilots elect to fly at, for instance, 1750ft, which in this case could have increased the vertical separation.

While noting that the incident took place after both ac had left the Farnborough frequency, Members observed that, although both pilots had requested an ATS, apparently neither had requested a TS despite flying through a very congested area.

Since neither pilot saw the opposing ac in time to take any effective avoidance, most Members agreed that in this incident there had been an actual risk of collision.

PART C: ASSESSMENT OF CAUSE AND RISK

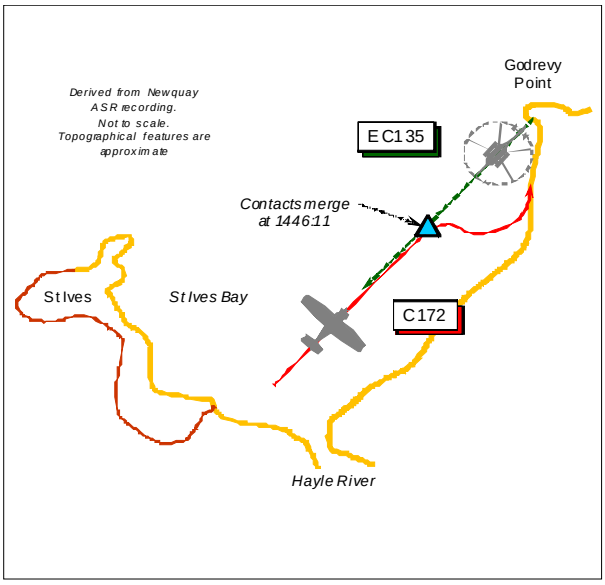
Cause: A non-sighting by the C172 pilot and effectively a non-sighting by the Luscombe 8A pilot.

Degree of Risk: A.

AIRPROX REPORT NO 2011077

Date/Time: 13 Jul 2011 1446Z
Position: 5013N 00525W
(1¼nm SW of Godrevy Point)
Airspace: London FIR (Class: G)

	Reporting Ac	*Reported Ac*
Type:	EC135	C172
Operator:	Civ Comm	Civ Trg
Alt/FL:	1200ft	1000-1200ft
	RPS (1018mb)	(1022mb)
Weather:	VMC CLBC	VMC NR
Visibility:	10km	>10k
Reported Separation:		
	Nil V/50m H	0-50ft V
Recorded Separation:		
	100ft V/contacts merged	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE EUROCOPTER EC135 HELICOPTER PILOT reports that he was in transit to Penzance, VFR and in receipt of a BS from Culdrose APP; a squawk of A0020 was selected with Modes C and S on. The helicopter is coloured yellow and red; the white HISLs and two landing lights were all on.

Flying level at 1200ft SCILLIES RPS (1018mb), about 060° LND VOR 11nm heading 220° at 125kt he encountered a small light ac. Flying into the sun, 200ft below the cloud base in VMC, the white C172 climbed from low level and appeared from out of his 10-11 o'clock blind spot with the sun behind it, which made it impossible for him to see it. The white C172 was seen in his 11 o'clock 100m away flying in a right hand banking turn at the same level before it passed down the port side 50m away with a 'high' Risk of collision. He was unaware that the C172 was in the vicinity until the very last moment when it was too late to take any avoiding action.

He immediately told Culdrose APP that he had just had an Airprox with a light fixed-wing ac flying in the opposite direction; they informed him initially that they had not seen anything on radar but then picked up a 7000 squawk in his 6 o'clock position. The light ac was white in colour and was flying just below the cloud base.

The EC135 pilot also included his two Paramedic's accounts within his report:

EC135 PARAMEDIC (A) was sitting in the LH P2 seat and had turned to speak to his colleague in the back seat; as he turned forwards he saw a white ac banking away at the same level in their 10-11 o'clock position. This aeroplane was extremely close, he estimated about 50-100 meters away – probably at the closer end of that scale – but banked sufficiently to pass down their port side.

EC135 PARAMEDIC (B) was in the rear seat facing aft. His first sight of the C172 was through the port side window, where he saw the complete C172 'filling' the side window of the helicopter. He believes they were about 50 metres apart at this point. He was unaware of his pilot taking any avoiding action.

THE C172 PILOT reports he was operating VFR, in receipt of a BS from Lands End TOWER on 120·250Mhz; a squawk of A7000 was selected with Mode C. Flying at 1000-1200ft (1022mb) some 500ft below and 2nm clear of cloud, the flight was a typical instruction flight following a common route taken for trial lessons along the southern coast from Land's End aerodrome to Penzance, cutting across land to St Ives Bay before following the N Cornish coast to Pendeen before re-joining at Lands End. There was a much higher level of GA traffic in the area than usual due to a microlight and gyrocopter fly-in to the Isles of Scilly; therefore he emphasized to his student the need to maintain a good lookout. His route took him E of St Ives for only a short period, therefore, given the amount of traffic in the local area receiving a BS from Lands End, he elected to remain in radio contact with Lands End

TOWER throughout the flight. In the vicinity of St Ives Bay heading 060° at 85kt a small rotary-winged ac that appeared to be a gyrocopter was seen about 1nm ahead on a converging heading in level flight on a course of about 240°. He considered it a collision risk and avoiding action was initiated into a banked turn to the R using 30° AOB onto a heading of about 150°, with a slight climb. The other traffic did not change its course as he turned away. There was no subsequent sighting of the ac. He considered that the other ac was seen and avoiding action taken soon enough to ensure that an Airprox did not occur.

THE CULDROSE APPROACH CONTROLLER (CU APP) reports that the EC135 helicopter pilot called APP on 134·050MHz abeam Godrevy Bay requesting a BS at 1000ft SCILLIES RPS (1018mb) en-route to Penzance. A BS was given with a request to report visual with the HLS and to advise when switching frequency. A few minutes later the EC135 helicopter pilot reported an Airprox with a light civilian ac in the vicinity of Hayle Bay. Nothing was seen on radar; however, upon rotating the EC135's SSR data block, a primary contact was observed in the helicopter's 6 o'clock at a range of ½nm tracking NE, which very shortly afterwards displayed a A7000 squawk climbing slowly through 1000ft unverified Mode C. Observing the ac's course using a combination of the A7000 squawk and the ac's primary radar response, the ac – the C172 - was tracked to Lands End aerodrome. When the C172 was shown joining overhead, he telephoned Lands End aerodrome to inform them of the Airprox. Subsequently, upon talking to the C172 pilot via landline, he confirmed he had been in Hayle Bay but had not seen the EC135 helicopter. The C172 pilot did not contact Culdrose ATC at any point during the flight. His workload was assessed as 'medium-low'.

UKAB Note (1): Manager ATS Newquay International Airport helpfully provided a copy of the Newquay ASR recording covering the period of this Airprox. However, the large displayed range makes it difficult to determine accurately the minimum horizontal separation that pertained. The EC135, identified from its A0020 squawk is shown departing Godrevy Point into St Ives Bay on a steady SW'ly track indicating a level cruise at an altitude of 1300-1400ft Mode C. Meanwhile an ac squawking A7000 is shown tracking NE'ly within St Ives Bay about ½ - 1nm offshore broadly in conformity with the route described by the C172 pilot. At 1445:44, the C172 indicates an altitude of 1500ft Mode C, 100ft above the EC135, in the latter's 12 o'clock at a range of 1½nm. The two ac close directly, head-on to one another; at 1446:01 the EC135 indicates 1300ft Mode C with the C172 at 12 o'clock – 0·5nm. Both ac maintain their course as the contacts merge at 1446:11 and pass marginally port-to-port as reported, the C172 indicating 1400ft ALT, some 100ft above the EC135 indicating 1300ft ALT. The C172 appears to turn R toward the shoreline onto a SE'ly heading, in conformity with the reported avoiding action R turn, before regaining the line of the coast 1nm S of Godrevy Point; the EC135 maintains its course and indicated altitude as they draw aft of one another. Subsequently, the EC135 coasts in SE of St Ives and the C172 turns about from Godrevy Point.

ATSI reports that the Airprox occurred within Class G airspace, the EC135 squawking A0020, operating VFR on a flight from Newquay to Penzance heliport. The C172 pilot was operating VFR, squawking A7000, on a local instructional flight from Lands End Airport and in receipt of a BS from TOWER.

The Lands End TOWER RTF recordings did not have a time injection element.

The Culdrose 1450 METAR: 21004KT 9999 –SHRA SCT010 SCT018 BKN030 16/13 Q1021 GRN TEMPO 7000 – SHRA SCT012 BKN020TCU GRN=.

The C172 departed from RW25 at Lands End airport, routeing E VFR at 2000ft. A broken transmission, *"....to Penzance,"* was made and the TOWER controller believed the C172 had transferred to Penzance RADIO. This information was passed to two other ac in the area. The C172 pilot's written report indicated that he had remained on the Lands End frequency due to the amount of traffic in the area.

The C172 contacted Lands End TOWER and joined on a right base-leg for RW25. After the C172 landed TOWER asked the pilot, "[C172 C/S] *have you been operating Hayle Bay"* and the pilot responded *"Affirm."* The controller asked, *"er roger did you see the* [EC135 C/S]" The C172 pilot responded, *"Negative* [C172 C/S]".

The C172 departed Lands End airport in receipt of a BS and was believed to have changed to Penzance RADIO. The Lands End TOWER controller was not aware of the Airprox or, of the EC135 helicopter. CAP 774, UK Flight Information Services, Chapter 2, Page 1. Paragraphs 1 & 5, State:

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

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

The Airprox occurred when the two ac operating VFR in Class G airspace and in receipt of a BS, flew into conflict. Under a BS there is no obligation placed upon the controller to provide traffic information. However, if a controller considers that a definite risk of collision exists, a warning may be issued to the pilot.

HQ NAVY COMMAND is content that had the controller seen the conflicting ac a warning would have been passed to the EC135 pilot. Given the weather conditions on the day and the reported numbers of GA traffic it may have been prudent for the C172 to have contacted Culdrose for a LARS. Whilst this may not have prevented the Airprox from occurring (if he had still requested a BS for instance) both pilots operating on the same frequency may have increased either pilot's SA.

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.

These two flights were operating legitimately in Class G airspace and in this situation both pilots were equally responsible under the Rules of the Air for sighting and avoiding other ac. To assist with this aim, the C172 pilot had elected to remain in RT contact with Lands End TOWER whilst following his route around the coast because of the higher than normal level of GA traffic in the area that he perceived would call TOWER. However, helicopter pilot Members familiar with this locale perceived that an ATS from Culdrose might have given him a better understanding of traffic operating in St Ives Bay, which is a popular location for helicopter check test flights from Culdrose. Members suggested that obtaining a radar service from Culdrose would generally be more beneficial than staying with Lands End TOWER. Nevertheless, whilst operating under a BS with CU APP, as the EC135 pilot was here, Members emphasised that there is no compunction on the controller to identify the flight, track it or provide TI. Plainly, if pilots wish to receive comprehensive TI about other traffic then in the first instance they should request a TS from a radar equipped ATSU and fly at an altitude commensurate with the ATSU being able to see proximate traffic. However, here the CU ASR had not detected the presence of the C172, probably due to the shielding effect of the terrain and the ac's low altitude. Unfortunately, therefore, the CU APP controller was unaware that a definite risk of collision existed and was powerless to intervene even with a basic warning to the EC135 pilot. Moreover, the EC135 pilot's lookout was hampered by the bright sunlight and he states it was impossible to see the C172 because of the sun behind it until the very last moment when it was too late to take any avoiding action. The C172 pilot lookout was not so encumbered by the sun and without any assistance from ATC he had spotted an ac, which he perceived at the time to be a gyrocopter, converging in level flight about 1nm ahead. Small helicopters, at a head-on aspect and with no crossing motion to draw attention to them can be difficult to spot but pilot Members agreed, while he had probably first seen the helicopter at less than 1nm, the C172 pilot saw it in reasonable time to initiate avoiding action into a 30° AOB bank R turn. Therefore, the Board agreed that this Airprox was the result of a conflict in Class G airspace resolved by the C172 pilot. The EC135 pilot reports the C172 passed down the port side 50m away at the same level, the distance also suggested by his paramedic colleagues. The Members concluded unanimously that although the C172 pilot had taken robust avoiding action, at these distances with the EC135 pilot unsighted beforehand, the safety of the ac involved had indeed been compromised.

AIRPROX REPORT No 2011077

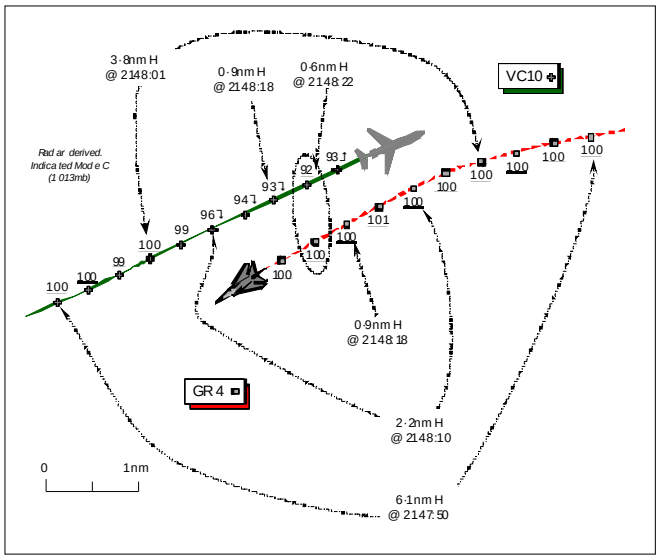
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict in Class G airspace resolved by the C172 pilot.

Degree of Risk: B.

AIRPROX REPORT NO 2011078

Date/Time:	12 Jul 2011 2148Z	NIGHT
Position:	5230N 00001W (9nm NNE of Wyton)	
Airspace:	London FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	VC10	Tornado GR4
Operator:	HQ Air (Ops)	HQ Air (Ops)
Alt/FL:	FL100	FL100
	SAS	SAS
Weather:	VMC CLOC	VMC CLAC
Visibility:	30km	40km
Reported Separation:		
	2nm H	2nm H
Recorded Separation:		
	800ft @ 0·6nm Min H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE VC10 PILOT reports the flight was tasked to one of the southern North Sea Air-to-Air Refuelling Areas (AARA 8) for high priority pre-deployment night training for a fast-jet squadron. The HISLs, nav lights and other standard ac lighting were all on. The assigned squawk was selected with Modes C and S on; TCAS is fitted.

Because of reports of poor weather over the North Sea, the crew had elected to maintain FL100 after exiting the DAVENTRY Radar Corridor (RC) for the transit towards AARA8, in order to check the weather at that level before trying any other level for suitable weather. Following their IFR FPL, after exiting the Daventry RC under a TS from London MILITARY on UHF they were given 'own nav for Area 8'. To circumnavigate the Wash Danger Areas they elected to maintain an easterly heading for a short while. After no more than a couple of minutes heading 068° at 300kt a contact appeared on TCAS at an estimated range of 3-5nm at their level. Simultaneously, TCAS enunciated a TA and within a couple of seconds or so, London MILITARY warned of a contact in their 1 o'clock, describing it as displaying 'no height information'. They immediately initiated a L turn but, during the roll-in, a DESCEND RA was received; at the same time London MILITARY confirmed the other ac was at the same level. The RA was followed, descending from FL100 to FL94; London MILITARY was informed and the unidentified ac, which was not seen visually, passed down their starboard side at an estimated distance of 2-3nm (from TCAS range discussions within the crew after the event.) Following the RA, a return to FL100 was instigated and the rest of the sortie passed without further incident. He assessed the Risk as 'high' and elaborated that it had been a quiet cockpit environment, with good visibility at night and a quiet ATC frequency. Apparently there was no squawk received from the other ac until a very late stage. An Airprox was reported to London MILITARY on 252·875MHz.

THE TORNADO GR4 PILOT (TORNADO A) reports that no hazard was perceived at the time. He was heading 257° at 300kt at the appropriate quadrantal of FL100, in VMC, he thought under a TS from Marham APPROACH, but actually still working London MILITARY. He was positioning the ac in preparation for a practice show of force that was to be carried out on a northerly heading from a rapid descent in the vicinity of Chatteris. Shortly before descending, ATC reported opposite direction traffic at FL100 just right of the nose. The pilot became visual with the traffic, displaying a large white floodlight and red strobes, at a range of 7nm and adjusted his heading by turning 10° slightly L onto 247° to increase the separation. The other ac passed 2nm to starboard with a 'low' Risk of collision. Shortly after the CPA, he turned his ac through 180° in order to acquire the line of attack for the show of force. A rapid descent was carried out, switching enroute from London MILITARY to the LFS frequency. At the time, the TI on the other ac was considered to have come a little late, but not sufficient to warrant reporting action. [No TI was issued before the Airprox.] The Tornado's lighting was red upper and lower strobes, with navigation lights set to bright and conspicuity flash mode.

THE LATCC (MIL) LJAO EAST SECTOR CONTROLLER (LJAO EAST) reports that the VC10 had left the DAVENTRY RC and the crew was under their own navigation to AARA 8. Initially the formation of Tornado GR4s

was also under her control executing general handling NE of Marham. When overhead Marham the GR4 formation reported they were splitting; one ac would remain with LJAO to go to Waddington for a pre booked PD and then to AARA8, the other switching to Marham. She believed that she only had one Tornado on frequency but this turned out not to be the case as Tornado (A) had also remained on the frequency. Tornado (A) then free called requesting GH, which was when she realised there had been a mix up. The non-squawking traffic – Tornado (A) - was then called to the VC10 crew at 12 o'clock - 5 miles - no height information, she then gave Tornado (A) a squawk. Once this was issued an SSR code of A3652 initially appeared from Tornado (A) at FL100; she re-called Tornado (A) to the VC10 at 12 o'clock - 3nm - same level. The VC10 pilot replied that he was descending in response to a TCAS RA; as he did this the A3652 changed to the LJAO assigned squawk. Tornado (A) then called visual with the VC10. Tornado (A) was subsequently identified and placed under a TS.

BM SAFETY MANAGEMENT reports that this Airprox occurred at 2148UTC, between a VC10 operating IFR in VMC receiving a TS from LJAO EAST and a Tornado GR4 - Tornado (A) - operating in VMC.

The LJAO EAST controller was operating a band-boxed position covering the LATCC (Mil) Area of Responsibility and had recently commenced her shift. Prior to the incident, the controller had been on leave for a week and was working the second night shift of a shift cycle, consisting of 2 mornings, 2 afternoons and 2 nights. At the time of the Airprox, LJAO EAST was operating on two different frequencies with a pair of Tornado GR4s (Tornado (A) and Tornado (B) - the original formation leader) conducting general handling (GH) in East Anglia on one frequency, with the VC10 en-route to AARA8, via the DAVENTRY RC, on the other. LJAO EAST transmitted simultaneously on both frequencies from 2144:07; however, they were not cross-coupled.

At 2143:25, the crew of Tornado (B) stated that the formation element of the sortie "*is complete.* [C/S Tornado (B)] *is stripping to the south, will free call Marham and* [C/S Tornado (A)] *is* [garbled] *will free call* [LJAO EAST]." LJAO EAST acknowledged this and amended the Electronic Flt Strip (EFS) to reflect that there was only one ac in the formation under control. LJAO EAST then asked the crew of Tornado (A) to confirm their intentions. Initially the crew of Tornado (A) stated that they planned to RV with the VC10 in AARA8, but then changed this to state that they planned to conduct a pre-booked practice diversion (PD) at Waddington, prior to routeing to AARA8. LJAO EAST acknowledged this and requested Tornado (A) to report steady and level. The crew of Tornado (A) replied at 2144:12 that they were, "*steady 2-4-0 at flight level 1-1-0* [sic]", which was also the heading and indicated Mode C level of Tornado (B). LJAO EAST did not formally identify, nor agree a type of ATS with the crew of Tornado (A).

At 2143:41 a primary surveillance radar contact (PSR) with no supporting SSR (Tornado (A)) appears on the radar recording, just as Tornado (B) turned L to track S, with the PSR-only contact maintaining the formation's previous southwesterly track. At 2144:18, with 3.2nm lateral separation, Tornado (B) turned south-westerly, slowly converging on Tornado (A).

At 2144:42 LJAO EAST passed TI to what they believed to be Tornado (A), stating, "*traffic believed to be your number 1 west 1 mile tracking southwest no height information*." Given this TI and subsequent events, LJAO EAST believed that Tornado (A) was the south-easterly of the two ac and the ac that had retained the SSR Mode 3A. In reality, as depicted in fig 1 below, Tornado (A) was the north-westerly PSR-only contact S of Marham, whilst Tornado (B) was the combined (SSR & PSR) contact SE of Marham. The TI issued was acknowledged by the crew of Tornado (A).

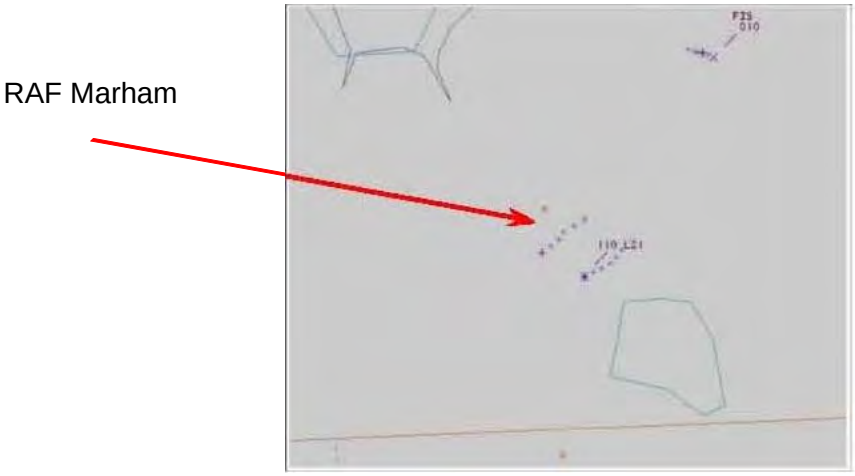


fig 1

At 2145:23, LJAO EAST made a landline call to Waddington to ask for the latest weather and confirm that they could accept Tornado (A) for a PD. This call became protracted with Waddington stating that they could not accept Tornado (A) and finished at 2146:54.

At 2145:35, the crew of Tornado (B) stated that they, "*would like to eh take a handover to Mildenhall for a pre-booked PD for radar to ILS*." LJAO EAST acknowledged this call and at 2145:47 asked the crew of Tornado (B) to confirm their position, who replied that they were, "*south-west of Marham by approximately 11 track miles*." This position information was acknowledged by LJAO EAST; however, Tornado (B) was actually 6·2nm SW of Marham with Tornado (A) 8·5nm SW of Marham. The controller's surveillance display was on a high range setting, thus reducing the angular distance between Tornado (A) and Tornado (B) on the radar display; consequently, this position information could not have been used to positively identify either ac.

At 2146:34, LJAO EAST informed the crew of Tornado (A) that Waddington could not accept them for a PD. The crew of Tornado (A) replied that they would descend to low-level for 3min, before routeing to AARA8. At 2147:20, prior to descending to low-level and with 12·5nm lateral separation between Tornado (A) and the VC10, the crew of Tornado (A) requested a, "*squawk and a traffic service*." LJAO EAST responded by instructing Tornado (A) to, "*maintain squawk of 6061*" which was the SSR Mode 3A code allocated to Tornado (B). The crew of Tornado (A) then replied that they were, "*currently squawking standby*." Immediately, LJAO EAST instructed Tornado (B) to "*squawk ident*" and for Tornado (A) to "*squawk 6062*."

At 2147:50, LJAO EAST passed TI to the VC10 on Tornado (A), stating, "*traffic right one o'clock, three miles* (the radar recording shows 6.1nm)*, opposite direction, no height information*." The VC10 crew replied that they were *"coming left";* LJAO EAST updated the TI at 2147:59 stating, "*that traffic's now indicating same level*." This update coincides with a displayed SSR code of A3652, previously issued by Marham ATC to the crew of Tornado (A) and Mode C becoming visible on the radar recording coincident with the PSR contact. At this point, 4nm lateral separation existed, with both Tornado (A) and the VC10 indicating FL100. Following their statement at 2144:12 that they were level FL110, the crew of Tornado (A) did not report descending to FL100.

At 2148:04, with 3nm lateral separation extant the VC10's L turn becomes evident on the radar recording, the crew stating that they're, "*responding to TCAS, descending*" with the descent already visible indicating FL98. At 2148:10, LJAO EAST updated the TI on Tornado (A) to the VC10 crew. A L turn by Tornado (A) becomes evident on the radar recording at 2148:12. Although the report from the pilot of Tornado (A) states that they first sighted the VC10 at approximately 7nm (equating to about 2147:43), it also states that on becoming visual with the VC10, the pilot, "*adjusted heading slightly left*." At 2148:18, the crew of Tornado (A) reported visual with the VC10, with the former crew reporting minimum separation as about 2nm and a negligible perceived risk to flight safety; the crew of Tornado (A) did not receive TI from LJAO EAST on the VC10. The CPA is shown at 2148:22, with 0·6nm lateral separation and 800ft vertically.

Based upon the crews' reports and the radar recording, it appears that both the crew of Tornado (A) and that of the VC10 over-estimated the range at which they first detected each other's ac and the minimum separation. Consequently, this Airprox resulted from the risk of 2 ac operating in Class G airspace and the relatively late sighting of each other's ac, potentially aggravated by the fact that the event occurred at night. However, the VC10 crew had a reasonable expectation that LJAO EAST would provide TI to assist them in discharging their collision avoidance responsibilities. The fact that TI was passed relatively late to the VC10 crew is a contributory factor in this occurrence and is rooted in the mis-identification of Tornado (A).

Whilst technically Tornado (A) was not identified and placed under an ATS, it is reasonable to argue that LJAO EAST believed that Tornado (A) was under a service, albeit that they were applying the service to Tornado (B). It was not until 2147:30 when Tornado (A) stated that they were, "*squawking standby*" that LJAO EAST realised the true identity of Tornado (A). This error originated from LJAO EAST's reaction to the initial split between Tornado (A) and Tornado (B). LJAO EAST did not acknowledge Tornado (B)'s statement that they would free call Marham and a response from the controller at that point might have prompted the crew of Tornado (B) to mention that they would be remaining on the LJAO frequency. Furthermore, it appears that LJAO EAST assumed that Tornado (A) was squawking the formation's assigned SSR code and did not appreciate the fact that the formation leader would squawk. Finally, LJAO EAST did not assimilate that the crew of Tornado (B) had not free called Marham when they called at 2145:31 requesting a handover to Mildenhall, thus missing the opportunity to update the controller's situational awareness (SA). The distraction caused by the protracted landline conversation with Waddington during this time may have interfered with LJAO EAST's ability to update their SA. Although the controller has made

no mention of any factors that may have affected their performance, given the nature of the errors, one possible explanation is grounded in the controller's psychophysiological state, specifically, the controller's levels of alertness and fatigue.

The TI to the VC10 crew on Tornado (A) at 2147:50, was passed at a late stage; however, given the relative positions of the two ac at the start of the exchange of RT at 2147:20 and the length of that exchange, it appears reasonable to argue that LJAO EAST passed TI to the VC10 crew as early as possible. Moreover, once LJAO EAST had identified Tornado (A), there was little opportunity for the controller to pass TI to Tornado (A) about the VC10, affording priority to the provision of TI to the VC10.

HQ AIR (OPS) comments that mix-ups like this occasionally occur. It seems that the controller's confusion was not detected by the Tornado crew in this case, and an inaccurate position report from them reinforced the controller's incorrect air picture. The controller nevertheless correctly prioritised the TI to the VC10 when she realised there was a potential for conflict. The Tornado crew's incorrect assessment of the range from the VC10 should serve as a reminder to all that at night it is impossible to visually judge distances effectively and avoidance should be verified by other means.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

Although the BM Safety Management report points out that the controller had just commenced the last night watch of the cycle, military controller Members contended that fatigue should not have been a factor here. On a different topic, the military Area controller Member explained that the controller had not cross-coupled the two frequencies in use. Therefore, although each crew could have heard the controller's RT transmissions on both frequencies, they would not have been able to hear the other crew's reply. Hence the aircrews' SA could not have been assisted from hearing the RT transmissions.

It was evident to the Members that this Airprox had its origins in the formation split when the formation leader – Tornado (B) – called and advised he was free-calling Marham, but subsequently remained with LJAO EAST. With hindsight it was plain that it was Tornado (B) that was squawking throughout the formation's GH, although when the split occurred the controller had misidentified the ac and perceived it was Tornado (A) that was squawking. Fast-jet pilot Members were critical of the execution of this formation split which was not conducted in good order; formation leaders should make clear to ATC the disposition of the ac and remain in those positions until ATC have had the opportunity to assimilate the information. LJAO EAST could have taken a more positive stance here and ensured that the formation elements squawked appropriately when service was terminated on Tornado (B). Confusion would not have arisen if Tornado (B) had been instructed to select the general-purpose conspicuity squawk when the formation split-up and proceeded about their independent tasks. Military procedures in the UK MIL AIP (ENR 1-6-9) stipulate that crews operating at or above FL100 'must' select a conspicuity squawk such as A7000 with Mode C 'at all times', unless flying in CAS, when under an ATS an individual code has been allocated or when circumstances require the use of another special-purpose code. Thus good practice would suggest that Tornado (B) should have been instructed by LJAO EAST to squawk A7000 when the crew advised free-calling Marham, or the crew could have selected the conspicuity code without a further prompt. Moreover, it was plain that when LJAO EAST asked the crew of Tornado (A) for their level it was the same as the level (and heading) indicated by Tornado (B) - FL110. Tornado (A) had been flying independently for nearly 4min before the crew prompted LJAO EAST and asked for a squawk. The ac should not have been flying at this level without transponding Modes A and C, so an opportunity was lost here to forestall this close encounter. Fortunately, this omission was rectified just before the Tornado (A) and the VC10 flew into close quarters. Wisely, LJAO EAST's first action after issuing a squawk to Tornado (A) was to pass TI to the VC10 crew under the TS, although the Tornado's Mode C was not evident to the controller at that stage, hence the omission of height information; it was only secs later that FL100 was shown for the first time - the start of the first diagram coinciding with this point. The VC10 crew's reaction to this TI was to initiate a L turn but by that stage the ac's TCAS had detected the Mode C data from Tornado (A) as soon as it was switched on and computed the DESCEND RA, which they complied with. Without the benefit of TI from LJAO EAST or TCAS in the other cockpit, the pilot of Tornado (A) had sighted the VC10 at a range of 7nm and had turned slightly L to increase the horizontal separation. Whilst these turns were uncoordinated they were complimentary to one another and increased the horizontal separation slightly as the

VC10 also descended 800ft below the level of Tornado (A). The Board concluded, therefore, that this Airprox had resulted from a conflict in Class G airspace resolved by both crews. Notwithstanding both crews' estimates that the horizontal separation was 2nm, the radar recording shows that it was significantly less at 0·6nm. Even at this short range the VC10 crew had not seen the Tornado visually. However, the crew would have been focused on their TCAS RA demands and the visibility from the VC10's flight-deck was not as good as that from the Tornado, whose crew had the VC10 in sight throughout. This led the Members to agree, unanimously, that no Risk of a collision had existed in the circumstances conscientiously reported here.

PART C: ASSESSMENT OF CAUSE AND RISK

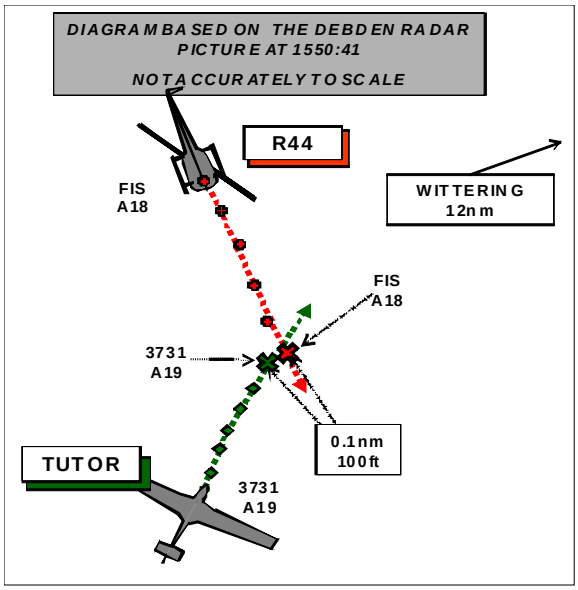
Cause: A conflict in Class G airspace resolved by both crews.

Degree of Risk: C.

AIRPROX REPORT No 2011079

AIRPROX REPORT NO 2011079

Date/Time:	12 Jul 2011 1551Z	
Position:	5231N 00045W (12nm WSW Wittering)	
Airspace:	Lon FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Tutor	R44 Helicopter
Operator:	HQ Air (Trg)	Civ Pte
Alt/FL:	1600ft QFE (1009mb)	NR
Weather:	VMC NR	VMC
Visibility:	35km	NR
Reported Separation:	100ft V/ NR H	NR
Recorded Separation:	100ft V/ 0.1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE TUTOR PILOT reports that the Airprox occurred during a mixed profile pre Final Handling Test (FHT) sortie in a white ac with all external lights switched on. The student had successfully carried out a simulated Low-Level Abort and during the climb to above MSA he had obtained a TS from Wittering APP. At 3000ft on the RPS, heading N, squawking 3731 with Mode C, Wittering QFE (1009) was set and ATC instructed them to descend to 1600ft QFE. The radar headings kept them clear of Corby en-route for a PAR for Wittering RW08; ATC also provided regular TI which was all acknowledged. At 1600ft the pre-landing checks were completed and they were on a heading of 060° at 100kt, about 12nm WSW of Wittering (to the S of Eyebrook Reservoir) when ATC gave urgent TI on an unidentified ac, at a similar alt tracking SE, 2nm N of their position. Since the student was under an IF hood, he (the Instructor) took control in case evasive action was required. The Tutor's TAS indicated a target to the right of their track 100ft lower in white symbology. Bearing in mind recent history of the unreliability of TAS in azimuth, he carried out a full lookout scan which was impeded by the broad canopy structure, the student's helmet and the IF hood. ATC made further Traffic calls to the effect that targets were merging. Seconds later TAS changed to yellow symbology and announced "Traffic, Right, Low, 1 o'clock less than 1 mile". He caught a glimpse of a yellow helicopter 250m away, moving left to right, slightly lower and just appearing from behind the left-hand canopy arch so he immediately pulled up and rolled slightly to the left of the threat (the flaps were at take-off and the G meter indicated 2G post event). The helicopter was identified as a Robinson R44 and it did not appear to take any evasive action.

ATC were informed and an airborne Airprox filed with an event time of 1650L given. He assessed the risk as being very high.

He commented:

The poor view is well documented (by AAIB/RAF SI) and deficiencies in Tutor Canopy design (wide canopy arches) with added restrictions to right hand side caused by side by side seating, helmets and in this case student I/F visor were contributory factors as was Tutor visibility to others (White aircraft against Light Grey/white background); a Cranfield University report into Grob ac paint schemes detailed visibility issues. The R44 was working in the London FIR and took no avoiding action as it appears that the pilot did not see the Tutor throughout the incident.

The Tutor TAS, although indicating threats, gives false lateral positions on the display and aural alerts gave the wrong direction despite the ac being straight and level.

The workload was reasonably low, the student had completed Pre-Landing Checks and no other ac were on frequency.

Despite degraded radar performance, TI updates were given by ATC and were accurate; however, had the Tutor been kept higher (2500 to 3000ft) until closer to the MATZ, the Airprox may have been avoided.

THE R44 HELICOPTER PILOT reports that he was flying a yellow helicopter with Nav and anti-collision lights switched on, on a private VFR/VMC flight from Sherburn to Elstree, in receipt of a BS from London Info and squawking 1177 with Mode C, but TCAS was not fitted. He was not aware of an incident but London Info did ask him during the flight whether he could see a Tutor ac in their vicinity and he remembered telling them that he could see only one fixed wing in about 2/3nm away in front of him in their 12-1 o'clock turning but not conflicting.

UKAB Note (1): The Wittering METAR was:

METAR EGXT 121550Z 04016KT 9999 FEW025 BKN060 17/11 Q1018 BLU NOSIG

BM SAFETY MANAGEMENT reports that this AIRPROX occurred between a Tutor on a mixed profile pre-FHT sortie, operating VFR in VMC in receipt of a TS from Wittering APP, and a R44 operating VFR in receipt of a BS from London Information.

The Tutor was operated by a QFI and a student, with the student as HP and under an IF hood. The pilot free-called APP at 1542:35 simulating a low-level abort and requesting a PD to Wittering. The Tutor was identified and, as requested, placed under a TS. At 1544:53, the ac was descended to 1600ft on the Wittering QFE of 1009Mb and, at 1546:04, turned right onto 020°.

The radar replay commences at 1546:48, at which point 12.5nm lateral separation existed between the Tutor and the R44, with both ac on a constant relative bearing, and indicating 1900ft and 1800ft respectively. Based upon the assumed closing speed, about 13.5nm lateral separation would have existed at the point that the turn onto 020° was issued.

At 1548:41 APP passed TI to the Tutor on the R44 stating, "*traffic north, five miles tracking south-east, indicating similar level*" (the radar replay shows 6.4nm), which was acknowledged by the pilot.

The TI was updated at 1549:45 as, "*previously reported traffic left eleven o'clock, two miles crossing left right, indicating similar altitude*" (the radar replay shows 3.1nm) and again at 1550:33 as, "*previously reported traffic twelve o'clock, half a mile, left right, indicating similar level*". The Tutor pilot reported visual with the R44 at 1550:44, immediately after the final TI.

The pilot's report of being visual with the R44 is broadly coincident with the CPA, with the radar replay showing the R44 to be slightly right of the Tutor's twelve o'clock, with 0.1nm lateral and 100ft vertical separation.

Following a landline conversation between Wittering ATC and London Info, the R44 pilot was asked whether he had seen a Tutor aircraft in the vicinity. Given the incident sequence, the R44 pilot's reply that they "could see one fixed wing in front…at about twelve to one o'clock, turning but not conflicting at about two or three miles" suggests that they did not see the Tutor involved.

Throughout the incident sequence, although the TAS was later found to be serviceable, the system appeared to display the conflicting R44 as right of the Tutor's track.

From an ATM perspective, Wittering APP provided a good level of TI that should have enabled the Tutor crew to acquire the R44 visually early enough to discharge their responsibilities for collision avoidance.

Following this Airprox, the Wittering ATC personnel involved felt that they were in some way responsible for the confliction incident in that they might have vectored the Tutor into confliction; however, based upon the dynamic situation and the lateral separation existing between the Tutor and the R44 at the time that APP issued the heading of 020°, BM SM is content that APP was not responsible.

Notwithstanding that, in accordance with the RoA the Tutor had right of way over the R44, it appears that although the aircrew were passed timely, accurate and relevant TI, they did not acquire the conflicting ac until late and did not take timely avoidance, to resolve the confliction; that said, some confusion may have arisen from the apparently contradictory TAS indications.

APP provided a timely and appropriate level of TI yet the Tutor was unable to visually acquire the R44 until late due to a number of cockpit environment related issues. Further, the pilot did not manoeuvre their ac based upon the TI in order to attempt to simplify their visual acquisition task or increase separation.

ATSI reports that the R44 established communication with London Info (FIS) at 1526. The flight was routeing VFR from Sherburn to Elstree and the pilot requested a BS. The Swanwick AC MATS Part 2 states that:

'Pilots in receipt of a continuous Basic ATSOCAS from FIS are requested to select FIS SSR code 1177. When it is established that a pilot will receive a continuous Basic ATSOCAS from FIS, the FISO shall inform pilots: *"(Aircraft Callsign), squawk 1177 with Mode C, Basic Service".*

This phraseology was used on this occasion.

While it was on the FIS frequency an Airprox was filed by a Tutor pilot. As the FISO was not in contact with the other ac, he would have been unable to issue any TI about the flight. In any case, under a BS the avoidance of other traffic is solely the pilot's responsibility.

At 1556, the FISO asked the R44 pilot if he had seen a Tutor about 12nm ago in the Cottesmore/Wittering area. He responded that he had seen a single fixed wing ac going around in circles but he was not sure of the type; he added that it was about 1500/2000ft.

No further comments were made on the frequency about the incident.

UKAB Note (2). The recording of the Debden radar shows the incident clearly as depicted on the diagram above.

HQ AIR (TRG) comments that the Tutor pilot could have turned before becoming visual to deconflict from the called traffic. However, there is potential for confusion in this regard because the crew were flying on vectors from ATC but under a TS they need to take their own avoiding action, or upgrade to a DS, if they need to discharge their collision avoidance responsibility. The chain of events in this case is entirely consistent, with converging TI followed by a TAS alert. This should not have come as a surprise, nor should it have been a surprise that the TAS indication was inaccurate in azimuth. Indeed, the pilot would have been visually scanning the area where the TI was being called and the final lookout scan would sensibly have been biased in that direction. Despite being in the right under the Rules of the Air, avoiding action was required by the Tutor because the R44 pilot clearly did not see it so he could not have given way. The effectiveness of the TAS is commented on correctly by the Tutor pilot and is a published limitation with the installation on the Tutor; this is emphasised in training hence the response of completing a full lookout scan. The effect of the IF hood on the instructor's lookout scan is also noted and the design of these devices is under review by 1 EFTS. Instructors should be prepared to take control early, or provide turn instructions to their students, to ensure they are able to maintain a robust lookout and to visually acquire contacts on problematic bearings.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

Members noted the Wittering APP passed accurate and timely TI to the Tutor pilot on several occasions but he did not act on it by turning his ac and breaking the conflict. In common with other airborne collision avoidance systems, the unreliability of the Tutor TAS in azimuth is a well-known and taught system limitation and there should have been little doubt in the instructor's mind that the TI was the more accurate of the two conflicting pieces of information (at least in azimuth). Despite that they were conducting a PD to Wittering under a TS, had the instructor taken control, broken off the approach and turned away for a short time the confliction would have been broken and, in the view of pilot Members, with little interruption to the instructional aims of the flight; alternatively,

had he asked for a DS on receipt of the first TI the same outcome would have resulted. Pilot Members opined that under such circumstances with a trainee pilot under an IF hood in Class G airspace, the prime responsibility of an instructor is lookout and he must not allow other factors to limit this.

Despite that the ac had been on a line of constant bearing with the light-coloured Tutor above the helicopter and probably blending in with background of summer cumulous cloud, the R44 pilot had an equal responsibility to see and avoid it. Further, the R44 had the Tutor on his right and should have given way to it; however, he could not do so because he did not see it. Although not necessarily a factor in this incident, the ANO RoA advice to 'stand on' if they have right of way, as this incident demonstrates well, this is not a fail-safe course of action as it is dependent on the other pilot seeing your ac, which is often not the case. Members advise that avoidance is initiated on first seeing that a conflict exists and not left to the 'last minute'.

The R44 pilot did not see the Tutor and, although the Tutor pilot did initiate effective avoidance, the Board agreed that this had been at such a late stage that the safety of both ac had been compromised.

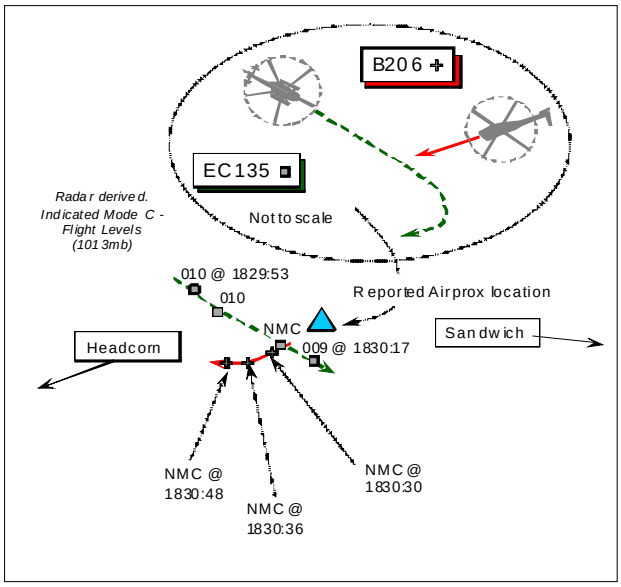
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A non-sighting by the R44 pilot and a late sighting by the Tutor instructor.

Degree of Risk: B.

AIRPROX REPORT NO 2011080

Date/Time:	15 Jul 2011 1830Z	
Position:	5117N 00117E (Ash - 4½nm SW of Manston)	
Airspace:	London FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	EC135 T2	Bell 206B
Operator:	Civ Comm	Civ Comm
Alt/FL:	1000ft RPS	1000ft amsl
Weather:	VMC CAVOK	VMC Haze
Visibility:	20km	5km
Reported Separation:	20ft V/400m H	Not seen
Recorded Separation:	Not recorded	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE EUROCOPTER EC135 T2 HELICOPTER PILOT reports he was operating VFR under a BS from Manston on 132·45MHz and also in contact with Sandwich RADIO, established for the temporary HLS at Sandwich for the British Open Golf Championships. A squawk of A0046 was selected with Mode C; Mode S and TCAS are fitted but the latter was noted as 'faulty'.

Over Ash village on a direct track from Whitstable to the Southern tip of Sandwich village, heading 120°, level at 1000ft Chatham RPS, and 130kt he observed a contact out to port in their 10 o'clock position after it had lifted out of Sandwich about 3nm away. The helicopter contact remained on a constant bearing and both he and his observer were monitoring it – a red and white Bell 206 JetRanger - for signs of the pilot having sighted their EC135 to starboard in his 1 o'clock. He expected the B206 pilot to turn at any moment, given the B206 pilot's obligation to take avoiding action to go behind his EC135 if seen, which he opined, given his helicopter's size, blue and yellow colour-scheme, lights and position in the other pilot's field of view, at most 50ft above the B206's altitude, should not have been difficult. Whilst working two frequencies, he was unsure which frequency the B206 pilot was using, or his callsign, as there appeared to be two ac talking to Sandwich RADIO, which he had expected to be busy. As the B206 closed to a range of about 400-500m, it appeared that the pilot had not seen his EC135 so he elected to take his own avoiding action by turning to the R and diving ahead of the B206. Minimum separation was about 20ft vertically and 400m horizontally and after he crossed ahead of the B206, he turned back towards it. Now off its port quarter, they used his helicopter's camera to view the B206's registration - which was given. He assessed the Risk as 'high'. He stated that he called Sandwich RADIO to ask if they knew the B206's registration, but they were only aware of company callsigns. Nav lights, strobes & white HISLs were on.

THE BELL 206B JETRANGER HELICOPTER PILOT (B206) reports he had departed the HLS at Sandwich golf course VFR, bound for a private HLS to the S of Headcorn. Flying level at an altitude of 1000ft in VMC at 90kt 'in CAVOK weather', he believed this was his 8th or 10th flight of the day, to and from the same two locations, which he flew at the same altitude in the same two directions all day. Throughout he was under a BS from Manston APP on 132·450MHz or in communication with Sandwich RADIO; a Manston squawk was selected, Mode C was 'off'. On this particular flight he was westbound into bright sunlight with all the ac's lights switched on – the in-flight visibility was quoted as '5km in haze with moments of glare'. Although he did hear the pilot ask for details of his callsign and another helicopter was known to be in the vicinity, he did not see the EC135 helicopter flown by the reporting pilot is unable to provide any more information about the Airprox. TCAS is not fitted. His helicopter has an orange and white livery; the HISLs were on.

UKAB Note (1): This Airprox is not shown on the LAC radar recording. The EC135, identified from its Mode S ac identity, is shown intermittently from 1829:53 approaching the reported Airprox location some 4½nm SW of Manston Aerodrome on a steady SE'ly course indicating level at 1000ft (1013mb). No significant deviation in the EC135's course is evident before the ac's Mode C indicates a descent through 900ft (1013mb) and then 800ft before fading from coverage, but perhaps indicative of the EC135 pilots reported avoiding action descent. The B206 is not shown until later when an A4250 squawk is displayed with NMC immediately to the SW of the reported Airprox location following a track similar to that reported by the B206 pilot toward Lashenden/Headcorn. A turn to the R is subsequently evident before the contact fades; NMC is displayed throughout this period. The SSR code A4250 is assigned to Manston and noted in the UK SSR Code Assignment Plan as an unvalidated and unverified code for conspicuity.

ATSI reports that Approval of an 'Air Ground Communication Service RTF Aeronautical Radio Station' had been agreed, by the CAA, relative to 'The Open Golf Championship' at Sandwich Helipad in Kent. This was valid from the 10th to the 18th July 2011. The site included a Final Approach and Take-Off area (FATO) aligned 11/29, with dimensions 250mx30m, at 12ft amsl.

General information regarding an A/G Service is stated in CAP413 (Radiotelephony Manual) Chapter 4 Page 32:

'An AGCS (Air/Ground Communications Service) radio station operator is not necessarily able to view any part of the aerodrome or surrounding airspace. Traffic information provided by an AGCS radio station operator is therefore based primarily on reports made by other pilots. Information provided by an AGCS radio station operator may be used to assist a pilot in making decisions, however, the safe conduct of the flight remains the pilot's responsibility'.

The Sandwich Air/Ground operation was not recorded. Consequently, no information is available from the allocated frequency. The Airprox was reported to have occurred at Ash, some 3nm away from the Sandwich site. The site operator, coincidentally the A/G operator at the time, made the following comments:

'The B206 had departed from Sandwich on a positioning flight back to a private landing site at Wingham (about 7nm W of Sandwich). The first he knew of this was when the EC135 pilot asked for details of B206, which he said he would pass by phone when he was back on the ground. The EC135 was operating from a Command Centre HLS in the local school and not from the Sandwich site. Normally the EC135 pilot called for traffic information when getting airborne, but he did not recall that the pilot did so on this occasion nor that he had noted it down; however it is possible that the EC135 pilot did call to operate along the coast in a southerly direction towards Deal and well away from the Sandwich circuit; the crew did normally listen out on their No2 box for traffic information and he is surprised that they did not pick up on this. He was not aware that the EC135 was in the position that it was as, had he known it was in the general area, he would have passed it to the B206 pilot as traffic information, who by this time had cleared the Sandwich circuit and had switched to his en-route frequency, either Manston or Lydd'.

The Manston Controller was performing both TOWER and APPROACH duties. The EC135 pilot contacted Manston at 1823. (Unfortunately some of the transmissions from the helicopter broke up on the RT recording.) The EC135 pilot reported routeing from Boreham, near Chelmsford, and approaching Whitstable from the W for Sandwich (Whitstable is 12nm W of Manston). The EC135 pilot requested a BS, which was agreed by the controller and he requested the pilot to report approaching Sandwich. He informed the EC135 pilot that there was a frequency for the Sandwich helicopter golf site. The EC135 pilot commented that he would be routeing S of the helicopter site. At 1826:56, the EC135 pilot was asked to contact Sandwich on 121.75MHz on his number 2 box; the pilot acknowledged the request.

Just less than 1 minute later the pilot of the B206 contacted Manston, using its issued helicopter callsign for the golf event. The pilot reported having lifted from Sandwich en route to Wingham. He was requested to report visual with the landing site. The controller then issued TI about the EC135, which was approaching the Sandwich area, last reported at 1000ft, W of Sandwich. (There is no recording of the EC135 pilot's reported altitude, possibly it occurred during the break-up of the frequency during its initial call.) The B206 pilot reported looking. The controller then passed TI the EC135 about the B206, which had just lifted from Sandwich en route to Wingham. No response was received from the EC135 pilot.

At 1830:36, the B206 pilot reported letting down. Two minutes later the EC135 pilot reported letting down at Sandwich. Shortly afterwards he asked, using the ac's registration, if a particular helicopter - the subject B206 - was on frequency. The controller commented that he only had the callsigns of the helicopters and not their registrations. No further comments were made on the frequency about the Airprox.

UKAB Note (2): NOTAM H3197/11 was issued for the event at Sandwich, promulgating intense helicopter activity within a radius of 2nm centred on 5117N 00122E, from the surface to 1500ft amsl, from sunrise to sunset during the period 11 to 18 Jul.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, RT and radar video recordings, reports from the A/G Operator and reports from the appropriate ATC authority.

The ATSI report shows that the Manston controller had issued TI about the EC135 to the B206 pilot, who advised he was looking for the other helicopter thereby confirming that the B206 was definitely aware that the EC135 was in the vicinity. Whilst it was unclear if the EC135 pilot had received the TI about the B206, because there was no reply to the controller's transmission recorded, with the advantage of looking down sun in CAVOK conditions he was able to spot the B206 3nm away and recognise the potential for a conflict.

Both the EC135 pilot and his observer monitored the B206 closely as the ac converged, expecting the B206 pilot to turn away at any moment as he was required to do under the 'Rules of the Air'. However, 'the Rules' can only work if the pilot who is required to 'give way' sees the conflicting ac, and the B206 pilot, flying westbound into bright sunlight did not see the EC135 helicopter to his R at all. In other circumstances Members suggested that obtaining a radar service from a suitably equipped ATSU could have helped the B206 pilot to fulfil his responsibilities to 'see and avoid' other ac, although here the Manston controller was providing a procedural APPROACH service combined with TOWER without access to radar it would seem. The EC135 pilot watched the B206 as both helicopters closed to a range of about 400-500m, realised that the B206 pilot had not seen his EC135 and wisely elected to take his own early and positive avoiding action, thereby safely resolving the conflict. This convinced the Members that the Cause of this Airprox was a conflict in Class G airspace resolved by the EC135 pilot.

Early avoiding action by the EC135 pilot ensured minimum horizontal separation of 400m was maintained as he crossed ahead of the B206 and turned onto the latter's port quarter. Although the Airprox was not shown on radar recordings and the reported separation could not be confirmed, there was no reason to doubt the veracity of the EC135 pilot's report. Whereas the EC135 pilot assessed the Risk as 'high', presumably this is his assessment of what might have occurred had no avoiding action been taken. As it was, 400m horizontal separation was preserved at the closest point and visual contact with the B206 was maintained throughout. Therefore, the Members agreed unanimously that there was no Risk of a collision in the circumstances conscientiously reported here.

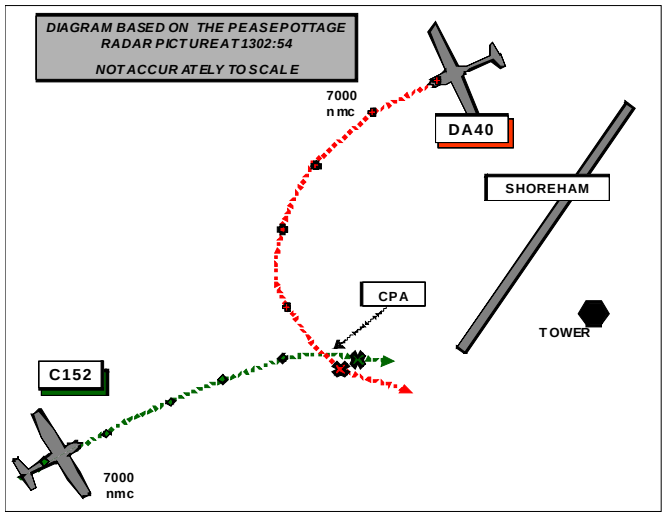
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict in Class G airspace resolved by the EC135 pilot.

Degree of Risk: C.

AIRPROX REPORT NO 2011081

Date/Time:	3 Jul 2011 1303Z (Sunday)	
Position:	5050N 00020W (Shoreham - elev 7ft)	
Airspace:	ATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	C152	DA40
Operator:	Civ Trg	Civ Trg
Alt/FL:	1100ft	1100ft
	(QFE 1018mb)	(QFE 1018mb)
Weather:	VMC CLBC	VMC NR
Visibility:	>10km	10km
Reported Separation:		
	200ft V/60m H	NR
Recorded Separation:		
	NR V/ est 0 H (between sweeps)	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE C152 PILOT reports flying a VFR dual training flight with the student as HP in a white ac with the anti-collision light switched on, at the time in receipt of a BS from Shoreham APP, squawking 7000 but Mode C was not fitted. They were heading 110° at 90kt to join the cct for RW20 (L hand) having been instructed to join crosswind at cct height. When approaching crosswind (0.3 DME) he noticed an ac 100m away, turning towards them and descending from the overhead; its pilot then called 'descending dead side' and ATC replied that they should not have descended because they were told to report overhead. (The ac had not been cleared to descend). The ac then appeared in a position some 200ft vertically and at a similar distance horizontally, in his 10 o'clock position so the instructor took control and initiated immediate avoiding action by diving, as the other pilot had clearly not seen them.

He reported the incident to ATC by telephone after landing, assessing the risk as being high.

THE DA40 PILOT reports flying a VFR training flight Shoreham and return via the Manston overhead with passenger, in a white ac with all external lights switched on. At the time they were in contact with Shoreham APP and squawking.

During their arrival at 90kt he contacted Shoreham APP about 5nm to the E of Brighton Marina at 2000ft and requested a standard overhead join for RW20 LH and he was instructed to continue inbound and report overhead.

Once overhead the airfield he tried to contact Shoreham APP to report overhead but the radio was busy at the time and he could not get through to them so he decided to continue and descended on the dead side, after checking that there were no conflicting ac. This is standard procedure for Shoreham Airport [he thought – see AIP extract below] where he had conducted the first half of his PPL, from which he recalled that ATC would normally clear ac for a standard overhead join.

About half way through the descent, he managed to get a call through informing APP that he had commenced a descent on the dead side and the controller acknowledged his call and did not issue any further instructions (as far as he can recall).

About 20sec, when he had levelled at 1100ft QFE another ac made a call saying that he had nearly 'landed on his head'. He then saw the ac off to his LH side, stopped his descent and made a turn away from the other ac to increase separation whilst maintaining a good look out.

He also offered to make a RH orbit but Shoreham APP declined. He subsequently ended up having to do a go-around as he could not increase the horizontal separation sufficiently for a safe landing.

The controller then came back on the radio, whist he was on cross-wind, saying that he should be careful when descending in a low wing ac when other high wing ac in the cct. Although he agrees and he is always careful when descending, he was not informed of the other ac at any point during his contact with Shoreham. He also feels that this comment would have been better saved for when he was on the ground as at this point, he still had to fly the ac and it may have concerned his 'first trip passenger'; nevertheless, he expressed his apologies over the radio and informed Shoreham APP that he had tried to call 'overhead' but could not get through.

He conducted a safe landing and taxied back then informed the operations desk as to what happened and they subsequently received a call from Shoreham TWR informing that the other pilot may file an Airprox report.

Since the event, he has had a thorough briefing from a company instructor on the standard overhead join at Shoreham and what to do if he cannot get his call in to ensure that this will not happen again.

He apologised for the delay in his report caused by his being of out the country engaged on other work.

ATSI reports that the Airprox occurred at 1302:53, 0.6nm SW of the Shoreham ARP, in the Class G airspace of the Shoreham ATZ, which consists of a circle, radius 2nm, centred on RW02/20 and extending to 2000ft aal (7ft).

The Airprox was reported by the pilot of a C152; the other ac was a DA40. Both ac were operating on local VFR flights from Shoreham Airport.

The Shoreham controller was operating a combined Aerodrome and Approach control position, without the aid of surveillance equipment, RW20 was in use with a LH traffic pattern. The workload was assessed as medium and the controller reported being comfortable with traffic levels.

The UK AIP page AD 2-EGKA-1-7 (29 Jul 10), paragraph 6, states:

c) Circuit heights are 1100ft aal for all runways.

d) Variable ccts at discretion of ATC.

e) Unless otherwise instructed ac joining the cct will overfly the aerodrome maintaining 2000ft aal, until instructed to descend to cct height on the inactive (dead) side of the runway in use and join the cct by crossing the upwind end. Pilots should note that there would frequently be helicopters operating both 'liveside' and 'deadside' in the ATZ up to 600ft.

ATSI had access to radar recordings, provided by NATS Swanwick and written reports from both pilots.

METAR EGKA 031250Z 22011KT 9999 FEW048 19/12 Q1018=

Two other ac had been given joining instructions; an AA5 was joining the deadside from the N and a Cessna was inbound from the E to join overhead at 2000ft

At 1254:45, the DA40 called Shoreham Approach, *"(DA40)c/s is a Diamond Star D A forty inbound currently five miles to we- to the east of Brighton Marina at two thousand feet information Hotel received on a Q N H of one zero one eight request a standard overhead join runway two zero lefthand",* the controller replied, *"(DA40)c/s report overhead at two thousand feet two others joining"* and the pilot acknowledged, *"Report overhead at two thousand and two others (DA40)c/s".*

The C152 pilot called Shoreham APP at 1256:44 reporting*, "(C152)c/s just passed er Littlehampton er sixteen hundred Hotel one zero one eight requesting crosswind join"* and was instructed*, "(C152)c/s crosswind join approved at cct height report N abeam Worthing pier look out for an A A five joining er from the northwest to the deadside and two others joining",* the C152 pilot replied, *"Traffic's copied Worthing pier and er expect crosswind cct height (C152)c/s".* [Note: cct height is 1100ft]. The controller stated that Worthing Pier is a point where updated TI would normally be passed to traffic joining crosswind.

The other Cessna reported overhead at 1257:22 and was instructed to descend deadside and report crosswind.

The controller passed TI to the C152 at 1258:31, *"(C152)c/s lookout for an A A five approaching from the deadside*" and the pilot replied, "*er thats copied I've still got about 6 miles to run".*

The AA5 inbound from the N, reported approaching the deadside and the controller instructed the pilot to keep a good lookout for the Cessna descending deadside. Subsequently the Cessna turned onto a wide crosswind and the AA5 pilot requested a short cct to position ahead, which was approved.

It was noted that the C152 did not call N abeam Worthing Pier and the DA40 pilot did not call overhead at 2000ft.

The radar recording shows the DA40 on the deadside in a L turn towards the crosswind leg with the C152 also approaching crosswind at 1302:48; neither ac is displaying Mode C and the distance between the two ac as they converge is 0.3nm.

At 1302:50 the DA40 reported, *"(DA40)c/s been descending on the deadside approaching crosswind"* the controller replied, *"(DA40)c/s thank you report turning downwind"* and almost immediately at 1303:00 the C152 pilot reported, *"(C152)c/s ???? (DA40)c/s nose is literally on my head."*

The controller stated that visual contact with the two ac was acquired just as they made the RT calls and when the CPA occurred.

The radar recording shows the tracks of the two ac crossed at 1302:55 and at 1302:57 shows the two ac diverging with a horizontal separation of 0.1nm and increasing with the C152 inside the DA40 on the crosswind leg.

The controller asked the DA40 pilot, *"(DA40)c/s do you have the Cessna on your L"* and the pilot responded, *"Affirm would you like me to make a right hand orbit",* the controller advised, *"No - just position number two"* and this was acknowledged by the pilot. The controller did not consider at that point, that there was any need for the DA40 to make a RH orbit.

The controller then advised the DA40 of the requirement to call before descending particularly in low wing ac, as ac below might not be seen. The pilot responded that he had been trying to get through on the radio.

The controller was asked if the pilot of the DA40, who had requested a standard overhead join, might have considered that descent into the cct was approved but he indicated that Shoreham had specific, promulgated procedures for overhead joins that required a pilot to maintain 2000ft until instructed to descend to cct height on the dead side. The controller believed that the DA40 pilot had been instructed to report overhead at 2000ft and being a locally based pilot, should have been familiar with Shoreham procedures.

When the DA40 called for a standard overhead join, the pilot was instructed to 'report' overhead at 2000ft and passed TI, ' 2 others joining'.

The C152 called when passing Littlehampton and was instructed to join crosswind at cct height and to 'report' N abeam Worthing pier, which is the point where the controller would normally pass updated TI to ac joining crosswind. However, the C152 was initially given TI on the other ac joining, 'lookout for an AA5 joining from the NW and 2 others joining'.

The C152 pilot did not report N abeam at Worthing Pier and the DA40 pilot did not report overhead at 2000ft. Both of these calls would have updated the SA of the controller and allowed the update of TI. The RT loading was high and this might have contributed to the pilots' missed calls; however, these calls were considered to be an important trigger for the integration of traffic into the cct allowing the update of position and TI.

Both pilot's had been given general TI on the cct situation and were operating VFR on the 'See and Avoid' principle.

The Airprox occurred when the DA40 did not report overhead, as instructed by ATC, and descended on the dead side without approval.

The C152 did not report N abeam Worthing Pier, as instructed by ATC, and this is considered to be a contributory factor.

Both ac had been passed general TI on the number of ac joining the cct and in good flight conditions, with visibility greater than 10km, the respective pilots were responsible for positioning into the cct VFR using the 'see and avoid' principle.

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 authority.

The Board noted the Shoreham procedures as promulgated in the UKAIP and summarised in the ATSI report above.

It was clear to Members that the DA40 pilot was instructed to report overhead, that the Shoreham joining procedure in the UKAIP states that ac should 'maintain 2000ft aal until instructed to descend' and that he did not comply with this. Members were however, divided regarding the correct course of action when pilots are, as in this case, in the awkward situation where they are unable to communicate with ATC due to continuous RT traffic; most however, agreed that ac should hold (in the overhead at 2000ft) but not descend until a break in the transmissions allows a request to be approved. This opinion was endorsed by the CAA Flight Ops Advisor.

It was unclear to Members whether the missed position report at Worthing Pier by the C152 pilot had any substantial impact on the incident; it was agreed however, that it would have allowed the controller to formulate a more accurate air picture.

Both ac were operating in the 'see and avoid' area of the (join or) visual circuit and although the DA40 pilot did not see the C152 until after the CPA, the latter pilot saw the former just in time to take effective avoiding action. Members agreed however, that the lateness of this avoidance had been such that the safety of both ac had been compromised.

The Board also agreed that it is invariably poor RT discipline to comment on or criticise pilot's actions on the radio. It is always better to debrief and learn from any incidents later on the ground in a calm and reasoned manner.

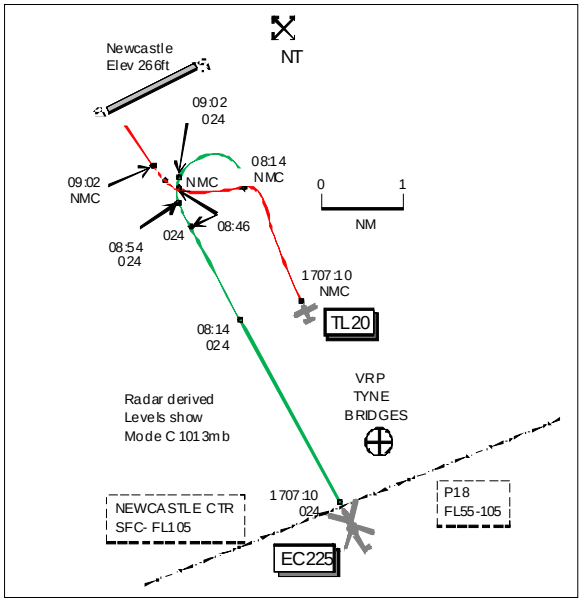
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The DA40 pilot did not follow the Shoreham joining procedure and descended into conflict with the C152, which he did not see.

Degree of Risk: B.

AIRPROX REPORT NO 2011082

Date/Time:	14 Jul 2011 1709Z	
Position:	5501N 00141W (1nm S Newcastle - elev 266ft)	
Airspace:	ATZ/CTR	(Class: D)
	Reporting Ac	*Reported Ac*
Type:	EC225	TL2000
Operator:	Civ Comm	Civ Pte
Alt/FL:	2500ft QNH	2200ft QNH
Weather:	VMC CLBC	VMC CLNC
Visibility:	>10km	50km
Reported Separation:	200ft V/300m H	100ft V/ 0·5-0·75nm H
Recorded Separation:	0·3nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE EC225 PILOT reports en-route to Aberdeen, VFR and in receipt of a RCS from Newcastle Approach on 124·375MHz squawking an assigned code with Modes S and C; TCAS was not fitted. The visibility was >10km flying 5000ft below cloud in VMC and the helicopter was green/yellow in colour; no lighting was mentioned. The helicopter was on a ferry flight from France with 2 pilots and 2 engineers on board. The crew had started work at 0745 UK local time and had accumulated 7hr flight time at the time of the Airprox so they were approaching fatigue. As the EC225 is certified for single pilot VFR the co-pilot had moved to the cabin for a rest and his seat was occupied by one of the engineers. Initially they were under a TS from Newcastle at 2500ft QNH before requesting transit of the Class D CTR. Initially their clearance limit was the 'Bridges' VRP but prior to arrival at this point the controller issued transit clearance via the RW07 threshold at 2500ft. On entering CAS the controller advised "RCS" which he acknowledged. He set the 07 threshold into the FMS and routed towards that point. Around this time he became aware of a light ac that had similarly requested to cross Class D and the flight was given a similar routeing i.e. cross O/H threshold 07. He couldn't remember if ATC specifically gave him TI, he thought they did, but only to the extent that there was another ac routeing to the same point. This other flight was a "not above 2500ft" clearance and he heard its pilot state he was at 2300ft. He was not aware of its inbound or outbound track but he was comfortable that with good VMC and in receipt of a RCS he was being looked after and didn't have too much to worry about. He couldn't see the other ac and it soon became apparent why, when ATC restated to the other pilot that the crossing point was the 07 threshold then shortly after informed the other pilot that his ac was heading for the wrong threshold (25). The other pilot apologised and said he would route to the correct threshold. Alarm bells started ringing and he asked ATC for climb to 3000ft but this was refused and he was instructed to remain at 2500ft. The frequency was very quiet and he was not aware of any other traffic on frequency though he didn't have the 'big picture'. Heading 340° at 155kt he then saw the other ac visually in his 2 o'clock. Being a small light ac it was probably by then only a little over 1nm away, that being realistically the maximum distance a light ac can been seen even in good conditions. Its relative bearing was changing so he was not overly worried but was keeping a continuous watch on it. He would have preferred to change heading to increase separation but since he was only about 0·5nm from the threshold to do so would mean he would not comply with his clearance. He determined the other ac's heading was roughly 90° to his and somewhere around this time ATC offered that he could make 1 orbit to the R if needed. Since there seemed at this time no risk of getting uncomfortably close and by making an orbit he would have lost sight of the traffic he declined. What happened next, with hindsight, was predictable. On reaching his 12 o'clock about 500m ahead the other ac banked sharply to the R (probably 45°) and was suddenly in his 12 o'clock a few hundred metres ahead and 200ft below on the same heading. At his cruising speed he was going much faster that the other ac and closing rapidly. He took evasive action by banking 30° to the R and made an orbit and having done so he could not see the other ac so he continued to O/H the 07 threshold, as instructed, and then on track SAB. He spotted the other ac a minute or two later as it was

diverging to the E and his helicopter was rapidly overhauling it again. He did not say anything on the radio but after landing spoke to the Watch Manager (WM) at Newcastle. The WM had been seated along the controller at the time and did not think much of the situation. The WM promised to look again at the tapes to see if anything could have been done differently. After he thought about it over the intervening weekend he elected to file an Airprox. It occurred to him that he didn't actually know what a RCS was. He scoured the ANO, AIP, CAA website but did not find an answer. He spoke to the Aberdeen WM who told him that under a RCS the pilot must follow ATC instructions. For IFR traffic the controller must ensure adequate separation from other traffic, he thought, but for VFR there is no such requirement. He believed that if the service does consist of ATC telling you what to do, whilst taking no responsibility for collision avoidance, it was a fundamentally flawed service with a deceptive name. As he normally flew IFR he was lulled into a false sense of security, feeling that he must continue 'on the tramline' under a RCS with a specified altitude and route resulting in late action when the crisis developed. If he had received a straightforward VFR clearance such as he receives at Aberdeen, perhaps 'not below' and to a region of airspace rather than routeing to a specific point at a specific altitude, he would have behaved differently. At Aberdeen he only hears 'RCS' when IFR. Although the other ac had routed initially towards the wrong threshold, had its pilot flown the route correctly from the start, they would have flown in close proximity earlier. He believed it was not best practice for a controller to instruct 2 flights to route to the same point at similar altitudes and expected arrival times, with a big speed differential whilst watching the scenario unfold on radar and declining a change of level request. The primary reason for filing this report was to question whether the RCS terminology was appropriate for something that seems only to be a constraint for pilots but is in no obvious way a service for them. It seemed to give ATC power without responsibility.

THE TL2000 PILOT reports en-route to Eshott, VFR and in receipt of a BS from Newcastle Approach on 124·375MHz, squawking an assigned code with Mode C. The visibility was 50km in VMC and the ac was coloured white/blue with strobe lights switched on. He was transiting the Newcastle CTR from S to N at 100kt and had received clearance from Approach to transit CAS VFR not above 2500ft. A further instruction was later given to cross the RW07 threshold but, in error, he headed towards the RW25 threshold. About 0·5nm S of the RW Approach reminded him the clearance was for RW07 threshold. He was aware, from a previous radio call, that a helicopter astern was also cleared to transit on the same route. He banked hard L and as he rolled out of the turn on heading 250° he saw the helicopter in his 10 o'clock range 2·5nm very slightly above. He monitored the helicopter's progress whilst he routed his ac to the RW07 threshold. As he commenced his R turn to parallel the helicopter's track at the 07 threshold, it was 0·5-0·75nm on his L about 100ft above. When level after the turn Approach asked if he had the helicopter in sight and he replied "affirm he is in my 7 o'clock". As he passed over Morpeth disused aerodrome [6nm NNW Newcastle], he noted the helicopter was in his 9 o'clock range 3nm on a slightly divergent course. He assessed the risk of collision as none.

THE NEWCASTLE APPROACH CONTROLLER reports that at 1657 the TL2000 (TL20) pilot called for a N'bound transit through Newcastle CAS and the flight was cleared to transit not above 2500ft and route via the RW07 threshold. At 1701 the EC225 flight, which was 5nm S of the TL20 on a similar track, called for transit and was given the same instruction to transit via the RW07 threshold. At 1706 the TL20 pilot was asked again to route via the 07 threshold as the ac's track appeared to be for the 25 threshold. The pilot apologised and turned L for the correct routeing. He then passed TI to the EC225 flight on the TL20 and the crew reported that they had the ac in sight. The EC225 crew then requested a climb to 3000ft but as there was traffic being vectored downwind LH descending to 3500ft this was refused and the crew was given the option of an orbit for spacing as required; the crew refused this stating the spacing was OK. TI was passed to the TL20 flight on the EC225 and the pilot also had this helicopter in sight. The EC225 then made one orbit before continuing N'bound.

ATSI reports that the Airprox occurred at 1708:53 UTC, 1nm to the S of Newcastle Airport, within Class D CTR and just above the Newcastle ATZ, which extends to a height of 2000ft above aerodrome level and is bounded by a circle 2·5nm radius centred on the mid-point of RW07/25.

The EC225 was operating on a VFR flight from Norwich to Aberdeen.

The TL20 was operating on a VFR flight from Fishburn (18nm S of Newcastle) to Eshott (13nm N of Newcastle).

The Newcastle radar controller was operating as the approach radar controller. RW07 was notified as the RW in use.

CAA ATSI had access to RT and radar recordings together with written reports from the Newcastle radar controller and both pilots.

METAR EGNT 141650Z 06005KT 020V100 9999 FEW045 19/10 Q1017=

At 1657:01 the radar recording shows the TL20 and the EC225,to the SE of Newcastle airport at ranges 17·5nm and 29·3nm respectively.

The TL20 flight contacted Newcastle Radar at 1658 reporting routeing from Fishburn to Eshott at 2300ft requesting a BS and clearance through the area. The controller agreed a BS and allocated a squawk of 3750. The TL20 flight was identified and cleared to transit the Newcastle CAS VFR, to maintain VMC not above 2500ft and to report approaching the Bridges (Tyne Bridges VRP – 5·6nm SSE of the airfield). The TL20 was displaying an SSR code but without Mode C level reporting.

At 1701:13 the EC225 flight contacted Newcastle radar and was identified on transfer, squawking 3755 at an altitude of 2500ft. Due to the position and level of the EC225, a reduced TS was agreed. The pilot requested a routeing through the zone via the NT(NDB), maintaining 2500ft (The NT(NDB) is 1·2nm NE of the airfield). The controller cleared the EC225 flight to *...transit Newcastle controlled airspace VFR maintain victor mike charlie and report approaching the bridges QNH one zero one seven"*. The EC225 pilot replied, *"Clear transit the zone er obviously maintain VMC erm report approaching the bridges one zero one seven (EC225 c/s)."*

The controller planned to route both ac, via the Tyne Bridges (VRP) and RW07 threshold, not above 2500ft. This would keep the ac on the W side of the airfield, clear of departures and 1000ft below the planned arrival of a B737 descending to 3500ft from the NE. The Newcastle Manual of Air Traffic Services (MATS), Part 2, Chapter 1, Section 3, Page 7, states:

'Aircraft transiting the Newcastle CTA/CTR at 2500ft QNH or below will be co-ordinated and transferred to ADC from APC. Such traffic will remain with ADC until it is clear of traffic operating under these VFR procedures.'

The radar controller coordinated with the Tower controller and it was agreed that radar would retain control of the 2 ac as they transitted the W side of the airfield.

At 1702:14 the controller passed TI to the TL20 regarding a PA38 Tomahawk, S'bound towards the Bridges at a similar level.

At 1703:13 the controller advised, *"(TL20 c/s) you're clear to transit Newcastle controlled airspace and route via the zero seven threshold."* The TL20 pilot replied, *"Clear to transit Newcastle airspace routeing via the zero seven threshold (TL20c/s).*"

At 1703:26 the controller transmitted*, "(EC225 c/s) you're clear transit via the zero seven threshold.*" The EC225 pilot responded, *"clear transit via zero seven threshold thanks (EC225 c/s).*"

At 1705:00 the B737 (34·9nm NE of the airfield), was given descent to 5000ft on QNH 1017mb.

At 1705:14 the TL20 pilot reported, *"(TL20 c/s) er Bridges level two thousand three hundred and we've crossed well clear of the Tomahawk."* The controller replied, *"(TL20 c/s) roger and report at the zero seven threshold."* The TL20 pilot acknowledged, *"Wilco (TL20 c/s)."*

At 1707:07 the controller advised, *"(EC225 c/s) you've entered controlled airspace Radar Control Service report abeam the zero seven threshold."* The pilot replied, *"er controlled airspace Radar Control Service report at er zero seven threshold (EC225 c/s).*"

At 1707:10 the radar recording shows the TL20, 3·1nm from the airfield with the EC225 crossing the CTR boundary, 5·6nm from the airfield. Both ac are tracking NW with a spacing of 2·5nm.

At 1707:30, after the a controller request, the TL20 pilot confirmed his level as 2300ft and the controller responded, *"Roger just to confirm it's not above two thousand five hundred feet there is traffic er vectoring downwind lefthand for zero seven and just confirm you are routeing via the zero seven threshold."* The TL20 pilot replied, *"er yes*

traffic is copied we're holding two thousand three hundred feet and er we've got about a mile to run to the zero seven threshold (TL20 c/s)." The controller responded, *"Just confirm that will be the zero seven threshold that's er west abeam the field not east abeam."* The TL20 pilot acknowledged, *"My apologies yes okay er just turning for zero seven threshold.*"

At 1708:08 the controller passed TI, *"(EC225 c/s) there is traffic to the north of you by one mile he's also routeing via the zero seven threshold similar level"* and the pilot replied, *"er (EC225 c/s) we have him visual.*"

At 1708:14 the radar recording shows the TL20, 1·6nm SE of the airfield with the EC225, 3nm SSE of the airfield. The TL20 had been routeing mistakenly towards RW25 threshold and radar recording shows the TL20 having turned L to reposition to the W side of the airfield. This results in the 2 ac converging with the TL20 crossing the track of the EC225 from R to L; separation is 1·6nm. The EC225 is indicating FL024 (converts to 2508ft with QNH 1017mb, 1mb equal to 27ft).

At 1708:22 the EC225 pilot requested a climb to 3000ft and the controller responded, *"Negative maintain two thousand five hundred feet er if you need er further spacing one left hand orbit in your present position."* The pilot replied, *"Yeah I think we're just about okay thanks (EC225 c/s)."* At this point radar recording shows the B737, 16·5nm NE of the airfield passing FL106.

At 1708:40 the controller passed TI, *"(TL20 c/s) there is helicopter traffic to the south of you has you in sight similar level."* The TL20 pilot reported the EC225 in sight and just about to cross the 07 threshold.

At 1708:46 the radar recording shows the TL20 commencing a R turn towards the 07 threshold in the EC225's 1230 position at a range of 0·5nm crossing from R to L, the EC225 is indicating FL024 (2508ft QNH).

[UKAB Note (1): On the next radar sweep at 1708:54, the CPA, the TL20 has temporarily faded from radar but the EC225 is seen commencing a R turn to pass behind the TL20; separation is estimated to be 0·3nm.]

At 1709:00 the EC225 pilot reported, *"(EC225 c/s) making one orbit."* The radar recording at 1709:02 shows the 2 ac diverging at a range of 0·3nm, with the EC225 starting a RH orbit. Once the EC225 completed the orbit, the 2 ac continued to transit CAS without further incident.

The written report from the EC225 pilot indicated that he was aware of a light ac that was on a similar routeing to the same point at not above 2500ft, but couldn't remember if ATC had given specific TI about the other ac's inbound or outbound track. The pilot added that, he was comfortable with the good VMC conditions and in receipt of a RCS. The pilot considered that the term RCS was misleading and indicated, *"feeling that I should continue to obey my clearance, thus taking late action only when a crisis developed rather than prevent a crisis developing in the first place".*

The 2 ac were both transiting Class D CAS, VFR and in receipt of a RCS. The Manual of Air Traffic Services (MATS) Part 1, Section 1, Chapter 2, Page 1, Paragraph 2, Classification of Airspace states the minimum services that are to be provided in Class D are:

'Aircraft requirements:

ATC clearance required before entry. Comply with ATC instructions.

Minimum service by ATC unit:

c) Pass traffic information to VFR flights on IFR flights and other VFR flights.'

The controller planned that both ac would route via the Tyne Bridges (VRP) and then via the RW07 threshold, routeing to the W side of the airfield and clear of departures.

The spacing between the 2 ac as they approached the airport gradually reduced, due to the variation in speed, between the faster EC225 and slower TL20. The incorrect routeing by the TL20 pilot resulted in the 2 ac converging towards RW07 threshold at a similar level and at the same time.

TI was passed to the EC225 pilot when the distance between the 2 ac reduced to 1·8nm and then to the TL20 pilot once the distance reduced to 0·5nm. This TI was sufficient to enable each pilot to see and avoid. However the passing of more timely TI may have aided the situational awareness of each pilot much earlier.

The EC225 pilot requested a climb to 3000ft. It is not clear why the controller was unable to approve this request. The inbound B737 was 16·5nm NE of the airfield passing FL104. Instead the controller approved an orbit for increased spacing.

The TL20 pilot routed towards the incorrect threshold, which when corrected resulted in the TL20 turning onto a W'ly track. The 2 ac then converged and came into close proximity. The controller passed TI that enabled both pilots to become visual with each other.

Within Class D CAS, ATC has a responsibility to prevent collisions between known flights and to maintain a safe, orderly and expeditious flow of traffic. This objective is met by passing sufficient TI and instructions to assist pilots to 'see and avoid'. In Class D airspace the controller is required to pass TI to VFR flights on other VFR flights.

A contributory factor was considered to be, the late passing of TI. The controller allowed the situation to develop as the 2 ac converged towards the RW07 threshold at a similar level and into close proximity. The passing of earlier TI would have aided the situational awareness of each pilot and may have allowed a better and, more timely assessment of the traffic situation by the EC225 pilot.

The EC225 pilot expressed some concern regarding that the term 'RCS,' as misleading, as applied to VFR ac operations in CAS. This issue was addressed in CAA Safety Sense Leaflet 27, Flight In Controlled Airspace and contained the following extract with respect to VFR flight in CAS, paragraph (f) states:

'The VFR pilot may have the privilege of some collision protection, although that may well not be available even if your transponder is transmitting a designated code. Beware the terminology. You may hear the controller use the words "radar control" – although technically that terminology may be accurate, he is not actively controlling you. Apart from remaining on whatever track at whatever altitude for which you have been cleared, and listening attentively at all times for any changes to these instructions, you have the further responsibility to avoid other traffic. Although the controller will pass information to you on the general position of other traffic, in Class D airspace he is not responsible for keeping you away from that other traffic.'

However, there is anecdotal concern that VFR pilots operating in Class D airspace are confused by the use of the term 'RCS' and the terms of service under which they are operating. This subject is currently under review by CAA ATC Phraseology Working Group together with the CAA Procedures Working Group.

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 understood the challenges of flying VFR within CAS and sympathised with the EC225 pilot's predicament. The flight had been given transit clearance of Class D CAS under VFR at 2500ft and had been told that the service was a RCS - the only radar service that can be given in CAS - as the helicopter crossed the CTR boundary. The onus was on the pilot to comply with the ATC instruction; however, he also had an overriding responsibility to avoid other traffic flying under VFR. He was aware from the RT exchanges that the TL2000 was on a similar routeing and ATC had passed specific TI on the ac, which he saw. Although conscious that he had to maintain track and altitude, he wanted to alter heading to increase separation but he had to continue as cleared to the RW07 threshold. He requested climb to 3000ft but this was refused; however, he was offered an orbit for spacing, which he declined at the time. ATC then passed TI on the EC225 to the TL2000 pilot, albeit late, which he saw and was content to proceed on a W'ly track while watching the helicopter to his SW before turning to the NW to fly O/H the RW threshold. This flightpath had placed the TL2000 in a position ahead of the EC225 which left its pilot with few options; however, he executed a R turn, to avoid flying close to or overflying the light ac. A controller Member stated that the EC225 pilot also had the options of slowing down or overtaking the TL2000 on its R, the pilot only needing to advise ATC of his intentions/actions. One pilot Member expressed a view that the whole issue of RCS and the rules/responsibilities for flights within Class D airspace were overly complicated and there seemed to be a difference in application by different ATSUs. A controller Member said that there was an

issue with the education of pilots to flights within CAS which was captured well within the Safety Sense leaflet 27. The general feeling was that VFR pilots only wanted a clearance to transit the CAS concerned but the RCS terminology clouded the situation in pilot's minds. The CAA SRG Strategy and Standards Advisor informed the Board that there was an ongoing review of RCS to VFR flights and it had been found that there was not 100% application of it by ATSUs. The Advisor concurred that a re-education was needed through the re-issue of the Safety Sense leaflet and through the Airspace Safety Initiative group. The Board also noted and endorsed the review being undertaken by the CAA ATC Phraseology and Procedures Working Groups. An experienced pilot Member said the aspects/responsibilities were very similar to flying within Class G airspace, with TI being provided by ATC to highlight the potential for conflict. In this incident, the EC225 pilot had seen the situation unfolding and resolved the conflict at the last minute which, Members agreed, had resulted from a misunderstanding of the rules for VFR traffic within the Newcastle Class D CTR.

Looking at the risk, some Members thought the incident had been benign such that it was a non-Airprox where all normal procedures, safety standards and parameters had pertained, a Category E incident. However this view was not shared by the majority who believed that the uncertainty in the EC225 pilot's mind combined with the subject acs' flightpaths had resulted in a confliction which needed resolution and this had been accomplished by the EC225 pilot whose actions had been effective in removing any risk of collision.

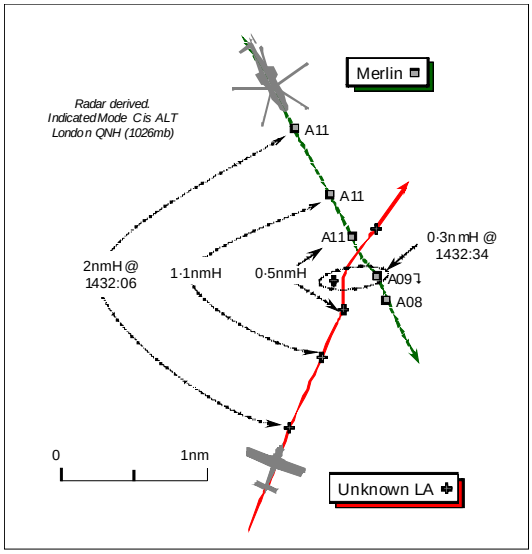
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict resulting from a misunderstanding by the EC225 pilot about the rules for VFR traffic in Class D airspace.

Degree of Risk: C.

AIRPROX REPORT NO 2011083

Date/Time:	1 Jul 1432	
Position:	5208N 00012W (3nm SE of Tempsford)	
Airspace:	FIR/UKLFS	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Merlin HC3	Untraced Light ac
Operator:	HQ JHC	N/K
Alt/FL:	1000ft QNH (1026mb)	N/K
Weather:	VMC CLBC	NK
Visibility:	30km	N/K
Reported Separation:	100m	N/K
Recorded Separation:	<0·3nmH - See UKAB Note	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE MERLIN HC3 HELICOPTER PILOT, a QHI, reports he was conducting a conversion training sortie and was in transit under VFR from Linton-on-Ouse to Benson, whilst monitoring the LFS frequency. He was not under an ATS; a squawk of A7000 was selected with Mode C; neither TCAS nor Mode S is fitted.

Approaching a position 3nm SE of Tempsford heading 160° at 130kt, flying a level cruise at 1000ft QNH (1026mb), a low-wing single-engine blue and white light ac (LA) was spotted 1km away [0·54nm] to starboard on a closing course. The LA was executing a high AOB R turn *[sic]* that appeared to be in excess of 90°. Avoiding action had to be taken by descending to avoid a collision with the LA, which passed 100m away at the closest point with a 'high' Risk of collision. The sortie was then continued as planned. The Airprox was subsequently reported by telephone. He added that visibility from the Merlin cockpit was good, but assessed the crew workload as 'relatively high whilst preparing to enter the London Helicopter Route structure.

THE RADAR ANALYSIS CELL (RAC) LATCC (MIL) report that despite extensive tracing action the reported LA could not be traced.

UKAB Note (1): The Stansted Radar recording shows the Merlin helicopter maintaining a steady course in a level cruise indicating 1100ft London QNH (1026mb). The untraced LA is shown as a primary contact only, maintaining a steady NE'ly track for some miles as the two ac close on a steady relative bearing to one another. The relative geometry remains unchanged until 1432:34, when the LA's primary contact swerves to the L and thence astern of the Merlin, which simultaneously descends 200ft, before levelling on the next sweep at 800ft London QNH. The minimum horizontal separation evinced by the radar recording of 0·3nm (556m) is significantly more than the 100m reported by the Merlin pilot, which might have been caused by plot extracted 'track jitter' at these low altitudes.

HQ JHC comments that the Merlin pilot's report indicates a particularly close call. The lookout of the Merlin did not pick up the untraced LA soon enough to avoid an Airprox but it is impossible to say when the LA picked up the Merlin. The Merlin pilot assessed the cockpit workload as high and therefore distraction almost certainly played a part. The difficulty of visually acquiring a LA on a constant bearing is significant and relies on a meticulous scan of the particular airspace in question. In this case, the Merlin took avoiding action as soon as the LA was acquired and whilst successful, safety margins had clearly been eroded.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included a report from the Merlin pilot, radar video recordings and a report from the appropriate operating authority.

Despite the best endeavours of the RAC at LATCC (Mil), the LA pilot could not be traced. Consequently, the Board assessed this Airprox based on the information provided in the Merlin pilot's account and data provided by the radar recording.

In this situation the Merlin pilot was required to 'give way' in accordance with the 'Rules of the Air', but plainly the 'Rules' can only work effectively when the other ac is seen in sufficient time for the pilot 'giving way' to take appropriate action to remain well clear. The Merlin pilot reports the untraced LA was spotted 1km away [0·54nm] approaching from his 1 o'clock at a similar altitude; because of the close proximity of the LA when first seen avoiding action was necessary to avoid a collision, which was apparently quite robust. Nevertheless, the radar recording illustrates that the LA had been closing on a steady course and bearing from some distance away and was indeed there to be seen by the Merlin crew. Although the Board recognised that a white LA of small cross-sectional area approaching on a constant relative bearing would be difficult to spot, despite the reported good visibility from the helicopter's flight deck, the Board concluded that, for their part, this was a late sighting by the Merlin crew.

Because the LA was in a high AoB turn when first seen by the Merlin pilot, it seems that the LA pilot might have spotted the large Merlin helicopter slightly earlier and was already effecting his own avoiding action turn to the L. Whilst the Board was unable to draw definite conclusions on this aspect, the robust nature of the LA's turn, which is evident on the radar recording, suggests that this was, in all probability, also a late sighting by its pilot. In the absence of an account from the LA pilot, the Board could only conclude that the Cause of the Airprox was a late sighting by the Merlin crew and probably a late sighting by the untraced LA pilot.

Turning to the inherent Risk, it was suggested that the LA pilot, unaware that his LA had not been spotted at the time, might have 'stood on' his course anticipating the Merlin pilot would take earlier action to remain clear, but thereby leaving his own avoiding action to a late stage. Nevertheless, the resultant close quarters situation could have been prevented if the confliction had been recognised earlier and robust action taken by either pilot. The radar recording suggested the horizontal separation was slightly more than that the 100m reported by the Merlin pilot as the LA passed astern of the helicopter, as simultaneously, the latter descended. Notwithstanding any Mode C lag associated with the radar recording, the Board agreed that the Merlin pilot's avoiding action descent had been actioned at a relatively late stage, just as the LA started to draw astern, which convinced the Members that the safety of these two ac had not been assured.

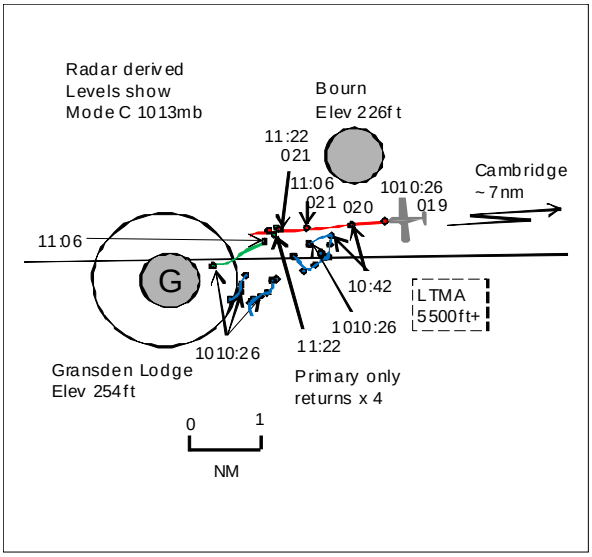
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A late sighting by the Merlin crew and probably a late sighting by the untraced LA pilot.

Degree of Risk: B.

AIRPROX REPORT NO 2011084

Date/Time:	1 Jul 2011 1011Z	
Position:	5211N 00004W (1·5nm SW Bourn)	
Airspace:	LFIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	ASW27B	PA28
Operator:	Civ Pte	Civ Club
Alt/FL:	3000ft↑	3000ft
	QFE	QNH
Weather:	VMC CLBC	VMC CLOC
Visibility:	15km	10km
Reported Separation:		
	200ft V/300m H	100ft V/3-400m H
Recorded Separation:		
	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE ASW27B PILOT reports, 3 weeks post incident, flying a cross-country flight from Gransden Lodge and in communication with Gransden Lodge Radio on 131·275MHz. She was thermalling, banked to R about 5km SE of Bourn airfield [actually SW], at about 3000ft Gransden Lodge QFE in a bid to climb to cloudbase which was around 4000ft. The visibility was 15km in VMC and the ac was coloured white. Turning through heading 045° at 65kt she suddenly saw a red/white single-engine ac heading SW from the direction of Cambridge and then changing course to a more W'ly direction at approximately the same height. She banked sharply L and flew towards Bourn airfield and observed the ac pass about 300m to her R and 200ft below where she had been thermalling. She believed the other ac's pilot had not seen her glider. She assessed the risk as medium. There were a number of gliders in the same area as it was a good gliding day.

THE PA28 PILOT reports, 10 weeks post incident, flying a dual training sortie to Turweston, VFR and possibly in communication with, or may have just left, Cambridge squawking 7000 with Mode C. The visibility was 10km in VMC and the ac was coloured white/red; no lighting was mentioned. When SW of Bourn heading W at 3000ft QNH and 100kt a glider appeared below their ac's nose to their L at about 300-400m. It appeared to be continuously climbing and banking from the moment it emerged from below their ac's nose ahead to when it left their forward view to the top R of their screen about 100ft above. He assessed the risk as medium to low.

UKAB Note (1): Following receipt of the ASW27B pilot's report, tracing action was commenced by RAC Mil. The reported position was 5km SE of Bourn at 1105UTC which necessitated further clarification from the ASW27B pilot. The PA28 was identified by 12 Aug and the pilot was contacted through the PA28's club; the pilot's report was received at the UKAB on the 12th Sep. Owing to the time delay no RT was retrievable from Cambridge ATSU.

UKAB Note (2): The Stansted radar recording at 1010:26 shows the PA28 1·1nm SSE of Bourn tracking 265° indicating unverified FL019 (~2300ft LON QNH 1027mb) with 4 primary only radar returns to its SW. The nearest is 1·25nm away and closes to within 0·25nm at 1010:42 before it is seen to turn away and manoeuvre to the S. The other 3 primary returns track NE'ly before the 2 S'ly targets fade 0·75nm of the PA28's intended track. The most W'ly of the primary returns, possibly the ASW27B, tracks NE'ly before fading at 1011:06 in the PA28's 1130 position range 0·6nm; the PA28 showing FL021 (~2500ft QNH). The primary return reappears at 1011:22 in the PA28's 1130 position, range 0·1nm tracking N'ly. The next sweep shows the primary return 0·1nm NE of the PA28, the ac having crossed. The ASW27B pilot reported flying at 3000ft QFE (Gransden Lodge elevation 254ft) which would equate to over 700ft separation but this does not accord with the subject pilots' reported separation of between 100-200ft V and 300-400m H.

AIRPROX REPORT No 2011084

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

Members were not surprised that the PA28 encountered a glider owing to the proximity of Gransden Lodge gliding site to the PA28's track to the S of Bourn. As this Airprox occurred in Class G airspace both pilots had equal responsibility to maintain separation from other ac through see and avoid. On this occasion, the ASW27B pilot saw the approaching PA28 and, although having right of way, she perceived the potential for conflict and turned L away from the PA28, which passed 300m to her R and 200ft below. The PA28 pilot saw the ASW27B 300-400m ahead and slightly below which one Member thought had been a late sighting. This view was not shared by the majority of Members who, cognisant of the known difficulty in visually acquiring thermalling white gliders against a backdrop of cloud, thought the PA28 pilot had seen the glider as soon a reasonably practicable in the conditions that pertained at the time. The PA28 pilot watched the ASW27B cross ahead of his track from slightly below before moving away to his R and above by 100ft. Members agreed that the ASW27B pilot had shown good airmanship; her actions were judged to have been timely, appropriate and effective in resolving this conflict and quickly removing the risk of collision.

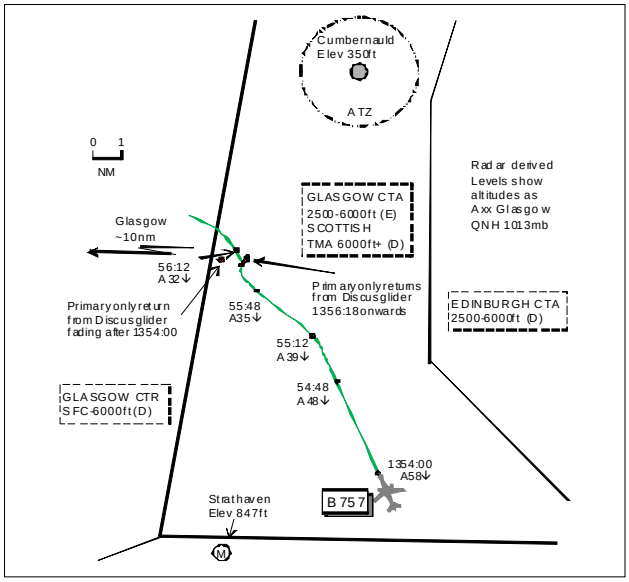
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict in Class G airspace resolved by the ASW27B pilot.

Degree of Risk: C.

AIRPROX REPORT NO 2011085

Date/Time:	23 Jul 2011 1356Z (Saturday)	
Position:	5551N 00405W (12nm E Glasgow - elev 26ft)	
Airspace:	Glasgow CTA	(Class: E)
	Reporting Ac	*Reported Ac*
Type:	B757	Discus BT
Operator:	CAT	Civ Pte
Alt/FL:	↓3000ft (QNH 1013mb)	3450ft↑ (QNH 1013mb)
Weather:	VMC CAVOK	VMC CLBC
Visibility:	>10km	30km
Reported Separation:	Nil V/100m H	20ft V/300m H
Recorded Separation:	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE B757 PILOT reports inbound to Glasgow IFR and in receipt of a RCS from Glasgow Approach on 128·75MHz, squawking 2746 with Modes S and C. They were operating in excellent visibility below scattered cloud and had requested and received clearance for a visual approach but not to descend below 3000ft. Radar had advised that a primary return had been seen in the area previously but had now disappeared, having believed that the ac had descended below radar cover. About 12nm SE Glasgow heading 300° at 230kt, level at 3000ft, he thought, he saw a glider directly ahead range 1·5nm and at the same level. The A/P was disconnected and a R turn was commenced. The glider appeared to fly straight and level in the opposite direction passing 100m to their L at the CPA. ATC was informed and the approach was continued normally. He assessed the risk as high.

THE DISCUS BT PILOT reports returning N towards Portmoak, VFR on a cross-country flight and listening out on frequency 120·6MHz [Cumbernauld]; no transponder was fitted. The visibility was 30km flying 1500ft below cloud in VMC and the ac was coloured white. He was heading for a gap between the Glasgow CTR and the Cumbernauld ATZ as with a NW'ly wind he wanted to avoid any likelihood of being drifted onto the Edinburgh Class D CTA if he tracked E of Cumbernauld. His over-riding concern was to avoid the Class D airspace to the E and W; however, this funnels one towards the Cumbernauld ATZ and, with every possibility of getting low in that area (as he had during his track S), he was monitoring their frequency. At about 1352 he commenced a climb in a thermal to the R with about 40° of bank and whilst turning he was scanning as normal but was not conscious of any other traffic. After several turns while turning through approximately an E'ly heading at 50kt and 3450ft QNH he suddenly became aware of an ac, a low-wing twin-jet, passing at high speed from R to L range 300m banking away from him about 20ft above and descending. He took no avoiding action as at that point there could have been no further conflict. The other ac continued descending to the N and turning L. He assessed the risk as medium. He went on to say that he had flown gliders through this particular stretch of Class E airspace in VMC over quite a few years without any conflict. He was concerned that in spite of ensuring his flightpath stayed out of the surrounding and O/H Class D airspace, fast CAT ac were descending out of the upper Class D into the Class E airspace, cutting the corner before entering the Glasgow CTR.

THE GLASGOW APR reports operating as the FIN DIR and, although the traffic loading, in terms of inbounds, was only medium, there were a number of VFR ac operating in and around the CTR. He had been observing a primary only return in the vicinity of Strathclyde Country Park for some minutes, initially suspecting that the return might be spurious. However, having watched it turn towards the edge of the CTR and then track the CTR boundary he elected to vector his inbound traffic around it. Subsequently he watched the return turn 180° to the S and then fade from radar entirely. Prior to it fading he called Scottish FIR at Prestwick Centre to see if the flight was in contact with them but it wasn't. In addition INT made a blind transmission to see the flight was listening out on 119·1MHz. The B757 crew reported visual with Glasgow and initially he was reluctant to release the flight,

partly for traffic reasons and partly because he had concerns about this unknown ac/return. A short time later, with the unknown return having faded from radar and the B757 flight having been instructed to reduce its speed for traffic reasons, he elected to release the B757 for a visual approach. There was no return showing on radar at this time and, as it was a nice day, it seemed preferable that the crew was flying by visual reference clear of cloud. He then informed the B757 crew that there had been a primary only return in the vicinity through which they were flying but that it had now faded from radar and was last observed turning to the S. Previous experience of popular ac routes and radar performance suggested that the ac had probably turned towards Strathaven and descended. The B757 crew then reported that they were turning to the N from a W'ly heading to avoid a glider at the same level which was described as being "scarily close".

ATSI reports that the Airprox occurred at 1555:50 UTC, in Class E CAS, 11·7nm to the E of Glasgow Airport. The Airprox was reported by the pilot of a B757, inbound to Glasgow, IFR from Verona. The other aircraft was a Discus BT glider, operating on a VFR flight from Portmoak, which lies 44nm NE of Glasgow Airport and 14nm N of Edinburgh Airport.

The Glasgow and Edinburgh Control Zones (CTRs), Class D CAS, extend from the surface to an altitude of 6000ft. The Glasgow Control Area (CTA), Class E CAS connects the 2 CTRs and extends from an altitude of 2500 (or 700ft agl if higher) to an altitude of 6000ft. VFR flight is permitted within Class E CAS without an ATC clearance although pilots are encouraged to contact ATC. Radio is not mandatory. The ATC watch log did not show any record of notification, nor was any activity promulgated by AIS NOTAM, regarding gliding activity at or from Portmoak.

NATS Glasgow had previously submitted an Airspace Change Proposal seeking re-classification of the Glasgow CTA, from Class E to Class D and believed that this would enhance safety by establishing the airspace as a known traffic environment where all ac are required to be in contact with ATC.

The radar controller's written report indicated that a number of VFR ac were operating in and around the zone with a number of primary contacts in the vicinity of Strathclyde Country Park, situated 14·5nm SE of Glasgow Airport.

The Glasgow controller was operating as Glasgow FIN (Director) and assessed traffic levels as medium.

CAA ATSI had access to radar and RTF recording, together with controller and pilot written reports.

METAR EGPF 231350Z 29006KT 260V350 9999 FEW042 19/09 Q1013=

At 1347:18, the radar recording shows an unknown primary contact, at a position 12·5nm E of Glasgow Airport. This contact is a steady return slowly tracking NW. Director was vectoring an A319 and DHC-8, ahead of the B757 and to the E of the unknown contact.

At 1349:32, the B757 flight contacted Glasgow Radar and reported descending to FL080, with information 'Oscar'. Director advised the B757 to expect vectors for ILS approach to RW23 and updated the B757 crew with information 'Papa'. The radar recording shows the unknown primary contact turn onto a N'ly track 11nm E of Glasgow Airport.

At 1351:10, Director advised preceeding inbound DHC-8, *"....just to keep you in the picture I'm going to keep you slightly wide today I've got er unknown traffic following the eastern edge of the zone so just want to give you a bit of a wide berth.*" Shortly afterwards the controller reported the unknown traffic had turned onto S.

At 1351:41, the radar recording shows the primary contact turning R, 12·7nm E of Glasgow Airport and become stationary. The track history then starts to fade. The controller's written report indicates that the contact was observed turning onto S before fading from radar and attempts were made to try and identify or make contact with the unknown ac. The controller considered that from previous experience and radar performance, the profile was consistent with an ac descending inbound to Strathaven.

At 1352:16, the B757 was 24nm SE of the airfield. The radar recording shows the track history of the unknown contact, fading from radar, 14nm ahead of the B757. Director turned the B757 flight onto a heading of 335°; this heading was adjusted to 340° and the B757 flight was descended to 3000ft QNH 1013mb.

At 1354:01, the B757 crew reported, *"...we are visual requesting visual contact approach."* Director replied, *"(B757)c/s roger er for the moment stay on the vector and I'll release you very shortly."* Shortly afterwards the B757 crew was asked to start reducing speed to 200kt. The radar recording shows a spurious return in the last known vicinity of the unknown traffic, which fades.

The controller's written report indicates that there was no return showing on radar and considered it preferable that the B757 flight continued with visual reference and clear of cloud. At 1554:47, Radar advised, *"(B757)c/s you're clear visual approach Runway two three route via five mile final not below three thousand feet until advised."* The B757 crew gave a correct readback.

At 1555:11, the B757 was 3·5nm from the last known location of the unknown traffic. Director passed TI, *"(B757)c/s er I did have a primary only return in your approximate vicinity until very recently it's faded from radar now so I believe it to be low level and probably gone even lower but suggest you keep a good lookout".* The B757 pilot replied, *"er (B757)c/s."*

At 1555:49, the radar recording shows the B757 passing an altitude of 3500ft and 1nm from the last known location of the unknown ac. The pilot reported, *"and (B757)c/s we've got a glider just ahead of us we're deviating right to avoid."* Radar acknowledged and shortly afterwards the B757 crew reported, *"er that was scarily close."*

At 1356:10, the radar recording shows the B757 passing an altitude of 3200ft. The B757 crew advised, *"and (B757)c/s now clear of that traffic and er returning to er so – towards a five mile final."* Director responded, *"(B757)c/s roger you say it was a glider was he at the same level as you."* The B757 crew responded, *"Affirm."* Director then reported that the contact had reappeared on radar.

At 1356:18, the radar recording shows an unknown primary contact appear, coincident with the track history of the B757 and 2nm behind, at a position 11·7nm E of Glasgow Airport. The radar recording shows this slow moving contact tracking NNE.

The B757 crew confirmed an intention to make a report and was then transferred to the Tower.

The glider was subsequently traced and the written report from the pilot indicated operating on a cross country flight from Portmoak and listening out on frequency 120·6MHz.

As a result of the Airprox the CAA Director of Airspace Policy (DAP) considered that a safety critical risk existed within the existing Glasgow Class E CTA. Consequently an interim reclassification of the airspace from Class E to Class D will take effect on 16th September 2011.

Once the primary contact had faded, Director would not have been aware of the exact location of the unknown ac and had an expectation that it had turned S and descended to low level.

The radar controller passed TI to the B757 flight on the last known position of the unknown traffic and advised the B757 crew, that the ac had probably descended to low level. MATS Part 1, Section 1, Chapter 5, Page 13, paragraph 15.2 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:

Class E:

Pass traffic information unless the controller's primary function of sequencing and separating IFR flights is likely to be compromised. If a pilot requests avoiding action it shall be provided to the extent determined by the controller. Give avoiding action if radar derived or other information indicates that an aircraft is lost or has experienced a radio failure.'

VFR flight is permitted within Class E CAS, without an ATC clearance, however pilots are encouraged to contact ATC. The glider pilot was listening out on frequency 120·6 MHz. It is not clear if the glider pilot had attempted to contact ATC either before or during the flight.

The interim measures taken by CAA DAP will prevent the re-occurrence of any similar event by ensuring that the airspace becomes a known traffic environment, where all ac are required to be in contact with ATC.

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.

While it is recognised that traffic inbound from the SE for a visual approach will enter the Glasgow CTA Class E, a CAT pilot Member wondered why the B757 flight was flying at an altitude that was well below that needed for a continuous descent approach (CDA) into Glasgow. The normal inbound routeing is via LANAK (20nm SE of Glasgow) at FL70 before receiving radar vectors towards the FAT. With CAVOK Wx at Glasgow, it was thought the B757 flight may have descended through the cloud base early in the initial approach phase with its crew anticipating clearance for a visual approach with its associated reduced track miles to touchdown. The Board was briefed that some cockpit navigation displays do not show the airspace boundaries and Members wondered if CAT crews, in general, would be aware of the airspace classification in which they were flying. It is incumbent on pilots to recognise the airspace classification which dictates the level of ATS and the responsibilities of pilots with respect to other traffic. Within Class E airspace, IFR traffic is separated from other IFR flights whereas pilots have equal responsibility to 'see and avoid' when IFR and VFR traffic are involved. The Radar controller had been vectoring traffic ahead of the B757 in the sequence around the Discus glider as it was unknown traffic in the CTA. This was more than was required by MATS Part 1 but was judged by Members to be good practice in the circumstances. However when the radar return from the Discus faded the controller released the B757 flight for a visual approach. The B757 crew turned L towards Glasgow and was told that the (Discus) radar return had faded in the area they were about to fly through and for them to keep a good lookout. This turned out to be a good call as they spotted the glider about 1·5nm ahead at the same level and executed a R turn to avoid it, estimating separation as 100m.

The Discus pilot was cognisant of the airspace and was attempting to gain height for his transit N'bound. This piece of airspace is in effect a N-S corridor between the Glasgow and Edinburgh Class D airspace through which GA ac can transit VFR. It was thought best practice by Members for pilots to follow the guidance in the AIP where they are encouraged to contact ATC when flying through the Class E airspace. The Discus pilot had elected to listen out on the Cumbernauld frequency as a precaution as he had encountered loss of lift earlier when transiting S'bound. Whilst orbiting R he saw the B757, albeit late, crossing from R to L, he estimated about 300m away and slightly above but descending. Members acknowledged that ultimately the Discus glider had right of way under the Rules of the Air but thought the Discus pilot should have been able to see the approaching airliner sooner.

Members agreed that all parties had fully discharged their responsibilities which led the Board to classify this a conflict between IFR and VFR traffic in Class E airspace which was resolved by the B757 crew. Although the B757 crew had taken positive action to avoid the Discus glider and remove the actual collision risk, the Board agreed that the ac passed with separation margins reduced and that safety had been compromised during this encounter.

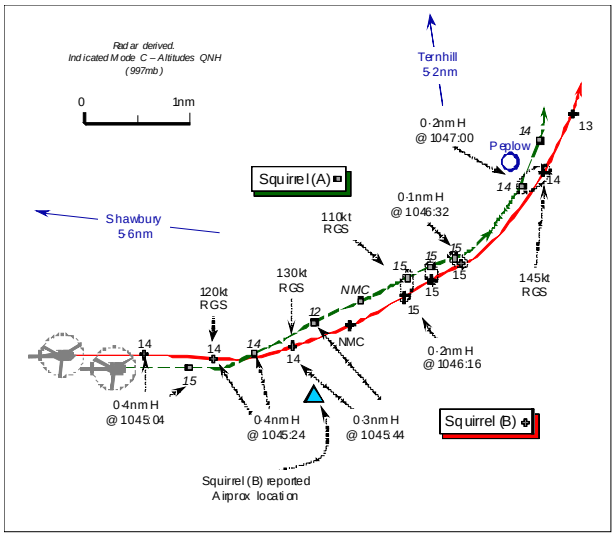
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict between IFR and VFR traffic in Class E airspace, resolved by the B757 crew.

Degree of Risk: B.

AIRPROX REPORT NO 2011086

Date/Time:	18 Jul 2011 1046Z	
Position:	5247N 0230W (1nm SSW of Peplow A/D)	
Airspace:	CMATZ/FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Squirrel (A)	Squirrel (B)
Operator:	HQ Air (Trg)	HQ Air (Trg)
Alt/FL:	1200ft	1000ft
	QFE (985mb)	RPS (985mb)
Weather:	VMC CLBC	VMC Light rain
Visibility:	30km	30km
Reported Separation:		
	2 rotor diameters [70ft]	200ft V/300ft H
Recorded Separation:		
	Nil V/0·1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PILOT OF EUROCOPTER SQUIRREL HT1 HELICOPTER (A), a QHI, reports that he was in transit VFR at 1200ft QFE (985mb), on an instructional sortie from Shawbury to Ternhill. As the PIC he was in the LH seat, with the student in the RH seat; they were in receipt of a BS from Ternhill TOWER on 376·400MHz. A squawk of A0221 was selected with Mode C; neither TCAS nor Mode S are fitted. The helicopter has a black fuselage with yellow engine cowlings; white upper and lower strobes, landing lamps and the nav lights were all on.

Overhead Peplow A/D heading 005° [more probably 040°] at 90kt, another Squirrel – Squirrel (B) -helicopter suddenly appeared in their 5 o'clock position at a distance equating to about 2 rotor diameters [70ft] away, in level flight at the same height but at a faster airspeed on a similar heading diverging slightly to the R. To avoid Squirrel (B), a slight L turn was commenced but the height maintained as the ac diverged with Squirrel (B) slowly descending. He assessed the Risk as 'low' but upon reaching Ternhill an Airprox was reported on the RT. Subsequently, after landing back at Shawbury, he discovered that Squirrel (B), crewed with a student QHI in the LH seat and the QHI and PIC in the RH seat, had been visual throughout, were aware of their intentions to join Ternhill and were conducting an overtaking manoeuvre.

THE PILOT OF EUROCOPTER SQUIRREL HT1 HELICOPTER (B), a QHI, was also conducting a VFR training sortie from Shawbury for a student QHI. A BS was provided by Shawbury ATC on 376·675MHz. A squawk of A0221 was selected with Mode C; neither TCAS nor Mode S are fitted.

They had departed Shawbury via the eastern gate at 1000ft BARNSLEY RPS (985mb) some 800ft below SCT cloud, en-route to a civilian aerodrome at 110kt following another helicopter – Squirrel (A) – that called at the gate for Ternhill. Approaching a position 5nm E of Shawbury A/D heading 050°, they were gaining ground on Squirrel (A) because of their own faster cruising speed, so he instructed his student QHI to position to the right of Squirrel (A) as the latter would shortly be turning L for Ternhill. Squirrel (A) was also 1-200ft higher than his helicopter at about 1200ft ALT (the RPS and QFE were the same value that day). As Squirrel (A) turned L they passed behind and to the R, slightly lower than Squirrel (A), before opening on a diverging heading and at the closest point assessed the separation as 300ft laterally and 100-200ft vertically. Squirrel (A) was visible throughout and he assessed the Risk as 'low'.

BM SAFETY MANAGEMENT reports that this Airprox occurred between Squirrel (A), operating VFR conducting a Tower-to-Tower transit between Shawbury and Ternhill and Squirrel (B) operating VFR within LFA9.

The pilot of Squirrel (A) reports that they were in receipt of a BS from Ternhill TOWER, but the ADC at Ternhill does not state a type of ATS. Moreover, Ternhill is not equipped with a Hi-Brite display as the airfield is VFR-only, with no requirement to integrate IFR and VFR traffic. Anecdotally, whilst a Hi-Brite display has been requested in the

past to increase the ADC's situational awareness, this has been refused on financial grounds. Consequently, the ADC is only able to provide warnings on known traffic.

At 1044:17, Squirrel (A) left Shawbury TOWER's frequency and stated their intention to contact Ternhill TOWER. At this point, Squirrel (A) was 2·2nm SE of Shawbury, tracking ENE at 1300ft Mode C (1013mb); Squirrel (B) was 0·5nm W of Squirrel (A) at 1400ft Mode C (1013mb). When routeing direct from Shawbury to Ternhill, the standing operating procedure is for crews to be transferred from TWR to TWR; they do not receive an ATS during the transit from a controller with access to a surveillance display.

At 1045:05, the crew of Squirrel (B) left Shawbury TOWER's frequency and stated their intention to contact Shawbury LOW-LEVEL, where they were provided with a BS iaw standard operating procedure on-route to Follies, a confined area used for Shawbury helicopter training, about 2nm NE of Ternhill. Although the unit has been unable to provide a definitive statement on the low-level controller's workload, from reviewing the radar replay it is possible to determine that the controller had at least 8 speaking units on frequency at the time of the Airprox, with all ac assigned an identical SSR Mode 3A code of A0221. At this point Squirrel (A) and Squirrel (B) were maintaining similar headings, with Squirrel (A) indicating 1500ftALT in Squirrel (B)'s 1 o'clock at a range of 0.4nm, the latter at 1400ftALT. The pilot of Squirrel (B) stated that as they departed eastern gate at Shawbury, they were visual with Squirrel (A) ahead of them and remained so throughout the incident sequence. The pilot of Squirrel (B), cognisant that Squirrel (A) would turn L for Ternhill, advised his student QHI to position to the R of Squirrel (A). Squirrel (B) then "*passed behind, right and lower than* [Squirrel (A)] *on an opening heading.*"

[UKAB Note: The combined LAC radar system 'best picture' shows the Airprox quite clearly, although the return from Squirrel (A) fades just after the 'overtake'. After departure from Shawbury both ac track due E; at 1045:04, Squirrel (A) is 0·4nm ahead in Squirrel (B)'s 12:30 position. At approximately 1045:17, Squirrel (A) commenced a L turn to take up a broadly NE'ly track. At 1045:24, Squirrel (B) commenced a wide L turn to take up an ENE'ly track, slowly diverging to that of Squirrel (A). At this point, 0·4nm lateral separation existed, with both ac indicating 1400ftALT. With a Radar Ground Speed (RGS) about 20kt faster Squirrel (B) starts to close on Squirrel (A). At 1046:16, Squirrel (B)'s track was slowly converging with that of Squirrel (A), the latter in Squirrel (B)'s 10 o'clock 0·2nm, with both ac indicating 1500ftALT. Squirrel (B) then starts to draw abeam Squirrel (A); the CPA of 0·1nm occurs at 1046:32, as Squirrel (B) overtakes (A) and starts to draw slowly ahead into the latter's 2 o'clock. Thereafter, however, Squirrel (A)'s radar return fades on the recording, whilst Squirrel (B)'s radar return continues to be displayed albeit with occasional lost returns through the latter part of the incident sequence. Both acs' tracks alter slowly L over the next 30sec. Squirrel (A) is next shown at 1047:00, just to the SE of the plotted position for Peplow A/D – Squirrel (A) pilot's reported Airprox location, indicating 1400ftALT. Squirrel (B) has now drawn ahead into Squirrel (A)'s 1 o'clock at a range of 0·2nm, diverging from Squirrel (A), and still co-altitude after completing the overtaking manoeuvre.]

From an ATM perspective, without a Hi-Brite display, Ternhill's ADC was not in a position to affect the outcome of the occurrence. Moreover, given the workload of Shawbury LOW-LEVEL and that the crew of Squirrel (B) was under a BS, it is unreasonable to expect that the controller could have affected the outcome. In the absence of a CWS fitted to the Squirrel, the sole remaining safety barrier was 'see and avoid'. Given the aircrafts' tracks, Squirrel (B) was the only crew that was in a position to 'see and avoid'; they were visual with Squirrel (A) throughout the incident sequence and overtook in accordance with the Rules of the Air.

HQ AIR (TRG) comments that the overtake manoeuvre was flown close enough to cause concern to the pilot of Squirrel (A). The radar trace does not accord with the statement that the overtake was flown on opening headings so the situational awareness of Squirrel (B) must be in doubt. This highlights the need to afford ample lateral separation when overtaking a non-cooperating aircraft, which may still manoeuvre unpredictably.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The Board agreed that ATC played no part in this Airprox and would have been unable to forestall it. The military helicopter pilot Member pointed out that Squirrel (B) was flown by a QHI instructing a qualified helicopter pilot, whereas that flown by the reporting pilot was crewed with a QHI instructing a basic student. It was evident to the Member that at this stage even flying straight and level may have been a challenge to the student in the RH seat

of Squirrel (A), furthermore, his look-out to starboard may not have been as all-encompassing as that of a qualified pilot and Squirrel (B) could not have been seen by either crew-member in Squirrel (A) until it started to draw abeam. The report from the QFI in Squirrel (A) states that he spotted Squirrel (B) when it suddenly appeared in their 5 o'clock position so this was probably the earliest opportunity he could have detected it and he estimated that when the other helicopter passed it was about 70ft away. For their part, the crew of Squirrel (B) had Squirrel (A) in plain sight throughout as they approached from its starboard quarter and it was the PIC of Squirrel (B) that determined the horizontal separation when they overtook – he estimated they passed 300ft away horizontally and the radar recording suggested it was in the order of 0·1nm co-altitude – but helicopter pilot Members could not understand why they had flown unnecessarily so close. The HQ Air Training Member's comments had reinforced this view and helicopter pilot Members agreed that it would have been better airmanship to have afforded Squirrel (A) a wider berth. Without further debate the Board concluded that this Airprox had resulted because Squirrel (B) crew flew close enough to cause Squirrel (A) crew concern.

Irrespective of whether the QHI of Squirrel (B) had correctly surmised that Squirrel (A) would be turning L for Ternhill, instructional sorties can be somewhat unpredictable and at this range there was little time to react to any sudden manoeuvre by the student pilot flying Squirrel (A); furthermore no warning was possible on the RT as they were operating on different frequencies. Nevertheless helicopter pilot Members judged that the crew of Squirrel (B) had kept Squirrel (A) in sight throughout the overtaking manoeuvre and could have turned away if necessary. This allowed the Members to agree, unanimously, that there was no Risk of a collision in these circumstances.

PART C: ASSESSMENT OF CAUSE AND RISK

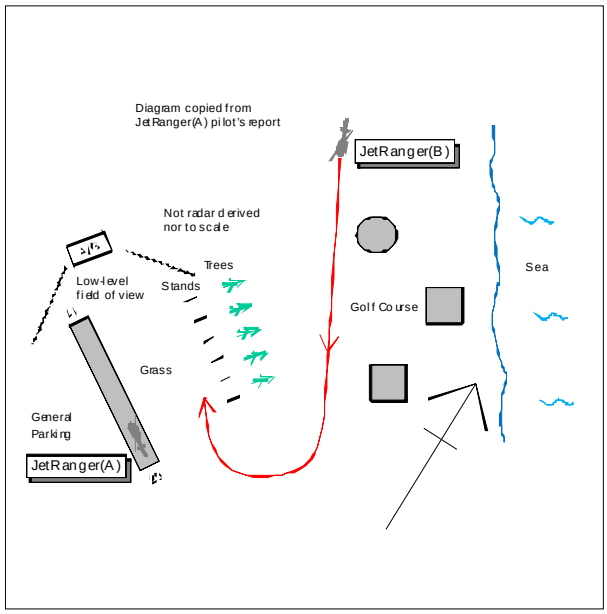
Cause: Squirrel (B) crew flew close enough to cause Squirrel (A) crew concern.

Degree of Risk: C.

AIRPROX REPORT No 2011087

AIRPROX REPORT NO 2011087

Date/Time:	14 Jul 1100Z	
Position:	5117N 00122E (FATO area Sandwich Helipad - elev 12ft)	
Airspace:	LFIR	(Class: G)
	Reporting Ac	*Reporting Ac*
Type:	Bell 206 JetRanger(A)	Bell 206 JetRanger(B)
Operator:	Civ Comm	Civ Comm
Alt/FL:	0-6ft agl	50-70ft↓ Rad Alt
Weather:	VMC CLBC	VMC CLBC
Visibility:	10km	10km
Reported Separation:	100-150ft	50m
Recorded Separation:	NR	



BOTH PILOTS FILED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE BELL 206 JETRANGER(A) PILOT reports departing Sandwich helipad VFR using the Final Approach and Take Off (FATO) area and in communication with Sandwich Radio on 121·175MHz, squawking 4250 with Mode C. The visibility was 10km clear below cloud in VMC and the helicopter was coloured red/white with nav and anti-collision lights switched on. He advised A/G that he was lifting from his stand and requested to "air-taxi and backtrack RW29 for the threshold to hold" and was told "at your discretion". As he was backtracking he was able to check for other helicopters on base and final and he heard JetRanger(B) pilot call downwind. As he had only just called "downwind" he assumed he was at a considerable distance from base, let alone final approach. He stopped at the threshold and turned slowly as the flight was at near maximum AUW, called "departing RW29" and was told "at your discretion". After transitioning close to the ground for 25m, height up to 6ft agl and before climbing, he noticed JetRanger(B) about 100-150ft above and on his R, abeam, and heard its pilot call "going around". JetRanger(B)'s manoeuvre was not abrupt or worrying and did not arouse or alarm him. At the time he did not consider it to be an Airprox. Next day he spoke to the pilot of JetRanger(B), who was from the same company, and asked if he wished to discuss the incident. The other pilot wondered what had happened and thought that he, pilot(A), was holding as (B) was about to land. They subsequently discussed the incident with the A/G operator, who didn't consider it to be an Airprox but pilot (B) elected to complete a report form for consideration later. The next day they discussed the event and agreed that it was prudent to send a report and also informed the CAA FOI of their intention to file a report, albeit late owing to workload, and believed it was acceptable because no remedial action appeared to be needed. He assessed the risk as very low.

The converging nature of the downwind leg caused by the need to not overfly the adjacent seaward golf course meant base leg was probably no more than 200m long. This funnelling effect definitely was a contributory factor. There was no question of fatigue or either pilot being inexperienced/low hours or any haphazard behaviour. A lesson had been learnt but he was unsure how it would best be disseminated to other company pilots.

THE BELL 206 JETRANGER(B) PILOT reports inbound to Sandwich helipad from Manston VFR and in communication with Sandwich Radio on 121·175MHz, squawking 7000 with Mode C. The visibility was 10km clear below cloud in VMC and the helicopter was coloured burgundy/white with nav and strobe lights switched on. He called "request join from the N" and was instructed by Sandwich Radio to "join downwind R base FATO 29" which he read back. JetRanger(A) was rotors running and requested to hover-taxi for FATO 29. Information on his helicopter (B) joining was given and pilot (A) stated he would wait by the threshold of 29 for the joining helicopter (B). Sandwich Radio called JetRanger(A) flight "with that joining rotary traffic in mind, depart at pilot's

discretion". JetRanger(A) had hover taxied from the stand to the threshold in such a manner that any traffic on the downwind leg or base leg would not be visible; no clearance turn was made to allow the joining traffic to be seen. JetRanger(A) pilot then elected to line-up for a 29 departure and began to transition. He, pilot(B), was now turning final and had been unable to call "final" owing to the 2-way RT exchange between Sandwich Radio and pilot(A), believing that JetRanger(A) was going to wait by the threshold. Now seeing JetRanger(A) transitioning, he conducted a go-around as he was certain that his helicopter had not been seen by pilot (A), who was unaware of JetRanger(B)'s position until its pilot called "going around". The go-around was conducted in a manner that provided sufficient clearance from JetRanger(A), vertical separation not <50ft. He landed without further incident. JetRanger(A) continued with its departure from FATO 29 following his "go-around" call. The Sandwich Radio controller spoke to him after the Airprox and apologised. He believed that Sandwich Radio was not at fault but they did have a lack of vision of any traffic on the downwind leg and only limited vision of traffic on base leg. A combination of lack of mental positioning and visibility of his joining helicopter and failure to conduct a clearing turn and the judgement of "at pilot's discretion" by pilot (A) were the main contributory factors. Following a discussion with pilot (A) the next day, pilot (A) was made aware of the close proximity of the 2 helicopters and he apologised.

ATSI reports approval of an 'Air Ground Communication Service RTF Aeronautical Radio Station' had been agreed by the CAA, relative to 'The Open Golf Championship' at Sandwich Helipad in Kent. This was valid from the 11th to the 18th July 2011. The site included a Final Approach and Take Off area (FATO) aligned 11/29, with dimensions 250mx30m, at 12ft amsl.

The Sandwich A/G operation was not recorded. Consequently, no information is available from the allocated frequency. Any investigation, therefore, relies on information received from the pilots concerned and the A/G operator (see below). Apart from the general comments in the next two paragraphs ATSI has nothing to add.

General information regarding an A/G service is stated in CAP413 (Radiotelephony Manual) Chapter 4 Page 32:

'An AGCS radio station operator is not necessarily able to view any part of the aerodrome or surrounding airspace. Traffic information provided by an AGCS radio station operator is therefore based primarily on reports made by other pilots. Information provided by an AGCS radio station operator may be used to assist a pilot in making decisions, however, the safe conduct of the flight remains the pilot's responsibility'.

AGCS radio station operators are reminded that they must not use the expression 'at your discretion' as this is associated with the service provided by a Flight Information Service Officer. It is noted that both pilots quoted the A/G Operator using the term 'pilot's discretion' in their respective reports of the incident.

The site operator and incidentally the A/G operator at the time made the following comments: 'The incident involved 2 JetRangers, (A) and (B). (A) had started on stand and called for taxi for a N'ly departure. The temperature was quite warm, the helicopter was full and so the hover-taxi was slower than usual, using the FATO C/L as there was no other known traffic at that time. On reaching the threshold the helicopter performed a spot turn for departure, and the pilot requested departure. By this time JetRanger(B) flight had called inbound from Manston as previously stated, having passed a reporting point at the disused Richborough Power Station chimneys [~1·5nm NNW Helipad]. JetRanger(A) flight was given a departure at his discretion, with 1 company ac inbound from the N, but he remained in a low hover. From my position in the control box, (B) was seen descending at a moderate speed on base leg, and then to turn on to final. JetRanger(A) initiated its departure along the FATO at this time, at which point JetRanger(B) initiated a go-around from approx 30ft with a marked nose-up tight 360° turn. I was surprised at this as in my opinion the pilot must have been listening out to hear that JetRanger(A) was not airborne, and should have seen (A) at the threshold at which point could have entered a 360° turn or straight hover either on base leg or on short finals, yet he elected to continue at speed, whilst (A) could only accelerate slowly. Although the 2 helicopters came close to each other, I was surprised that one pilot decided to file an Airprox because in my opinion there was only a low risk of collision as by this time they were moving away from each other. On A/G all movements are ultimately at the pilot's own discretion and for reference I have had an aircraft closer off my own wingtip when flying practice formation.

UKAB Note (1): NOTAM H3619 was issued for the Open Golf Tournament:-

H3197/11

INTENSE HEL ACTIVITY WI 2NM 5117N 00122E (BRITISH OPEN GOLF

AIRPROX REPORT No 2011087

TOURNAMENT, SANDWICH, KENT). 11-07-0337/AS 2.
LOWER: SFC
UPPER: 1500FT AMSL
FROM: 11 JUL 2011 00:00 **TO:** 18 JUL 2011 23:59
SCHEDULE: HJ

UKAB Note (2): The Aerodrome Operating Procedures valid 11-17 July Areas to avoid states:-

'Sandwich town to the SSW, Clubhouse and event (to S and SE of landing site).'

Arrival & Approach Procedures for RW29 states:-

'Traffic inbound from Manston Airport call when clear of circuit with ETA and route towards Richborough power station – reporting point 'Chimneys'.'

Landing Procedures states:-

'Approach towards aiming point situated midway along FATO and after landing vacate FATO and proceed as advised towards the marquee area and parking spots, giving way to outbound traffic.'

Departure Procedures states:-

'Preferential direction 29.
Engine start - call on A/G to request start-up; request runway in use and taxi as advised.
Helicopters not to lift until given 'thumbs-up' by ground crew.
Spot turn, then hover; hover-taxi only when safe to proceed.
Hovering not permitted on adjacent bays
Outbound traffic has priority.
Route via outbound taxiways to threshold of FATO.
When safe to do so line up on the centre line and take off at pilot's discretion.
After take-off runway 29 for environmental reasons turn on to heading of approx 240 deg to route over roundabout on Sandwich bypass for Ash village, avoiding built up areas at Great Stonar and thence to Wingham Church at 6 miles.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, a report from the A/G Operator involved and reports from the appropriate ATC authorities.

Without the benefit of an RT transcript it was not possible for Members to determine what transmissions were made during this encounter. However, from the information provided by both pilots and the A/G Operator it was clear that, irrespective of the service being provided, it was very much down to the pilots to operate safely through good airmanship. JetRanger(A) pilot had elected to taxy and then depart, without seeing the approaching JetRanger(B), in the belief that he had plenty of time to execute the manoeuvre following JetRanger(B) pilot calling downwind and before (B) would be on final approach. On the other hand, JetRanger(B) pilot had joined the cct and flown the pattern whilst watching JetRanger(A) taxy out and then commence its transition from the threshold after its pilot had an RT exchange with the A/G operator. Members agreed that either pilot could have coordinated with each other to clarify their intentions if it was unclear what was happening. JetRanger(B) pilot had elected to continue his approach and when it became apparent that JetRanger(A), who had priority, was still occupying the FATO area, he commenced a go-around, albeit later than ideal, and then broadcast the fact on the RT. JetRanger(A) pilot saw JetRanger(B) to his R and above and continued his take-off but by then the situation had been resolved. The Board concluded that during the incident JetRanger(B) pilot had flown close enough to cause JetRanger(A) pilot concern but the actions taken by pilot(B) had been effective in removing any risk of collision.

PART C: ASSESSMENT OF CAUSE AND RISK

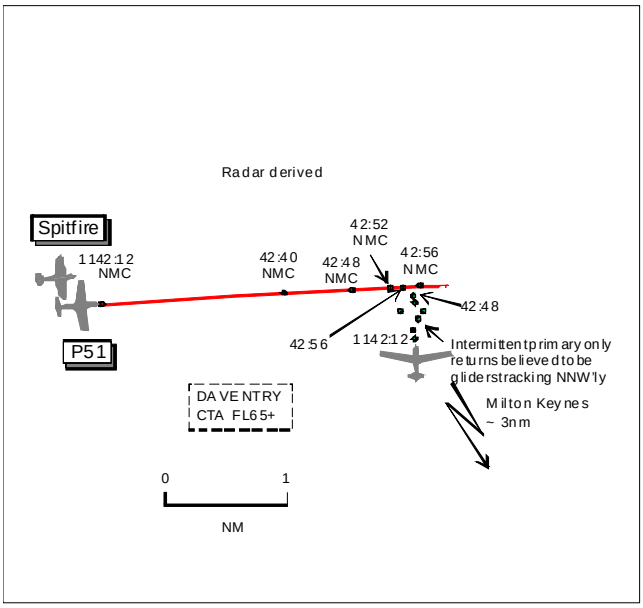
Cause: Bell 206 JetRanger(B) pilot flew close enough to cause Bell 206 JetRanger(A) pilot concern.

Degree of Risk: C.

AIRPROX REPORT No 2011088

AIRPROX REPORT NO 2011088

Date/Time:	24 Jul 2011 1143Z (Sunday)	
Position:	5207N 00047W (2nm N Newport Pagnell)	
Airspace:	LFIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Discus B	P51 Mustang + Spitfire
Operator:	Civ Pte	Civ Pte
Alt/FL:	2500ft agl	3000ft QNH
Weather:	VMC CLBC	VMC CLBC
Visibility:	40km	20km
Reported Separation:	50ft V/Nil H	200ft V/Nil H
Recorded Separation:	<0·1nmH	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE DISCUS B PILOT reports thermalling with 2 other gliders 4nm W of Cranfield at 2500ft agl and not in communication with any ATSU. The visibility was >40km flying clear below cloud in VMC and the ac was coloured white; no lighting was fitted. The ASK21 glider in front turned N and a glider behind his ac turned W. He followed the ASK21 approximately 600ft behind, 200ft to its R and 400ft below. About 3nm N of Newport Pagnell whilst OH the M1 heading 330° at 60kt he noticed a movement to his L 9 o'clock and slightly low. He looked just in time to see a P51 Mustang, coloured dark gloss green on the upper surfaces, about 100ft away and 50ft or less below which was in formation with a Spitfire, coloured glossy 2-tone grey, positioned to the Mustang's L and slightly behind. He only had a brief second or less to violently pull-up, his glider's nose was just beginning to lift as the pair passed underneath diverging in his 3 o'clock. He assessed the risk as high.

THE P51 MUSTANG PILOT reports en-route to Duxford VFR leading a Spitfire in echelon port and not in communication with any ATSU but in contact with the Spitfire on a discrete frequency, squawking 7000 with Mode C switched off. The visibility was 20km flying below cloud in VMC and the ac was coloured green/silver with no lighting fitted. About 3nm NW Milton Keynes heading 090° at 3000ft QNH and 190kt 2 gliders, flying in-trail, flew over the formation heading approximately NW'ly. The formation had gently descended as the risk of collision was deemed negligible, passing 200ft below them.

THE SPITFIRE PILOT reports in loose formation with the P51 Mustang, 60m ahead in his 2 o'clock returning to Duxford. They were level at 3000ft using a discrete frequency and were aware of several large gliding competitions in the area and had seen numerous gliders during the flight. He spotted 2 gliders in their 12 o'clock at 0·75nm range and at a similar level flying straight and level, 1 behind another about 400m apart. The rear glider was about 100ft higher than the front glider and they were moving from R to L and their formation was going to pass just behind the front glider but close to the second one. He called "gliders ahead" to the lead pilot and glanced over to see that the lead pilot was already looking at them and he acknowledged his call on the radio. He initiated a gentle descent to increase separation on the second glider and the lead ac was seen doing the same. He passed about 100m in front of, and about 200ft below, the second glider. As he passed the glider commenced a L turn. He believed there was no risk of collision.

UKAB Note (1): The Heathrow radar recording 1142:12 shows a 7000 squawk with NMC, believed to be the P51 and Spitfire formation, 5nm NW of Milton Keynes tracking 085°. Ahead by 2·5nm are intermittent primary only returns, believed to be gliders including the Discus B, tracking predominantly NNW'ly. The P51/Spitfire formation continues on a steady track and at 1142:48 a primary only return is seen in the formation's 1230 position range

0·3nm. On the next sweep the primary return fades but then reappears at 1142:56 in the formations 6 o'clock with 0·1nm separation.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

Members noted that the P-51 pilot had elected to switch-off Mode C on his ac's transponder, contrary to the guidance promulgated in the UK AIP. This recommends that the transponder is operated with pressure altitude enabled in order to facilitate detection of their ac by collision avoidance systems (ACAS) and ATC radar. As this Airprox occurred in Class G airspace both pilots had equal responsibility to maintain separation from other ac through see and avoid. Undoubtedly the Discus pilot was surprised when he caught a glimpse of the P-51 and Spitfire formation as they were about to pass under his glider from L to R, he thought by 50ft. He had had good SA on the 2 adjacent gliders and he had elected to follow the ASK21 ahead when the formation underflew. His natural reaction to pull-up was ineffective as the formation was already crossing before the glider responded to his control inputs. Meanwhile, both pilots in the formation had seen the ASK21 and Discus following behind, converging on a crossing track from R to L, about 0·75nm ahead and had commenced a gentle descent to increase separation, estimating they passed 200ft below and just in front of the Discus. However, in doing so Members agreed that the P-51 and Spitfire flew close enough to cause concern to the Discus pilot which had caused the Airprox.

Looking at risk, although the passage of the formation appeared close to the Discus pilot, Members agreed that the P-51 and Spitfire pilots were always in a position to adjust their flightpaths further if necessary and that their actions had been effective in removing any risk of collision.

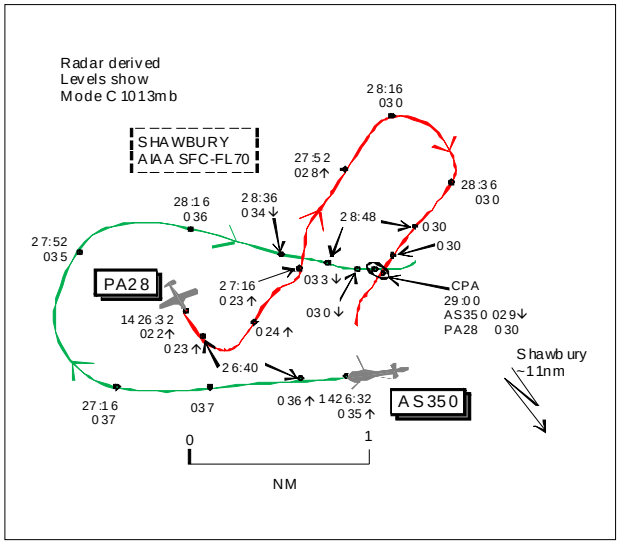
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The P-51 and Spitfire flew close enough to cause the Discus pilot concern.

Degree of Risk: C.

AIRPROX REPORT NO 2011089

Date/Time:	22 Jul 2011 1429Z	
Position:	5257N 00252W (11nm NW Shawbury)	
Airspace:	Shawbury AIAA	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	AS350	PA28
Operator:	HQ Air (Trg)	Civ Club
Alt/FL:	2800ft↓	3000ft
	RPS (1013mb)	QNH (1017mb)
Weather:	VMC CLBC	VMC CLOC
Visibility:	10km	>10km
Reported Separation:		
	Nil V/100m H	50ft V/100m H
Recorded Separation:		
	Nil V/0·1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE AS350 PILOT reports flying a dual Instrument Flying (IF) test from Shawbury in IF Box A and in receipt of a TS from Shawbury Approach on Stud 10, squawking 0233 with Mode C. The visibility was 10km clear of cloud in VMC and the helicopter was coloured black/yellow with HISLs, landing and position lights all switched on. The student was directed to carry out a PFL (autorotation) which was initiated at 3500ft RPS. They had been advised that a fixed-wing ac was in the vicinity and he, the QHI, was responsible for lookout and was seeking to establish visual contact. Heading 100° at 65kt descending through 2800ft RPS he spotted the fixed-wing ac in his 10 o'clock, slightly low and close. He took control and initiated avoiding action by turning L onto 070° and the fixed-wing ac, coloured white/orange/brown, was then seen to pass down their RHS by 100m at the same level. The fixed-wing ac's attitude was wings level suggesting they had not seen his helicopter. He assessed the risk as very high.

THE PA28 PILOT reports flying a dual flying instructor training sortie from Liverpool, VFR and in receipt of a BS from Liverpool Approach on 119·85MHz, squawking 0260 [Liverpool conspicuity code] with Mode C. The visibility was generally >10km flying clear of cloud in VMC and the ac was coloured white/red/orange with the red anti-collision light switched on. The student had received a demonstration of the exercise (engine failure - ex16) on an earlier flight and had given an appropriate ground briefing prior to this flight, including the importance of all airmanship aspects of the exercise. The student was searching for a sufficiently large clear area, level at 3000ft QNH 1017mb and 105kt from which he intended to simulate an engine failure and then practise the appropriate drills and patter. There was scattered Cu with base around 2500ft and usable gaps between. A lookout was being maintained by both crew members. A helicopter was seen to the E of their position initially at range 1nm some minutes before the incident and it appeared to be manoeuvring in and out of cloud but possibly intermittently passing behind the build-ups. The helicopter eventually disappeared from view, appearing to be on a steady SW'ly heading. However, shortly afterwards, it or a similar helicopter appeared from their 7 o'clock range 100m, already banking in a L turn presumably to avoid their ac with vertical separation of 50ft. The commander took control and turned the ac to the R but the conflict was effectively already resolved. While a lookout was being maintained to a good standard, the area behind the PA28 from approximately 5 o'clock to 7 o'clock is difficult to cover. While lookout ahead and to the sides was considered good, it appeared the combination of difficult rear vision and possibly a late sighting due to broken cloud may have been the cause. He assessed the risk as high. An additional factor could have been his decision to remain with Liverpool Approach rather than Shawbury. Commonly, if intending to fly much further S, it was usual to request a BS from Shawbury; however, this flight was intended to remain close to the Liverpool/Manchester CTA and it was judged appropriate to remain with Liverpool. In the event the position used for the exercise was very slightly further S than planned due to the availability of suitable Wx. It was not possible to know if Shawbury would have been able to advise either pilot of the proximity of the other ac if they had contacted them or if they were able to advise the helicopter of their presence.

THE SHAWBURY APPROACH CONTROLLER reports his workload was light with 1 Griffin ac conducting a PAR on RW09 which then left the frequency and he was providing a TS to the AS350 which was conducting IF training to the NW of Shawbury. Conflicting traffic was seen and called numerous times. The closest the 2 ac came was 0·25nm and the same altitude, he thought. The AS350 pilot called visual and reported an Airprox. The conflicting traffic was displaying a Liverpool conspicuity squawk.

BM SAFETY MANAGEMENT reports that this Airprox occurred between a PA28 operating VFR in receipt of a BS from Liverpool Radar and a Squirrel (AS350) conducting an IF Test in receipt of a TS from Shawbury APP.

All heights stated are based upon SSR Mode C from the radar replay unless otherwise stated.

The AS350 pilot reports VMC with unlimited visibility in dust and SCT cloud at 3000ft and that they were 1000ft below and 10kms horizontally from cloud. The PA28 pilot reports VMC with in excess of 10kms visibility, which was obscured by cloud in certain directions and that they were 500ft above a BKN cumulus cloud base and 1nm horizontally from cloud.

Although not included within the AS350 pilot's report, the student would have been seated in the right-hand seat, with the instructor in the left.

At 1425:06 APP first passed TI to the AS350 on the PA28 stating, "*traffic north-west at three miles, manoeuvring, indicating six hundred feet below you*." This TI was re-stated at 1425:50 after the AS350 pilot asked APP to, "*say that again please,*" with the AS350 pilot acknowledging the TI by replying that they were, "*looking*."

The PA28 pilot reports that they initially sighted the AS350 at a range of approximately 1nm "some minutes before the incident" but that it "eventually disappeared from view [behind or within cloud] appearing to be on a steady SW heading." Based upon the radar evidence, this sighting is likely to have been at approximately 1426:32; the PA28 was on a SE'ly track indicating 2200ft, with the AS350 on a WSW'ly track, indicating 3500ft, with 1·1nm lateral separation existing.

At 1426:40, the PA28 commenced a turn onto a NE'ly track, climbing through 2300ft, with the AS350 maintaining its WSW'ly track, indicating 3600ft. At 1427:16 the AS350 commenced a relatively wide R turn, 1·4nm SW of the PA28.

At 1427:50, APP updated the TI to the AS350 flight on the PA28 stating, "*traffic update, the closest one is now east, two miles* (radar replay shows 1·6nm)*, manoeuvring nine hundred feet below you*", which is acknowledged by the AS350 pilot.

At 1428:16 the AS350 rolled out tracking ESE, indicating 3600ft, with the PA28 1·4nm NE indicating 3000ft and commencing a R turn. At approximately 1428:38, the AS350 commenced a descent, with SSR Mode C indicating 3400ft. APP then provides a further update to the TI at 1428:40 stating, "*the closest one now north-east, half a mile* (radar replay shows 0·9nm) *manoeuvring 400 feet below you*", which is also acknowledged by the AS350 pilot.

At approximately 1428:48, the PA28 rolled out of the R turn onto a SSW'ly track indicating 3000ft, 0·6nm NE of the AS350, which was descending through 3300ft.

Almost immediately, after the AS350 acknowledged the updated TI at 1428:40, APP provided a further update to the TI at 1428:53, stating, "*north-east, quarter of a mile* (radar replay shows 0·3nm)*, same height*." Co-incident with this updated TI, the avoiding action L turn reported by the AS350 pilot is evident on radar. The AS350 pilot replies to the updated TI at 1429:00 stating that, "*that will be an Airprox*."

The CPA occurred at 1429:00 with approximately 0·1nm lateral separation, with the next sweep of the radar indicating that the AS350 had descended a further 100ft. This accords with the AS350 pilot's estimation of minimum separation. Of note is the PA28 pilot's report that states that their next sighting of the AS350 was in their 7 o'clock. Consequently, having lost sight of the AS350 shortly after 1426:30, they did not regain sight of it until after the Airprox had occurred.

From an ATM perspective, APP provided a good level of TI to the AS350 and should be commended for continuing to provide TI. As suggested by the PA28 pilot, cloud formations in the area of the occurrence may have played a part in the late and non-sighting respectively by the AS350 and PA28 pilots; however, the TI provided to the AS350 pilot should have enabled them to visually acquire the PA28 early enough to discharge their responsibilities for collision avoidance, or to have considered seeking deconfliction advice. The fact that it did not adds further support to a trend identified by RAF FS and BM SM that may require further investigation from CFS and HQ 22(Trg) Gp.

ATSI reports that the Airprox occurred at 1429:00 UTC, 11·1nm NW of RAF Shawbury, and 23·8nm S of Liverpool airport, within Class G airspace.

The PA28 was a training flight operating VFR from Liverpool Airport and in receipt of a BS from Liverpool Radar.

The AS350 was operating on an IF test and in receipt of a TS from Shawbury Approach.

CAA ATSI had access to RT and area radar recordings, together with the written report from both pilots.

METAR: EGGP 221350Z VRB03KT 9999 VCSH SCT027 16/11 Q1017=

The PA28 flight contacted Liverpool Radar at 1334:44 and was instructed to report at Chester, which lies just to the S of the Liverpool CTR.

At 1337:51 the PA28 pilot reported overhead Chester and the controller responded, *"(PA28 c/s) thank you leaving controlled airspace it's a Basic Service.*" The PA28 pilot acknowledged, *"Basic Service outside controlled airspace (PA28 c/s).*"

At 1415:10, the radar recording shows the PA28 tracking S at a position 11·8nm NW of Shawbury, with the AS350 also manoeuvring in the area. Both ac are indicating FL026.

At 1426:48, the radar recording shows the 2 ac passing abeam at a range of 0·3nm, at a position, 11·4nm NW of Shawbury. The PA28 was indicating FL023 and the AS350, indicating FL036. The 2 ac continued to manoeuvre in the area.

Two minutes later, at 1428:49, the radar recording shows the 2 ac converging at a range of 0·6nm, with the AS350 tracking E, indicating FL033 and the PA28 tracking SW indicating FL030.

At 1428:52, the radar recordings show that the AS350 has started a descent and passing FL032.

At 1429:00, the CPA, the radar recording shows the AS350 tracking E descending through FL029 (2981ft QNH 1016mb, 1mb equates to 27ft), with the PA28 level at FL030 (3018ft QNH) passing through the AS350's 1230 position at a range of 0·1nm, crossing from L to R. This was considered to be the reported Airprox at a position, 11·1nm NW of Shawbury.

Later, at 1436:18, the PA28 pilot reported, *"....P A thir-er twenty eight out of Liverpool returning to Liverpool we have Zulu although we copy you may be changing to zero nine er therefore request join Chester VFR."* The controller cleared the PA28 flight to join CAS at Chester not above 1500ft VFR, QNH 1017. This was acknowledged correctly by the PA28 pilot.

At 1441:00, the Liverpool controller advised, *"and (PA28 c/s) er just had a message from Shawbury er th t eh um not sure what they were talking about but are you filing an Airprox."* The PA28 pilot replied, *"er negative.*" The PA28 continued to Liverpool without further incident.

The PA28 pilot's written report indicated that he had intended to remain relatively close to the Liverpool/ Manchester CTA, but due to Wx was further S than planned. The PA28 was operating in an area 11nm to the NW of Shawbury and in receipt of a BS from Liverpool Radar. CAP 774, UK Flight Information Services, Chapter 2, Page 1. Paragraphs 1 & 5, 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.'

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

The Airprox occurred when the PA28 and AS350 helicopter came into close proximity whilst operating in Class G airspace. The PA28 was in receipt of a BS from Liverpool Radar. Under a BS there is no obligation placed upon the controller to provide TI.

HQ AIR (TRG) comments that the AS350 crew's use of the TI provided was not effective and the matter will be addressed in RAF Flight Safety publications. A review of the IF area may be needed to see if traffic patterns have changed significantly. That the PA28 pilot did not consider a TS from Shawbury in what is a busy operating area for the military is also of concern.

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.

Within the Shawbury AIAA Class G airspace, pilots are responsible for maintaining their own separation from other ac through see and avoid. Wx appears to have played a part in this incident as the PA28 pilots had previously seen the AS350 but had lost sight of it, only regaining visual contact with the helicopter as it was passing behind at the CPA, effectively a non-sighting and a part cause of the Airprox. As broached by the PA28 crew in their report, with hindsight a call to Shawbury for a service (a TS would have been pertinent with the cloud structure that pertained) would probably elicited information on the manoeuvring AS350 and improved their SA. The AS350 instructor, who was responsible for lookout as his student was under an IF hood, appeared to have not assimilated the potential confliction after being given timely and accurate TI by Shawbury on several occasions and had commenced the autorotation without visually acquiring the conflicting PA28 as it approached from his L. Although the AS350 had right of way under the RoA Regulations, the rules only are effective if both crews can see each other and act appropriately. The AS350 instructor saw the PA28 only about 0·25nm away, which Members agreed had been a late sighting and the other part cause. The actions taken by the AS350 instructor in taking control and turning L to avoid the PA28 were judged to have been just enough to prevent an actual collision; however, the ac had passed in such close proximity, unsighted by one of the crews, which was enough to persuade the Board that safety had been compromised during this encounter.

PART C: ASSESSMENT OF CAUSE AND RISK

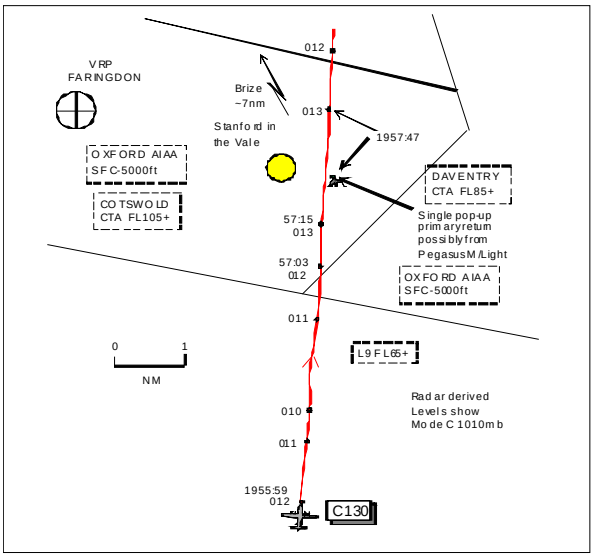
Cause: Effectively a non-sighting by the PA28 crew and a late sighting by the AS350 instructor.

Degree of Risk: B.

AIRPROX REPORT No 2011091

AIRPROX REPORT NO 2011091

Date/Time:	25 Jul 2011 1957Z	
Position:	5138N 00130W (7·5nm SSE Brize Norton - elev 288ft)	
Airspace:	Oxford AIAA	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Pegasus M/Light	C130
Operator:	Civ Pte	HQ Air (Ops)
Alt/FL:	1200ft	1500ft
	QNH (1010mb)	QNH
Weather:	VMC CLOC	VMC NR
Visibility:	50km	NR
Reported Separation:		
	30ft V	Not seen
Recorded Separation:		
	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PEGASUS M/LIGHT PILOT reports flying a local sortie non-radio from a private site near Swindon, VFR. The visibility was 50km in VMC and the ac was coloured black/green/white and no lighting was fitted. Passing E abeam Stanford in the Vale [7·5nm SSE Brize] heading 340° at 45kt level 1200ft QNH 1010mb he was overtaken from behind and directly above, by 30ft, by a C130. The event happened too quickly to take any avoiding action and he assessed the risk a high.

THE C130 PILOT reports that subsequent to visual recovery to Brize from a low-level training sortie, he was informed that a M/Light pilot had filed an Airprox just to the E of Stanford in the Vale, 3-4nm S of the Brize CTR. No traffic was sighted by the crew at the time. He was not certain if they were receiving a radar service at the time but they thought it reasonable to assume they were in contact with Brize given their proximity to the CTR, speed and N'ly track. He thought he was at 1500ft and 210kt at the position stated.

UKAB Note (1): Sunset was 2008Z.

THE BRIZE RADAR CONTROLLER reports that he did not see any radar returns come close to the C130 and knew nothing of the incident.

Brize METAR shows EGVN 251950Z 34008KT CAVOK 20/03 Q1010=

THE BRIZE SUPERVISOR reports manning the ADC position having been notified of a C130 recovering visually from the S. He monitored the Radar frequency from upstairs and when the C130 was transferred to him it joined the visual cct and landed safely. It was only after the M/Light pilot's telephone call to the oncoming Supervisor, who submitted an ASIMS report, that his shift became aware of the event.

BM SAFETY MANAGEMENT reports that this Airprox occurred between a C130 conducting a visual recovery to Brize Norton in receipt of a BS from BZN APP and a M/Light operating VFR.

The M/Light pilot's report states that the Airprox occurred outside the Brize CTR and that they were not in receipt of an ATS. Moreover, BZN APP states that at the time of the occurrence, although the PSR was fully serviceable, the surveillance display did not paint any primary-only contacts in the vicinity of the C130; hence they were unable to provide the C130 crew with any TI.

Based upon the limited information available, it is clear that the ATM related safety barriers were unable to function and that the sole remaining barrier was that afforded by "see and avoid." However, given the limited separation

reported by the M/Light pilot, the fact that the C130 crew did not report an Airprox, nor a sighting of the M/Light to ATC and the M/Light pilot's statement that the incident occurred too quickly for them to take any form of avoiding action, this suggests that "see and avoid" also failed in this instance, leaving only providence.

UKAB Note (2): The radar recording at 1955:59 shows the C130 12nm SSE Brize tracking 005° having just changed from a 7001 squawk to a Brize 3740 code and indicating FL012 (1100ft QNH 1010mb). During the next minute the C130 continues on a steady track with its Mode C showing a descent to FL010 (900ft QNH) before climbing up to FL013 (1200ft QNH) at 1957:15 when the ac is 1nm SE of Stanford in the Vale village. The C130 passes E abeam the village, through the Airprox reported position, maintaining FL013 (1200ft QNH) and as it reaches a position 1nm NE of the village (1957:47), a single pop-up primary return appears, possible the Pegasus M/Light, in the C130's 6 o'clock range 1nm. The Pegasus pilot reported cruising at 1200ft QNH 1010mb when the CPA occurred.

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, 'see and avoid' pertained. The Pegasus M/Light would have presented a small (tail-on) target aspect to the C130 crew in their 12 o'clock. Also the incident time was almost at sunset, making the sighting of the M/Light more difficult owing to the lack of lighting carried, the ac's colour scheme and the fading ambient light. Although there was an equal responsibility on both crews to maintain their own separation from other ac, given the geometry of encounter, it would have been difficult for the Pegasus pilot to have seen the approaching C130 in his 6 o'clock. These factors led Members to decide that the cause of the Airprox was a non-sighting by the C130 crew.

Looking at risk, the incident happened too late for the Pegasus pilot to take any action and the C130 crew did not see the M/Light at all. Although the Board accepted that the Pegasus pilot's estimate of 30ft vertical separation was made in good faith, he did not report encountering any of the considerable wake turbulence that would be expected behind and below a C130 at such close quarters. That said, with the radar recording showing the C130 passing through the area at 1200ft QNH, the same altitude flown by the Pegasus, this had undoubtedly been a very close call. These elements led the Board to conclude that an actual risk of collision existed during this encounter.

PART C: ASSESSMENT OF CAUSE AND RISK

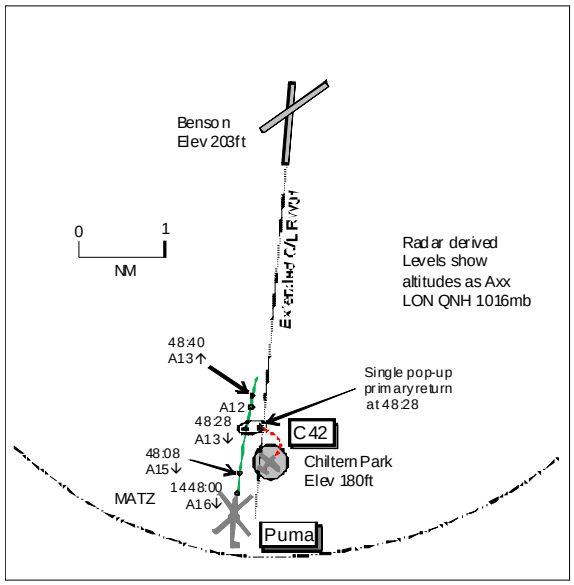
Cause: A non-sighting by the C130 crew.

Degree of Risk: A.

AIRPROX REPORT No 2011092

AIRPROX REPORT NO 2011092

Date/Time:	26 Jul 2011 1448Z	
Position:	5133N 00106W (3nm FIN APP RW01 Benson - elev 203ft)	
Airspace:	MATZ/FIR	(Class: G)
	Reporting Ac	*Reporting Ac*
Type:	Puma	C42 Ikarus
Operator:	HQ JHC	Civ Club
Alt/FL:	1250ft↓	800ft↑
	QFE (1009mb)	QNH (1015mb)
Weather:	VMC CLBC	VMC CLBC
Visibility:	20km	10km
Reported Separation:		
	150ft V/200m H	100ft V/200m H
Recorded Separation:		
	0·1nm H	



BOTH PILOTS FILED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PUMA PILOT reports flying an instrument approach into Benson and in receipt of a TS from Benson Talkdown, squawking 3611 with Mode C. The visibility was 20km flying 2000ft below cloud in VMC and the helicopter was coloured green with nav and strobe lights switched on. During a PAR approach heading 015° at 100kt ATC reported a light ac to be on their RHS and below and with lateral separation. They became visual with the ac shortly afterwards with 3·5nm to go on the approach when passing 1250ft QFE 1009mb. The high-wing ac, coloured white with red stripes, was seen to be on a parallel track about 300ft below and slightly behind in their 4 o'clock appearing as if it had just departed from a nearby airstrip. The crewman maintained visual contact with the ac and at range 3nm, whilst reported by Talkdown to be on track and on the GP, the crewman noted that the other ac was climbing and turning towards their helicopter. When the crewman told them of this, and as ATC gave a 'check gear' call, they again became visual with the ac, which appeared to be closing quickly. The decision was made immediately to break-off the approach and ATC were informed of the go-around; a ROC was applied at the same time. At the CPA the other ac was about 150ft below and 200m away and starting to turn away but still in their 4 o'clock position. The ac was seen to make an approach back to the nearby airstrip but not land. About 10min later they carried out another PAR and landed without further incident. He assessed the risk as medium.

THE C42 IKARUS PILOT reports flying a local dual training sortie from Chiltern Park, VFR and in receipt of an A/G service from Chiltern Radio on 134·025MHz; no transponder was fitted. The visibility was >10km clear below cloud in VMC and the ac was coloured white with red accents. They took-off from RW04 and climbed ahead at 70kt before they turned L onto crosswind heading 310° and rolled wings-level; a large military helicopter was immediately revealed. Climbing through 800ft QNH 1015mb he, the Capt, took control and instituted a steep climbing turn to the R to avoid, estimating separation as 100ft vertically and 200m horizontally. He later called Benson Zone on 120·9MHz to report an Airprox and he assessed the risk as medium.

He went on to say that Chiltern Park has had a trouble free relationship with RAF Benson for 23yr. During the 2 months preceding this incident there had been a number of instances where Benson helicopter traffic has flown close to Chiltern Park with no regard for ac joining, departing or in the cct. The airfield manager had queried these with Benson ATC but to no avail. On at least 2 occasions Benson had responded with "we have a MATZ, you don't have an ATZ". Chiltern Park airfield owner is seeking a meeting with Benson ATC.

THE BENSON TALKDOWN CONTROLLER reports the Puma was inbound to RW01 RH cct and was correcting to the C/L from the L, already descending on the 3·5° GP. As the Puma approached 4·5nm a radar contact was seen on the PAR at about 3·5nm climbing out from LL in the vicinity of Chiltern Park. The contact moved away to

the E as it climbed and he perceived there to be no risk to the Puma. However, the contact then proceeded to turn and, as it did, he told the Puma flight that Chiltern Park was active, the pilot reporting that he copied the traffic. The unknown ac's contact then turned back towards the approach lane and the Puma, whose pilot elected to break-off the approach before he could give avoiding action. He climbed the Puma flight to 1900ft and handed the flight back to Approach. The Chiltern Park ac moved away to the W, he thought, and off the PAR display.

THE BENSON SUPERVISOR reports that ATC had been informed earlier in the day that Chiltern Park would be active with 2 ac flying until sunset up to 3000ft. This information was broadcast on the ATIS and was available to ac as they checked in for departure or recovery. Whilst monitoring Zone and Talkdown frequencies with a talkdown in progress he observed, along with Zone, a primary radar return appear in the vicinity of Chiltern Park. With the Puma inbound he advised Talkdown to pass TI which he duly did in generic form as he thought it wasn't showing on PAR at the time. The Puma pilot responded in a manner that led him to believe that he was visual. As the unknown ac appeared on PAR in azimuth and elevation the Puma pilot reported he was breaking-off the approach and he was issued an immediate climb to 1900ft by Talkdown. Supervisor continued to monitor the unknown ac's track from Chiltern Park and its pilot eventually called Zone at CPT, 8-10nm SW of Chiltern Park. The ac was identified and its pilot, when asked, confirmed that he wanted to file an Airprox. Having reviewed the LoA, dated 20 Aug 2010, he believed a contributory factor was the Chiltern ac's pilot did not call Zone prior to leaving the cct and climbing above normal cct height of 700ft.

THE BENSON USMO comments that on revisiting the LoA, it states that 'RT equipped ac are advised to contact RAF Benson on frequency 120·9MHz immediately prior to, or upon getting airborne.' The LoA will now be reviewed before Aug 2012 and it has been agreed that a liaison visit to Chiltern Park will happen in the near future.

THE BENSON ZONE CONTROLLER reports he observed, during a PAR to RW01 by a Puma, a non-squawking ac departing Chiltern Park and flying through the approach lane without making contact on any Benson frequencies. The ac, a C42, later called Zone in the vicinity of CPT to file an Airprox. The pilot stated that he had departed Chiltern Park and climbed to 1000/1100ft QNH and encountered a Puma which he thought was flying through the Chiltern Park cct. The details were logged and Chiltern Park was informed.

BM SAFETY MANAGEMENT reports that this Airprox occurred between a Puma on a PAR in receipt of a TS from Benson Talkdown and a C42 Ikarus departing Chiltern Air Park VFR.

All heights stated are based upon SSR Mode C from the radar replay unless otherwise stated.

Unfortunately, the PAR data was not impounded and, given the height at which the Airprox occurred, the NATS supplied radar data has limited utility in this investigation.

The Puma pilot reported VMC with 20km visibility in nil Wx with SCT cloud at 4000ft QFE 1009mb, with the incident occurring approximately 3·25nm from touchdown.

The Talkdown controller reported that as the Puma approached 4·5nm from touchdown, a "contact was seen on the PAR at around 3·5nm, climbing out from low level in the area Chiltern Park is known to be. The track moved away to the east as it climbed and I perceived there to be no risk to my aircraft on PAR; however, the track then proceeded to turn and as it did I advised my aircraft that Chiltern Park was active." Based upon the transcript and radar replay, this warning was passed at 1448:08, with the Puma approximately 3·75nm from touchdown and was acknowledged by the Puma's crew at 1448:18.

The Supervisor's report is broadly supportive of Talkdown's statement adding that they and Zone had observed a PSR-only contact appear on SRE in the vicinity of Chiltern Park. This prompted the Supervisor to direct Talkdown to pass TI to the Puma flight which was passed generically about Chiltern Park's activation status as the ac had not yet appeared on the PAR display.

Although the Puma crew reported that they received more specific TI than was the case, they were able to use the generic TI to visually acquire the Ikarus and maintained visual contact throughout the incident sequence. They did not inform Talkdown that they were visual with the Ikarus and Talkdown did not pass any further, nor more specific, TI to the Puma flight.

AIRPROX REPORT No 2011092

At 1448:28 a primary-only contact appears on the radar replay for 1 sweep, 0·1nm E of the Puma and approximately 3·1nm from touchdown. At 1448:31 the Puma pilot reported "*breaking off the approach*" as the "civilian ac looked to be closing quickly." The Puma pilot assessed minimum separation as 200m laterally and 150ft vertically

The Ikarus pilot reported that they departed RW04 at Chiltern Park, before turning cross-wind onto a heading of 310°, maintaining a climb, and rolling wings level. It was at that point that "the helicopter was immediately revealed."

Chiltern Park is situated 3·5nm S of RAF Benson and slightly to the E of the extended C/L to RW01 RH (see Figure 1 below), with a visual cct height of 700ft QFE. Published within the AIP as a microlight site, there is no avoidance criteria associated with the site. Chiltern Park and RAF Benson are signatories to a LoA which states that ac wishing to depart above the Chiltern Park cct height of 700ft are advised to contact Benson Zone prior to leaving the cct; it is not a mandatory requirement. The Ikarus flight did not contact Zone in this instance. In the Ikarus pilot's written report, he stated that the Airprox occurred at 800ft QNH, whereas during their later report of the Airprox to Zone on frequency at 1452:23, he stated that they "*we're climbing through approximately a thousand or ish seven hundred feet QNH*."

Figure 1: RAF Benson Local Area

Analysis of the RT transcript from Talkdown has shown that following the instruction to commence descent at 1447:00, the Puma remained on the notional 3·5° GP until breaking-off the approach at 1448:31. Furthermore, the Puma remained L, then slightly L of the C/L throughout the incident sequence.

Based upon discussions with Talkdown and the Supervisor, the Supervisor stated that prior to directing Talkdown to pass TI, they observed there to be no contact on the PAR display. When asked 10wk after the event, Talkdown was unable to recall the incident with any clarity. However, the evidence suggests that the point at which the Sup and Zone observed the Ikarus' PSR-only contact, was after it had "moved away to the east" and off the lateral dimensions of the PAR display. Therefore, the TI passed by Talkdown to the Puma flight was generically about Chiltern Park's activation status, rather than specifically about the Ikarus. Moreover, discussion with Talkdown and the Supervisor has demonstrated that at the point that they perceived the Ikarus to be turning back towards the Puma, the Puma's crew elected to break off the approach. In sum, the TI passed by Talkdown to the Puma flight, whilst generic, increased the Puma crew's alertness such that they were able to visually acquire the Ikarus.

At 3nm from touchdown, based upon a 3·5° GP, a Puma on the GP would be passing 1200ft QFE, according with the Puma pilot's report of the Airprox occurring at 1250ft QFE. The aerodrome elevation at RAF Benson is 203ft, thus the Puma's approximate altitude at the time of the Airprox was 1450ft. The aerodrome elevation of Chiltern Park is 180ft; consequently the Ikarus pilot's reported 800ft QNH accords to 620ft QFE, which is below cct height of 700ft QFE. Based upon the evidence and the subsequent outcome, it is more likely that the Ikarus was flying at approximately 1000ft QNH, which equated to 820ft QFE, which suggests that approximately 450ft vertical

separation existed. However, given the separation reported by both pilots and the method of calculation, this should be considered to be the maximum separation.

Following Airprox 2011051 in similar circumstances, ATC at RAF Benson have liaised with Chiltern Park about the wording of the section of the LoA that discusses contacting Zone before leaving the visual circuit. However, the airfield operator has stated that they are unable to amend the advice to contact Benson Zone to make it a requirement. Whilst that is perhaps a reasonable standpoint, it is clear that the position of Chiltern Park in relation to RAF Benson is far from ideal with respect to the safeguarding of IFR approaches to RAF Benson. Therefore, it is incumbent upon users of Chiltern Park to demonstrate airmanship in being aware of the implications of their actions on other airspace users. In this instance, the Ikarus pilot climbed above the Chiltern Park cct height, without speaking to Benson Zone and turned towards the approach lane of RAF Benson. Moreover, the high-wing monoplane design of the Ikarus would have restricted the pilot's view during the turn, delaying the point at which they could have visually acquired the Puma.

Finally, the requirement for Chiltern Park users to operate a LH cct to RW04 could be considered to be a latent condition within the incident. Currently, the system "fails unsafe" in that crews are required to turn across the approach path to an instrument RW at RAF Benson. The safety barriers are vertical deconfliction through the height of the cct at Chiltern Park, the issuance of deconfliction advice by Talkdown to ac on a GCA PAR and "see and avoid." The latter is prejudiced by aircrews departing Chiltern Park being potentially unsighted due to cockpit/ac design and the high workload of the aircrews recovering IFR to RAF Benson with an "assumed" level of protection from being on an IFR approach. The deconfliction advice argument is undermined by the conduct of IFR approaches other than a GCA PAR, meaning that deconfliction advice may not always be available. Finally, the vertical deconfliction provided by the Chiltern Park visual cct height of 700 ft QFE is undermined both by human error, should aircrews accidentally climb above 700ft QFE, and the wording of the LoA which does not make mandatory the requirement to contact Benson Zone prior to climbing above 700ft QFE.

HQ JHC comments that the current deconfliction procedures in the LoA between RAF Benson and the Chiltern Park Aerodrome (CPA), made an Airprox more likely to happen. Therefore it is strongly recommended that it should be reviewed to seek a safer deconfliction solution that does not fail unsafe.

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 BM SM Advisor informed Members that some sort of deconfliction plan based on vertical or lateral separation was needed between Benson and Chiltern Park as the advice to call on RT was not foolproof. The Board discussed the requirement for the LoA to be more prescriptive with regard to Chiltern Park traffic calling Benson and making it compulsory for traffic to remain at 700ft QFE or below in the cct until in RT contact. Some Members considered that a RH cct onto RW04 would also alleviate the potential for confliction. However, when this incident occurred, there was no requirement for traffic flying in, or departing, the Chiltern cct to contact Benson Zone. The responsibility for collision avoidance was with both crews, this being discharged through see and avoid. The Benson ATC team had seen the C42 on radar and Talkdown passed generic TI to the Puma crew which enabled them to see the light ac on departure to their R. The C42 pilot was not aware of the Puma's presence until he turned onto the crosswind wind leg and rolled 'wings level'. Members thought that both crews had discharged their responsibilities at the earliest opportunity; however, the ac were on conflicting flightpaths which had caused the Airprox.

The Puma crew had monitored the C42's flightpath and executed a go-around as the C42 pilot had also taken avoiding action by turning away. These combined actions were enough to allow the Board to conclude that any risk of collision had been quickly and effectively removed.

Members were briefed that since this Airprox the wording had changed in the LoA such that pilots 'should' call Zone when getting airborne or before climbing above 700ft QFE. Also, the relationship between both parties had improved with the Chiltern Park operator more aware of Benson operations and when traffic is likely to affect their airfield operations. The activity status of Chiltern Park is displayed on each console at Benson and is also

broadcast on the ATIS. Mindful of these facts, the Board declined to make a recommendation with respect to integration/deconfliction of Benson and Chiltern Park operations.

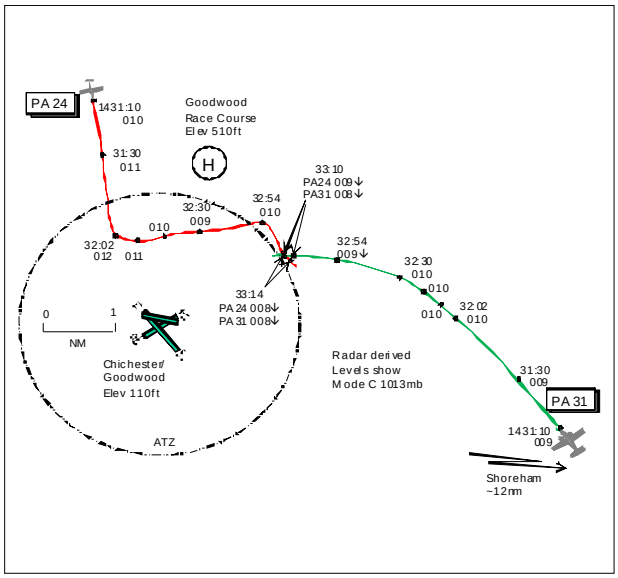
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict in Class G airspace on the final approach to Benson RW01.

Degree of Risk: C.

AIRPROX REPORT NO 2011093

Date/Time:	28 Jul 2011 1433Z	
Position:	5053N 00043W (2nm FIN APP RW24 Goodwood - elev 110ft)	
Airspace:	ATZ/LFIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	PA31	PA24
Operator:	Civ Pte	Civ Pte
Alt/FL:	1000ft↓	800ft↓
	QNH (1022mb)	NK
Weather:	VMC CLOC	VMC CAVOK
Visibility:	10km	
Reported Separation:		
	50ft V/30-40m H	'underneath'
Recorded Separation:		
	<100ft V/<0·1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PA31 PILOT reports inbound to Chichester/Goodwood VFR and in receipt of a BS from Goodwood Information on 122·45MHz, squawking 7000 with Modes S and C. The visibility was 10km in VMC and the ac was coloured white/red; no lighting was mentioned. On approaching Goodwood from the ESE he was advised that RW24 was in use and that 3 ac were in the cct. He elected to join for a straight-in approach while listening to other traffic position reports and adjusting his speed accordingly. ATC advised him to join at 4nm and on reporting at 4nm he was asked to report at 2nm. The only traffic when calling at 4nm was on short final and sufficient space was available for his approach. At 2nm heading 240° at 110kt descending through 1000ft QNH 1022mb an ac appeared in his windscreen in his 2 o'clock range 30-40m and 50ft above passing from R to L just in front. He took avoiding action by increasing his ROD and reported the 'near miss' to Goodwood Information with the other ac's registration, possibly a PA28 type. He initially stated separation was 100ft but he was a little shocked and later thought it was definitely a lot closer. The other ac's pilot, when asked by ATC, confirmed that it was his ac that had flown in front of his PA31. He had not heard any radio calls from this flight stating its position or intentions prior to the 'near-miss'. He assessed the risk as high. He believed the other ac's pilot showed poor airmanship by not communicating his position and intentions to ATC, by flying across the FAT of a busy active RW at cct height, by showing a total disregard for the safety of his PA31 and that of others and dismissing the seriousness of the situation with no apology or offer of discussing the incident. He felt the other pilot will cause a similar situation in the future as he showed poor airmanship, poor judgement and dangerous flying.

THE PA24 PILOT reports inbound to Chichester/Goodwood from a private site near Hull, VFR and in receipt of an AFIS from Goodwood on 122·45MHz, squawking 7000 with Mode C. The Wx was CAVOK. Inbound he called at 5nm to run and was told that the RW in use was 24 operating RH ccts to the N. He requested to join downwind and shortly after this he recalled hearing another flight report 'late downwind'. He joined downwind and reported this on the RT and on reaching 2 DME from GWC, which he considered was late downwind, he turned onto R base and reported this on the radio. Heading 170° at 100kt descending through 800ft, it was then he heard another flight report 2nm final for the same RW. He immediately pulled-up while looking for the other ac and then spotted it as it passed beneath before the other ac's pilot reported a 'near-miss' on the frequency. He informed ATC that his ac was the reported one and he asked if he could orbit L and complete a landing behind the other ac, which he did. While aware of an ac late downwind when he joined from the N, he didn't hear the flight report R base or turning finals or he wouldn't have turned in from downwind himself. After landing he telephoned ATC and discussed what happened and they thanked him for calling and told him the other ac's pilot did not wish to take matters further. He did not assess the risk. He thought it strange that Goodwood were operating ccts to the N given the proximity of the horse racing course on a race day, where helicopters are engaged in shuttle flights to and from the racecourse to the S. The cct seemed rather constrained when having to observe clearance from the racecourse, there being far more room to manoeuvre if fixed-wing ccts were to the S.

AIRPROX REPORT No 2011093

THE GOODWOOD FISO reports the PA31 flight was inbound from Shoreham and called to join the cct on a long final for RW24, initially reporting at 8nm. The PA24 flight called for joining information and read back all the details correctly. The PA31 pilot called at 2nm final and stated that an ac (initially identified as a PA28) had crossed the approach in front of his ac heading S'bound by around 100ft. ATS identified the ac as the PA24 and asked the pilot his intentions, who responded positioning for RW24. The PA31 landed safely at 1434 and vacated RW24 and the PA24 positioned onto short final for RW24 and landed safely at 1435; the pilot was asked to call the Tower after shut down.

Unofficial Goodwood MET observation gave 22010KT 9999 SCT/BKN025 Qxxxx=

ATSI reports that the unit did not impound the required information as requested, consequently no RT recording of the event is available. Therefore, this report is based on the reports from both pilots and the Goodwood FISO.

The pilot of the PA31 commented that no calls were made by the PA24 on the frequency before the Airprox occurred. The pilot of the PA24 stated that he had requested joining information from Goodwood and this was confirmed by the FISO. The PA24 pilot said he was 5nm from the airfield at the time. It is not known if this contact had occurred before the PA31 was listening on the frequency. The PA24 pilot was informed that the RW in use was 24, RH cct and he requested to join downwind. He continued to join the cct, later reporting downwind. When 2nm from GWC, he commenced a R turn onto R base, reporting this on the frequency. The FISO made no comments in his report about the PA24 reporting, or turning, on to R base. It was at this time the pilot of the PA24 heard the PA31 reporting on final approach at 2nm. He pulled up and spotted the PA31 as it passed underneath.

The FISO reported that the PA31 had requested to join the cct for a straight-in approach at 8nm. The pilot stated that he had been advised to join at 4nm and was informed about 3 ac in the cct. Reporting at 4nm, he was asked to call at 2nm. The only traffic he was aware of was landing traffic on short final. At 2nm, he sighted the PA24 in his 2 o'clock, 50ft above and 30-40m to the R. It passed R to L in front of his ac. He commented that he had heard no radio calls by this flight.

Without access to an RT recording it is not possible to confirm the calls and their respective timings made by both flights. Both pilots appeared not to hear the transmissions made by the other flight, until the pilot of the PA31 reported at 2nm. Neither reported being aware of the presence of the other ac until just before the Airprox occurred.

CAP427 (Flight Information Service and the FISO Licence) states:

'Flight Information Service is provided at an aerodrome to give information for the safe and efficient conduct of flights in the Aerodrome Traffic Zone. From the information received, pilots decide the appropriate course of action to be taken to ensure the safety of flight. A FISO (at an aerodrome) has the following responsibilities:

a) Issuing information to aircraft flying in the Aerodrome Traffic Zone (ATZ) to assist pilots in preventing collisions.

During the notified hours of watch of the FISO unit, entry of aircraft into the ATZ to transit or land is subject to the pilot obtaining information from the FISO which will enable the flight within the zone to be conducted safely'.

The UK AIP, Page AD 2-EGHR-1-5, Para 2.22 Flight Procedures for Goodwood states:

'Fixed-wing circuit height 1200ft or as directed by ATS. Circuit directions: Runways 06, 14L/14R and 10 – LH; Runway 24, 28 and 32L/32R – RH or as directed by ATS.

Fixed-wing standard join is overhead at 2000ft. 'Straight-in' and 'base' joins are strongly discouraged when the circuit is active. ATS can advise on circuit status'.

Goodwood is situated within an ATZ (Class G airspace), circle radius 2nm centred on runway 14R/32L, with vertical limits from surface to 2000 ft aal; airfield elevation 110ft.

UKAB Note (1): The radar recording at 1431:10 shows the PA31 6nm ESE of Chichester/Goodwood tracking 315° squawking 7000 indicating unverified FL010 (1270ft QNH 1022mb) with another 7000 squawk, believed to be the PA24, 3·75nm NNW of Goodwood tracking 175° indicating unverified FL010 (1270ft QNH). At this time radar

shows 2 other ac in the cct, 1 ac on a 1nm final and the other 1·5nm NE of Goodwood on R base leg. The PA24 passes 1·5nm W of Goodwood Racecourse before commencing a L turn at 1432:02 showing FL012 (1470ft QNH), rolling out onto a 080° track. Meanwhile, the PA31 has commenced a slow L turn towards RW24 final approach. At 1432:54 the PA24 is seen to commence a R turn onto base leg at FL010 (1270ft QNH) in the PA31's 1230 position range 1·25nm, the PA31 is now tracking 275° in a slow descent passing FL009 (1170ft QNH). The PA24 steadies on a 160° track and at 1433:10 is seen to also commence a descent passing FL009 (1170ft QNH) in the PA31's 12 o'clock range 0·1nm, the latter descending through FL008 (1070ft QNH). The next sweep 4sec later at 1433:14 shows the ac having crossed, both ac indicating FL008 with the PA24 tracking 140° and now 0·1nm SE of the PA31. The CPA occurs between radar sweeps but separation is estimated to <100ft and <0·1nm.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, radar photographs/video recordings, reports from the FISO involved and reports from the appropriate ATC authorities.

Members were disappointed that the RT was not impounded and available for transcription. Without this information, it was not known what information was broadcast on the frequency. From the reports received it appeared that both the PA31 and PA24 pilots had made calls on the frequency which were either not heard or assimilated by the other party. Although RT exchanges are an aid to pilots to build up their SA of the cct pattern, the primary means of avoidance in this Class G ATZ was through see and avoid. The PA24 pilot had joined the visual cct from the N, albeit in a truncated manner revealed from the radar plot, but had integrated behind the 2 other ac already established ahead. Members noted that the PA31 pilot had elected to join on a 'straight-in' approach with 3 ac in the cct, contrary to the guidance promulgated in the AIP; the radar recording shows the PA31 joining initially on a wide L base leg before commencing a gentle L turn onto final and placing it into conflict with the PA24 on R base. In doing so, Members agreed that the PA31 pilot did not integrate safely into the cct pattern and this had caused the Airprox. One controller Member opined that when the PA31 pilot called at 4nm he would have expected the FISO to update the cct status; however, the FISO had not made comment in his report and this element could not be corroborated owing to the lack of RT transcript. Another pilot Member commented that fitting-in with other cct traffic is more easily accomplished by entering the pattern either O/H, crosswind etc and adjusting the cct size accordingly, i.e. widening crosswind or extending downwind if required, whereas flying a straight-in approach leaves the pilot with only one option by adjusting his airspeed.

Turning to risk, the PA31 pilot was turning belly-up to the PA24 when he saw it 30-40m away and just 50ft above as it crossed from R to L, increasing his ROD to avoid. The PA24 pilot heard the PA31 pilot report at 2nm and pulled-up while looking for it and then saw the ac pass 'underneath'. Members thought that luck had played a part in this Airprox and it was fortunate the PA24 pilot's actions had mirrored those of the PA31 pilot. Taking these facts into account, combined with proximity of the ac revealed by the radar recording, the Board concluded that an actual risk of collision had existed during this encounter.

PART C: ASSESSMENT OF CAUSE AND RISK

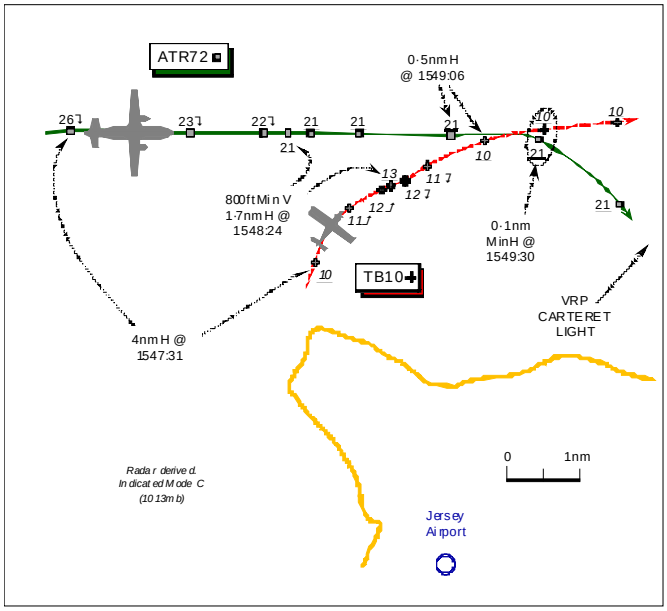
Cause: The PA31 pilot did not integrate safely into the cct pattern.

Degree of Risk: A.

AIRPROX REPORT No 2011094

AIRPROX REPORT NO 2011094

Date/Time:	23 Jul 2011 1548Z (Saturday)	
Position:	4918N 00214W (6nm N of Jersey Airport - elev 277ft)	
Airspace:	C. Islands/Jersey CTR (Class: A/D)	
Reporter:	Jersey ATC	
	1st Ac	*2nd Ac*
Type:	ATR72-500	TB10
Operator:	CAT	Civ Pte
Alt/FL:	↓2000ft	1000ft
	QNH (1016hPa)	QNH (1016hPa)
Weather:	VMC	VMC
Visibility:	NR	NR
Reported Separation:		
	1000ft V/1nm H	NK
Recorded Separation:		
	800ft Min V @ 1·7nm H	
	0·1nm Min H @ 1100ft V	



CONTROLLER REPORTED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE JERSEY APPROACH RADAR CONTROLLER (APR) reports that the TB10 was departing from Jersey Airport bound for Oxford/Kidlington and was issued a Special VFR (SVFR) clearance outbound not above 1000ft Jersey QNH (1016hPa) to Carteret Lighthouse VRP [on the French coast 18nm NE of Jersey Airport] as per standard clearances. The ATR72 was inbound to Jersey, IFR under a RCS and being vectored for an ILS approach to RW27 descending to an altitude of 2000ft QNH (1016hPa). When released, the TB10 pilot was given a climb-out restriction of straight ahead off RW27 due to traffic inbound to Jersey from Guernsey. After contacting Jersey APP the TB10 pilot was instructed to turn R onto a radar heading of 020°, to keep him clear of the centre line. Immediately before the TB10 pilot initiated his climb, he was released off the heading on his own navigation to Carteret. There was some confusion in the TB10 pilot's read-back and so the controller restated that the flight was cleared own navigation to Carteret. The TB10's Mode C then indicated the ac was climbing and he asked the TB10 pilot to check his altitude followed by an instruction to descend back to 1000ft and a reiteration of his clearance limit, as well as TI about the ATR72 descending to 2000ft QNH from above. He instructed the ATR72 crew to stop their descent 'now' and passed TI on the TB10 below them. The ATR72 crew acknowledged the stop descent and advised they had the TB10 in sight and also displayed on their TCAS. The pilot of the TB10 apologised and continued as per his SVFR clearance until approaching the French coast. Prescribed separation was eroded to 700ft vertically at a range of 1nm; prescribed separation was subsequently re-established and the ATR72 completed a visual approach without further incident.

THE ATR72-500 PILOT reports he was inbound to Jersey from Cork under IFR and in receipt of a RCS from Jersey APPROACH on 120·300MHz. The assigned squawk was selected with Modes C and S on.

At a position about 300° JSY 10DME, heading 090° at 180kt descending to 2000ft QNH (1016hPa) in VMC, traffic appeared on TCAS in their 2 o'clock at a range of about 3nm, so he reduced the ROD to 500ft/min. Shortly afterwards, with the other ac – the TB10 – about 1nm away, APP instructed them to 'stop descent immediately'. The TB10 was already in sight before the call from APP, but he levelled off immediately at about 2300ft QNH. APP instructed the pilot of the TB10 to maintain an altitude not above 1000ft QNH and then asked if they had the TB10 in sight or displayed on TCAS. They did have the TB10 in sight and on TCAS throughout and no TA or RA was enunciated. There was no danger of collision; the controller did not indicate that he would make an Airprox report at the time of the occurrence.

THE TB10 PILOT reports he departed from RW27 at Jersey Airport with a R turnout cleared to 1000ft Jersey QNH. APP gave various heading instructions for Carteret Lighthouse VRP but about 10min after departure he was told by APP to 'assume your own navigation'. He corrected his course toward the VRP at 110kt and started to ascend; passing 1300ft APP asked him to confirm his altitude and he replied 'approaching 1400ft', he thought. APP then instructed him to descend to 1000ft QNH as he had not been given permission to climb; he thought he replied to the controller that as he had been given an instruction to assume his own navigation that this meant he could also ascend. He apologised for this mistake and descended to below 1000ft QNH. A few minutes later he received details to continue and to free-call his en-route frequency. At no time did he or his two passengers (both pilots) see any other ac in close proximity to themselves. They were aware that there was a PA28 about 5nm ahead of them but they could not see that ac. He realises that it was an error to ascend to 1400ft QNH, for which he gave his unreserved apologies. His error was not intentional but a misunderstanding of the 'assume' instruction. The Risk was not assessed.

On landing at Oxford he discussed the occurrence with the Owner of his Club and he will not be making the same mistake again; he will get confirmation from ATC when under their control that he is cleared to either ascend or descend. He did try to telephone Jersey ATC to explain and apologise for the confusion but the phone was not answered. He apologises for this mistake but he did not see any other ac close by, neither did his passengers. He was not aware of any possible Risk to others or himself by being close to another ac, specifically the ATR72, which was not seen.

UKAB Note (1): Analysis of the Jersey APP transcript reveals that after TOWER instructed the TB10 pilot to line up on RW27, the controller passed an amendment to the flight's departure clearance. At 1540:34, TOWER transmitted, "[TB10 C/S] *an amendment to your clearance after departure climb straight ahead till advised Special V-F-R not above altitude 1 thousand feet";* this was immediately read-back by the TB10 pilot, *"climb straight ahead Special V-F-R not above a thousand feet* [TB10 C/S]". After take-off TOWER requested the TB10 pilot recheck the allocated squawk of A1235 before instructing the pilot to, *"..report your heading to Jersey APPROACH 1-2-0 decimal 3",* which was acknowledged by the pilot correctly at 1542:29.

At 1542:56, the ATR72 crew made their initial call to APP descending on a radar heading of 100°. APP responded by instructing the ATR72 crew to descend to 3000ft QNH (1016hPa). A little later at 1543:35, the TB10 pilot made his initial call to APP stating, *"Good afternoon Jersey Approach* [TB10 C/S] *awaiting further instructions."* The controller's initial response was to turn the TB10 R onto 330°, followed by further R turn onto 350° that was read-back by the TB10 pilot at 1544:22. Moments later at 1544:25, the ATR72 crew was instructed to, *"..descend altitude 2 thousand feet"* that was read-back correctly. APP then issued a vector to the TB10 pilot to fly a heading of 020° that was duly acknowledged, before the ATR72 crew was placed on a radar vector of 090° that was read-back correctly at 1545:53.

At 1547:18, APP instructed the TB10 pilot to, *"..resume..own navigation now to Carteret"*, this was acknowledged by the pilot merely as, *"Resuming own navigation* [TB10 C/S]". APP therefore challenged this read-back by stating, *"confirm to Carteret";* the TB10 pilot reaffirmed at 1547:46, *"resume own navigation to Carteret* [TB10 C/S]". The LAC Jersey Radar recording at 1547:31, shows the ATR72 tracking E descending through 2600ft (1013hPa), some 4nm NW of the TB10 that is shown turning R on course to Carteret indicating 1000ft (1013hPa). Some 30sec later at 1548:01, as both ac close to a range of 2·5nm the TB10 is first shown climbing through 1100ft, as the ATR72 descends through 2300ft. At 1548:22, APP instructed the TB10 pilot to, *"..check your level*"; no reply is apparent from the TB10 pilot before the controller transmitted 4sec later, "[TB10 C/S] *continue not above 1 thousand feet".* This transmission was immediately read-back by the TB10 pilot, *"continue not above 1 thousand feet* [TB10 C/S]". APP then instructed the ATR72 crew at 1548:29 to, *"..stop decent immediately",* which was acknowledged immediately by the crew. The radar recording shows the TB10 ascended to a maximum of 1300ft (1013hPa) – about 1390ft Jersey QNH (1016hPa) and within the Class D Jersey CTR – at a range of 1·7nm, 800ft below the indicated level of the ATR72 that was now indicating level at 2100ft (1013hPa) – about 2190ft QNH (1016hPa) and marginally within the Class A Jersey CTA. At 1548:37, APP advised the ATR72 crew about the TB10 for the first time, *"Traffic in your 12 o'clock should be not above 1 thousand feet has climbed through 14 hundred feet descending back down".* Although the TI was incomplete, the ATR72 crew responded *"Copy have him in sight and have him on TCAS* [ATR72 C/S] *thank you"*. The TB10 descended thereafter, re-establishing alevel cruise at 1000ft at 1548:50, with the ATR72 astern, off the TB10's port quarter, at a range of 0·9nm. As the faster ATR72 closed on the TB10, APP advised the latter's pilot that, *".. you were cleared not above 1 thousand feet there was traffic a thousand feet above you continue not above 1 thousand feet".* APP subsequently cleared the ATR72 crew for a visual approach. The respective tracks crossed with minimum horizontal separation of

0·1nm, the TB10 1100ft below the ATR72; as the ATR72 cleared to the S of the TB10, horizontal separation was established and the ATR72 crew was cleared to descend. The TB10 pilot apologised to the APP controller, who released the flight to continue VFR when passing the CTR boundary and call Deauville en-route at 1554:21.

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 air traffic controller involved.

It was explained that commonly within Class D CAS, VFR flights are passed TI about IFR and other VFR flights and it is then the responsibility of the pilot flying under VFR to maintain his own separation on the traffic he has been told about. However, here the IFR ATR72 was descending in the Class A Channel islands CTR and the TB10 was departing within the Class D Jersey CTR on a Special VFR clearance. No TI had been passed to the TB10 pilot about the ATR72 beforehand and it was evident that the Jersey APR had restricted the TB10 pilot to a maximum of 1000ft Jersey QNH beneath the inbound ATR72 descending to 2000ft, in order to ensure vertical separation of 1000ft. After providing radar vectors around other traffic, the TB10 pilot was then 'released' by the APR to, *"..resume..own navigation now to Carteret"*. It was evident that the TB10 pilot had misunderstood this message such that he believed he could now turn on track to the VRP and also climb to his desired transit altitude. Members who fly regularly to the Channel Islands commented that being held down at 1000ft for a long over sea transit in a single-engine ac was particularly uncomfortable; an engine problem at that altitude could result in a ditching with very little time to prepare or make appropriate RT calls. It was understandable, therefore, that the TB10 pilot would wish to climb as soon as possible. That said, it was the TB10 pilot's misunderstanding regarding the words "own navigation" that was the crux of this Airprox. Experienced pilot Members commented that this had been a hotly debated topic for many years and the GA Member observed that it was unfortunate that TI on the ATR72 had not been passed by the APR and the altitude restriction reinforced, which could have been a helpful safeguard. The SRG Policy Advisor pointed out the changes that had been made to SIDs & STARS by ICAO and Members were aware there was no recognised definition of "..*own navigation..".* The SRG Advisor considered that an AIC might be beneficial to reinforce the meaning and usage of this widespread term so as to reduce the potential for similar events. Nevertheless, within the context of an ATC 'clearance', the term was used in the lateral plane only and did not cancel the altitude restriction, thus the TB10 pilot should not have climbed above 1000ft QNH without further reference to the APR. The Board concluded, therefore, that this Airprox had resulted because the TB10 pilot climbed into conflict with the ATR72 after assuming his altitude restriction had been removed.

It was clear that the ATR72 crew had the TB10 in plain sight ahead of them even before the APR passed TI and also had the ac displayed to them on TCAS. Thus the ATR72 crew were prepared to act even before the APR detected the TB10's climb and instructed the pilot to descend back to his assigned altitude. This coupled, with horizontal separation of 1·7nm as the vertical separation decreased to a minimum of 800ft convinced the Board that no Risk of a collision existed in these circumstances.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The TB10 pilot climbed into conflict with the ATR72 after assuming his altitude restriction had been removed.

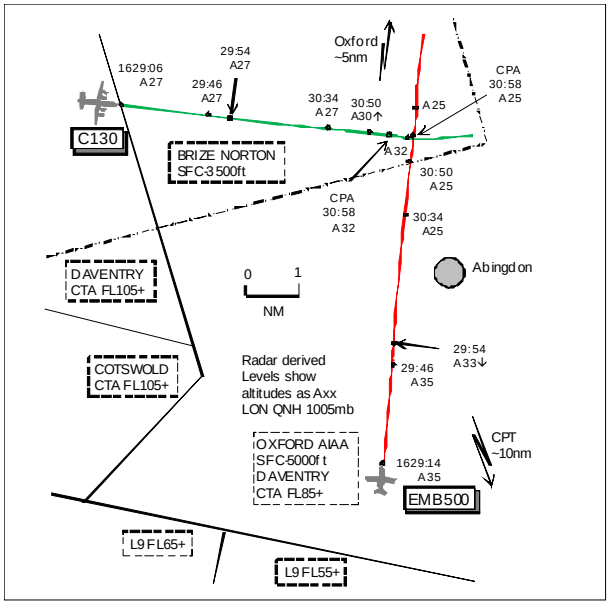
Degree of Risk: C.

AIRPROX REPORT NO 2011095

Date/Time:	8 Jul 2011 1631Z	
Position:	5144N 00120W (9nm SE Brize - elev 288ft)	
Airspace:	Brize CTR	(Class: D)
	Reporting Ac	*Reported Ac*
Type:	C130	EMB500
Operator:	HQ Air (Ops)	Civ Comm
Alt/FL:	2500ft	2500ft
	QFE (994mb)	QNH (1003mb)
Weather:	IMC KLWD	IMC KLWD
Visibility:	10km	10km

Reported Separation:
'below' V/0·5nm
H500ft V/500m H

Recorded Separation:
700ft V/0·4nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE C130 PILOT reports flying a local CT sortie from Brize Norton, IFR and in receipt of a TS from Brize on 124·275MHz, squawking an assigned code with Modes S and C. The flight was IMC approaching the end of the outbound leg of a TACAN procedure heading 100° at 170kt and level at 2500ft QFE 994mb. At BZN 100R 9D, just prior to commencing the inbound turn and associated descent, a TCAS contact appeared on their display at the same height approximately 1nm in front. The controller initiated avoiding action by vectoring the flight to the N at the same time as a TCAS RA climb was commanded. The RA was followed, the climb initiated without changing heading, during which time the ac broke cloud and they became visual with the conflicting ac, a low-wing twin engine type possibly a BE200 or similar type, which was crossing from R to L 0·5nm ahead and just below. The controller subsequently provided vectors to enable the flight to resume the procedure and the sortie was continued without further incident.

THE EMB500 PILOT reports inbound to Oxford, IFR and in receipt of a PS from Oxford Approach on 125·325MHz, squawking 3057 with Modes S and C. En-route from just W of CPT to Oxford, London gave descent to 3500ft direct to the OX and to call Oxford as per the usual arrival via CPT. Heading 360° at 180kt they continued descent to 3500ft early in order to try and get VMC. They were bouncing around in the cloud bottoms and it looked as if they would be in VMC if a few hundred feet lower. The PNF called Approach and asked, "If possible can you liaise with Brize for further descent. We are in the cloud bottoms and would appreciate lower to be VMC". Oxford replied, "I can give you 2500" so they continued descent to 2500ft assuming that liaison with Brize had already been arranged. After levelling at 2500ft (now in the Brize CTR) about 12nm S of OX they received proximate traffic on TCAS then a TA on traffic from the W at the same level heading towards them. They became visual with a C130, which climbed to take avoiding action before it passed about 500ft above, and 500m behind. When they received the TA the PNF called Approach to request TI and was advised that Brize CTR had been infringed and that they should leave asap. By now they were within 10nm of OX and they turned R and exited the CTR before turning L to OX for a normal procedural ILS to RW19 starting 2500ft. The PNF spoke to Oxford ATC post flight and the controller felt that the crew wanted to transfer to Brize to request lower for a visual join however the PNF had not mentioned the words "visual" or "transfer". Their request for ATC to liaise with Brize implied that they were aware of Brize airspace. From their perspective it would have been helpful to hear the words "Remain clear of Brize" when ATC gave the descent to 2500ft. Also, because London took them on heading W of CPT before clearing them direct to OX, the usual CPT-OX track did not apply and so did not keep them clear of the CTR. Approach assumed that they were routeing direct from CPT and therefore to the E of Brize.

THE EMB500 COMPANY FLIGHT SAFETY OFFICER reports the following investigation was carried out as a result of an ASR filed by the EMB500 crew and the subsequent MORs raised by Brize Norton ATC and Oxford

ATC. The fact that the zone infringement occurred is not in doubt. The focus of this investigation is to establish the reasons why the infringement occurred and to present recommendations that may prevent a future reoccurrence.

Sources Available for the Investigation

The sources available for this investigation included:

1) the accounts of the crew involved from their initial ASR and subsequent discussions

2) the audio tapes held by Oxford ATC that recorded RT transmissions at the time of the incident as well as telephone calls between Oxford ATC and the Brize Norton controller and London Area Control.

The audio tapes and radar traces from Brize Norton were not available to the company to assist in the investigation.

Commander's experience: 2800 hours total flying time

298:35 hours flying Phenom 100
26:40 hours flying Phenom 100 in previous 28 days
1:15 mins rest prior to the day of the incident

First Officers experience: 320 hours total flying time

39:40 hours flying Phenom 100
24:45 hours flying Phenom 100 in previous 28 days
11:15 mins rest prior to the day of the incident

Weather at Oxford

At the time of the incident the promulgated weather report was:

Surface wind: 240/8-11 knots
Visibility: 6 km
Precipitation: RA SH
Cloud: FEW 020 SCT026 BKN031
Temperature: +14/+12
QNH: 1003

History of the flight

The crew reported in Berlin at 0520z for a 3-sector day. Maximum FDP for the day was 11:30 and the planned FDP was 10:05. The crew had a rest period prior to the day of flying of 11:15 (15min more than the minimum required rest).

The first flight of the day from Berlin to Oxford was uneventful but was delayed by 25min in Berlin. The ac arrived in Oxford at 0900z.

The ac's departure from Oxford was delayed by 20min due an ATC slot restriction and the ac departed Oxford at 1120z for a passenger-carrying sector to Zurich. On take-off from Oxford the ac suffered a bird strike shortly after rotation (ASR 080 refers). No problems were encountered with the ac following the birdstrike and the remainder of the flight to Zurich was uneventful.

On engine start for the return flight to Oxford there was an abnormal start event (ASR 081 refers). The subsequent start was uneventful. The abnormal start and subsequent conversation with the Continuing Airworthiness Manager plus a further ATC slot restriction contributed to a delay to the departure from Zurich of around 45min.

The handling pilot for the empty return sector was the First Officer who was undergoing Line Flying under Supervision and was undertaking her 30th sector. The minimum number of sectors of Line Flying under Supervision to be undertaken by a crew member with her experience is 40 prior to line check. This is not felt relevant to the incident.

The ac routed broadly in accordance with the flight plan route until entering UK airspace where the crew received the normal combination of vectors and "own navigation" instructions consistent with a normal arrival towards Oxford.

On reaching the area to the E of the CPT VOR the crew received vectors from London Control that took them past CPT VOR (heading 280° at FL80) to the W before being asked to route to Oxford with a descent to altitude 3500ft amsl.

At this stage the arrival was normal with the expectation of routing to the OX NDB and then outbound for the ILS RW19 procedure at Oxford. The incident occurred during the phase following the initial descent to 3500ft amsl.

Before describing the events surrounding the incident it is necessary to understand the airspace restrictions around Oxford and the normal arrival routes to the airfield.

Airspace issues around Oxford

Oxford Airport has an ATZ with radius 2nm centred on the longest runway (01/19). The vertical limit of the ATZ is from the surface to 2000ft aal. The airspace above the ATZ is Class G.

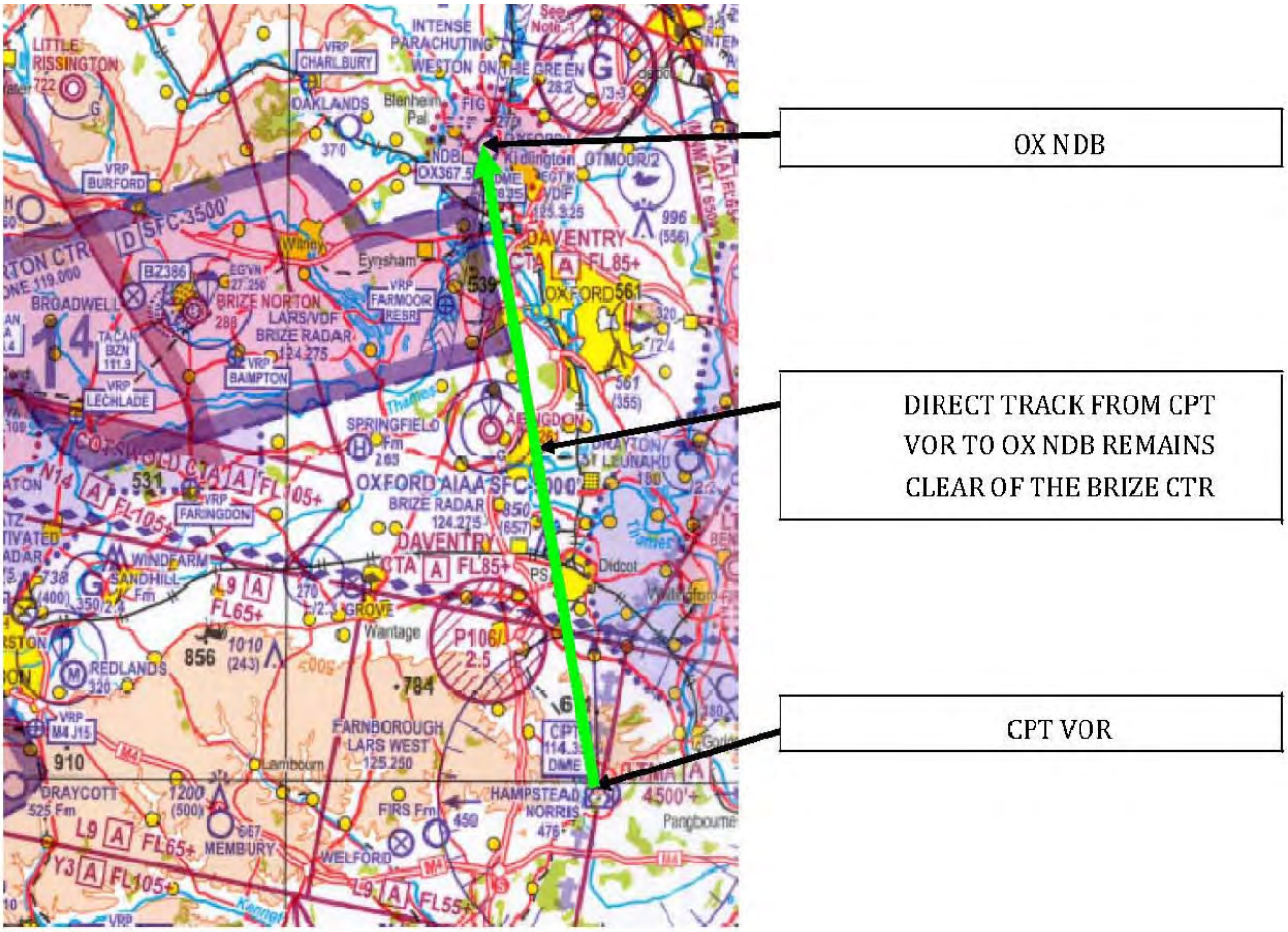
To the SW of the Oxford ATZ lies the Brize Norton CTR with vertical extent from surface to 3500ft amsl (Class D airspace). The area of the Brize Norton CTR that affects operations into and out of Oxford is the stub to the E of Brize Norton aerodrome. This stub lies across the instrument approach to RW01.

To the NE of Oxford are the paradropping areas of Hinton-in-the-Hedges (GND to 2500ft) and Weston-on-the Green (GND to 3300ft). The boundary of the latter area almost touches the Oxford ATZ. To the S and SE lie the paradropping areas of Abingdon and Chalgrove as well as numerous gliding sites.

IFR routes from the S route via L9 at CPT (MEA FL55) and from the N via A34 (MEA FL110) and N859 (MEA FL90).

To the SE of Oxford and on tracks between the CPT VOR and Oxford Airport lies the Benson CTR, the location of which creates funnels between Benson and Abingdon and between Benson and P106.

AIRPROX REPORT No 2011095



The usual arrivals from the S route via CPT followed by a direct track to the OX NDB. The timing of the turn is determined by release from London Control and may be delayed until the ac is W of CPT or may be prior to the ac reaching CPT. It is seldom at CPT as ac are frequently under radar vectors at this point due to the separation requirements for the Heathrow departures via CPT.

The timing of the release is important to this investigation since the direct track from the CPT VOR to the OX NDB ensures that the ac remains clear to the E of the Brize Norton CTR. If the turn towards the OX NDB is delayed to any degree and the ac passes the CPT VOR to the W then the direct track towards the OX NDB will overfly the Brize Norton CTR and any descent below 3500ft amsl on track to the OX NDB will require a clearance to enter the Brize Norton CTR.

Arrivals from the S for RW01 will require liaison with Brize to enter the CTR whilst positioning for the NDB approach to RW01. Arrivals from the S for RW19 do not normally require a clearance to enter the Brize CTR as ac will normally not descend below 3500ft amsl on track to the OX NDB.

The Incident

The flight in question was planned to route from the CPT VOR to the OX NDB. The vectors from London Control took the ac to the W of CPT prior to being released to fly direct to the OX NDB. As such this track would take the ac over the Brize Norton CTR and the ac was cleared by London to descent altitude 3500ft amsl.

Company crews are well acquainted with the location and vertical extent of the Brize Norton CTR and it was clear to the crew that the track towards the OX NDB would take them over the CTR at 3500ft amsl.

In the initial RT call made by the Commander to Oxford ATC his position was stated as 18nm to the S of Oxford Airport. It is clear from the ASR that he was aware of his position to the W of CPT prior to the turn to the OX NDB and a bearing of 180°M would place the ac to the W of CPT. However, it is accepted that a bearing of 172°M from the OX NDB would place the ac on a direct track from the CPT VOR and that a reference to "south of the airport" could be interpreted either way by the controller at Oxford.

Oxford Airport does have a VDF capability and the reporter understands that a VDF bearing was recorded at the time of the first transmission by the EMB500 flight.

On reaching the cleared altitude the crew found themselves in the lower level of cloud and in turbulent air. It was perceived that a further descent would take them clear of the cloud and afford them greater visibility in VMC. From the tapes it is clear that the Commander requested that Oxford ATC liaise with Brize to allow further descent below the cleared altitude. Once again this confirms that the crew were aware that they were above the Brize CTR and that any lower altitudes would require a clearance into the zone.

Oxford ATC acknowledged the request and stated that the lowest altitude they could offer would be 2500ft amsl (MSA). This was followed by a clearance to descend to altitude 2500ft amsl. Crucially this was NOT followed by an instruction to remain clear of CAS.

The ac descended in accordance with the new clearance. The Commander contacted Oxford ATC when he became aware of a TCAS contact at approximately the same level to the W. This exchange with Oxford ATC was interrupted by a telephone call to Oxford ATC from Brize advising them that the EMB500 had infringed the Brize zone and that a departing ac (believed to be a Hercules) had taken avoiding action. Oxford ATC was advised to instruct the EMB500 flight to leave CAS immediately and this was passed to the crew.

On receiving the RT call from Oxford ATC advising them of the infringement the Commander queried the initial descent clearance prior to instigating a 30° R turn. Due to the proximity of the ac to the edge of the Brize zone, and the short distance required to exit the zone, this was shortly followed by a L turn back towards the OX NDB. The Brize controller perceived this as being no attempt to leave the zone but this is challenged by the crew. The radar traces will provide further evidence but for a short turn to the R followed by a turn to the L the interval between radar images may mean that the turns were not visible to the approach controller.

The ac continued to the OX NDB and landed without further incident.

Investigation

The crew filed an ASR immediately after the arrival at Oxford. The Commander also spoke to Oxford ATC.

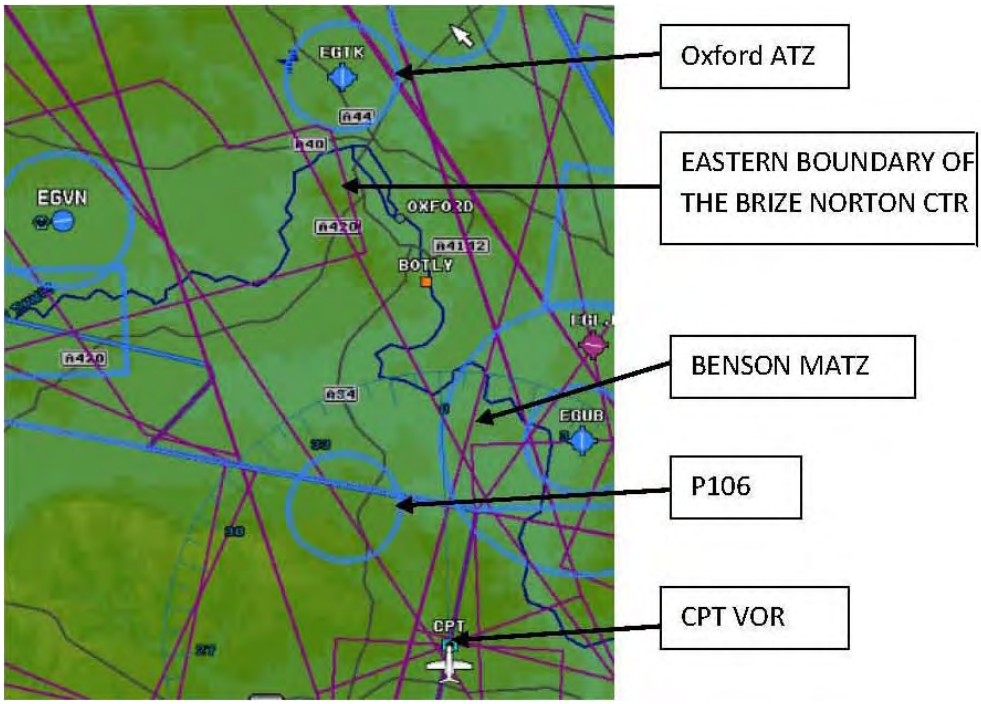
The information from the crew (via the ASR) was supplemented by information from conversations with the crew. Oxford ATC also made the tapes available for the RT exchanges between the EMB500 flight and Oxford ATC, and also for the telephone conversations between Oxford ATC and London Area Control and with the Brize Norton controller.

The information extracted from the taped conversations was consistent with the events in the ASR except that the Brize controller claimed that the crew made no attempt to exit the Brize zone. This is addressed in the section above.

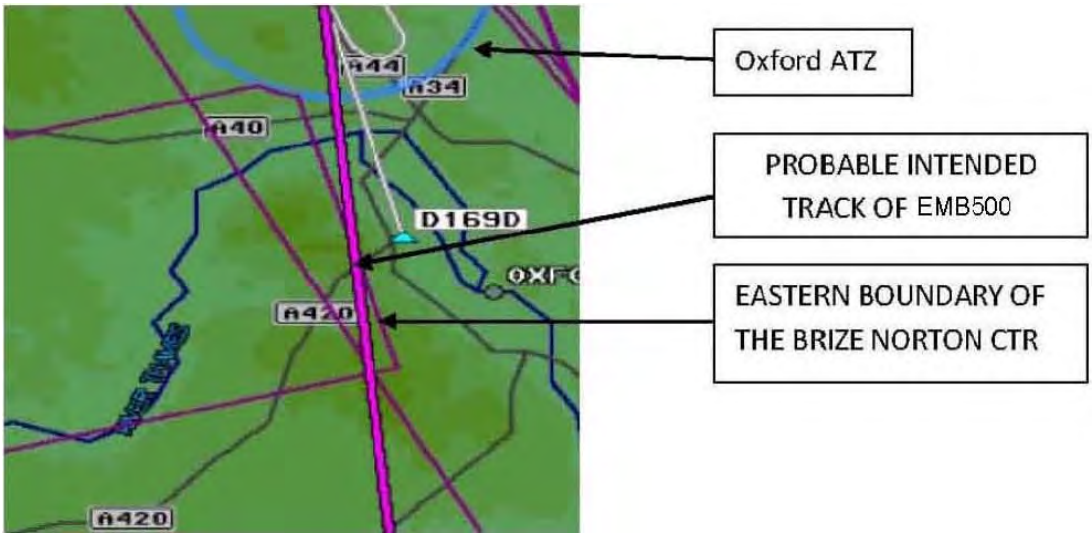
It is clear that the crew were aware of their proximity to the Brize Norton CTR, both vertically and laterally, and requested that Oxford liaise with Brize Norton for the required descent. It also appears the Oxford controller was not completely aware of the position of the EMB500 and mistakenly assumed it to be clear to the E of the Brize CTR. This position would have been consistent with a direct route from the CPT VOR to the OX NDB. However, the EMB500 had been vectored to the W of CPT and the revised track took the ac over the stub of the Brize CTR.

Oxford ATC is able to use VDF to establish the direction from which traffic is approaching Oxford. It is not clear why the use of VDF did not show that the track of the EMB500 presented a potential issue with respect to the Brize zone. The EMB500 flight transmitted at least 4 times prior to the zone infringement.

The EMB500 (Phenom) fleet are equipped with integrated electronic navigation systems. The MFD display (example shown below) available to the crew shows very clearly the location of the Brize Norton CTR and this display was in use by the crew at the time of the incident. It supports the position that the crew were completely aware of their position with respect to the zone. It may also explain why the turn to the R to exit the zone was not noted by the Brize controller as the crew would see exactly when they had turned sufficiently to exit the zone prior to resuming their track to the OX NDB.



The above display is in an expanded view. When operating closer to Oxford the depiction is scalable and the proximity of any CAS is very clear.



When issued with the requested descent clearance the crew assumed that liaison with Brize had taken place. Had the descent clearance been followed by an instruction to remain clear of the Brize zone then the crew would have adjusted their track by heading to the E of the present track until clear of the zone and then descended to the new cleared level.

Causal factors

Primary causal factors

There appears to have been uncertainty from the perspective of the Oxford controller as to the position of the EMB500 with respect to the Brize Norton CTR. An assumption was made that the ac was on a direct track between CPT VOR and the OX NDB, a track that would have kept the ac clear of the Brize zone. This was not the case as the delayed release from London had resulted in the ac being to the W the direct track between CPT and OX NDB. This lead to a descent clearance being issued without an instruction to remain clear of the Brize zone.

The crew departed from the Company standard arrival procedures in order to exit the turbulent lower levels of cloud and to benefit from improved visibility below the cloud. Had the ac remained at 3500ft amsl then the incident would not have occurred.

Secondary causal factors

1)The EMB500 crew had experienced a few unusual events on the day of the incident: a bird strike on departure from Oxford, an abnormal start in Zurich and a temporary TCAS FAIL in the cruise. Although the duty period was not long these events will have had an effect on the workload and fatigue of the crew.

2) Due to the delays encountered during the day the crew were within 5min of maximum FDP on arrival at Oxford. This may have contributed to the overall fatigue experienced by the crew.

NB It should be noted, however, that the crew did not refer to fatigue or to the events earlier in day as a factor in this incident.

Recommendations

Standard Operating Procedures

Position Reporting

As uncertainty regarding the position of the ac with respect to the direct track from CPT VOR to OX NDB was a primary causal factor, the initial radio contact with Oxford could include information on the actual track towards the OX NDB. This contact could include phrases such as “our current track will ensure that we remain E of the Brize zone” or “our current track will route over the Brize zone”.

Routings into and out of Oxford Airport

The hazards associated with operations at Oxford Airport are documented in the Company SMS under HRF002. This HRF is permanently under review.

The following is extracted from the mitigations section of HRF 002. The underlined sentences are pertinent to the incident under investigation.

‘Arrivals

The direct track between CPT VOR and Oxford Airport is identified as an area of significant risk during daylight hours. There is coordination between London Area Control, Brize Norton, Benson and Oxford that seeks to provide either procedural separation (by Oxford) or radar separation (by Benson and/or Brize Norton). However, there are potential risks associated with transiting this area due to traffic that is not subject to procedural separation or is not visible to secondary radar.

The lack of a standard procedure is an issue that counters our potential mitigation. In trying to provide more direct routings London Control are actually contributing to the problem.

Approaches

Although the published hold for Oxford Airport at the OX NDB lies outside of controlled airspace it is considered best practice to route towards the OX NDB and to enter the instrument procedure from overhead the airfield. This practice provides a prescribed and repeatable track to the overhead and throughout the procedure. It also allows ATC at Oxford to provide procedural separation from other IFR traffic and to advise VFR traffic of the likely position of the inbound aircraft. Additionally, this practice reduces the risk of encounters with low level VFR traffic and offers protection against CFIT.

For landing on runway 19 the full procedure represents the best option for maintaining procedural separation from IFR traffic.'

The procedures above are covered in crew line flying under supervision. It is felt that, when followed, the above procedures provide adequate mitigation against hazards and also against inadvertent penetration of the Brize zone.

It is strongly recommended that standard routings are identified and utilised for both departures and arrivals at Oxford Airport. There are currently no official, published departures to the S of Oxford nor any published arrivals from the S of Oxford. This should be addressed with some urgency.

Crew Awareness

It is felt that the Company crews are sufficiently aware of the lateral and vertical boundaries of the Brize Norton CTR. This understanding is greatly enhanced by the abundance of situation awareness afforded by the integrated electronic navigation system on the Phenom 100.

However, further information should be circulated to ensure that crews remain aware of the effect of small changes in track when routing from the S. They should further be reminded of the vertical extent of the Brize Norton CTR and the issues that face the Oxford controllers in trying to establish the position of incoming ac.

THE BRIZE RADAR CONTROLLER reports he was bandboxing Zone, DIR and Radar. He had 1 flight on the DIR frequency and 2 on Zone. The C130 was conducting a procedural TACAN approach and was downwind in the radar pattern for RW26 at height 2500ft QFE 994mb. He cleared the C130 for the full procedure and was in the process of dealing with a flight on Zone frequency, AC3, which had requested a CTR transit and needed to descend to maintain VMC. When the C130 was late downwind he noticed an ac, the EMB500, 3nm outside the CTR but looking like it was going to infringe the Zone. He immediately called the EMB500 to the C130 flight, believing he stated the unknown ac was going to infringe CAS and gave an avoiding action turn onto N. By this time the EMB500 was 0·5nm and approximately 200ft from the C130 having entered the CTR without permission. The C130 did not leave the CTR and was about 2nm from the S edge to the CTR. Previously he had noticed the EMB500 when it was about 15nm S of Brize but had no reason to believe it would enter CAS. The EMB500 was code c/s converted and was indicating inbound to Oxford. The other controller, who was on a break, came into the ACR and was able to telephone Oxford and ask for TI, informing them that the EMB500 had entered the Brize CTR. The Oxford controller stated she would get the flight to exit the CTR straight away; however, it appeared that the EMB500 continued straight ahead towards Oxford without turning to exit. After he had issued avoiding action to the C130 the crew informed him that they had a TCAS RA, which he acknowledged. The C130 crew told him that they had climbed to 3000ft QFE and he thought he updated the TI on the EMB500 and gave TI on another radar track as the C130 had exited CAS at the E edge before it turned inbound, repositioned for the TACAN approach and re-entered CAS.

THE BRIZE SUPERVISOR reports working as the ADC in the VCR monitoring the Tower, Ground and Management frequencies. The only part of the incident he saw was when he glanced at the Hi-Brite display and saw the C130 squawk in a late outbound radial position for RW26 within 0·5-1nm of the EMB500 squawk which appeared to be on a straight-in approach to RW01 at Oxford. The Mode C of each squawk indicated that they were within only a few hundred feet of each other which caused him concern. By this time the incident was effectively already at a point where he considered it too late to do anything. Unit workload was light to medium with 2 radar controllers on duty, which was normal for operations outside 0900-1700L Mon-Fri.

THE OXFORD APPROACH CONTROLLER reports the EMB500 was pre-noted from London leaving CAS at CPT. The flight checked in on frequency and was given onward descent to 3500ft and told to continue to the OX NDB and expect ILS RW19 no delay. The pilot reported flying in the cloud base and requested to talk to Brize for

further descent. She informed the flight that she could do that procedurally and cleared the flight to descend to 2500ft. A short while later the pilot questioned a TCAS contact in his 11 o'clock whilst simultaneously the Brize telephone line rang. Brize reported that the EMB500 was inside the Brize CTR and in conflict with a C130 that was being vectored inbound. Brize instructed her to tell the EMB500 flight to leave the Zone immediately, which she did. It would appear the EMB500 actually left CAS in the vicinity of KENET, a direct track to Oxford would route through/over the Brize CTR, whereas leaving from CPT remains clear to the E.

BM SAFETY MANAGEMENT reports that this Airprox occurred between a C130 operating IFR in IMC in receipt of an ATS from Brize APP within the BZN CTR and an EMB500 operating IFR in IMC inbound to Oxford Kidlington and in receipt of a PS from Oxford APP.

All heights stated are based upon SSR Mode C from the radar replay unless otherwise stated.

The incident occurred relatively late on a Friday afternoon when BZN were operating with reduced manning; 2 radar controllers monitoring APP/Zone and DIR respectively and ADC. APP reported their workload as medium to low and the task complexity as medium.

At 1620:45, Oxford called BZN DIR passing TI on the EMB500 as "*leaving CPT…"* and *"is going to descend to 3500ft*." Given the range scale on which BZN controllers operate their surveillance display, the EMB500 would not have been displayed as it was approximately 40nm SE of BZN, in the vicinity of LHR. No mention was made by Oxford of the CPT estimate, nor the pressure datum for the EMB500's descent, nor did BZN DIR seek this information. Oxford asked DIR whether BZN required to work the traffic and, after liaison between APP and DIR that was un-recorded on the audio-tape, DIR stated that BZN did not wish to work the traffic. The conversation ended at 1621:27.

Based upon subsequent discussion with BZN personnel, following this landline conversation DIR left the ACR on a short break, with APP operating bandboxed on APP, DIR and Zone. At 1623:09, another flight, AC3, called Zone 38nms NE of BZN, requesting a transit through the BZN O/H towards Lyneham and was placed under a TS. In addition, APP was providing an ATS to the reporting C130 in the RTC on DIR's freq and an unrelated ac approaching the CTR from the SE for a VFR crossing also on the Zone freq; the EMB500 was 31·4nm SE of BZN, descending through FL127.

Between 1626:39 and 1627:08 APP carried out liaison with AC3 to deconflict its route through the O/H from the C130; however, the ac needed to maintain VMC and was unable to accept a climb. This liaison did not achieve a course of action.

APP states in their report that they first sighted the EMB500 when it was approximately 15nm S of BZN, this being at 1628:03 with the EMB500 descending through FL053. At this point the C130 crew reported, "*beacon outbound*" as they routed through the BZN O/H to the ESE, on the TACAN approach to RW26, indicating 3000ft.

Between 1629:07 and 1629:57, APP was engaged in a further exchange of RT with AC3 to deconflict its transit through the BZN O/H, including the passing of the BZN Wx from 1629:14 to 1629:34, with an agreement reached for AC3 to operate at 2500ft. During this exchange, at 1629:14 the EMB500 levelled at 3500ft and then, at 1629:54 recommenced descent into Oxford; at this point, the EMB500 was 5·5nm SE of the C130. At 1629:58, APP amended the C130 flight's climb-out instructions to vertically deconflict it from AC3 following its approach.

At 1630:17, AC3 flight stated that they were level at 2500ft which was acknowledged by APP at 1630:22. At 1630:32 APP stated, *"(C130 c/s) traffic right two o'clock, two miles, crossing right left, indicating similar altitude. I think it's about to infringe control zone, if not sighted avoiding action turn north immediately, traffic was south-east, one mile, tracking north, indicating two hundred feet below.*" Whilst APP reports that they issued the avoiding action when the EMB500 was 3nm outside the CTR boundary, the radar replay shows it to have been 1·1nm to the S indicating 2600ft, with the C130 indicating 2700ft. The EMB500 subsequently levelled at 2500ft at 1630:34. The C130 pilot replied at 1630:50, "*visual, TCAS RA, (C130 c/s)"* which is coincident with the point at which the EMB500 entered the BZN CTR without authorisation.

MMATM Chapter 11 Annex B contains the ATC Procedures in Class D Airspace and states that avoiding action should be passed to IFR flights if a particular unknown ac is lost and should achieve standard lateral separation of 5nm whenever possible.

The CPA occurred at 1630:58 with 0·4nm lateral and 700ft vertical separation existing as the EMB500 passed through the C130's 12 o'clock, with the C130 indicating 3200ft having followed the TCAS RA.

The key causal event within this incident is the unauthorised penetration of the BZN CTR by the EMB500 which is addressed within the operator's investigative report. However, in considering EMB500 company's assessment that the infringement was caused by a delayed turn at CPT, caused in turn by vectoring imposed by LACC, when the EMB500's turn is evident on radar at 1626:02, they travel 5·7nm laterally to turn through 90° of heading: this appears to be a relatively slow rate of turn. This notwithstanding, the ATM aspects of this incident warrant further examination.

Understandably given the Unit manning and the fact that had the EMB500 not infringed the CTR then there would have been no confliction with Brize traffic, Brize did not wish to work the EMB500 inbound to Oxford. Moreover, until the EMB500 recommenced their descent at 1629:54, APP had no reason to suspect that the EMB500 posed a threat as they could deem the ac as remaining outside the CTR. Furthermore, although their taskload was relatively low, APP was involved in deconflicting AC3 and the C130 until approximately 1630:10, which would have acted as a distraction, given AC3's position to the NE of the CTR and N of the CPA. Moreover, subsequent to completing their report, APP stated that their assessment of a moderate task complexity was directly linked to their work to deconflict AC3 and C130 as they were cognisant of the poor Wx in the area.

At 1630:10, the EMB500 was 2·5nm from the CTR boundary and 4·2nm from the C130 and it is reasonable to argue that the impending infringement and associated confliction are evident. However, Brize have stated that their personnel are frequently faced with situations where ac are flown along similar profiles to that used in this incident sequence to within close proximity of the CTR boundary before turning away. In order to avoid nugatory deconfliction instructions to IFR ac within the CTR, Brize personnel will have understandably adapted their behaviour to accommodate this experience. In this instance, although APP's actions were explicable, this adaptation delayed the point of action and arguably aggravated the severity of the occurrence; however, it should also be born in mind that regulation does not stipulate lateral separation requirements for IFR ac within Class D airspace against ac operating outside the CTR in Class G airspace.

Based upon their report, although APP had sighted the EMB500 previously, they did not perceive the confliction until immediately prior to 1630:32, at which point 2·2nm lateral separation existed. Moreover, in analysing their transmission at 1630:32, it appears reasonable to argue that they realised during that transmission that the EMB500 would infringe the CTR, thus correctly providing deconfliction instructions. However, whilst there is no specific regulation governing the provision of TI to ac operating within Class D airspace, it is reasonable to suggest that the principles within CAP774 would apply in terms of the applicability and timeliness of that information against ac remaining outside the CTR.

SATCO Brize has stated that following this incident and in light of other issues, a meeting was held between Oxford, NATS, SRG, DAP and Brize. The purpose of the meeting was to determine a course of action to assist Oxford inbound and outbound ac, whilst reducing the potential for mid-air collisions. Brize agreed to take on an additional task effective from Sep 11, where all Oxford ac route inbound via KENET (released at FL80) – DILAX – BAMBO – OX and outbound (climbing to FL70) via BAMBO – DILAX – KENET. Whilst causing a significant increase in the Brize workload, this has reduced the risk of mid-air collision within the Oxfordshire AIAA. It is planned for Brize to maintain this task until Oxford is able to provide organic surveillance based services.

ATSI reports that the Airprox occurred at 1631:00, 6·3nm to the SSW of Oxford Airport, within the Brize Norton CTR Class D airspace, which lies to the S and SW of Oxford airport and extends from the surface to an altitude of 3500ft.

The EMB500 was an IFR flight inbound to Oxford from Zurich, leaving CAS at CPT and routeing to the OX(NDB) at Oxford.

The C130 was operating within the Brize Norton CTR, in the radar pattern for an approach to Brize Norton RW26. Brize Norton LARS is promulgated as being available in summer from 0800 UTC to 1600 UTC.

The Oxford controller was operating combined Aerodrome and Approach Control positions, without the aid of surveillance equipment. All equipment was reported as serviceable. APP reported workload as light with no distractions.

CAA ATSI had access to RT and radar recordings, together with written reports from the controller and 2 pilots.

The weather for Brize Norton was:

METAR EGVN 081550Z 24004KT 9999 –SHRA SCT028CB BKN035 BKN050 14/13 Q1003 RERA BLU TEMPO 4000 TSRA GRN=

METAR EGVN 081641Z 21004KT 3700 SHRA SCT025CB BKN035 BKN050 15/13 Q1004 GRN TEMPO TSRA GRN=

After the event the Oxford controller indicated that London Control (TC SW) had coordinated the arrival of the EMB500 leaving CAS at CPT and routeing to the OX(NDB). The controller indicated that 3500ft had been allocated at the OX NDB and Brize Norton had been passed TI regarding the EMB500 leaving CAS at CPT descending to an altitude of 3500ft.

At 1625:06 the radar recording shows the EMB500 tracking W'bound on the S side of airway L9 and a B767 on the N side. Both ac are established on parallel tracks with the EMB500 descending and the B767 climbing. In addition a GLF5 is shown inbound towards CPT from the N descending to FL80.

At 1626:50 the radar recording shows the EMB500 passing FL70 in the descent and no longer in conflict with the GLF5 approaching CPT from the N. At this point the EMB500 commences a R turn towards Oxford. At 1627:27 the radar recording shows the EMB500 passing 5·6nm W of CPT on a N'ly track.

At 1627:27, the EMB500 flight established contact with Oxford approach and reported, *"Oxford hello this is (EMB500 c/s) passing five thousand seven hundred feet er direct to the Oscar Xray we are coming from the south with eighteen and a half miles to run information Kilo Q N H one zero zero three two P O B."* The controller responded, confirming a PS and descent to 3500ft on track 'OX'. The pilot was instructed to report passing 4500ft in the descent. The controller couldn't recall the exact D/F bearing of the EMB500, but considered that it was consistent with the expected inbound routeing from CPT.

The EMB500 pilot was advised to expect the ILS approach RW19. This was acknowledged and the pilot requested cloud base and visibility. The controller passed, *"...few at two thousand six hundred broken three thousand six hundred and we've got decreasing visibility to the north and west down to about five thousand metres as a hefty rain shower moves through"*.

At 1628:37, the EMB500 flight reported passing 4500ft and the controller instructed the pilot, *"(EMB500 c/s) many thanks report reaching three thousand five hundred feet with five miles to run for onward clearance."* The controller added that no delay was expected.

At 1629:12, the EMB500 pilot requested, *"er (EMB500 c/s) we're three thousand five hundred feet now at twelve miles er is it possible to talk to Brize to get us lower down to MSA we're just in the bottom of er er clouds at the moment bumping around."* The controller responded, *"(EMB500 c/s) roger I can I can give you descent down to two thousand five hundred feet procedurally but no lower than that would that help you at all."* The pilot replied, *"er we'd like to try er (EMB500 c/s)"* and the controller responded, *"Roger then descend to altitude two thousand five hundred feet one zero zero three to report reaching and with your intentions.*" The radar recording shows the EMB500, 13nm S of Oxford.

The controller was asked if D/F bearings had given any indication that the EMB500 was likely to infringe the Brize Norton CTR. The controller couldn't remember the bearing or looking at the D/F at this point. The controller was asked if pilot's were normally advised about the proximity of the Brize Norton. The controller indicated that only visiting pilots were normally advised and added that the EMB500 was locally based and was familiar with the airspace and local procedures. The controller was asked if perhaps the pilot was aware of the proximity of Brize Norton CTR and had asked the controller to talk to Brize. The controller indicated that the pilot wanted descent due to bumping around in the cloud base and the controller had not at the time considered that a clearance to enter controlled airspace was being requested.

At 1629:45, the EMB500 pilot acknowledged, *"er so we are now descending two thousand five hundred feet one zero zero three towards the Oscar Xray er and we would like Procedural Service for ILS Runway one nine."* The

controller advised, *"and (EMB500 c/s) upon reaching the Oscar Xray you are cleared for the ILS Runway one nine report beacon outbound."* This was acknowledged correctly by the EMB500 pilot. The radar recording shows the EMB500 11nm S of Oxford, with the C130 tracking E'bound within the Brize Norton CTR indicating an altitude of 2700ft.

At 1630:33, the EMB500 pilot reported, *"(EMB500 c/s) at two thousand five hundred feet we've got traffic in our eleven o'clock on TCAS er at about our level do you have any info."* The controller replied, *"(EMB500 c/s) nothing on this frequency standby though Brize are on the line.*" The radar recording shows the EMB500 1nm S of the Brize Norton CTR boundary, indicating an altitude of 2500ft. The C130 is in the EMB500's 1030 position at a range of 2·4nm. The C130 is indicating an altitude of 2700ft and tracking E.

At 1630:48, the pilot advised, *"Traffic in sight passing overhead er looks like Brize Traffic (EMB500 c/s).*" The radar recording shows the EMB500 entering CAS. At 1630:50, the Brize Radar controller rang Oxford, reporting that the EMB500 had infringed CAS and that avoiding action had been taken.

At 1630:58, the radar recording shows the EMB500 has crossed the C130 from R to L, at a range of 0·4nm, with the C130 tracking to pass behind. The EMB500 is indicating an altitude of 2500ft and the C130 is indicating an altitude of 3200ft.

At 1631:00, the controller transmitted, *"and (EMB500 c/s) Brize just advised you have infringed controlled airspace er into their zone and that was their traffic they've taken avoiding action against you and if you could get out of the zone as quickly as you can please."* The pilot responded, *"er (EMB500 c/s) sorry I thought we were cleared down to two thousand five hundred feet."* The controller replied, *"Yeah affirm you were cleared down to two thousand five hundred feet but er it is to remain clear of the Brize Conrol Zone at all times."* The pilot advised, *"Okay roger misunderstood erm okay we'll make a right turn to clear the zone (EMB500 c/s)."*

At 1631:28, the controller asked the EMB500 flight to report either field in sight or outbound on the ILS. The pilot acknowledged and continued without further incident.

The controller was asked how a similar situation might be prevented. The controller recognised that better use of D/F may have given an indication of the EMB500's position. The controller recognised that the pilot may have misunderstood the descent clearance and that advising the pilot to remain clear of the Brize Norton CTR would have raised the pilot's awareness. The controller added that revised procedures are to be introduced that will establish routeings which would keep traffic away from the area N of CPT.

After extensive consultation with all of the stakeholders, Oxford ATSU promulgated a MATS Part 2, Supplementary Instruction 08/11, effective from 22 September 2011, together with a change to the UK AIP, Page AD 2-EGTK-1-6 (20 Oct 11). This introduced new procedures for the management of Oxford inbounds and outbounds from the S, which will be to route ac away from the busy area N of CPT. Oxford Airport are also installing a primary and secondary (Mode-S, MSSR) surveillance radar system with an estimated completion date of May 2012.

The EMB500 was not routed via CPT to OX, in accordance with release details passed by TC SW. Due to the traffic configuration on airway L9 the EMB500 was released 5·6nm W of CPT. This resulted in routeing that on a direct track to the OX NDB, would require the EMB500 to pass O/H the Brize Norton CTR.

The Oxford controller was not advised or aware of the amended routeing and did not detect the D/F indications that may have alerted the controller to the EMB500 routeing, which was further W than expected. The EMB500 pilot on the initial contact with Oxford stated, "…*we are coming from the south…,"* but this was not considered to be sufficient to have alerted the controller to the more W'ly route.

A misunderstanding occurred, when the EMB500 pilot requested further descent, due to turbulence in the base of cloud. The EMB500 pilot's requested, "...*is it possible to talk to Brize to get us lower down to MSA we're just in the bottom of er er clouds at the moment bumping around."* However the pilot's written report did not indicate whether the pilot regarded his request, included, or implied a clearance to transit the CTR. Consequently, the controller gave descent to an altitude of 2500ft in the expectation that the EMB500 would pass E of the Brize Norton CTR. The controller also considered that pilot was locally based and familiar with local and CAS restrictions. The Oxford Manual of Air Traffic Services, Part 2, Page 4-4, Paragraph 3.2, states:

'Aircraft who do not require to hold will, when appropriate, be cleared direct outbound from altitude 2500ft. This is subject to the aircraft being able to level at altitude 2500ft before it reaches 5min flying time from the 'OX' and associated holding pattern.'

This resulted in the EMB500 entering the Brize Norton CTR without a clearance and into conflict with the C130 in the radar pattern. The UK AIP Page, ENR 2-1-19 (20 Oct 11) states:

'Brize Norton Control Zone:

Pilots wishing to enter the Control Zone must observe the normal procedure for joining Controlled Airspace and should make their request for entry when 15nm or 5 minutes flying time (whichever is earlier) from the Control Zone Boundary. Pilots should make their request for Control Zone entry to BRIZE ZONE.'

A misunderstanding caused the EMB500 to enter the Brize Norton CTR without first obtaining a clearance. A number of factors were considered to have been contributory:

The EMB500 did not leave CAS at CPT in accordance with normal procedures and this was not communicated to the Oxford Approach controller.

The Oxford controller was not aware of the change in routeing and did not detect the pilot's report of being to the S, or the D/F bearings that may have indicated the EMB500 was routeing further W than planned.

The pilot was required to obtain a clearance before entering the Brize Norton CTR. The pilot asked Oxford to speak to Brize Norton in order to obtain further descent but no specific request was made regarding a crossing clearance. It was not clear to CAA ATSI, if the pilot had intended Oxford to obtain a crossing clearance.

The controller gave the EMB500 flight descent to an altitude of 2500ft and had an expectation that the ac was descending in Class G airspace to the E of the Brize Norton CTR.

The pilot entered the Brize Norton CTR without first obtaining a clearance and into conflict with the C130.

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 appeared to Members that there were differing expectations on the EMB500 flightdeck and within Oxford ATC. The transmission made by the EMB500 flight asking, *"…is it possible to talk to Brize to get us lower down to MSA…"* was made with the intent that Oxford coordinate with Brize for clearance into the CTR whereas the Oxford APP took this to mean that the crew wanted to leave the frequency to speak to Brize for further descent to MSA which she could give, believing the flight was routeing E of the CTR. Controller Members noted that the VDF should have alerted the APP to the EMB500's bearing from Oxford and the possibility that a descent would put it into CAS. However, Members agreed that the subsequent executive instruction given to the EMB500 flight by Oxford APP under the PS to descend to 2500ft had led to it entering the CTR without clearance and into conflict with the C130, which was the cause of the Airprox. With hindsight, had the crew stated that their request for descent to a lower altitude was a request to enter the CTR it would have been clear to the APP what the crew intended. She had not instructed the crew to remain outside CAS at the time and the EMB500 crew did not query whether they were cleared to enter the CTR during the descent. A salutary lesson to aircrew is to ensure that a positive clearance is received before entering CAS. The Brize controller had been pre-noted by Oxford about the EMB500 and had declined to work the flight as it was, at the time, only descending to 3500ft. It was when he was dealing with AC3 that the EMB500 had descended below 3500ft; this was noticed shortly afterwards as it entered the CTR and avoiding action was given. The C130 crew followed the TCAS RA guidance and climbed and as they did so they saw the EMB500 crossing ahead from R to L and below. The EMB500 crew saw the C130 as proximate traffic on TCAS before a TA was generated as it converged from the W. The PNF queried the C130's presence and was informed of the CTR infringement during which time they visually acquired the C130, climbing, before it passed above and behind. These elements, when combined allowed the Board to conclude that the risk of collision had been quickly and effectively removed.

Although the operating company's report listed the unusual events and the crew being within 5min of their maximum FDP as secondary causal factors, an experienced pilot Member opined that there were other factors. The crew had been close to the minimum rest period before the current duty period and had an early start from an airfield that wasn't their base; in addition the Captain had relatively few flying hours and was training a very inexperienced co-pilot. All of these elements would be likely to increase the crew's tiredness during this last portion of the flight.

Members were pleased to see that new procedures had been introduced for ATM of Oxford inbound and outbound flights as well as the introduction of radar during 2012.

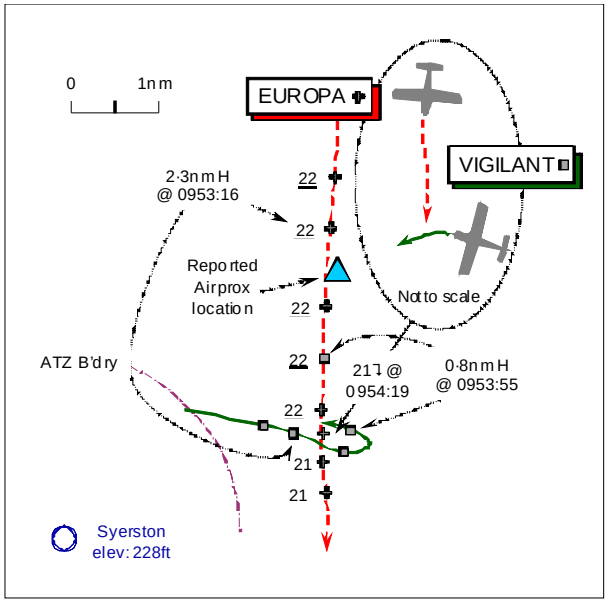
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Oxford APP descended the EMB500 to 2500ft which put it into CAS without clearance and into conflict with the C130.

Degree of Risk: C.

AIRPROX REPORT NO 2011096

Date/Time:	26 Jul 2011 0954Z	
Position:	5303N 00050W (3nm ENE of Syerston - elev 228ft)	
Airspace:	Lincolnshire AIAA	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Vigilant MG	Europa
Operator:	HQ Air (Trg)	Civ Pte
Alt/FL:	2000ft	2300ft
	QFE (1008mb)	QNH (1016mb)
Weather:	VMC CLBC	VMC CLBC
Visibility:	30km	>10km
Reported Separation:		
	50ft V/50m H	50ft V/50m H
Recorded Separation:		
	Not recorded	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE VIGILANT MOTOR GLIDER (MG) PILOT, a gliding instructor, reports he was conducting an elementary glider training sortie with an Air Cadet from Syerston and was in communication with Syerston RADIO on 125·425MHz. A squawk of A7000 was selected; neither Modes C, S nor TCAS are fitted. The MG is coloured white with red flashes on the fuselage/wingtips and orange stripes on the mainplane. Strobe lighting, navigation lights and the landing lights were all on.

About 4nm NE of Syerston, heading 290°, during a straight and level cruise at 60kt at 2000ft Syerston QFE (1008mb), some 500ft clear below cloud, a low-wing single-engine light ac was sighted about 200m away to starboard in his 1 o'clock and about 50ft slightly below his MG. A L turn was initiated to avoid the conflicting ac – the Europa – that maintained straight flight throughout and passed some 50m away and 50ft below his Vigilant. He assessed the Risk as 'high'.

THE EUROPA PILOT reports he was in the cruise on a VFR flight from Sandtoft to Redhill; his next waypoint was Wycombe Air Park. He was in receipt of a BS from Doncaster RADAR on 126·225MHz flying at an altitude of 2300ft QNH (1016mb). A squawk of A6160 was selected with Mode C; neither Mode S nor TCAS is fitted. There was a reasonably consistent cloud layer at around 2500ft so he was about as high as he could fly without being too close to the base of the layer. After passing Newark, approaching a position 3nm to the E of Syerston, heading 180° at 125kt, he noticed for the first time an ac at about the same level in his 10:30 position about 200m away, very close, on a converging track. He could see that there was a chance of collision and recognised that he was slightly below the other ac's altitude, so to avoid it he applied forward stick to decrease his altitude. A few seconds later he flew about 50ft under the other ac about 50m away, noticing that it was a predominantly white Vigilant MG. He did not notice any avoiding action taken by the Vigilant pilot and no lighting was observed on the MG; he assessed the Risk as 'medium'.

Resuming a level cruise, he asked Doncaster RADAR on the radio if they had seen the Vigilant, as they had not reported any traffic to him. The controller replied that he had not, but also stated that he had not been closely following his track as he was only under a BS. He made no further comment and proceeded en-route.

He remarked that he would hope to have sighted the Vigilant earlier, but it certainly demonstrated to him the difficulty of picking up a white ac against a predominantly white sky. In theory, he believes that he had 'right-of-way', but his instinct was to push forward as he was already slightly lower than the Vigilant. As for the BS, he thinks in the future he will always ask for TS; in the past he has done this but it has so often been downgraded to a BS that his habit has become to only ask for BS in the first instance. This had not worried him unduly as he has

often had conflicting traffic reported to him, even under a BS, although he understands that this is at the controller's discretion. He has reported this Airprox as a 'medium' Risk, though if he had either not sighted the ac at all or not taken avoiding action then he would have put it down as 'high'. He would be interested to learn if the pilot of the Vigilant MG had seen his ac and taken avoiding action as he did not notice any and also if the other ac was squawking Mode C.

ATSI regrets that due to an error in the request process from ATSI, the RT recording from Doncaster RADAR is not available for the period of the Airprox.

The pilot of the Europa was in receipt of a BS from Doncaster RADAR and his written report indicates that he asked Doncaster if they had seen the other ac. The controller responded that he had not, adding that he had not been following the track of the Europa. CAP744 states:

A controller may identify an aircraft to facilitate co-ordination or to assist in the provision of generic navigational assistance, but is not required to inform the pilot that identification has taken place.

Identification of an aircraft in receipt of a Basic Service does not imply that an increased level of service is being provided or that any subsequent monitoring will take place. Controllers may allocate SSR codes to aircraft in receipt of a Basic Service. The issuance of such a code does not constitute the provision of a surveillance service.

On the basis of the information available, ATSI is not able to process a formal report.

ATSI have identified an issue with processing procedures and have taken steps to ensure that a similar error does not recur.

UKAB Note (1): The UK AIP at ENR 2-2-2-4, notifies the dimensions of the ATZ at the government aerodrome of Syerston as a circle of radius 2nm, centred on RW07/25, extending from the surface to 2000ft above the aerodrome elevation of 228ft. An Air/Ground Communications Service is provided, C/S Syerston RADIO on 125·425 MHz, which is active in summer from 0730UTC to Sunset.

UKAB Note (2): Analysis of the LAC Debden and Claxby radar recordings is somewhat inconclusive as this Airprox is not shown clearly. The Europa, shown squawking A6160 and identified from following the track to Redhill, maintains a level cruise at 2200ft (1013mb) as it tracks S passing the Airprox location reported by the Vigilant pilot just after 0953:16. The Vigilant MG is shown exiting the Syerston ATZ only as a primary contact, before crossing through the Europa's 12 o'clock at a range of 2·3nm before turning about onto a heading of 290°, as reported. Unfortunately at 0953:55, moments before the Airprox occurs, the Vigilant fades from coverage in the Europa pilot's 11 o'clock at a range of 0·8nm. Just after the Europa passes the projected point of conflict the Mode C indicates a slight descent to 2100ft (1013mb), which is maintained thereafter and perhaps indicative of the Europa pilot's avoiding action descent. Although not shown, the Airprox is presumed to have occurred at 0954:19, some 3nm ENE of Syerston, clear of the ATZ.

HQ AIR (TRG) comments that this was clearly a close Airprox as both parties concur on the separation. The mutual avoiding action appears to have been effective, although given the geometry, the Europa pilot's vertical manoeuvre is likely to have been more significant. The lessons regarding availability of a Traffic Service are valid and indicate that without additional resource, scope for improvement in use of surveillance services is limited.

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.

Board Members echoed the Europa pilot's view over the provision of a TS to flights operating in Class G airspace. Whilst the pilot says that he had not asked for a TS because it was so often downgraded to a BS, Members agreed that it is wiser airmanship to obtain a radar service whenever possible. Clearly a BS will not generally deliver TI about any other ac in the vicinity and in this location other flights would be unlikely to be working Doncaster/ Sheffield ATC. The Board recognised that it was not always feasible for controllers at terminal ATSUs to provide a radar service to transit traffic and priority will invariably be accorded to flights arriving or departing at that aerodrome. However, a nominated LARS unit should be able to provide a radar service within the normal

constraints of traffic loading and radar/radio coverage. The Board agreed the Europa pilot could have chosen a more suitable ATSU as he progressed S along his route and here Waddington might be a more helpful choice perhaps with better coverage. Moreover, Members were keen to emphasise that past experience should not inhibit pilots from asking for a TS or DS in the first instance to supplement their own lookout whenever appropriate. The Europa was not fitted with any form of collision warning system, but as the Vigilant was evidently not transponding Mode A and the type is not fitted with Mode C altitude reporting this would not have helped here. Nevertheless, controller Members emphasised the importance of SSR data, both in the provision of ATC services and to enable TCAS to detect other ac, so pilots should always ensure they are squawking when airborne in accordance with standard procedures. There were no other ac shown in the vicinity of the Europa's track clear to the E of Syerston and the primary contact that had been identified on the radar recording as the subject Vigilant faded just before the closest point, so the separation could not be assessed independently. With both pilot's reporting that they sighted each other's ac at a range of 200m during this crossing encounter, in the short time available this allowed little scope to assess the situation and take appropriate action. The difficulties of sighting white gliders of small cross-sectional area at the same level against a cloudscape was recognised, but applied equally to small aeroplanes such as the Europa. Members agreed unanimously that the Cause of this Airprox was a late sighting by both pilots.

With 50ft vertical separation, 50m apart both pilot's reports agreed on the minimum separation that was plainly too close for comfort. Although the Europa pilot perceived that he had 'right-of-way', the Board noted the Vigilant pilot was 'gliding' when the Airprox occurred and therefore he had right of way. Either way, at these close ranges the Europa pilot wisely elected to descend as the Vigilant pilot turned L. Fortunately, the avoiding action taken by both pilots was complimentary, but at these distances a test-pilot Member opined that in view of the Vigilant's relatively slow rate of roll, its pilot would likely have achieved greater separation in the vertical plane than was possible by turning. Since the Vigilant pilot's L turn probably had little effect on moving his ac out of the way, one experienced Member concluded that there was an actual Risk of collision. However, this was a solitary view; the Board concluded that whilst the resultant separation was barely sufficient, the action taken had been effective in augmenting what separation there was. Members agreed that the safety of the ac involved had been compromised.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Late sightings by both pilots.

Degree of Risk: B.

AIRPROX REPORT No 2011097

AIRPROX REPORT NO 2011097

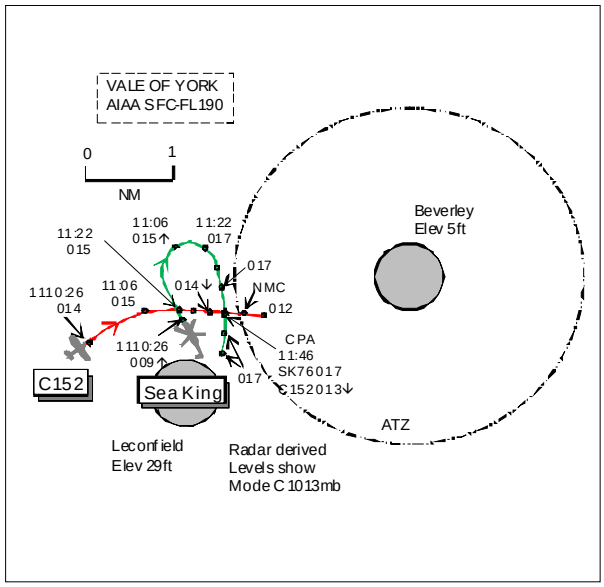
Date/Time: 26 Jul 2011 1112Z

Position: 5353N 00026W
(1·25nm NE Leconfield - elev 29ft)

Airspace: Vale of York AIAA(Class: G)

	Reporting Ac	*Reported Ac*
Type:	Sea King	C152
Operator:	HQ Air (Ops)	Civ Pte
Alt/FL:	1500ft	1500-1800ft
	QFE (1014mb)	QNH
Weather:	VMC CLBC	VMC CLBC
Visibility:	30km	5000m
Reported Separation:		
	50m	300ftV/100m

Recorded Separation:
400ft V/returns merge



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE SEA KING PILOT reports flying a local sortie from Leconfield, VFR and in communication with Beverley Radio on 123·05MHz, squawking 7000 with Mode C. The visibility was 30km flying 200ft below cloud in VMC and the helicopter was coloured yellow with strobes and nav lights switched on. As part of a 6-monthly QHI check flight the helicopter was being positioned for a PFL to Leconfield. Having departed upwind of the field to the N and levelled at 1500ft QFE 1014mb he entered a rate 1 turn to the R to point at the airfield. Having rolled 'wings-level' heading 170° he, the QHI in the LH seat, observed and called a light fixed-wing ac tracking 090° in the 0130 position, range 150-200m, no more than 100ft below. The HP in the RH seat entered a steep RH turn to avoid the ac which appeared not to deviate from its track in any way. As it passed close down their port side, approximately 50m distant, he saw that the ac was a Cessna type coloured white/blue and noted its registration [one letter incorrect]. He contacted Beverley Radio to enquire whether this ac was inbound to Beverly, which it was not. He contacted Humberside Radar who was able to confirm that the flight was on frequency with its correct c/s. He informed Humberside that an Airprox was to be filed which was confirmed by telephone after landing. He assessed the risk as medium. It was noteworthy that at the CPA the Cessna was in Class G airspace not infringing any zone at Leconfield as no such zone exists for civil operators. However, had the Cessna continued on its E'ly track it had <0·5nm to run before the Beverley ATZ and, unless aggressive manoeuvring was undertaken, it was likely the ac infringed the ATZ.

THE C152 PILOT reports flying a local sortie from Sandtoft, VFR and in receipt of a BS from Humberside Radar on 119·125MHz, squawking an assigned code with Mode C. The visibility was 5000m flying 500ft below cloud in VMC and the ac was coloured white/blue with strobe and anti-collision lights switched on. He was on a cross-country flight in the process of building flying hours, routeing at the time from 2nm S of Pocklington to Hornsea on an E'ly track towards the coast at 90kt. The Wx started to deteriorate suddenly with a low cloud base from the coast so he had to maintain an altitude of about 1500-1800ft below the cloud and at the same time above MSA. About 3nm W of Beverley ATZ and Leconfield airfield he took the decision to change his track to avoid both locations from E'ly onto a NE'ly track. After a few moments he spotted a yellow Sea King helicopter from his R window taking-off from Leconfield and gaining height quickly; it was almost equal to his level before it crossed his track from R to L heading N. Therefore as an action he reduced his speed and maintained his heading (ENE track). As the helicopter was on his R he gave the flight right of way and waited a few moments to see the helicopter pilot's actions. The Sea King then started to turn R through 180° and head S which put both ac onto a collision course. He elected to avoid a collision by a fast descent below the helicopter which passed 300ft above and 100m clear but it caused him to slightly penetrate the Beverly ATZ. At the time he was unable to turn around as the Wx and visibility was deteriorating owing to drizzle that had started to fall. A few moments later the Sea King crew spotted his ac, he thought, and spoke to the controller about his ac crossing into the ATZ. He believed the controller did not see the Airprox as he was called moments later by the controller to confirm if he had entered

the ATZ. He felt that he was under pressure and overwhelmed by the incident and so as not to inconvenience anyone he told the controller that he had not crossed into the ATZ as he believed it to be the case at the time. He considered that he had taken whatever actions were necessary to avoid the Airprox and collision.

THE HUMBERSIDE RADAR CONTROLLER reports on duty when the pilot of a Sea King made an initial call to report that he had flown close to a Cessna in the Beverley area and requesting if he was working any traffic of that type in the area. At the time the C152 was on frequency under a BS about 2nm NE of Beverley airfield on an E'ly track indicating 1400ft altitude and the only ac showing on radar in the vicinity. The pilot of the Sea King pilot was informed of the C152's position and he stated that he was considering filing an Airprox. Soon after the Sea King pilot changed to Leconfield frequency. The controller then asked the C152 pilot if he had seen the Sea King or called Beverley Radio for transit of the ATZ. He replied negative to both and added he had remained clear of the ATZ.

ATSI reports that the Airprox occurred at 1111:47 UTC, 2·2nm WSW of Beverley airfield and 1·25nm NE of Leconfield airfield. The Beverley ATZ comprises a circle radius 2nm centred on the mid-point of RW12/30 and extending to 2000ft above surface level (elevation 5ft). Beverley operate an A/G radio. Leconfield do not have an ATZ and also operate an A/G radio.

The Sea King was operating on a flight from Leconfield airfield as part of a 6-monthly Qualified Helicopter Instructor (QHI) check and was in communication with Beverley Radio.

The C152 was operating from Sandtoft airfield on a local VFR cross country flight and in receipt of a BS from Humberside Radar.

CAA ATSI had access to area radar recordings, together with the written report from both pilots. A request for RT recordings was not made within 30 days and therefore was not available.

METAR: EGNJ 261050Z 35010KT 9999 SCT014 BKN018 15/11 Q1016=

METAR: EGNM 261050Z 01007KT 340V070 9999 SCT017 14/10 Q1016=

The C152 departed from Sandtoft and was in receipt of a BS from Humberside Radar, squawking 4271. The pilot's written report indicated flying a cross country flight in order to build up hours.

At 1107:01 the radar recording shows the C152, 8·1nm to the WSW of Beverley airfield indicating FL015 (1600ft QNH 1016mb). The Sea King was manoeuvring just to the NW of Leconfield airfield indicating unverified FL006 (700ft QNH).

At 1110:26 the radar recording shows the Sea King, 1·1nm N of Leconfield, tracking NNW, indicating FL009 (1000ft QNH) climbing and crossing ahead of the C152 from R to L at a range of 1·3nm. The C152 was tracking NE indicating FL014 (1500ft QNH).

At 1111:06 the radar recording shows the Sea King commencing a R turn with the C152 also turning R onto an E'ly track to pass 0·7nm S of the Sea King.

Sixteen seconds later at 1111:22, the distance between the 2 ac is 0·8nm, with the Sea King indicating FL017 (1800ft QNH) and the C152 indicating FL015 (1600ft QNH). The Sea King continued the R turn onto a S'ly heading as the 2 ac converge.

A further 16sec later the radar shows the 2 ac in close proximity at a position, 2·2nm to the WSW of Beverley airfield. The distance between the 2 ac is 0·3nm and the Sea King is crossing the C152 from L to R, indicating FL017 (1800ft QNH). The C152 is indicating a descent through FL014 (1500ft QNH).

The next sweep at 1111:46 the radar recording shows the 2 contacts merging, the Sea King is indicating FL017 (1800ft QNH) and the C152 FL013 (1400ft QNH).

The ac then quickly diverge, the Sea King maintaining indicating FL017 (1800ft QNH) and the C152, indicating FL012 (1300ft QNH). The C152 continues on the E'ly track, transiting through the Beverley ATZ.

The Sea King pilot contacted Humberside Radar and requested details of the C152. The controller's written report indicated that the C152 pilot reported that he had not seen the Sea King or called Beverley for transit of their ATZ, adding that he had remained clear of the Beverley ATZ.

The C152 was operating under VFR, in receipt of a BS from Humberside Radar. CAP 774, UK Flight Information Services, Chapter 2, Page 1. Paragraphs 1 & 5, state:

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

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

The Airprox occurred when the C152 and the Sea King came into close proximity, whilst operating VFR in Class G airspace. The C152 was in receipt of a BS from Humberside Radar. Under a BS there is no obligation placed upon the controller to provide TI.

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 two different viewpoints on this incident. The Sea King departed Leconfield to the N and climbed to 1500ft, passing over 1nm ahead of the C152 approaching from the W, which the crew did not see, prior to turning back to the S towards the airfield. It was only after rolling-out S'bound that the QHI saw the Cessna in his 0130 position, about 100ft below, and executed a R turn to pass behind it by 50m. Meanwhile the C152 pilot saw the Sea King taking-off and slowed down to give way to it, as it was on his R, and watched it pass ahead at almost the same level. When the Sea King then turned onto a conflicting course, although the C152 pilot had right of way, he wisely elected not to let the conflict develop. Rather, he descended, passing, he estimated, 300ft below and 100m clear; this separation was borne out by the radar recording which shows 400ft as the returns merge. Members agreed that the C152 should have been visible to the Sea King crew as they crossed ahead of, but it would have been difficult to spot at that range and aspect. Once the Sea King was in its R turn on to a S'ly heading, the crew had seen the C152 at the earliest opportunity and that this incident had been a conflict where the actions taken by both crews had been effective in removing the risk of collision.

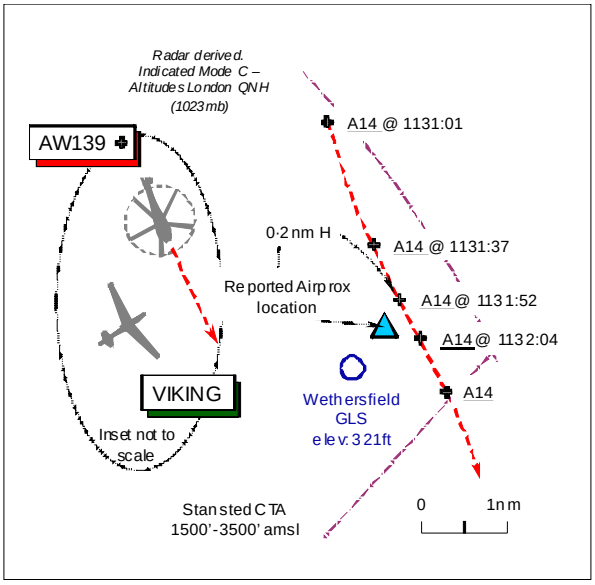
PART C: ASSESSMENT OF CAUSE AND RISK

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

Degree of Risk: C.

AIRPROX REPORT NO 2011098

Date/Time:	29 Jul 2011 1131Z	
Position:	5158N 00031E (0·75nm NE of Wethersfield GLS)	
Airspace:	London FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Viking Glider	AW 139
Operator:	HQ Air (Trg)	Civ Exec
Alt/FL:	950ft↓	1400ft
	QFE	QNH (1023mb)
Weather:	VMC CLBC	VMC NR
Visibility:	10km	8km
Reported Separation:	<100ft V/<100m H	200ft V/500m H
Recorded Separation:	Not recorded - see Note (1)	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE VIKING CHIEF GLIDING INSTRUCTOR reports that a white and green Agusta 139 helicopter was seen suddenly, tracking S across the eastern half of Wethersfield aerodrome at an estimated height of 1000ft beneath a 1200ft overcast. The Viking glider pilot was carrying out cadet training in the RH cct to RW04 at a height of about 950ft heading 060° at 50kt when he spotted the helicopter 2km away. However, the helicopter pilot appeared not to see the Viking glider, which was in his 1-2 o'clock position, very slightly below, and heading towards. Quickly and deliberately lowering the nose of the glider, whilst keeping the helicopter in sight, the glider pilot turned away to increase separation between his glider and the conflicting Agusta 139, which passed by less than 100m away and less than 100ft above the Viking glider at the closest point. The white and green helicopter maintained its southerly track and the glider subsequently landed without further incident. The glider pilot considered that there could have been a risk of collision had the helicopter made a slight course deviation to its R. If no avoiding action had been taken by the glider pilot, the aircraft would have passed dangerously close to one another and he assessed the Risk as 'high'. Wethersfield was NOTAM'd for operations at the time of the incident.

Farnborough LARS was contacted, and stated that a helicopter, squawking A7000 was shown on radar, but they were not in RT contact with the pilot.

THE AGUSTA/WESTLAND A139 HELICOPTER PILOT (A139) reports he was the PIC and the PF from the RH seat, whilst in transit under VFR routeing from Newmarket to Braintree VRP and thence to Hicksted, S of Gatwick. A squawk of A7000 was selected with Modes C and S on; TCAS I is fitted. Flying at an altitude of 1400ft beneath the Stansted CTA in VMC some 700ft below cloud, he had contacted Essex RADAR but due to controller workload they were unable to provide a TS. Because of Wethersfield Glider Launching Site (GLS) along their track, he had altered his course further to the E to avoid flying too close to Wethersfield; he estimates that their track passed about 2nm NE of the gliding site at the closest point heading 170° at 145kt. The HISL was on and as he approached Wethersfield he switched on the fixed landing lights to assist visual conspicuity. Aware of some gliders on the ground, both he and the PNF in the LH seat were actively scanning for any confliction with airborne gliders when he became aware of a glider to their right about 500m away in their 2:30 position and 200ft below his helicopter. They were already ahead of the glider so he maintained his course. The glider was not spotted earlier due to the thick door pillar, neither had the PNF seen the glider until he pointed it out to him. There was no Risk of collision. When they reached Braintree they contacted Farnborough LARS for a BS, who advised them that his helicopter had flown overhead Wethersfield, which he disputed

UKAB Note (1): The LAC Stansted 10cm radar recording does not illustrate this Airprox as the Viking glider is not shown at all, therefore, the minimum separation that pertained cannot be ascertained independently. However, the A139 is clearly shown in transit beneath the north-eastern stub of the CTA, maintaining an altitude of 1400ft

London QNH (1023mb). The A139 makes a slight track alteration at 1131:37, turning slightly L thereby increasing the track displacement from Wethersfield, as reported, before drawing abeam the reported location of the Airprox at 1131:52, the helicopter following a track displaced 0·2nm from the reported point. The A139 passes about 0·8nm abeam Wethersfield GLS at the closest point at 1132:04, before clearing to the S.

UKAB Note (2): The UK AIP at ENR 5-5-1-7, notifies the GLS at Wethersfield A/D as active from Sunrise to Sunset on Fridays, Saturdays, Sundays and Public Holidays or as notified by NOTAM. Winch launching is notified to 2000ft above the aerodrome elevation of 321ft amsl. A NOTAM – H3372/11) had been issued notifying extended gliding activity from 25 – 28 Jul, in addition to the normal activity for this Friday.

ATSI reports that when the A139 crew contacted Essex RADAR at 1126, the pilot was asked to standby. Some 7min later the controller asked the pilot of the A139 to pass his message, if he was still on the frequency. In this intervening period the controller's workload was high. The RTF recording shows that he was controlling ten Stansted movements, which included both inbound and outbound flights. The A139 pilot reported, at 1133, that he was on a flight from Newmarket and at the time was passing Braintree at 1400ft, which is about 6nm S of Wethersfield, consequently, the Airprox had already occurred before an ATS could be established.

HQ AIR (TRG) comments that the A139 passed within 1nm of an active glider site at the operating altitude and it appears he only saw the Viking approaching the CPA. By contrast, the Viking pilot acquired the A139 at a good distance and was able to avoid it as it approached, fortunately without affecting his recovery.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

Despite the close location of the Stansted 10cm radar head to the position of the Airprox, the small Viking glider with its composite structure is not shown on the radar recording. Consequently, the significant disparity between the minimum separation reported by Viking glider pilot and that contained in the AW139 pilot's account could not be resolved. The 500m horizontal separation filed by the AW139 pilot was more than 5 times the <100m perceived by the glider pilot leading some Members to contend that the AW139 pilot had not seen the glider flown by the reporting pilot. Moreover, an effective lookout regimen should include clearing areas behind 'blind-spots' regardless of airframe obstructions and a slower transit through this confined part of Class G airspace might have helped the AW139 crew to discharge their responsibilities to 'see and avoid' other ac.

It was evident that the AW139's track was closer to Wethersfield GLS than the A139 Captain's estimate. The radar recording shows that the helicopter passed about 0·8nm abeam the GLS at the closest point, level at 1400ft amsl, and would have been closer if the helicopter crew had not made their earlier course alteration. Helicopter pilot Members voiced a concern that the AW139 crew had flown closer than was prudent at an altitude below that which can be attained by gliders on the winch wire. Fortunately, the presence of the helicopter flying close by had been detected in time to enable the glider pilot to take robust and effective avoiding action. The Board concluded, therefore, that this Airprox had resulted from a conflict in the vicinity of a promulgated and active glider launching site resolved by the Viking pilot, whose avoiding action had effectively removed the Risk of a collision.

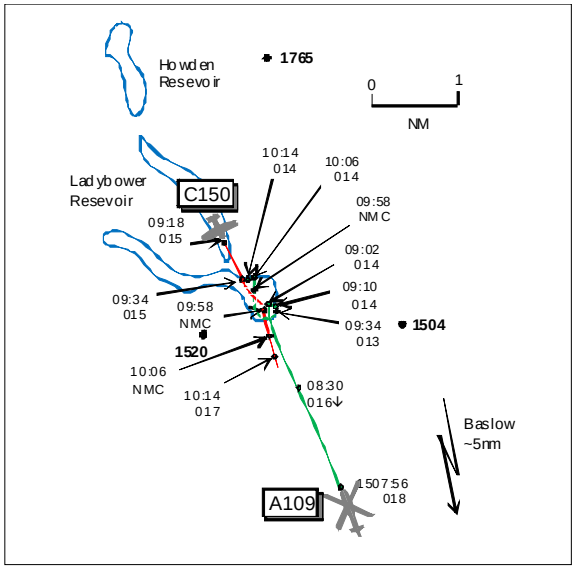
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A Conflict in the vicinity of a promulgated and active glider launching site resolved by the Viking pilot.

Degree of Risk: C.

AIRPROX REPORT NO 2011099

Date/Time:	5 Aug 2011 1510Z	
Position:	5322N 00142W (9nm W Sheffield)	
Airspace:	LFIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	A109	C150
Operator:	Civ Comm	Civ Pte
Alt/FL:	1700ft↓	700-1000ft
	QNH (1010mb)	RPS
Weather:	VMC CLBC	VMC CLNC
Visibility:	40nm	>10km
Reported Separation:		
	75ft V/100m H	NR
Recorded Separation:		
	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE A109 PILOT reports flying a HEMS mission VFR and in communication with East Midlands on 134·175MHz, squawking 0020 [Medivac] with Modes S and C. The visibility was 40nm flying 1000ft below cloud in VMC and the helicopter was coloured yellow/grey with nav, 2 anti-collision and 2 HISLs all switched on. Heading 360° at 150kt leaving 1700ft QNH 1010mb and while trying to identify the intended landing site, a pop-up TCAS TA appeared on his TAS display. Nothing was visual so after a few seconds he entered a tight RH orbit in an attempt to locate the other ac. The TAS is not highly sophisticated and targets appear in the wrong location on the display, disappear and reappear at random. Three orbits were executed while scanning above, below and level. No crew member saw anything until he spotted an ac, a red coloured M/Light, he thought, in his 1 o'clock. A descending LH turn was executed to put some distance between them and its registration was noted [incorrectly] as it passed 75ft above and 100m clear on his R. Although he had reported leaving the East Midlands frequency to the Ambulance Control moments earlier, he reported the Airprox to East Midlands as soon as he could. He assessed the risk as high.

THE C150 PILOT reports flying a local sortie from Scampton, VFR and listening out with Doncaster/Sheffield on 126·225Mhz, squawking 6160 with Mode C. The visibility was >10km in VMC and the ac was coloured white/ maroon with anti-collision light switched on. His route incorporated a 13nm part at low-level from Howden Reservoir to Baslow following the Upper Derwent Valley before climbing out for recovery to Scampton (copy of route/map supplied). Earlier he had transited the Doncaster/Sheffield Class D airspace and continued on a BS until the descent point at Howden Reservoir. He advised Doncaster of his intentions to follow the valley at low-level and recall Radar on climbout at Baslow whilst retaining the squawk. Heading 170° at 85kt and 700-1000ft RPS his pax spotted a helicopter ahead at very low-level manoeuvring. They maintained visual contact and noted the helicopter turning port and pass well clear on his starboard side although slight rotor wash was felt as his ac crossed the path of the helicopter. A photograph was taken by his pax [included with his report] showing the helicopter passing on their starboard side before he initiated a climb to 2000ft and recalling Doncaster/Sheffield to continue with a BS. He assessed the risk as low.

UKAB Note (1): The Manchester METAR shows EGCC 051450Z 28010G22KT 230V330 9999 FEW042 20/09 Q1012 NOSIG=. The Barnsley RPS 1500-1600 was 1006mb.

ATSI comments that the subject A109 flight established communication with East Midlands Approach at 1456. The pilot reported leaving the CTR, requesting a BS, which was agreed. The next transmission from the A109 was at 1507:30, when the pilot reported landing in 1min. He added he would call when airborne. The A109's destination was Ladybower Reservoir, situated about 36nm NW of East Midlands Airport. Apparently, the A109 pilot tried to contact Approach at 1511 but nothing was heard on the ground. A relay from another helicopter was

unsuccessful. At 1518, the pilot of the A109 reported he would be filing an Airprox report, commenting that it occurred at 1609 (local) directly overhead Ladybower Reservoir at 1300ft QNH 1011 when he was heading N and a small fixed wing was heading S straight towards them. They came quite close to each other and he had to take avoiding action. A report would be filed on returning to the airport.

The other flight involved, the C150, reported being in contact with Doncaster and receiving a BS. At the time of the Airprox the pilot reported he was not receiving an ATC service but was listening out only. He had reported to Doncaster that he was descending to low-level in the Upper Derwent Valley from Howden Reservoir. His intention was to recall Radar on climbing out at Baslow, whilst retaining the squawk. Ladybower Reservoir is about 26nm WSW of Doncaster Airport.

CAP 774 (Flight Information Services), Chapter 2 defines 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. This may include weather information, changes of serviceability of facilities, conditions at aerodromes, general airspace activity information, and any other information likely to affect safety. The avoidance of other traffic is solely the pilot's responsibility. Basic Service relies on the pilot avoiding other traffic, unaided by controllers/FISOs. It is essential that a pilot receiving this service remains alert to the fact that, unlike a Traffic Service and a Deconfliction Service, the provider of a Basic Service is not required to monitor the flight. Pilots should not expect any form of traffic information from a controller/FISO, as there is no such obligation placed on the controller/FISO under a Basic Service outside an Aerodrome Traffic Zone (ATZ), and the pilot remains responsible for collision avoidance at all times. However, on initial contact the controller/FISO may provide traffic information in general terms to assist with the pilot's situational awareness. This will not normally be updated by the controller/FISO unless the situation has changed markedly, or the pilot requests an update. A controller with access to surveillance-derived information shall avoid the routine provision of traffic information on specific aircraft, and a pilot who considers that he requires such a regular flow of specific traffic information shall request a Traffic Service.'

UKAB Note (2): The radar recording does not capture the CPA. At 1507:56 the A109 is seen squawking 0020 approaching Ladybower Reservoir from the SSE tracking 340° level at FL018 (~1700ft QNH 1010mb). Just over 30sec later the A109 is seen descending through FL016 (1500ft QNH) before commencing a R turn at 1509:02 on reaching the S edge of the reservoir and descending through FL014 (1300ft QNH). The A109 disappears after the next sweep at 1509:10, turning through a SE'ly heading still level at FL014 (1300ft QNH). The next sweep 8sec later at 1509:18 reveals the C150 squawking 6160 tracking 160° towards the position where the A109 faded with just under 1nm to run, level at FL015 (1400ft QNH). The C150 disappears after the radar sweep at 1509:34 indicating FL015 (1400ft QNH) whilst the A109 reappears as a pop-up return, very close to the position of its previous radar return, in its 11 o'clock range 0·5nm indicating FL013 (1200ft QNH). This lack of movement by the A109 is probably owing to it entering a tight RH orbit, as reported by its pilot. The next time the subject ac are seen is at 1509:58 after they have passed, the C150 tracking 170° showing NMC 0·2nm SSE of the A109 which is also displaying NMC and tracking N'ly. The A109 shows FL014 (1300ft QNH) on the next sweep turning L before the next sweep at 1510:14 shows the C150 climbing through FL017 (1600ft 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 and reports from the appropriate ATC authorities.

With both flights descending under VFR to low-level the only means of collision avoidance was through see and avoid. The A109 pilot was unaware of the approaching C150 until commencing descent and then receiving a TCAS TA. Being unable to acquire the C150 visually he elected to enter a RH orbit, which Members believed had not assisted the pilot with assimilating the relative bearing of the approaching Cessna since the limitations of TCAS in azimuth are exacerbated while manoeuvring. Owing to the nature of the area, with both flights confined within a valley, the A109 pilot had limited options to manoeuvre out of the way. Some Members thought that the actions taken by the A109 pilot had led him to visually acquiring the C150 late but this view was not shared by the majority of Members. Members agreed that the orbits flown had probably made the helicopter more conspicuous thereby attracting the attention of the C150 pax and then the pilot. Given all of these circumstances, it was felt that both crews had seen each other as soon as practicable and that this had been a conflict in Class G airspace.

Members noted that there were discrepancies in the reporting of the relative heights by both pilots. The A109 pilot was undoubtedly concerned with the situation, which occurred at a critical stage while on task and while trying to establish a suitable landing site. He saw the C150, probably later than ideal and turned L and descended, estimating it passed 75ft above and 100m clear. The C150 pilot appeared to be unconcerned with the scenario, having seen the A109 orbiting ahead and below him at low-level and maintained visual contact with it before watching it turn L to pass clear on his RHS. The recorded radar only shows the ac approaching the incident area and then intermittently thereafter, the A109 descending and entering the RH orbit at about altitude 1400ft before fading and then appearing as a pop-up contact at 1200ft whilst the C150 disappears at 1400ft with the A109 0·5nm ahead. The photograph supplied by the C150 pilot shows the A109 in the C150's 1-2 o'clock tracking to pass well clear on its RHS at about the same level. From the information available Members believed that the C150 pilot was always in a position to take action, if necessary, to avoid a collision but the ac had passed closer than ideal, given the surrounding landscape. This, when combined with the action taken by the A109 pilot was enough to persuade the Board that any risk of collision had been effectively removed.

PART C: ASSESSMENT OF CAUSE AND RISK

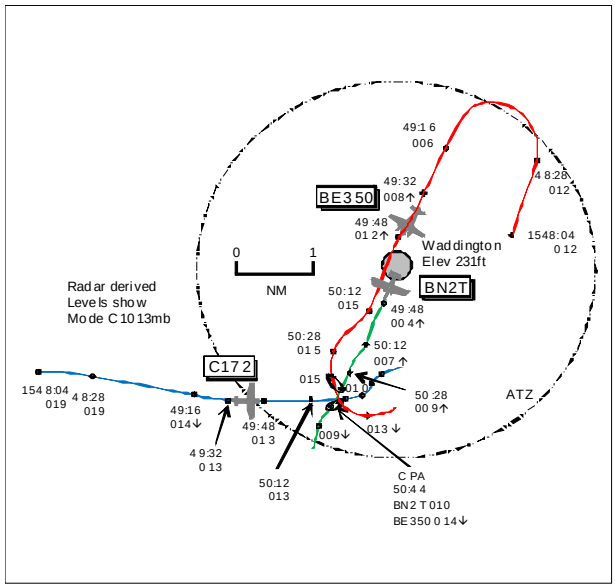
Cause: Conflict in Class G airspace.

Degree of Risk: C.

AIRPROX REPORT No 2011100

AIRPROX REPORT NO 2011100

Date/Time:	5 Aug 2011 1551Z	
Position:	5308N 00033W (2nm SSW Waddington - elev 231ft)	
Airspace:	ATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	BN2T Islander	BE350
Operator:	HQ AAC	HQ Air (Ops)
Alt/FL:	900ft↑	1000ft
	QFE (1002mb)	QFE (1002mb)
Weather:	VMC CLBC	VMC NR
Visibility:	10km	NR
Reported Separation:		
	<100ft slant	NR
Recorded Separation:		
	400ft V/0·1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE BN2T ISLANDER PILOT reports outbound from Waddington, VFR and in communication with Tower and then Approach on UHF, squawking 3610 with Modes S and C; TCAS was not fitted. The visibility was 10km flying clear below cloud in VMC and the ac was coloured grey with nav and strobe lights switched on. After normal start-up and taxi ATC Ground asked what type of departure they required. He requested VFR and was given a standard clearance, "Depart as requested, squawk 3610, Stud 3 once airborne"; this clearance allows for a non-standard turn against the cct direction; Tower then cleared them for take-off. Just as they began to rotate (the front wheel had just left the ground so not the best time to pass info) Tower advised "light ac in your 2 o'clock". Once safely clear of the ground heading 200° at 90kt he acknowledged this and confirmed that he had seen the light ac, possibly a C152 [actually a C172], in the 2 o'clock high; he then changed to Stud 3 (Approach) at approximately 500ft. They began a gentle climbing RH turn to pass behind the light ac as it was now going to pass in their 12 o'clock on the extended C/L at a range of approximately 0·25nm; Approach also confirmed the light ac. At about 900ft QFE 1002mb he spotted a King Air in his 4 o'clock position slightly high. As he was the NHP in the RH seat he had to take control, stopping the R turn and turning L onto 200° before halting the climb and carrying out a descent of 100ft to avoid the King Air as it was in a gentle rate 1 LH turn from the deadside of the cct, presumably to join. At no time were they informed of the King Air and he suspected the King Air was unsighted to their ac as they were underneath and in its blind-spot and very close (<100ft separation). Had he not taken avoiding action he suspected they would have impacted into the underside of the King Air. He assessed the risk as very high. He opined that this was a potentially serious incident. At no time had he requested an expeditious departure. In hindsight it would have been more sensible for ATC to have held them on the RW for a couple of minutes to allow the light ac (which was operating on VHF and not the standard UHF for military ac) to move away from the extended C/L and for ATC to have made them aware of the King Air joining on the deadside.

THE BE350 PILOT reports flying a local training sortie from Waddington. Whilst in the visual cct on short final to RW20 they were instructed by ATC to go-around as an Islander had yet to get airborne. Established on the deadside heading 200° at 140kt level at 1000ft QFE 1002mb they were informed of a light ac [the C172] joining for downwind. With the departing Islander in sight climbing straight ahead they delayed a downwind turn until visual with the light ac. Once visual with both ac they turned downwind. Although they received a TCAS TA against the Islander, they were visual with both ac throughout and the flight safety risk was minimal.

BM SAFETY MANAGEMENT reports that this Airprox occurred between a BN2T Islander CC2 conducting a VFR departure and a BE350 going around within the visual cct at Waddington.

All heights stated are based upon SSR Mode C from the radar replay unless otherwise stated, with a 2-300ft difference between QFE height and radar altitude. All speeds quoted are based upon the recorded GS.

At the time of the incident, Waddington was operating to RW20 with a LH cct at 1000ft QFE. The TWR and GRD positions were bandboxed which is common at Waddington due to the lack of task load on GRD. The ADC assessed the task complexity as medium and their workload as high to medium.

There were 3 ac involved within the incident sequence, the Islander operating on UHF and the BE350 and a C172 operating on VHF. At times during the incident sequence the RT is congested, with 3 separate occasions where transmissions from ac were made simultaneously on UHF and VHF. Whilst the ATC Order Book states that 'when operating a visual circuit containing a mixture of VHF and UHF ac, all UHF traffic must be transferred onto VHF' the ADC has stated that they interpreted this as referring to ac remaining within the visual cct; consequently, they allowed the Islander flight to remain on UHF as it was departing the airfield. Moreover, the ADC did not take the opportunity to transmit on both frequencies simultaneously but alternated between them.

The incident sequence commenced at 1547:36 when a C172 pilot called to join the visual cct from the W, positioning for a downwind join to RW20 (WAD 257° 5nm indicating 1900ft). However, the ADC did not respond as they were liaising with APP about the Islander's departure details and then passing these to the Islander crew. At this point, the Islander was taxying for departure and the BE350 was downwind, 1·5nm NE of the airfield. At 1548:00, co-incident with the C172 pilot calling again on VHF for join, the Islander stated on UHF that they were switching to Tower.

At 1548:07 the ADC authorised the C172 flight to join the cct downwind which was acknowledged by its pilot. At 1548:14 the Islander crew called on UHF that they were, *"ready for departure"* and the ADC cleared them for take-off at 1548:20. At 1548:30 the BE350 called final on VHF and, having initially been placed on a *"continue"*, was instructed to, *"go-around"* at 1549:17. Waddington have subsequently confirmed that the *"continue"* clearance was issued in expectation of the Islander departing but that the Islander's pre-takeoff checks took longer than expected as the pilot was new to type.

At 1549:32 APP called the ADC to highlight the crosswind position of the C172 joining from the W, which was 2·8nm SW of the airfield. This prompted the ADC to pass a warning of the traffic to the Islander flight at 1549:45, stating that there was, *"one light aircraft joining from the west."* Co-incident with this transmission on UHF, the C172 pilot called on VHF stating that they were, *"upwind request location of the other aircraft*." The ADC responded by correctly re-stating the positions of all of the cct traffic and, at 1549:48, the Islander is seen to get airborne on the radar replay.

At 1549:52 and co-incident with the C172 pilot reading back the TI on VHF, the Islander crew asked the ADC on UHF to, *"confirm that's one aircraft from the west "* which was confirmed by the ADC. At this point the Islander was accelerating through 73kt and indicated FL004 (~100ft QFE 1002mb) climbing, with the BE350 0·9nm N, indicating FL012 (~900ft QFE) and 156kt and 0·2 nm lateral separation between their respective tracks.

Between 1550:02 and 1550:18 the ADC exchanged RT with the C172 pilot to ensure that he was visual with both the Islander and the BE350. During this exchange at 1550:14, the BE350 turned starboard to diverge from the track of the Islander. At 1550:12, 0·5nm lateral separation existed between the incident ac; the BE350 indicating FL015 (~1200ft QFE) and 160kt, with the Islander indicating FL007 (~400ft QFE) and 93kt.

At 1550:28, with the Islander 1·6nm SW of the airfield indicating FL009 (~600ft QFE), the Islander crew stated that they were, *"taking a right turn for that aircraft* [the C172] *in our twelve o'clock, changing stud 3."* This turn can be witnessed on the radar replay between 1550:15 and 1550:22. At the same time the BE350, 0·4nm NW of the Islander, commenced a L turn to pass through the Islander's 6 o'clock. The BE350 pilot stated in their report that they remained visual with the Islander throughout the incident sequence and turned downwind once they were visual with the C172.

The CPA occurred at 1550:44 as the BE350 passed 0·1nm through the Islander's 6 o'clock, indicating 400ft above.

Based upon conversation between APP and the ADC after the incident, the call from APP to the ADC at 1549:32 was as a result of APP's concern about the release of the Islander with the C172 in the crosswind position. However, although the Islander turned to position themselves behind the C172, the change of direction was only around 2-5°. Consequently, given that the BE350 was visual with the Islander throughout the incident sequence, the positioning of the C172 had no bearing on this incident. Furthermore, on the basis that the BE350 was visual with the Islander throughout, it is clear that the separation that existed was controlled and thus the crew of the

Islander were concerned over the proximity of the BE350, which would have been ameliorated by improved situational awareness.

The ADC's understandable yet incorrect interpretation of the ATC Order Book where it related to the operation of the visual cct on VHF, removed the ability for the Islander crew to develop their SA. Moreover, the ADC's workload meant that they were too busy to pass individual TI to the Islander crew on UHF, as their focus was on the C172. Finally, the Islander crew's decision to switch to APP whilst still within the ATZ removed the ADC's final opportunity to have passed TI, albeit that that TI would have only been 12sec prior to the CPA.

Following this incident, RAF Waddington has reviewed their Flying and ATC Order Books and has adopted the use of VHF as the primary TWR freq.

HQ AIR (OPS) comments that it seems that the Islander crew was not aware of the presence of the BE350 due to the fact that they were operating on UHF, whereas the cct traffic was on VHF; this may account for their planning to turn R on their departure when a LH cct direction was being used and there was another ac (the BE350) on the deadside. It is pleasing to note that the RAF Waddington FOB has been revised to avoid this situation in the future. However, ultimately the BE350 flew close enough to the Islander to cause concern, even though the pilot of the BE350 seemed to have good SA on all cct traffic (despite the issue of the ac being on different frequencies) and was visual with the Islander throughout the Islander's departure. All aircrew should be reminded of the need to give sufficient avoidance to other ac to prevent these sorts of situations arising.

HQ AAC agreed with HQ Air (Ops), and added that it is imperative that sufficient 'separation' is maintained at all times. It is felt the clearance to allow the C172 to join non-standard across the extended C/L with ac departing contributed to 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 and operating authorities.

Members agreed that there were several factors which had led to this Airprox being filed and a critical element was that the BN2T crew had no warning of the BE350's approach. First, the ADC had prevented the BN2T gaining SA on cct traffic by allowing the flight to remain on UHF whilst the other traffic was on VHF. Second, ATC had not transmitted on both frequencies at the same time which would have improved the BN2T crew's mental 'air picture' by hearing ATC's instructions and information, even if they could not hear the pilots' responses on VHF. As a result, they did not hear the BE350 being told to go around, after the BN2T apparently took longer to take-off than expected by the ADC when he issued its clearance. Having gone around on to the dead-side, the BE350's turn crosswind, normally initiated at the upwind end of the RW, was effectively 'baulked' by the C172, which was allowed to join in a non-standard manner across the climb-out. This delay in the BE350's turn crosswind while the crew were looking for the C172 led to the BE350 catching up the BN2T as it was climbing out straight ahead. The BE350 crew, after visually acquiring the C172, turned slightly R to generate some separation before turning L to pass behind both of the other ac. However, for their part, the BN2T crew was unaware of the BE350 until it was first spotted in their 4 o'clock slightly above. Without the benefit of SA gained from the RT, this sudden appearance undoubtedly caused the BN2T crew concern and this was a part cause of the Airprox. Had the ADC been minded to do so, his ability to pass a late warning to the BN2T crew would likely have been frustrated because they followed his departure instructions to call on Stud 3 when airborne. Given the traffic situation, with ATC cognisant of the BN2T's intended R turn to leave the cct, and with the BN2T and the BE350 on different frequencies, Members agreed that ATC should have passed early TI on the BE350 to the BN2T flight and the absence of this was another part cause.

Turning to risk, the BE350 crew had good SA on the traffic and had maintained visual contact on the departing BN2T throughout. However, they had been forced to delay their turn crosswind until after assimilating the C172's flightpath which had led to them flying closer to the BN2T than normal. The BN2T crew had only seen the BE350 very late in their 4 o'clock, as it was about to turn L onto the crosswind leg, estimating it passed very close with <100ft separation. That said, the radar recording reveals the separation, although close in azimuth with 0·1nm (185m), was 400ft vertically. Taking all of these elements into account, Members agreed that the BE350 crew had

the situation under control and was always in a position to manoeuvre further, if necessary, which allowed the Board to conclude that any risk of collision had been effectively removed.

PART C: ASSESSMENT OF CAUSE AND RISK

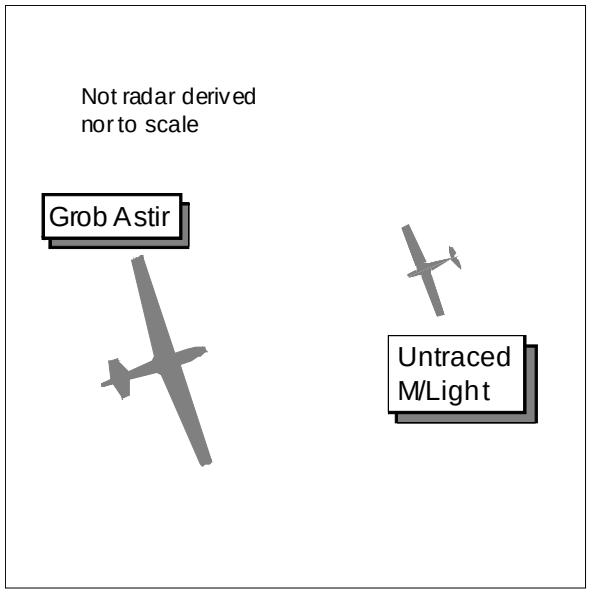
Cause: In the absence of TI, the BN2T crew was concerned by the proximity of the BE350.

Degree of Risk: C.

AIRPROX REPORT No 2011101

AIRPROX REPORT NO 2011101

Date/Time:	09 Aug 2011 1206Z	
Position:	5208N 00050W (6nm NW Milton Keynes)	
Airspace:	LFIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Grob Astir	Untraced M/Light
Operator:	Civ Pte	NK
Alt/FL:	3676ft amsl	NK
Weather:	VMC CLOC	NK
Visibility:	>20nm	NK
Reported Separation:	10-15ft V	NR
Recorded Separation:	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE GROB ASTIR PILOT reports flying in a gliding competition from Wittering, VFR and not in communication with any ATSU. The visibility was >20nm flying 1000ft below cloud in VMC and the ac was coloured white. He was en-route from a turning point at Silverstone towards another turning point N of Cambridge, cruising in a level attitude and slight descent at 65kt. On reaching the turning point he looked down to change radio frequency to monitor Cambridge Tower. On looking up he was confronted with a M/Light head-on at the same level and very close, 150m. He immediately pushed forward on the stick and passed directly underneath the M/Light with 10-15ft clearance. The M/Light was red coloured high-wing with tricycle undercarriage and engine mounted above the cockpit on a pylon. Being somewhat shaken he landed at Bedford aerodrome and abandoned the competition flight. He assessed the risk as high. At the time of the Airprox he was flying at 3676ft amsl heading 075° and the position was O/H the M1 between J15 and Newport Pagnell services.

RAC MIL reports that despite extensive tracing action the identity of the M/Light remains unknown. Intermittent primary returns, believed to be gliders, show in the Airprox area but no radar return shows that could be correlated to the M/Light on a SW'ly track. Eleven M/Light clubs and sites were contacted during the procedural tracing phase; however, no ac were identified as likely candidates.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the Grob Astir pilot.

Members were disappointed that the M/Light could not be traced, leaving them with only one viewpoint of the incident on which to make an assessment. Given the reported geometry and separation, Members were surprised that the M/Light pilot had not filed a report unless the Grob had passed unsighted, for whatever reason, to the pilot. Although the Grob Astir pilot had right of way under the RoA Regulations, there was equal responsibility for both pilots to maintain their own separation from other ac through see and avoid. It was unfortunate that the Grob pilot's scan had been interrupted by a 'heads-in' cockpit task at a critical time, which had led to a late sighting and a part cause of the Airprox. The Grob Astir pilot did not report seeing the M/Light taking any avoiding action which led Members to believe that the M/Light pilot had probably not seen the glider during the encounter, the other part cause.

Looking at the level of risk, the Grob Astir pilot saw the M/Light late with only 150m separation and took immediate action to avoid it; however, the ac passed in such close proximity that the Board concluded that an actual risk of collision had existed during the encounter.

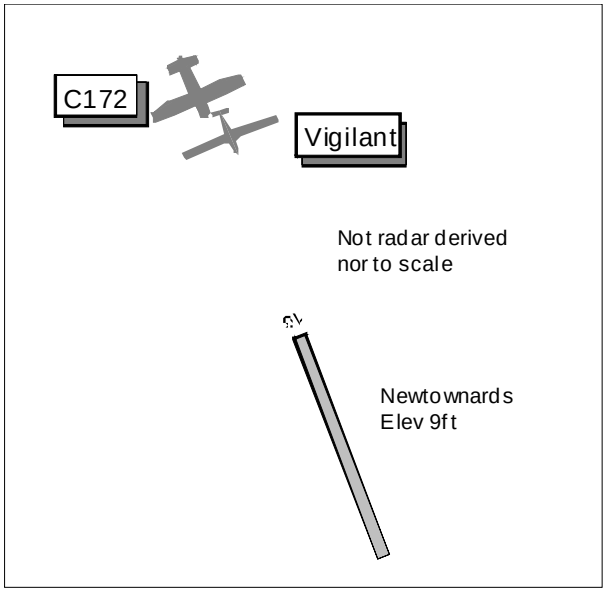
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Probable non-sighting by the untraced M/Light pilot and a late sighting by the Grob Astir pilot.

Degree of Risk: A.

AIRPROX REPORT NO 2011102

Date/Time:	30 Jul 2011 1545Z (Saturday)	
Position:	5436N 00542W (0·5nm FIN APP RW16 Newtownards - elev 9ft)	
Airspace:	ATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Vigilant	C172
Operator:	HQ Air (Trg)	Civ Pte
Alt/FL:	150ft↓	300ft↓
	QFE (1020mb)	QNH
Weather:	VMC CLBC	VMC CAVOK
Visibility:	5000m	10km
Reported Separation:		
	20ft V/10ft H	25ft slant
Recorded Separation:		
	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE VIGILANT PILOT reports flying a dual training sortie from Newtownards, VFR and in communication with Newtownards Radio on 128·3MHz, squawking 7000 with NMC. The visibility was 5000m flying clear below cloud in VMC and the ac was coloured white with red/orange markings with nav, landing and strobe lights switched on. He was teaching an engine failure exercise and after climbing away from a practice EFATO (landing ahead) on RW16 he climbed onto the downwind leg, levelling-off at 1000ft. While downwind a C172 was overflying the RW at 1000ft and then shortly after turned downwind behind his ac. As he turned base leg he stated on the radio his intentions to carry out a low-approach and go-around. Before turning final he looked onto the downwind leg and noted the C172 was now downwind with another Cessna behind. He proceeded to turn final for RW16 at 65kt and the approach continued normally until approximately 150ft QFE 1020mb at which point a call was made on the radio in a stressed voice saying, "aircraft….maintain altitude". He looked behind and to the R where he spotted the black/gold coloured C172 approximately 10ft behind and 20ft below his ac. He shouted over the radio and immediately initiated a go-around while the C172 continued and landed on the RW. Had the C172 pilot not made the radio call or had he, the instructor, not looked around to the back of his ac when he did, he was confident that a collision could have resulted. On the go-around he contacted Newtownards Radio informing them of the near collision. He assessed the risk as high.

THE C172 PILOT reports inbound to Newtownards VFR and in receipt of an A/G service from Newtownards Radio on 128·3MHz, squawking 7000 with Mode C. The visibility was 10km in CAVOK VMC and the ac was coloured black/gold with anti-collision and strobe lights switched on. The cct was busy with various categories of ac and he had had to go-around on his first approach to RW16 owing to a M/Light ahead. His second approach was high and fast which was occupying his attention as it was a warm day and RW16 is short [displaced threshold 85m, LDA 533m]. He heard another ac's pilot call final but scanning ahead he could not see it. Heading 160° at 70kt descending through 300ft QNH he then saw a Grob M/Glider appear in the top LH corner of his vision about 100ft away descending in front of his ac in the 11 o'clock position. He heard its pilot "going around" and expected that the pilot would apply full power and climb away but he kept descending into his flightpath. He turned his Cessna abruptly R (deadside) with separation reduced to 25ft and the Grob continued upwind on RW heading. He landed his ac as the Grob climbed away. He assessed the risk as medium. Later, after talking to the resident CFI, he learned that the Grob pilot had transmitted "low approach and go-around". He had not heard the first part of the transmission owing to his pre-occupation with his approach. With hindsight he should have been more aware that the Grob has a slower and steeper approach than the C172 so he should have been looking above as well as ahead. He normally operated from an airport with ATC where separation is organised by the Tower but he recognised that in the A/G situation, responsibility for separation is totally down to the pilot.

ATSI reports that Newtownards do not record their frequency consequently it was not possible for ATSI to investigate this Airprox further.

NB: An AGCS radio station operator is not necessarily able to view any part of the aerodrome or surrounding airspace. TI provided by an AGCS radio station operator is therefore based primarily on reports made by other pilots. Information provided by an AGCS radio station operator may be used to assist a pilot in making decisions; however, the safe conduct of the flight remains the pilot's responsibility.

HQ AIR (TRG) comments that this was clearly an alarming event for both crews. The limitations of operating without ATC are well known and this incident highlights how poor awareness, for whatever reason, can be dangerous. The C172 pilot's open and honest assessment above is very welcome and usefully highlights the pitfalls from which hopefully he and others can learn. Unfortunately, the combination of flight profiles probably left the Vigilant pilot unsighted on the C172 shortly after the start of his final turn.

UKAB Note (1): The UK AIP at AD 2-EGAD-1-3 promulgates Newtownards ATZ as a circle radius 2nm centred on the longest notified RW (04/22) 543452N 0054131W from SFC to 2000ft aal; aerodrome elevation 9ft.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

Members agreed with the HQ Air Trg sentiments with respect to the C172 pilot's report. After going around from his 1st approach he was obviously unsettled during his 2nd cct when the Airprox occurred. He did not see the Vigilant ahead of him in the cct pattern or assimilate its pilot's RT calls. As a result of inadequate SA and being unsighted on the Vigilant, the C172 pilot flew into conflict with it on final approach which had caused the Airprox. Having established on final approach, the C172 pilot was undoubtedly surprised when the Vigilant appeared in the windscreen in his 11 o'clock and above at close range. He expected the Vigilant to manoeuvre following its pilot's call of "going around" but he then had to break R to avoid a collision when it continued its approach. The Vigilant pilot saw the C172 close behind and executed his go-around whilst broadcasting his intention on the RT. The Board were in no doubt that this had been a very close and serious encounter. Prior to the visual acquisition by both pilots, the low wing Vigilant was descending from above on to the high-wing C172, until a very late stage in the evolution. These elements were enough to persuade the Board that an actual risk of collision existed during this incident.

PART C: ASSESSMENT OF CAUSE AND RISK

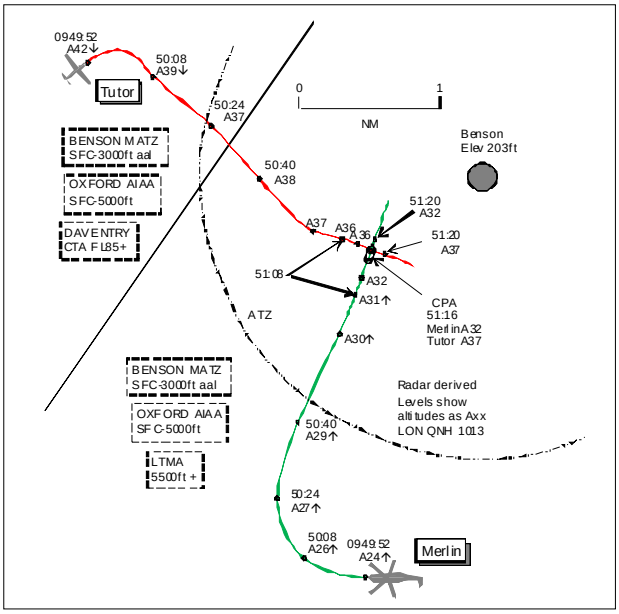
Cause: The C172 pilot flew into conflict with the Vigilant on final approach.

Degree of Risk: A.

AIRPROX REPORT No 2011103

AIRPROX REPORT NO 2011103

Date/Time:	5 Aug 2011 0951Z	
Position:	5136N 00107W (1nm SW Benson - elev 203ft)	
Airspace:	Benson MATZ/ Oxford AIAA	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Merlin	Tutor
Operator:	HQ JHC	HQ Air (Trg)
Alt/FL:	4000ft↑	3000ft
	RPS (1012mb)	QFE
Weather:	VMC CLBC	VMC CLBC
Visibility:	20km	8km
Reported Separation:		
	1-200ft V/100m H	400ft V/0·5nm H
Recorded Separation:		
	500ft V/<0·1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE MERLIN PILOT reports on departure from Benson, IFR and in receipt of a TS from Benson Approach on 136·45MHz, squawking 3615 with Modes S and C. The visibility was 20km flying 2000ft below cloud in VMC and the helicopter was coloured green with upper and lower strobe, nav and landing lights all switched on. Whilst carrying out a NE SID from RW19 tracking towards WCO heading 021° at 120kt and climbing through 4000ft for 5000ft, he thought, ATC reported traffic at 1nm and 1000ft above in their 10 o'clock. During their lookout for the traffic, a Tutor was seen approximately 200m away to their L and 150ft above. A descent and a turn to the L were initiated and the flight then continued without further incident. He estimated separation as 100-200ft and 100m at the CPA and assessed the risk as medium. Both flights were operating under a TS and the Tutor was positioning for a PFL to Benson.

THE TUTOR PILOT reports flying a local sortie from Benson and in receipt of a BS from Benson Tower on Stud 2, squawking an assigned code with Modes S and C; TAS was fitted. The visibility was 8km flying 1000ft below cloud in VMC and the ac was coloured white with nav, landing and HISLs all switched on. During a visual recovery for a PFL heading 090° at 80kt level at 3000ft whilst approaching high-key, he saw a Merlin in his 2 o'clock range 0·5nm approximately 400ft below as it appeared out of cloud. The traffic was not reported to him by ATC but a TA was generated on TAS. No avoidance action was taken as he deemed there to be no collision risk.

THE BENSON APP reports the Tutor flight called inbound to Benson for a PFL when approximately 8nm to the W and the APP and ADC approved the PFL. The Merlin was already warned out for a NE SID and the APP did not anticipate the possible confliction. The Tutor pilot called visual with the aerodrome and left the frequency just before the Merlin flight called climbing out on the NE SID, which takes the ac back through the O/H on passing 1500ft QNH climbing to 5000ft; the scenario presented had not been seen before. The Tutor was descending to 3000ft QFE (1005) and then further in the O/H whilst the Merlin was climbing to 4000ft. APP called the Tutor to the Merlin flight but the crew did not get visual until they were very close. APP called the TWR and told him to call the Merlin to the Tutor flight but this was quite late as they were only 1nm apart. In hindsight, the PFL should not have been approved; having not witnessed the scenario before, as NE SID departures are rare, it came as a shock.

BM SAFETY MANAGEMENT reports that this Airprox occurred between a Merlin operating IFR in VMC carrying out a NE SID from RW19 at Benson and in receipt of a TS from Benson APP and a Tutor, operating VFR conducting a PFL to Benson, in communication with Benson TWR.

All heights stated are based upon SSR Mode C from the radar replay unless otherwise stated.

Benson METAR shows EGUB 050950Z 32005KT 9999 FEW030 BKN050 20/12 Q1012 BLU NOSIG=

The NE SID RW19 procedure requires a climb on RW track (189° M), calling approach by 1000ft; on passing 1500ft (QFE) turn R to WCO, continuing climb to 4000ft (illustrated at Figure 1).

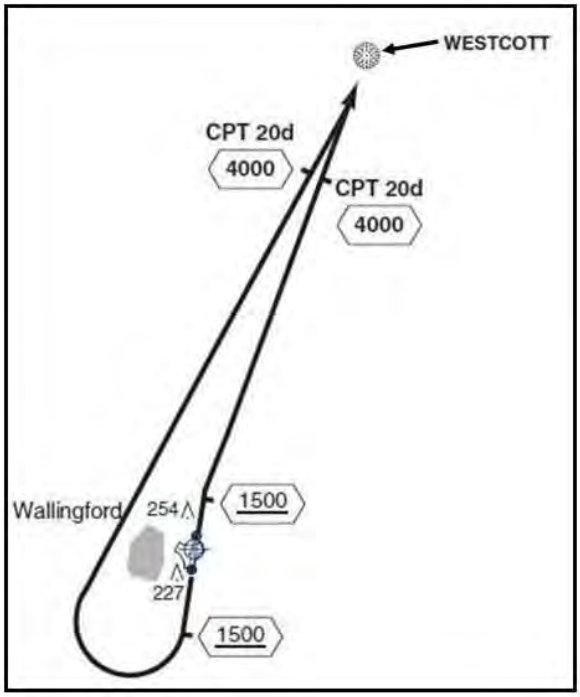


Figure 1. NE SID Benson

APP described the workload as high to medium with average task complexity. Unfortunately, APP did not report the number of ac on the freq and consequently it has not proved possible to conclusively determine the workload; however, analysis of the transcript seems to show that the APP was providing an ATS to at least 2 Tutors and 3 Rotary-wing, including the incident ac. TWR was unable to recall any aspect of the incident; however, analysis of the transcript suggests that the workload was moderate.

At 0949:11, the Merlin flight contacted APP, was identified, placed under a TS and instructed to climb to 6000ft on 1012mb, subsequently corrected at 0949:32 to 5000ft. At this point, the Merlin was 1·9nm S of Benson, maintaining RW track climbing through 2000ft, with the Tutor 3·9nm WNW of Benson, tracking ESE, indicating 4300ft; 4·6nm lateral separation existed between the ac.

At 0949:53, the Tutor flight, already in receipt of a TS from APP, called for a visual recovery through a PFL and was instructed to, "*report visual with the aerodrome*." At this point the Merlin was 3nm SW of Benson in the R turn for WCO, climbing through 2400ft; the Tutor was 4·2nm NW of the Merlin, tracking NE at 4200ft, descending. No TI was passed to the Tutor flight on the Merlin.

CAP 774 states that in providing 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 and to allow for an update in traffic information if considered necessary. However, high controller workload and RTF loading may reduce the ability of the controller to pass traffic information, and the timeliness of such information.' APP did not reduce the service to any ac on frequency due to high workload.

At 0950:03, in accordance with a local procedure, APP commenced a landline call to Ground to advise TWR of the Tutor's PFL. During this exchange at 0950:05, the Tutor, 2·6nm WNW of Benson, reported, "*field in sight*" to APP.

At 0950:22 APP informed the Tutor flight that their PFL was approved and asked them to, "*report visual* (with the aerodrome)." The Tutor pilot replied immediately, "*field in sight, to Tower*" which was acknowledged by APP at 0950:26. APP reported that they had not seen a scenario before on RW19 where an ac was recovering from the W through a PFL coincident with an ac departing on a NE SID. Consequently, they did not "anticipate the possible confliction" and "in hindsight" should not have approved the PFL.

At 0950:40, the Tutor pilot called TWR to request a visual join for a PFL, which was approved at 0950:51 and included information on, "*radar traffic seven miles*."

At 0950:42, APP passed TI to the Merlin flight on the Tutor stating, "*Tutor north, two miles (*radar replay shows 1·8nm)*, tracking south, one thousand feet above, inbound P-F-L*" which was acknowledged at 0950:49. Eighteen seconds later, at 0951:09, APP commenced a landline call to TWR stating, "*can you call the three-six-one-five, the Merlin, to your Tutor please (*3sec pause) *to (*Tutor c/s) *in the P-F-L, can you tell him that there's a Puma going through the overhead*." The Merlin mentioned by APP is the reporting Merlin; however, the Puma that is mentioned is un-connected to the incident and is inbound on an ILS approach from the NE of Benson.

At 0951:20 TWR broadcast to the reported Tutor flight that there was a, "*Puma going through the overhead, currently south, half a mile, five hundred feet below*." The Tutor pilot reports, "*Erm we saw him thank you*." However, in reality, the subject of this broadcast was the incident Merlin, with the broadcast being made shortly after the CPA which occurred at 0951:16. Coincident with the landline call at 0951:09, a pair of Tutor flights un-connected to the incident had called TWR which may have obscured part of the landline call and caused the mis-communicated TI.

The radar replay shows that at 0951:16 the Tutor was passing L to R through the Merlin's 12 o'clock with <0·1nm lateral and 500ft indicated vertical separation. At 0951:20 the Merlin is 0·1nm NW of the Tutor, with both ac maintaining their respective altitudes; the avoiding L turn described by the Merlin is evident on radar.

The Tutor pilot reported that as they were approaching High Key, they visually acquired the Merlin in their 2 o'clock at a range of 0·5nm approximately 400ft below. The Merlin pilot reports first sighting the Tutor approximately 200m (0·1nm) to their L and 150ft above which, if accurate, would equate to just before 0951:16, immediately prior to the CPA. Of note is the fact that the Merlin pilot did not report the Airprox on the frequency at the time of the incident.

Notwithstanding the respective crew's responsibilities to 'see and avoid' other ac which they discharged, albeit at differing times in the incident sequence, the ATM aspects warranted further analysis; specifically, the suggestion by APP that they should not have approved the PFL.

Bearing in mind the process of human cognition and APP's workload, compounded by the Tutor flight's proximity to the O/H on their initial call at 0949:53, it is perhaps understandable that APP perceived their immediate priority to be to seek approval for the PFL from Ground. However, the ensuing relatively rapid sequence of events and their 'challenge and response' nature meant that APP had little time to intercede to control the developing situation, for example by providing vertical separation between the two ac, once they had started the landline call.

Realistically, once the Tutor had transferred from APP to TWR at 0950:26, the opportunity was lost to control the situation. The remaining course of action open to APP was to pass TI to the Merlin and Tutor crews to enable them to develop their SA in order for them to 'see and avoid' each other. However, it was approximately 14sec later that APP passed TI to the Merlin flight and a further 18sec before they instructed TWR to pass the TI to the Tutor flight. Arguably, the point at which APP passed TI to the Merlin, when 1·8nm lateral separation existed, represents both the point that APP first perceived the confliction between the 2 ac and the point at which they realised that approving the Tutor's PFL had caused the Airprox. This suggests that APP's visual scan of the surveillance display had degraded, possibly as a result of attentional tunnelling caused by an elevated level of psychophysiological stress, in turn caused by high workload. That notwithstanding, the Merlin crew received the TI 30sec prior to the CPA, which enabled them to focus their visual scan, gain visual with the Tutor and take appropriate action, albeit later than is ideal.

Unfortunately, as TWR was unable to recall the incident, it has not been possible to determine their thought processes, or perception of priorities at the time. Whilst 'good practice' would suggest that TWR was monitoring

the High-Brite VRD which would have enabled them to perceive the confliction and pass TI, the absence of a warning prior to APP's call at 0951:09 could be explained in a number of different ways.

Immediately following this incident the unit reviewed their PFL v IFR procedures and issued a temporary order precluding PFLs if a NE SID had been prenoted or TACAN approaches are being made.

HQ JHC comments that the issue of the temporary order precluding PFLs should be followed up with a permanent solution which could include improved education to APP controllers, TWR supervisors and Tutor pilots.

HQ AIR (TRG) comments that the root cause of the incident appears to be the organisational issue of conflicting procedures. Whilst not overtly dangerous, such conflicting procedures increase the likelihood of ac coming into close proximity and the unit's procedure change is welcome. The weather conditions (the Tutor reports the Merlin appearing out of cloud and the Merlin reports operating between cloud layers) reduced his time available to acquire the Merlin visually and this was compounded by the lack of TI, which would have suggested that there was unlikely to be any conflicting traffic. However, this was mitigated to a large degree by the effectiveness of TAS, which assisted in gaining the visual contact. This highlights the benefits that TAS offers in acquiring and avoiding transponding traffic. It is unfortunate that the Tutor pilot then elected to fly close enough to cause the Merlin crew concern.

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.

With this incident occurring in Class G airspace, there was equal onus on both crews to maintain their own separation from other traffic through see and avoid. Both flights were augmenting this with a TS from APP, although Members queried whether this service was appropriate in IMC where a DS would be better. The BM SM Advisor informed Members that a TS was mandated in the Benson FOB as the minimum service for flights in IMC. From the chain of events it appeared to Members that APP had no plan of action and was controlling reactively. Although APP reported not seeing the scenario beforehand, Members thought that the controller should, from knowledge of the procedures, have been able to assimilate that PFL traffic commencing from 3000ft QFE and routeing to the airfield O/H from the W could conflict with an IFR departure climbing to 5000ft on NE SID. However, it was only after coordinating the Tutor's PFL with TWR through GRD and the flight had been transferred that APP realised from the radar the developing conflict. It appeared that the coordination with TWR had been carried out in haste because of the Tutor's proximity to the Benson O/H but without considering the Merlin. APP recognised the potential conflict shortly thereafter but by that stage the TI to the Merlin crew on the Tutor was late (30sec prior to CPA) and a further delay ensued before APP asked TWR to pass reciprocal TI to the Tutor, which was received as the ac crossed at the CPA. Had the potential conflict been assimilated, APP could have easily nipped this incident 'in the bud' by applying a level restriction to both flights until the crews reported visual with each other, particularly as both were approaching the radar O/H. Members noted that the TI given to the Merlin crew under the TS was incomplete, only stating that the Tutor was at 2nm and 1000ft above inbound for a PFL but not that it was descending. For their part, the Merlin crew had a responsibility to assimilate and then act on the TI, based on their mental air picture; the mention of PFL should have alerted the crew to the Tutor pilot's intentions, but they had continued their climb. Pilot Members believed that the Wx conditions had played a small part in this incident as there was a cloud layer in the area at 3000ft and the Tutor pilot reported seeing the Merlin as it appeared from behind cloud. Given these facts, Members believed that both crews saw each other a soon as practicable and that this Airprox had been a conflict.

Looking at the risk element, the Tutor pilot was aware of the Merlin from his TAS and saw it in his 2 o'clock range 0·5nm 400ft below, believing that no collision risk existed and no avoiding action was necessary. The Merlin crew saw the Tutor about 200m away, albeit later than ideal, and executed a L turn and descent, estimating it crossed 100m away and 150ft above. The radar recording shows the Merlin having levelled-off and the Tutor also level, after a slight climb of 100ft, with vertical separation of 500ft. These elements were enough to persuade the Board that the actions taken by all parties had been effective in removing any risk of collision.

AIRPROX REPORT No 2011103

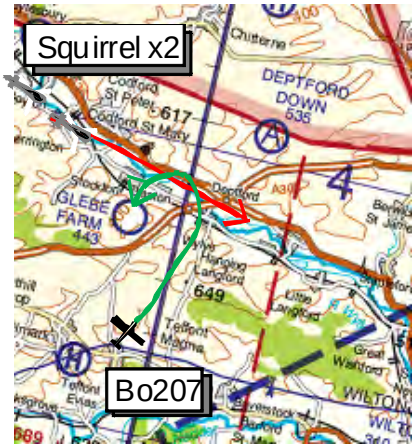
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict between the Merlin departing on the NE SID and the Tutor positioning for a PFL.

Degree of Risk: C.

AIRPROX REPORT NO 2011104

Date/Time:	2 Aug 2011 1001Z	
Position:	5108N 00201W (10nm W Boscombe Down)	
Airspace:	LFIR/LFA1	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Bolkow Bo207	Squirrel x 2
Operator:	Civ Pte	AAC
Alt/FL:	150ft↓ aal	100ft agl
Weather:	VMC CLOC	VMC CLBC
Visibility:	>10km	30km
Reported Separation:	50-100ft V	800m H
Recorded Separation:	NR	



Not radar derived nor to scale

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

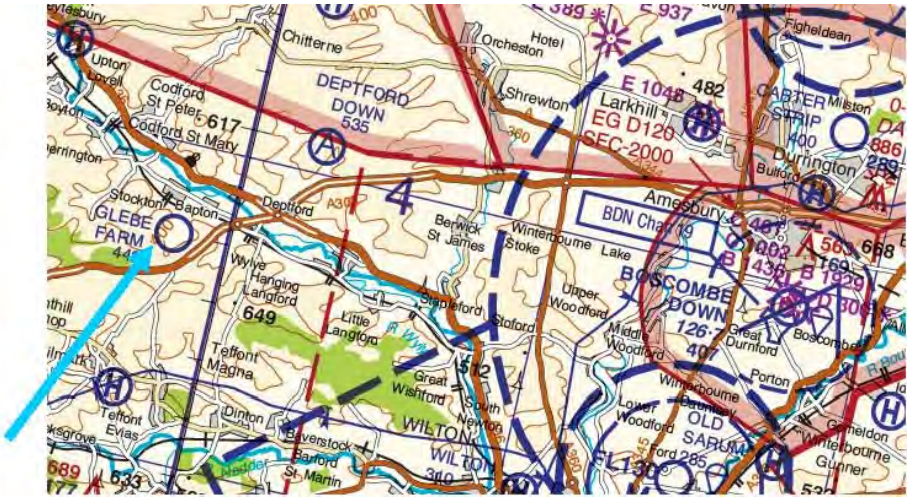
THE BO207 PILOT reports inbound to a private site at Stockton (Glebe Farm) VFR and in receipt of a BS from Boscombe Zone on 126·7MHz, squawking 2650 with Mode S and C. The visibility was >10km in VMC and the ac was coloured blue/white with strobe and landing lights switched on. He was very familiar with Glebe Farm with its surrounding unusual topography and had frequently seen AAC helicopters using the valleys around 3 sides of the airstrip for training. When Glebe Farm is active a windsock is flown and the strip is used almost exclusively in association with maintenance activities – arriving/departing ac or those on air test. On this occasion the airfield operator was on site, had raised the windsock and had also telephoned the Bo207 pilot on the ground, prior to his departure from Thruxton, to warn him that there were helicopters in the area. He had worked Boscombe Down for 'clearance' through the MATZ at 2000ft and had reported Glebe Farm in sight and commencing descent. He descended to approximately 800ft aal and overflew the RW at the mid-point, carefully checking the surrounding valleys for helicopters; none were seen so he flew a LH cct. On final Boscombe Down cleared him to change squawk to 7000 and change to en-route frequency. He acknowledged the call but as he was in the final approach phase he did not change his transponder code, which was retained until after landing. On short final heading 220° at 70kt descending through 150ft aal he just caught sight of a Squirrel passing 50-100ft beneath his ac tracking R to L at 90° to his flightpath. He also had a better sighting of a second helicopter 150-200m to his R following the first at the same height. He thought that the second helicopter may have taken some corrective action by reducing speed. He assessed the risk as high. The incident was observed by the airfield operator, an experienced pilot, who, because of the sloping nature of the RW [uphill RW20 elev 443ft amsl], was at the same height as the helicopters.

THE SQUIRREL NO 2 PILOT reports conducting a low-level tactical pairs sortie, VFR and listening out on Low Flying Common frequency squawking with Mode C. The visibility was 30km clear below cloud in VMC and the ac's strobe and nav lights were switched on. At 1000 they departed their battle positions [2·25nm WNW Glebe Farm airstrip] and he noticed a small fixed-wing ac climbing out from the airstrip heading S. As he was flying the trail helicopter of the pair, he indicated the fixed-wing ac to the formation Leader who acknowledged and pushed further N into the Wyle Valley; the light ac looked as if it was departing the area. While following about 2000m behind the lead helicopter heading 070° at 100kt the fixed-wing ac turned towards them whilst on base leg and started to descend. The lead helicopter, which was at 100ft agl, as per the pre-briefed sortie profile, pushed further N at the village of Stockton [~0·5nm N of airstrip] to avoid confliction. The lead pilot estimated being 800m from the fixed-wing when it turned final. During the post sortie debrief the fixed-wing ac was mentioned but neither he nor the formation leader saw any confliction and were happy with their deconfliction actions. He assessed the risk as low.

AIRPROX REPORT No 2011104

UKAB Note (1): The UKAB Secretariat attempted to contact the Squirrel No2 pilot, albeit 4 months post incident, to discuss the disparate separation distances reported. After eventually establishing that the pilot was no longer employed, the No1 pilot was identified and contacted. The Lead pilot could not remember much about the incident but confirmed the Bo207 was pointed out to him by his No2 when it was O/H or downwind for Glebe Farm, about 800m away and he altered his flightpath further N towards the bottom of the Wylie Valley. He remembered seeing it again later when it was to his R, behind and above after he was well past Glebe Farm strip. He could not give an estimate of separation or the exact geometry at the CPA.

BM SAFETY MANAGEMENT reports this Airprox occurred between a pair of Squirrels operating VFR in LFA 1 and a Bolkow 207 operating VFR making an approach to a private airstrip at Stockton (Glebe Farm).



The Bolkow 207 pilot reports being in receipt of a BS from Boscombe Zone until shortly before the incident (the service was terminated at 1000:13); however, Zone recalls no incident occurring over that time period and that their workload was low, a fact borne out by the tape transcript. Given this low workload, it is likely that had Zone seen the Squirrel formation on radar, they would have provided TI if they had perceived a risk of collision.

Glebe Farm airstrip is on high ground, surrounded on 3 sides by valleys and, based upon the report supplied by the Squirrel crew, the Squirrel formation were operating within these valleys at 100ft AGL. It is reasonable to argue that the topography and operating height of the Squirrel formation would have prevented the detection of the formation on radar. Given this, the ATM-related safety barrier was unable to operate leaving “see and avoid” as the sole remaining mitigation. The Squirrel formation’s crew report being visible with the Bolkow 207 throughout the incident sequence and deconflicted themselves accordingly.

HQ AAC comments that the Squirrels were visual with the Bo207 and maintained a safe margin of separation. Both parties involved appear to be conducting themselves in accordance with current guidance and practice of good airmanship within Class G airspace. This is an unfortunate hazard of operating in an area of a high concentration of mixed GA and military ac in the low level environment.

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 that there were different cockpit viewpoints of the incident. The Squirrel pair were flying at very low level (100ft agl) and their crews had the better opportunity to see the potential conflict as the Bo207 would have been sky-lined while flying its O/H join and visual cct. The Squirrels would have been very difficult to see from the Bo207 cockpit; a predominantly dark helicopter flying low against a dark background. Members agreed that the Squirrel crew had seen the Bo207 early on (most likely during its O/H join) as it formed a cct pattern for Glebe Farm airstrip and they had, quite sensibly, elected to move further N into the Wylie Valley. The crews initially

thought the Bo207 was departing the area but when they saw it then turn onto a base leg and commence descent towards their projected flightpath they pushed further to the N, towards Stockton village, to deconflict their flightpaths laterally. The Bo207 pilot reported that while on final at 150ft aal, while concentrating on his approach and landing, he saw a Squirrel helicopter pass close beneath his ac followed by a second one in trail. Members sympathised with his predicament and understood his concern at being 'underflown' on short final at a critical stage of flight. The Bo207's approach to the uphill strip meant that it was crossing much lower ground in the Wylie Valley on final and although the Bo207's height was not far above the airstrip whilst on short final, there was a vertical gap beneath it for the helicopters to pass. Members noted the disparate separation distances reported by pilots involved but were confident the correct ac had been identified. The Board accepted that as the Bo207 descended on its final approach the minimum the vertical separation was around 50-100ft and it seemed likely that the trailing Squirrel was closer than 2000m to his leader for the Bo207 pilot to be able to see it. It was unclear to Members whether the Squirrel crews had maintained visual contact with the Bo207 throughout. The HQ AAC Advisor explained that the crews would have attempted to monitor the Bo207's progress as much as possible; however, they would have been concentrating on their low-flying tactical task. From the information available, the Board believed the Squirrel crews had monitored the Bo207's flightpath sufficiently and taken timely action to remove the collision risk but had flown close enough to cause the Bo207 pilot concern.

PART C: ASSESSMENT OF CAUSE AND RISK

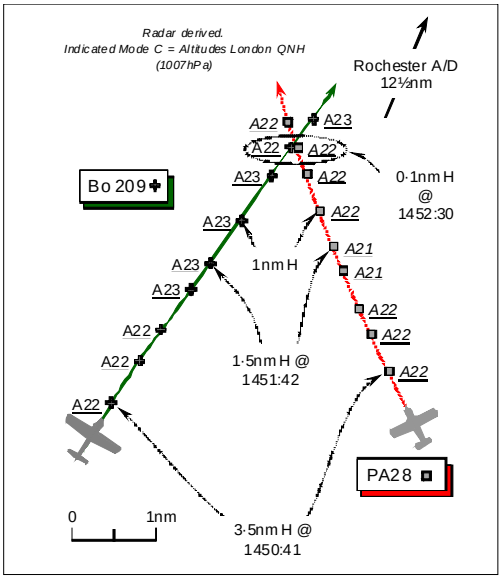
Cause: The Squirrel flight flew close enough to cause the Bo207 pilot concern.

Degree of Risk :C.

AIRPROX REPORT No 2011105

AIRPROX REPORT NO 2011105

Date/Time:	14 Aug 2011 1452Z (Sunday)	
Position:	5111N 00018E (12½nm SW of Rochester A/D)	
Airspace:	London FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Bolkow 209	PA28
Operator:	Civ Pte	Civ Trg
Alt/FL:	2300ft	2200ft
	QNH (1008hPa)	QNH (1007hPa)
Weather:	VMC No Cloud	NR
Visibility:	20km+	NR
Reported Separation:		
	10ft V/100m H	NR
Recorded Separation:		
	<0·1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE MESSERSCHMITT BOLKOW Bo209 MONSUN (Bo209) PILOT reports he was inbound to Rochester from Bembridge with two pilots aboard under VFR; he was not in receipt of an ATS, but was about to call Rochester on 122·25MHz. His aeroplane is coloured blue/white and the strobe light was on.

On the 040 radial MAYFIELD VOR 22nm he thought, but actually as he was approaching a range of 14nm, heading 040° at 115kt, cruising level at 2300ft QNH (1008hPa), the other ac – a low-wing single engine aeroplane with a fixed undercarriage approached from his starboard rear quarter just below his level. When he saw it, the pilot of the other ac was executing what appeared to be very late avoiding action by turning L to pass astern and diving beneath his ac's tailplane. He took no avoiding action because the other ac had approached from his starboard rear quarter with a 'high' Risk of collision. Minimum vertical separation was 10ft below his aeroplane at a range of 100m.

UKAB Note (1): A review of the LAC radar recording originally suggested that this Airprox had occurred earlier at 1447, somewhat closer to Rochester A/D with a DA20, whose pilot helpfully provided a report. However, further analysis of the radar data revealed that the geometry did not closely match the encounter reported by the Bo209 pilot and that the DA20 was not the reported ac. Furthermore, no reference was made to the Bo209 squawking A7000 with Mode C in the pilot's written account. Following further discussion with the Bo209 pilot it was ascertained that the Airprox occurred in a position 040° MAY 14nm, not the 040° MAY 22nm reported. The reported ac was identified as a PA28 that subsequently landed at Biggin Hill. To date, despite contact with the successors to the company that owned the ac when the Airprox occurred, the identity of the PA28 pilot remains unknown.

UKAB Note (2): The Bo209, identified by its Mode S AID, is shown squawking A7000 on a direct track between MAY VOR and Rochester A/D at 1450:41, tracking 040°, maintaining a level cruise indicating 2200ft Mode C London QNH (1007hPa); at this point the PA28 is shown in the Bo209's 2o'clock at a range of 3·5nm indicating 2200ft London QNH (1007hPa). Each ac maintains a steady course as they converge, but their respective altitudes fluctuate slightly; the Bo209 climbing to 2300ft for a period and the PA28 descending slightly to 2100ft before resuming a level cruise at 2200ft as the ac close to a range of 1nm. The CPA of 0·1nm occurs just after 1452:30, in between radar sweeps, as the Bo209 crosses marginally ahead of the PA28 with both ac indicating 2200ft London QNH. No avoiding action is apparent from either ac as the range increases with both ac maintaining a steady course.

ATSI reports that the Airprox occurred at 1452:30 UTC, 18.9nm to the east of Gatwick Airport on the MAY(VOR) 010 radial at 14.2nm in Class G airspace.

The Airprox was reported by the pilot of a Messerschmitt Bolkow Bo209, which was operating on a VFR flight from Bembridge to Rochester. The Bo209 was not in receipt of an air traffic control service and the pilot reported that the Airprox occurred at 1450 UTC at a position on the MAY(VOR) 040 radial at 22nm. The Bo209 pilot's written report did not show that a transponder was being operated. The Airprox Notification listed the second ac as a Diamond DA20 and the pilot's written report indicated he was operating VFR, squawking A5021 and in receipt of a BS from Farnborough LARS.

Based on these reports, CAA ATSI requested radar and RTF transcription for the two ac concerned. At 1447:35, the radar recordings show the DA20 squawing A5021 and passing in close proximity to another primary contact on the MAY(VOR) 030 radial at 22.9nm, being the approximate time and position of the reported Airprox. An initial investigation was completed by ATSI based on the available facts.

After the CAA ATSI investigation was concluded, UKAB advised that the 2nd ac was not the DA20, but had now been traced as being a Cherokee PA28, on a Farnborough LARS squawk A5024 inbound to Biggin Hill.

Radar recordings were re-examined and showed that the Airprox occured at 1452:30, at a position 10nm further SW than the original reported position. Mode S identified the Bo209 ac, which was squawking A7000 and came into close proximity with an ac squawking 5024. Unfortunately it was not feasible to trace the PA28 pilot and no report was available. Due to the elapsed time no transcription was available for the PA28 and neither Biggin Hill or Farnborough had retained the flight progress strip data beyond the 3 month requirement.

ATSI had access to area radar recordings, together with the written report from the Bo209 pilot and the Farnborough RT recording which terminated at 1450.

The 1420UTC Manston METAR: 35006KT 9999 BKN048 19/11 Q1007=

The 1420UTC Gatwick METAR: 24007KT 9999 FEW044 20/11 Q1007=

At 1443:00, radar recordings show the Bo209 in a position 13nm W of MAY, indicating an altitude of 2100ft and the PA28, 1.9nm NW of MAY, indicating an altitude of 2200ft. At 1445:11, the two ac are shown tracking NE separated by approximately 9nm.

At 1448:40, radar recordings show the PA28 (MAY031R at 9.4nm) has turned onto a northwesterly track and on a converging track with the Bo209 (MAY340R at 8nm). The distance between the two ac is 7.5nm.

During the period of RTF recording for Farnborough LARS E, there is no transmission from or to the subject PA28. This recording ends at 1450. It is considered likely that the PA28 was in receipt of a BS.

At 1450:27, radar recordings show the two ac converging at a range of 3.9nm and both ac are indicating an altitude of 2200ft.

At 1451:59 the range between the two ac was 1.1nm. The Bo209 was indicating an altitude of 2300ft and the PA28 an altitude of 2100ft.

At 1452:33, radar recordings show both ac tracks crossing in very close proximity, on the MAY011R at 14.2NM, with both ac indicating an altitude of 2200ft. The two ac then diverge on a steady course.

The PA28 was reported to have landed at Biggin Hill at 1509.

The two ac were operating in Class G airspace and the Bo209 was not in receipt of an Air Traffic Service. The PA28 was squawking 5024 and was most likely in receipt of a BS from Farnborough LARS-E. CAP 774, UK Flight Information Services, Chapter 2, Page 1. Paragraphs 1 & 5, 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.'

'Basic Service relies on the pilot avoiding other traffic, unaided by controllers/FISOs. It is essential that a pilot receiving this service remains alert to the fact that, unlike a Traffic Service and a Deconfliction Service, the provider of a Basic Service is not required to monitor the flight.'

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

The Airprox occurred when the Bo209, operating VFR in Class G airspace and not in receipt of an in Air Traffic Service, came into close proximity with the PA28, which was most likely in receipt of BS. Under a BS there is no obligation placed upon the controller to provide TI.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included a report from the Bo209 pilot, a limited transcript of relevant RT frequencies, radar video recordings and reports from the appropriate ATC authority.

The Board was briefed on the difficulties of obtaining a report from the PA28 pilot, whose employer ceased trading after the Airprox occurred. The report was therefore incomplete and the absence of the PA28 pilot's perspective hampered assessment of the Cause of this Airprox and made it difficult to come to a meaningful conclusion as to Risk, which should be borne in mind when considering the Board's views.

It was unfortunate that the Bo209 pilot had not availed himself of a radar service to supplement his lookout as even a BS, as apparently provided to the PA28 pilot, did not guarantee that a warning would be given by ATC about other traffic in the vicinity. The recorded radar data showed the PA28 closing on a steady course to starboard of the Bo209, whose pilot reported he was flying in VMC with an in-flight visibility of 20km and no cloud to hinder his lookout. As the PA28 was closing from the R, the Bo209 pilot had a responsibility to see other ac to starboard and take action to remain clear. Members recognised that the PA28 was closing on a constant relative bearing forward of the starboard wing at exactly the same indicated altitude; therefore, it was there to be seen in the Bo209 pilot's field of view for some time. However, with little relative movement to draw attention to it, the Bo209 pilot looking 'cross-cockpit' from the LH seat, did not see the PA28 until it was turning L to pass astern and diving beneath his ac executing what appeared to be late avoiding action. Given the Bo209 pilot's responsibility under the Rules of the Air, the Board concluded that the first part of the Cause was effectively, a non-sighting by the Bo209 pilot. Without the PA28 pilot's account the Board could only postulate what had occurred from his perspective. Some Members contended that the PA28 pilot, who was also beset with the same difficulties sighting small ac on a constant bearing at the same level, had similarly not seen the Bo209 until a late stage. Whereas other pilot Members said that its pilot might have recognised that the pilot of the Bo209 to his L was required to give way and therefore 'stood on' in the expectation the latter would turn away, but subsequently had to manoeuvre around the Bo209 himself at close quarters at a late stage. Given the Bo209 pilot's assertion that the PA28 pilot had turned astern of his aeroplane the Board could only conclude that the other part of the Cause was possibly, a late sighting by the PA28 pilot.

In the Board's determination of the inherent Risk, some Members suggested there might be insufficient information available, but this was a minority view. If the PA28 pilot had indeed 'stood on' until he had flown into close quarters and then taken robust avoiding action, pilot Members believed that it had been left too late and possibly an example of the difficulty of judging separation distances in the air. Whilst the avoiding action is not readily apparent on the radar recording, this does not cast doubt on the veracity of the Bo209 pilot's report but is perhaps a function of the slow data update rate and lack of short range discrimination available from the long range area radar recording. The separation evinced by the radar recording of <0.1nm at the same altitude suggested to some Members that neither pilot had taken appropriate action to avert a collision early enough, leading to an actual Risk of collision. However, other Members were swayed by the reporting pilot's observation that the PA28 pilot had turned to pass astern, leading the overwhelming majority of the Members to agree that, while the resulting separation was not simply fortuitous, the safety of the ac involved had been compromised.

PART C: ASSESSMENT OF CAUSE AND RISK

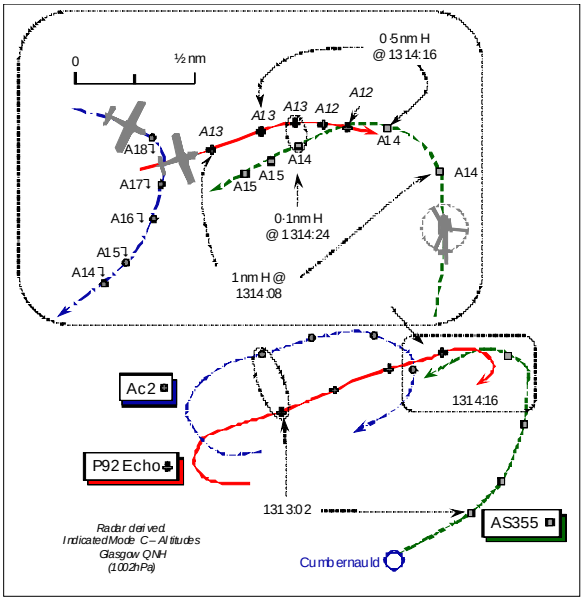
Cause: Effectively, a non-sighting by the Bo209 pilot and possibly a late sighting by the PA28 pilot.

Degree of Risk: B.

AIRPROX REPORT No 2011106

AIRPROX REPORT NO 2011106

Date/Time:	6 Aug 2011 1314Z (Saturday)	
Position:	5600N 00357W (2·3nm NNE of Cumbernauld A/D - elev 350ft)	
Airspace:	FIR/ATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	AS355	Tecnam P92
Operator:	Civ Trg	Civ Pte
Alt/FL:	1000ft	950ft
	QFE	QFE
Weather:	VMC NK	VMC CLOC
Visibility:	10km	10km
Reported Separation:		
	100ft V/nil H	Not seen
Recorded Separation:		
	100ft V/0·1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE AEROSPATIALE SQUIRREL II (AS355) PILOT reports he was conducting a licence skills test on a company pilot following a course of approved type rating training. The helicopter is coloured blue and the HISLs were on. A squawk of A7000 was selected with Mode C on; TCAS is not fitted.

On climb-out into the Cumbernauld cct for RW08 at 100kt whilst in communication with Cumbernauld RADIO on 120·6MHz, another ac [Ac 3] called to report that there were two ac in the downwind heading in the wrong direction. This raised their awareness and they established visual contact when they commenced the downwind leg level at 1000ft (1007hPa). When established downwind, one ac turned 180° and joined the downwind leg about ½nm in front of them [Ac 2]. The other ac – the white P92 [registration given] – that had been spotted about 1nm away, continued heading towards them and turned about 100ft beneath their helicopter. He as the instructor and PIC had issued a warning on RT to the P92 pilot before the Airprox occurred and he asked the A/G Operator to log it. There was not enough time for avoiding action and he assessed the Risk as 'medium'.

After landing he went to discuss the Airprox with the A/G Operator and asked if he could locate the P92 pilot so they could discuss the incident further. The P92 pilot didn't believe he had done anything wrong and also said that even though he had passed 100ft below it, he never saw his AS355 helicopter.

THE TECNAM P92 SUPER ECHO PILOT reports he was returning VFR to Cumbernauld from Glenforsa Mull and in communication with Cumbernauld RADIO on 120·6MHz. A squawk of A7000 was selected with Mode C on. His aeroplane is predominantly white with orange and blue stripes; no lighting is fitted.

He called Cumbernauld and advised that he was joining from Denny [3nm NE of Cumbernauld A/D] downwind for RW08, which Cumbernauld RADIO acknowledged. Adjacent to the RW26 numbers, he called downwind for RW08 to land; Cumbernauld RADIO acknowledged this call. Then he heard a radio call for another ac also joining downwind – Ac2. His P92 was No 1 in the cct and Ac2 was No 2, but he was not visual with it. At the end of downwind leg, when he was just to the N of Banton at 80kt [2nm NW of the A/D], he saw what he could only assume was Ac2 - a faster low wing aeroplane - about 200ft to his L and about 50ft higher as it overtook him. He presumed that his P92 had not been seen by the pilot under his R wing; he also heard a downwind call on RT from a third ac – Ac3. [UKAB Note (1) Ac2 – that is presumed to be the Cherokee referred to later in the ATSI report - is shown on the radar recording to L of the P92 only at the start of the first downwind leg at about 1·5nm N of the A/D at 1310:49. Ac2 is above the P92 as Ac2 overtakes and crosses ahead from L – R descending to 1200ft ALT.]

While considering his reaction, Cumbernauld RADIO advised of a possible conflict. He transmitted that he was entering a R orbit to allow Ac2 and Ac3 to clear, so he flew a long elliptical RH orbit on a heading of 080° to rejoin the cct downwind for RW08; Ac3 was not seen. [UKAB Note (2): Ac3 passed abeam to starboard of the P92 just after 1313:02, heading downwind but with no Mode C displayed.] He then heard an RT call from the AS355 pilot reporting an Airprox as he rejoined downwind and landed.

Later he spoke to the A/G Operator and went to see the pilot of the AS355 pilot – to whom he explained his decision and actions and that his P92's flight path was outside the cct. However, the AS355 pilot claimed that his P92 was flying in the opposite direction to cct traffic within the cct area about 150ft from the AS355. Since he did not see the AS355 at all he cannot disagree. The AS355 pilot said to him that he would not progress the Airprox report so he apologised and thanked the AS355 pilot.

He then sought advice from his previous instructor as to what might have been a better course of action. He accepts that a better decision might have been to make a circular orbit and rejoin on base leg, but he wasn't sure where Ac3 would be when he completed his orbit. He thought his elliptical orbit was outside the cct well clear of normal downwind traffic, but the AS355 pilot disagreed.

He should have alerted the No 2 - Ac2 - to his presence, let him go in ahead as No 1 and extended his downwind leg to give him space, but he was concerned about Ac 3 [which ultimately joined ahead]. Orbiting back to downwind might have been OK if he had gone a mile further to the N. A valuable lesson learned he opined.

ATSI reports that Cumbernauld A/D is situated within Class G airspace. The Aerodrome Traffic Zone (ATZ) is a circle radius 2nm centred on the midpoint of RW08/26, extending from the surface to 2000ft above the aerodrome elevation of 350ft. An Air/Ground Communication Service (AGCS) is provided.

The AS355 crew departed for a local training flight to the N of Cumbernauld at 1235. About 20min later, when the helicopter was 3nm N of the A/D, the crew made a Practice PAN call, requesting to return for landing on the N side grass to RW08. After returning, the AS355 entered the LH cct for RW08 northern grass.

At 1306, the P92 pilot reported inbound from the E by the Falkirk Wheel (situated about 5nm E of the A/D), at 1800ft for a left hand cct to RW08. Shortly afterwards, the AS355 reported downwind for the northern grass. Approximately 2min later, the P92 pilot reported downwind for RW08 and this was followed by a late downwind call at 1311. The A/G Operator asked the P92 pilot if he was on a left base-leg. The P92 pilot reported over Banton (2nm NW of the A/D), turning base [but did not appear to do so]. The next RT call was from the AS355 crew, who reported going around.

In addition to the P92, a Cherokee [Ac2] had also reported downwind for RW08. The A/G Operator noticed that these two ac were potentially in conflict and warned both pilots accordingly. They both opted to make a right hand orbit. [This resulted in them turning R onto a reciprocal heading parallel to the downwind leg.] Whilst they were turning onto a reciprocal heading, another flight [Ac3] that was joining downwind reported sighting traffic below flying in the other direction. The A/G Operator confirmed there were two aircraft flying E - the P92 and the Cherokee [Ac2]. The pilot of the AS355 later commented in his written report that 'this raised awareness and we established visual contact when we commenced the downwind leg'.

The Cherokee pilot subsequently reported downwind. The P92 reported at the 'water features' turning downwind. (ATSI Note: The 'water features' are a reservoir and pond situated NE of the airport at the start of the downwind leg for RW08.) The pilot of the AS355 transmitted, *"that's not awfully clever"* and he would consider filing an Airprox. He later reported that an ac [Ac2 - the Cherokee] joined the downwind leg approximately 0·5nm in front of him. He added that the P92 'continued heading towards us and turned underneath us at approx 100ft below'. The radar photographs of the incident show two aircraft, both squawking A7000 and assessed to be the subject flights, on conflicting tracks.

[UKAB Note (3): The SAC (Prestwick) System recording shows Ac 2 turning R onto a downwind heading for RW08 from its orbit at 1314:08, descending through 1800ft QNH and turning astern of the P92 as the latter tracks easterly at 1300ft QNH. The AS355 is shown at this point in a L turn onto a downwind heading level at 1400ft QNH at a range of 1nm. Just before the AS355 steadies downwind indicating 1400ft QNH, the P92 commences a gentle R turn, still 100ft below the helicopter that has closed to a range of 0·5nm. The AS355 and P92 pass 'starboard to starboard' 0·1nm abeam one another at 1314:24 with 100ft vertical separation. Subsequently the AS355 climbs

to 1500ft QNH, and follows Ac2 downwind whilst the P92 descends marginally to 1200ft and turns R onto the downwind leg astern of the AS355.]

CAP 413 (The Radiotelephony Manual), Chapter 4, Page 32, states:

'An AGCS radio station operator is not necessarily able to view any part of the aerodrome or surrounding airspace. Traffic information provided by an AGCS radio station operator is therefore based primarily on reports made by other pilots. Information provided by an AGCS radio station operator may be used to assist a pilot in making decisions, however, the safe conduct of the flight remains the pilot's responsibility'.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, RT and radar video recordings and a report from the appropriate ATC authority.

At aerodromes such as Cumbernauld where an aerodrome control service is not provided, pilot Members were keen to emphasise that keeping everything standard was a great advantage, particularly for those with limited experience to fall back on. By joining the cct downwind the P92 pilot had not allowed himself sufficient opportunity to establish what was happening within the cct and pilot Members articulated the advantages of an overhead join in this respect. The 'standard' overhead join enables pilots to fly safely above other cct traffic until they have spotted all the ac already in the cct, including here the AS355, and gives the joining pilot time and space to integrate his ac into the pattern so formed safely, before descending to cct height. Three ac had all joined the RW08 LH cct downwind at cct height, which reduced the available time for pilots to assimilate what was going on and act appropriately. Moreover, as the P92 pilot was established ahead of both Ac2 and Ac3 downwind, these pilots should have followed him in the pattern but the radar recording revealed that Ac2 had pressed on, overtaking the P92 in the cct initially, before turning R just as the P92 pilot did so as well. Fortunately, the pilot of Ac3 seemed to have recognised what was happening when he met the P92 and Ac2 going the opposite way in the cct area and issued a warning on the RT. The long elliptical RH orbit executed by the P92 pilot and Ac2, as revealed by the recorded radar data, was close to a reciprocal of the downwind leg and experienced pilot Members opined this was most unwise course of action and the Board agreed that it was part of the cause of the Airprox. The safest course of action would have been for the P92 pilot to continue on downwind and then turn base at the normal position but remain at cct height; he could then have crossed to the dead side and flown a dead side leg while assessing the cct traffic and judging when to make his turn on to downwind. All turns would then be to the L in the LH cct – as specified in the Rules of the Air. As it was, the P92 pilot was unaware of the AS355 until he heard the crew declare the Airprox; as he had not seen the helicopter at all when he flew under it this was also part of the Cause. The Board concluded that this Airprox resulted because the P92 pilot repositioned by flying in the opposite direction to circuit traffic downwind and into conflict with the AS355, which he did not see.

Turning to the inherent Risk, the recorded radar data shows that this Airprox occurred just outside the ATZ boundary some 2·3nm N of the aerodrome. A helicopter pilot Member opined that this was a fairly wide cct for an AS355, but it was evident the PIC had been conducting a test which included various practice emergencies and the warning provided by the pilot of Ac3 might have induced the AS355 crew to expand their cct somewhat. This warning call was certainly a helpful heads-up for the AS355 crew climbing out, who had been established in the cct before either the P92 or Ac2 (the Cherokee) joined. Consequently, they were looking for Ac2 and the P92 as they turned downwind and fortunately spotted the former as its pilot turned in ahead. Although the AS355 crew's sighting of the P92 at a range of 1nm was somewhat less than ideal, there was a lot going on here and the AS355 crew probably saw the P92 as soon as they were able as they steadied downwind; however, the AS355 pilot reports that he was unable to take any avoiding action in the time available. Members considered that although the AS355 crew's sighting and reported 100ft vertical separation was sufficient to avert an actual collision, as the P92 pilot was unaware of the helicopter as it passed just 200yd away, the Board agreed unanimously that the safety of the ac involved had been compromised.

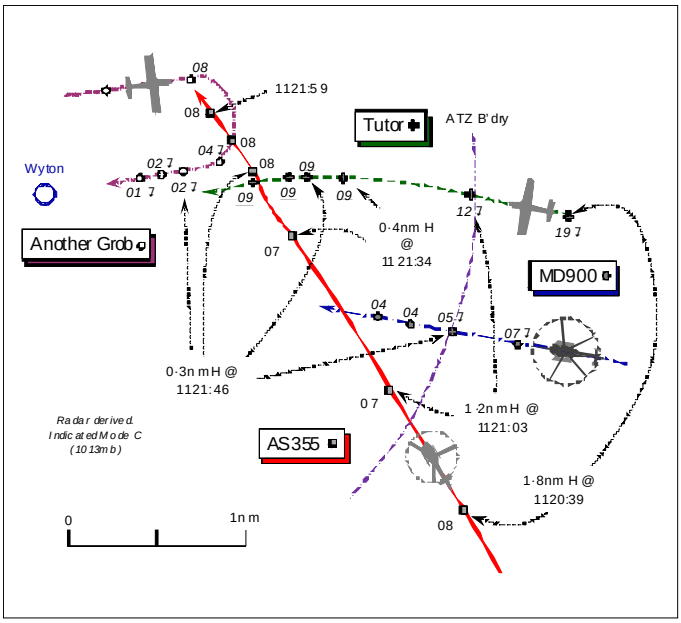
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The P92 pilot repositioned by flying in the opposite direction to circuit traffic downwind and into conflict with the AS355, which he did not see.

Degree of Risk: B.

AIRPROX REPORT NO 2011107

Date/Time:	19 Aug 2011 1121Z	
Position:	5221N 00004W (1·3nm E of Wyton A/D - elev 135ft)	
Airspace:	Wyton ATZ	(Class: G)
Reporter:	Wyton ATC	
	1st Ac	*2nd Ac*
Type:	Grob Tutor TMk1	AS355 F1
Operator:	HQ Air (Trg)	Civ Comm
Alt/FL:	800ft	1300ft
	QFE (1015hPa)	NR
Weather:	VMC CLBC	VMC CAVOK
Visibility:	30km	>10km
Reported Separation:		
	Nil V/150yd H	>100ft V/500m H
Recorded Separation:		
	100ft V/0·3nm H	



CONTROLLER REPORTED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE WYTON AERODROME CONTROLLER (ADC) reports that the RW in use was RW26RHC with a busy visual cct active with three Tutors, plus another Tutor joining O/H and a police helicopter joining from the SE. He then noticed another unknown helicopter SE of the threshold for RW26RHC northbound at about 800ft Wyton QFE (1015hPa) that was crossing the path of the Tutor approaching the Deadside from Initials. The pilot of the unknown helicopter – the AS355 - was not in communication with TOWER as it crossed RW26 threshold directly in front of a Tutor. TI about the unknown AS355 was passed to all of the ac on frequency in the cct and also those joining. At about 1122UTC, just as the AS355 was N of RW26 threshold, the AS355 pilot called on the Wyton APPROACH (APP) frequency and the helicopter was identified.

The Wyton Weather was Colour State Blue, the prevailing visibility 30km and the cloudbase FEW at 3000ft, with SCT cloud at 25000ft.

THE GROB TUTOR T MK1 PILOT reports he was recovering to Wyton from a routine 25min AEF sortie. He was in communication with Wyton TOWER on 126·85MHz and a squawk of A7000 was selected with Modes C and S; a Traffic Advisory System (TAS) is fitted. The aeroplane is coloured white and normal lighting was displayed.

The RW26RHC was busy, with three in the cct, one joining overhead and a police helicopter approaching from the SE. He was visual with all of the traffic and their ac contact 'diamonds' were displayed on his ac's TAS. To the E of Wyton A/D, the TAS alerted him to the unknown helicopter with an advisory 'notice'. Between Initials and the Deadside for RW26RHC, flying wings level at 800ft Wyton QFE (1015hPa) heading 255° at 120kt, he first spotted the helicopter about ½nm away and realised it was not the police helicopter descending into the circuit but a dark-coloured civilian-registered Squirrel at the same height. Turning L would have taken his aeroplane towards the AS355 but turning R would have taken him across the cct towards other cct traffic. As his flight path was diverging (sic) with that of the Squirrel helicopter, he reduced his IAS to a safe minimum of 80kt for lateral deconfliction. The helicopter passed about 150yd ahead from L to R (S to N) at the same height with a 'high' Risk of collision, before proceeding through the visual cct. He added that he did not want to try to climb over the AS355 in case its pilot took action to avoid the other ac in the cct. His recovery was then completed without further incident.

AIRPROX REPORT No 2011107

THE AS355 F1 PILOT reports he was flying single pilot in transit VFR from a private HLS at Chelmsford to York Racecourse and was in receipt of a BS from Cambridge APP on 123·6MHz. SSR was selected on but neither Mode S nor TCAS is fitted. The helicopter has a dark maroon livery and the red strobes were on.

Heading 310° at 110kt in a level cruise at 1300ft ALT after flying W of the City of Cambridge he recalls seeing a police helicopter whose crew reported recovering to Wyton on the RT and appeared to be on a diverging course. The white Grob trainer was first seen at a range of 1nm, 100ft above his helicopter and closing from his 2 o'clock. The Grob passed astern, 500ft away horizontally and >100ft above his helicopter at the closest point with a 'medium' Risk. He had stayed with Cambridge APP until he realised his geographical position and that he had infringed Wyton's 'airspace'. He switched frequency and gave Wyton APP a late call, who then advised him to continue en-route. Mistakenly, he had relied on the GPS fitted in the ac, which did not show Wyton A/D on its database. This, coupled with seeing the police helicopter flying away gave him a false indication that Wyton was further to the E. He opined that this infringement was a simple case of his erroneous assumption of his ac's position and the distraction of dealing with passengers on-board. He was informed later by Cottesmore ZONE that an Airprox report was being raised.

ATSI reports that the Airprox occurred at 1121:46 between a Squirrel AS355 F1 Helicopter and a Grob Tutor, 1·3nm E of Wyton A/D, within the Class G Wyton ATZ, which comprises a circle radius 2.5nm centred on RW08/26, extending from the surface to 2000ft above the aerodrome elevation of 135ft. The AS355 was operating on a VFR flight from a private site at Chelmsford to York Racecourse Heliport and was in receipt of a BS from Cambridge APP on 123.6MHz. The Tutor was on a local VFR training flight from Wyton A/D and at the time of the incident was in receipt of an Aerodrome Control Service from Wyton TOWER on 119.975 MHz. Cambridge Approach was providing an Approach PS without the aid of surveillance equipment. Wyton TOWER and APPROACH were operating as separate positions without the aid of surveillance equipment.

The Wyton 1050Z METAR: 28005KT 9999 FEW030 SCT250 18/09 Q1019 BLU=

The Wyton 1150Z METAR: 24005KT 9999 FEW030 SCT250 18/09 Q1019 BLU=

At 1111:10 the AS355 pilot contacted Cambridge APP and reported routeing from a private site in Chelmsford to York Racecourse at 900ft requesting a BS, which was agreed by the controller and the AS355 pilot instructed to report W abeam *"Cambridge".* At 1112:00 the Police MD900 helicopter pilot contacted Cambridge APP and was given TI on the AS355. The MD900 pilot reported at 1000ft and requested a routeing via the northern edge of Cambridge A/D en route to Wyton. The controller informed the MD900 pilot that he would provide a BS, and the MD900 pilot reported having the AS355 in sight. The MD900 was then issued with a clearance to proceed overhead Cambridge A/D. At 1113:00 the Cambridge APP controller gave TI on the MD900 to the AS355 pilot who reported having the MD900 in sight. At 1114:00 the AS355 reported passing W abeam *"the city"* and was told to keep a good lookout for gliders WNW of Cambridge. At 1117:30 the MD900 pilot reported clearing to the NW of Cambridge A/D and switching to Wyton, which was acknowledged by the controller.

At 1119:00, the MD900 pilot contacted Wyton TOWER for joining instructions and was told it was RW26, righthand, with 1 ac departing and 3 ac in the cct. At 1120:00 the subject Grob Tutor pilot contacted Wyton TOWER on instruction from Wyton APPROACH (134.050MHz) requesting a visual recovery for RW26 from the E. The Wyton TOWER controller informed the Tutor pilot that there was 1 ac departing, 3 in the cct and a police helicopter – the MD900 - joining from the SE.

At 1120:10, Cambridge APP asked the AS355 pilot if he wished to continue en-route with Wyton as he had no further traffic. At 1120:40 the AS355 reported going en-route to Wyton.

[UKAB Note (1): At 1120:39, radar recordings show the AS355 3nm SE of Wyton with the Tutor 2.9nm to the E of Wyton. The Tutor and the AS355 are 1.8nm apart at this point. The Police MD900 squawking the discrete code of A0054 is shown 4.7nm to the ESE of the A/D. At 1121:00 the Wyton TOWER controller saw the AS355 to the SE of the RW26 threshold and broadcast to 'All Stations' that an unknown helicopter was crossing RW26 northbound. At 1121:34 radar recordings show the Tutor approaching RW26 from the E at a range of 2nm from the A/D with the AS355 0.4nm to the SW of the Tutor on a converging, NW'ly track. The CPA occurs at 1121:46, at a position 1.3nm E of the A/D as the AS355 crosses from L - R ahead of the subect Tutor at a range of 0.3nm, whilst also passing astern of another circuiting Tutor that has just steadied on final.]

At 1122:00 the AS355 contacted Wyton APP apologising for the late call and informed the controller that he was transiting the zone to the E.

The report from the pilot of the Tutor stated that when his TAS alerted him about traffic the pilot believed it was the previously mentioned police helicopter, then realised it was an unknown helicopter – the AS355 - and reduced speed to avoid it. The pilot of the AS355 stated in his written report that he had relied on his GPS which did not show Wyton on the database. He remembered seeing the Police MD900 who had reported recovering to Wyton and appeared to be on a divergent course. The pilot remained with Cambridge APP and contacted Wyton APP when he realised his position.

The AS355 and the Tutor were both inside the Wyton ATZ. The Tutor was in receipt of an Aerodrome Control Service from Wyton TOWER. The AS355 had not obtained permission to enter the ATZ at Wyton. Rule 45 of the Rules of the Air Regulations 2007 states that at:-

'an aerodrome having an air traffic control unit', 'During the notified hours of watch of the air traffic control unit' '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 paragraphs (3), (4) or (5) as appropriate.'

Paragraph (3) states that:

'(3) 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.'

Furthermore paragraph (6) requires that:

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….at the

aerodrome (as the case may be) on entering the zone and immediately prior to

leaving it.

Wyton's hours of watch are notified in the UK AIP at ENR 2.2 as sunrise to sunset during the Summer period.

The written report from the AS355 pilot states that seeing the Police MD900 on a divergent course for Wyton reinforced his belief that Wyton was further E than it actually was. When the pilot realised his position he contacted Wyton APP apologising for the late call.

The Cambridge APP controller was not using surveillance equipment to provide a BS to the AS355 so would not have been able to assist the pilot in ascertaining that his position was close to the Wyton ATZ.

The Wyton ADC was unaware of the presence of the AS355 until it was seen SE of the RW26 threshold, flying northbound and was therefore unable to provide timely TI that might have assisted in preventing the Airprox. When the Wyton ADC saw the AS355 TI was immediately broadcast to all ac on the frequency. The AS355 pilot contacted Wyton APP after he had crossed the RW26 threshold in front of the Tutor.

HQ AIR (TRG) comments that the 'simple' mistake by the AS355 pilot created a very high potential risk for the multiple ac within the Wyton ATZ, the AS355 pilot and his passengers. That risk was well handled by the Tutor pilot, who maintained good situational awareness with the help of TAS and who took sensible actions to avoid a collision. The risk posed to the other cct traffic might also be worthy of consideration as it is not clear whether they saw the intruder or not. This incident is a salutary reminder that lapses in, or failures of navigation, on the part of any ac can result in infringements of supposedly protected airspace. Therefore, even in the visual cct, pilots should remain aware to the possibility of unknown traffic approaching from any direction.

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 ATSI report shows that in the provision of a BS to the AS355 pilot, the Cambridge controller had no access to radar data and would, therefore, have relied on position reports from the AS355 pilot. Consequently, Cambridge APP would not have recognised how close the AS355 was to Wyton, before the controller prompted the pilot to call Wyton APP. The recorded RT and radar data shows that the helicopter was 3nm SE of Wyton at 1120:39, with a mere ½nm to run to the Wyton ATZ boundary, when the AS355 pilot switched from Cambridge APP to Wyton APP. Moreover, the AS355 pilot did not contact Wyton until 1122:00, when the radar recording shows the AS355 had already crossed through the final approach to RW26 and was infringing the liveside of the RH cct in opposition to the established visual cct pattern, whereas he should have remained clear of the airspace within the pattern formed by the circuiting ac.

It was evident that the AS355 pilot had not been aware how close he had flown to Wyton before he had sighted the Tutor and finally realised his position. The AS355 pilot reported that his ac's GPS database did not show Wyton A/D and Members were most surprised that this large, well established A/D, with it associated 2½nm radius ATZ, was not clearly delineated. Whilst the type and GPS equipment software version in use by the AS355 pilot was not revealed in his report, an experienced helicopter pilot Member was most concerned that the GPS database had not been kept accurately up to date and suggested inadequate pre-flight planning. Moreover, it was observed that CAA Safety Notices warn pilots operating VFR not to use GPS as a primary means of navigation. In the Member's view there was no excuse; the AS355 pilot's overreliance on GPS without apparent reference to an up-to-date chart was indicative of poor airmanship. The Board agreed that navigational errors by the AS355 pilot were the catalyst to this Airprox, however, this seems to have been a salutary lesson and the pilot has acknowledged his mistake. The result was that, contrary to Rule 45 of the Rules of the Air, the AS355 pilot did not obtain permission to enter the ATZ from Wyton ATC or monitor the frequency during the transit. Furthermore, he did not give way to the Tutor approaching from his right hand side and flew through the downwind leg at about cct height. The Board concluded, therefore, that the Cause of this Airprox was that the AS355 pilot entered the ATZ without permission, contrary to Rule 45 of the Rules of the Air (RoA), and flew into conflict with joining and established cct traffic.

The AS355 pilot had seen the subject Tutor joining the cct to his right from a range of 1nm, but still maintained his course and took no action to avoid it or increase the separation, even though he was required to 'give way'. Fortunately, the AS355 passed clear astern of another Grob on final but it seemed that the helicopter pilot might not have sighted the other circuiting Tutors, which were not mentioned in his account. Nevertheless, the alert Wyton ADC had spotted the AS355 and at 1121:00, made the 'all stations' broadcast, broadly when the AS355 was 1·2nm SSW of the Tutor and just after it had crossed the ATZ boundary. Alerted also by his ac's TAS, the Tutor pilot joining the cct reports he spotted the AS355 about ½nm away. Conscious that any avoiding action he took also had to account for the other traffic in the busy cct, the Tutor pilot wisely reduced his speed to afford the maximum separation against the then unknown and unpredictable AS355. This ensured that the helicopter passed no less than 0·3nm ahead of the joining Tutor and 100ft below it at the closest point, but also allowed the Tutor pilot the maximum freedom to manoeuvre if need be. All this convinced the Board that no Risk of a collision had existed in the circumstances conscientiously reported here.

PART C: ASSESSMENT OF CAUSE AND RISK

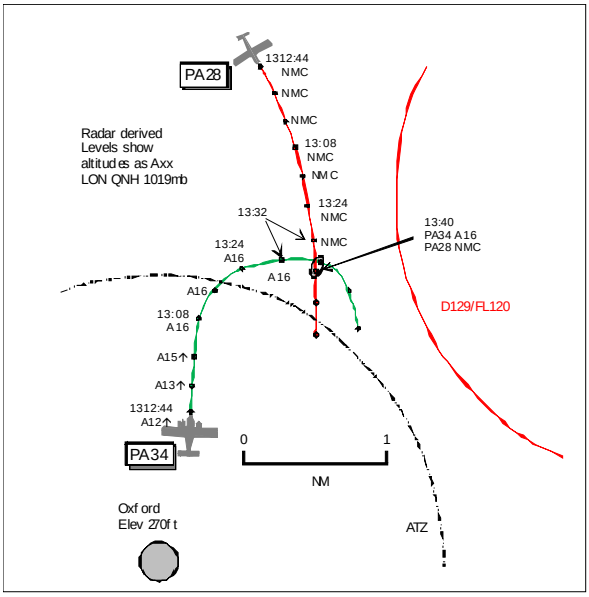
Cause: The AS355 pilot entered the ATZ without permission, contrary to Rule 45 of the RoA, and flew into conflict with joining and established cct traffic.

Degree of Risk: C.

AIRPROX REPORT No 2011108

AIRPROX REPORT NO 2011108

Date/Time:	22 Aug 2011 1314Z	
Position:	5152N 00117W (2·4nm NNE Oxford - elev 270ft)	
Airspace:	ATZ/Oxford AIAA	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	PA34	PA28
Operator:	Civ Trg	Civ Pte
Alt/FL:	1500ft	1500ft
	QNH (1019mb)	NK
Weather:	VMC CLBC	VMC CLBC
Visibility:	>20nm	10km
Reported Separation:		
	75ft V/Nil H	1000m H
Recorded Separation:		
	<0·1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PA34 PILOT reports flying a dual cct training detail, VFR and in communication with Oxford Tower on 133·425MHz, squawking 7000 with Modes S and C. The visibility was 20nm flying 3000ft below cloud in VMC and the ac was coloured blue/white; no lighting was mentioned. They were flying RH ccts to RW01 when the incident occurred. As they commenced their crosswind turn a PA28 flight was cleared to join downwind and was informed by ATC that an ac was climbing out crosswind (their ac). They flew a continuous turn to downwind and when about 2/3rd of the way round the turn, passing through heading 160°,he thought, at 120kt and levelling at 1500ft QNH 1019mb, he saw a blue and white coloured PA28 as it appeared between the fuselage and RH engine nacelle travelling towards their 2 o'clock position; it was 75ft below. It was too late to take avoiding action as the ac were already diverging. He informed ATC that the PA28 had passed directly beneath their ac and the PA28 pilot then reported that he had their ac in sight. By this stage the PA28 was approximately 200m to their R at the same level. He assessed the risk as high.

THE PA28 PILOT reports inbound to Oxford, VFR and in receipt of a BS from Oxford Tower on 133·425MHz, squawking with NMC. The visibility was 10km flying 2000ft below cloud in VMC and the ac was coloured blue/white; no lighting was mentioned. They were advised to join the cct downwind and to look out for a PA34 departing RW01. Heading 190°, he thought, at 90kt and level at 1500ft both he and another pilot aboard had visual contact with a PA34 which was seen to turn behind their ac when they were downwind. He elected to fly a tight cct pattern in case the PA34 should want to overtake their ac. Later on the downwind leg he asked ATC if they wished him to 'go-around' and was told "no, extend downwind leg, PA34 will cross below you and we will fit you in". Both he and his pilot colleague were visual with the PA34 about 1000m away and did not consider this to have been an Airprox.

ATSI reports that the Airprox occurred at 1314 UTC, 2·4nm NE of Oxford Airport and just outside the Oxford ATZ (Class G airspace), which comprises a circle 2nm radius centred on the mid-point of RW01/19 and extends to a height of 2000ft above aerodrome level.

The PA34 was operating VFR in the visual RH cct for RW01 at Oxford Airport and in receipt of an Aerodrome Control Service. The PA28 was operating on a VFR flight from Shobdon inbound to Oxford.

CAA ATSI had access to area radar recordings, together with written reports from both pilots. RT recordings for the Airprox were requested by the CAA ATSI transcription unit on 30 August 2011. However the Oxford ATSU did not impound the recordings and therefore no transcription of the event was available. The PA34 pilot's report indicated that the incident was reported later by telephone. The ATSU reported that the pilot discussed the

incident but did not indicate that an Airprox was being filed. ATC were unaware of the Airprox and no controller report was received.

The METAR for Brize Norton shows EGVN 221250Z 06006KT 9999 SCT045 BKN300 21/10 Q1019 BLU NOSIG=

The PA34 pilot's written report indicated that the Oxford controller had advised the PA28 pilot about the PA34 which was climbing out crosswind.

The PA28 pilot's written report indicated that the controller had instructed the PA28 pilot to join downwind RH, advising the pilot to look out for the PA34. The PA28 pilot in his written report, indicated that he had visual contact with the PA34.

The PA34 pilot indicated that as he turned from crosswind to the downwind position he noticed that the PA28 had passed approximately 75ft below and the pilot reported this to ATC. The pilot reported that as the PA34 turned downwind the PA28 was 200m to the R.

The PA28 was in a tighter cct inside the PA34 and the Tower controller advised the PA28 to extend downwind in order to allow the PA34 to position ahead.

The inbound PA28 pilot was passed TI on the PA34. The Manual of Air Traffic Control, Part 1, Section 2, Chapter 1, Page1 Paragraph 2.1 states:

'Aerodrome Control is responsible for issuing information and instructions to aircraft under its control to achieve a safe, orderly and expeditious flow of air traffic and to assist pilots in preventing collisions between:

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

The PA28 pilot was instructed to join downwind RH. The PA28 pilot indicated that he had the PA34 in sight. Rule 12 (a) of RoA, states:

'the commander of the aircraft……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'

The controller passed TI to the PA28 pilot, in the expectation that the PA28 pilot would join downwind, positioning sensibly into the traffic pattern.

CAA ATSI considered that the PA28 pilot passed underneath the PA34 into a tighter than normal circuit pattern, which caused the PA34 pilot to be concerned.

UKAB Note (1): The UK AIP at AD 2 EGTK 1-6 Para 2.21 Noise Abatement Procedures states:

'b. After departing from Runway 01, climb straight ahead to 750ft QFE (1000ft QNH) or 1.0 DME I OXF, before turning on course. Pilots carrying out visual departures should endeavour to complete this turn before reaching the Mercury Satellite Station (at 1.5nm). When turning right, pilots are to avoid overflying the village of Shipton-on-Cherwell [approx 0·8nm NE of ARP].

e. Whenever possible aircraft joining the circuit should, subject to ATC approval, plan to join on base leg or via a straight-in approach, giving way to traffic already established in the circuit.'

Para 2.22 Flight Procedures Section 1 Circuits states:

'a. Circuits variable. To be flown to the east of Runway 01/19.

b. To provide separation between fixed-wing and rotary-wing traffic, the circuit height for fixed-wing ac is 1200ft QFE. All departing fixed-wing aircraft are to climb straight ahead to 750ft QFE (1000ft QNH) before turning crosswind.'

UKAB Note (2): The radar recording at 1312:44 shows the PA34 1nm N of Oxford climbing straight ahead from RW01 and climbing through altitude 1200ft QNH 1019mb. At the same time a 7000 squawk is seen, believed to be the PA28, 3·5nm NNE of Oxford in a gentle R turn towards the downwind leg RW01 passing through heading 150° showing NMC. The PA34 is seen to level at altitude 1600ft and commence a R turn at 1313:08 with the PA28 1·4nm to its NE. The ac converge, and by 1313:24 the PA34 has departed the ATZ turning through heading 070° with the PA28 0·6nm to its NE. Eight seconds later at 1313:32 the PA28 is in the PA34's 11 o'clock range 0·2nm crossing from L to R. The CPA occurs just before the next radar sweep at 1313:40 as this radar update reveals the ac having passed, the PA28 tracking S, having crossed just ahead of the PA34, which is now in its 7 o'clock range 0·1nm. Lateral separation at the CPA was estimated to be <0·1nm, vertical separation was not recorded.

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 were disappointed that Oxford ATSU did not impound the RT recordings, which left the Board without a transcript of the RT exchanges during the incident. As a result it was unclear exactly when the PA28 pilot called to join the cct but he was cleared to join downwind; the PA34 pilot thought it was when he commenced his turn onto the crosswind leg that the PA28 pilot made his joining call, which would have made it a late call. The PA34 pilot thought that ATC told the PA28 pilot that his ac was climbing out crosswind whereas the PA28 pilot thought ATC told him the PA34 was departing RW01. With ac joining a visual cct, it is essential to ensure the 'mental air picture' is correct to allow traffic to integrate themselves safely, being cognisant of the other traffic's position and intentions. The ADC did not have an ATM which made it difficult for the controller to give a cct order or more positive instructions, which left it down to the PA28 pilot to fit in to the cct pattern formed by other ac. An experienced GA Board Member thought that the cct pattern flown by the PA34, although probably standard during a student's training phase, did appear large in size with the ac leaving the ATZ whilst turning from crosswind onto the downwind leg. Also, with the ADC giving the PA28 flight a downwind join, this didn't give the pilot many options to sequence himself i.e. build in separation against the PA34 turning towards his ac climbing to the same level. The PA28 pilot reported positioning for a tight cct pattern, seeing the PA34 and watching it as it turned to pass behind. In doing so Members thought the PA28 pilot had flown close enough to cause the PA34 pilot concern which had caused the Airprox.

Looking at risk, some Members thought that, as the PA34 was turning 'belly up' to the approaching PA28 and the flightpath flown relative to it had been fortuitous, while the PA28 pilot would have been unaware that the PA34 pilot was unsighted, safety had not been assured. The PA34 pilot only saw the PA28 as it appeared in his 2 o'clock, between the fuselage and RH engine an estimated 75ft below and diverging. Other Members believed that as the PA28 pilot had maintained visual contact with the PA34 and was always in a position to manoeuvre further, if necessary, any risk of collision had been effectively removed. The recorded radar shows the PA28 passing 0·1nm ahead of the PA34, the vertical separation not showing owing to the PA28's NMC. Without agreement between Members, a vote was taken which resulted in a small majority in favour of the collision risk having been effectively removed.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The PA28 pilot flew close enough to the PA34 to cause its pilot concern.

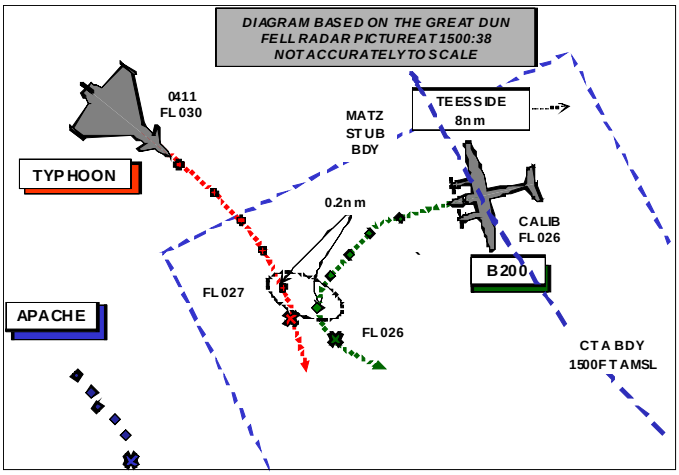
Degree of Risk: C.

AIRPROX REPORT NO 2011109

Date/Time:	24 Aug 2011 1501Z	
Position:	5425N 00138W (9nm Final 05 Durham Tees Valley- elev 120ft)	
Airspace:	Leeming MATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	BE200	Typhoon
Operator:	Civ Comm	HQ Air (Ops)
Alt/FL:	2500ft	NK
	QNH (1009mb)	NK
Weather:	VMC CLBC	VMC CLBC
Visibility:	8nm	30km

Reported Separation:
0ft V/2-300m H
200ft V 0.25nm H

Recorded Separation:
100ft V/0.2nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE BE200 PILOT reports conducting a check on their calibration equipment using the ILS for RW05 at Durham Tees Valley (DTV). They were operating VFR, in receipt of a TS from Durham APR, she thought, and were squawking 0024 with Modes C and S but TCAS was not fitted. The pilot was heading 240° at 180kt positioning L downwind at 2500ft (1009mb) aiming to be established at on the ILS at 8nm. Two to three min prior to the Airprox, APR passed TI on an Apache and Typhoon tracking S'bound to Leeming. They were visual with the Apache 3nm to the W of them at the time of the Airprox as they turned L from the downwind heading at 8.2nm, the pilot (in the RHS) was looking for traffic joining for Leeming RW16. As they were passing through a heading of about 190° the Typhoon was sighted co-altitude in their 5 o'clock position so they continued the L turn with increased bank and descended causing them to lose visual contact. They estimated the Typhoon to be 200-300m away and it had a very high nose attitude. As they turned L to establish, she caught a glimpse of a strobe, but it was obscured by their wing; as the L turn continued the Typhoon came into full view.

The pilot reported the incident to ATC assessing the risk as being high and they noted the position.

THE TYPHOON T3 PILOT was asked on numerous occasions by the UKAB Secretariat, through his command, to complete an Airprox report, but it was not forthcoming until over 3 months after the event.

He was flying a grey ac with all external lights switched on, squawking as directed by Leeming APP with Mode C and in receipt of a TS from them with the student was flying a TACAN approach to RW16. They were approaching the FAF [11.2nm] heading 155° at 190kt [at 3500ft QFE] prior to the descent and he was monitoring the HP's instrument flying. They were informed of traffic in their 2 o'clock by Leeming APP and he saw an Apache helicopter about 2nm away in the reported position and below, which he discounted as it was not a factor.

ATC then informed them of further traffic in their 10 o'clock and both the student and he saw a low wing twin-engine ac, tail on, at their height and about at ¼nm from them and slightly below but heading away. Although they were close, there was no risk of collision because of their divergent flight paths.

He assessed the risk of collision as being low.

THE LEEMING CONTROLLER reported that he was screening a UT Director (DIR) working a single Typhoon ac, on a TAC-TAC procedure to RW16. The Typhoon ac was handed over from ACC and the necessary administration regarding the procedure and subsequent intentions completed. Information regarding the approach profile of the

AIRPROX REPORT No 2011109

Typhoon was passed to Durham Tees Valley Airport (DTV) as they had previously advised of a Calibrator ac conducting approaches to RW05. DTV then passed TI on an ac S of GASKO, inbound to DTV RW23.

The Typhoon ac completed a short hold and was cleared for the TAC-TAC procedure to RW16. The Leeming Approach controller advised DTV that the Typhoon ac was now inbound on the procedure. TI was provided to the Typhoon ac on an Apache which had been handed from DTV to Leeming Zone at 3000ft S'bound, first at 10nm range and when asked to 'say again', at 5nm range (these 2 TI calls were relatively close together – the assessed range was inaccurate on the first); the Typhoon ac subsequently passed behind and above the Apache. The Calibrator ac had been observed conducting approaches within the DTV Class D airspace and was not expected to be a factor. Nevertheless, TI on the Calibrator was provided to the Typhoon (at the request of the Screen Controller) by the UT Controller as it was possible the Calibrator would pass within 3nm of the Typhoon. As the Typhoon turned inbound from the procedure arc to the FAF, the Calibrator ac had still not turned inbound to DTV and further TI was provided to the Typhoon ac.

Shortly afterwards the Typhoon pilot reported visual with the Calibrator ac, stating it to be about 100-150m to their S and that he would be re-positioning to the FAF. TI on the Typhoon ac was then passed to DTV and subsequently, detail of the proximity of the 2 ac. DTV reported that the Calibrator had been visual with the Typhoon ac and was now 'turning left'. By that time, the Calibrator ac was in a position well within the stub of the RAF Leeming MATZ.

BM SAFETY MANAGEMENT reports that unfortunately, this investigation has had to be completed without the benefit of a report from the Typhoon pilot.

DIR was manned by a trainee and a screen who was also acting as the ATCO IC.

At 1444:53, the Leeming ATCO IC passed TI to the Durham Radar ATSA on the Typhoon in the Leeming TACAN hold. At 1454:57 DIR cleared the Typhoon to carry out the TAC procedure. The Typhoon was 17.9nm WSW of Leeming, with the BE200 15.8 nm N of Leeming, placing the latter 25nm NE of the Typhoon.

At 1456:33 DIR contacted DTV (the transcript does not differentiate between RAD or the ATSA) and informed them that the, "*Typhoon was descending on the TACAN*."

At 1458:08, DIR passed TI to the Typhoon on unrelated Apache traffic, with that TI updated at 1459:18. During this update, DIR also passed accurate TI on the BE200 stating, "…*further traffic north-east, six miles* [radar replay shows 6.9nm]*, tracking south-west, two thousand six hundred feet, calibrator at Durham Radar*."

At 1500:12, DIR updated the TI on the BE200 to the Typhoon stating, "*previously called traffic, south-east, two miles, tracking south-west, three hundred feet below climbing*." The radar replay shows the Typhoon turning through a heading of 100° towards the FAF and descending through 3200ft, with the Apache 1.1nm S, tracking S indicating 3300ft and the BE200 1.8nm E, tracking SW indicating 2600ft.

The BE200 pilot reported receiving TI from RAD on both the Apache and the Typhoon around 2 to 3 min before the Airprox but he does not state whether the TI was updated.

At 1500:34 the radar replay shows the BE200 entering a relatively tight left turn, which accords with the pilot's statement that on sighting the Typhoon they tightened a pre-existing left turn with 'increased bank and descent'. At that point 0.4nm lateral separation existed with the Typhoon indicating 100 ft higher than the BE200.

The CPA occurred at 1500:42 with the recording showing 100ft vertical and 0.1nm lateral separation. Shortly after the CPA the Typhoon pilot stated to DIR that they, "*were very close towards that calibrator, it was about a hundred metres away, one hundred and fifty metres away to the south of us…can you keep him clear please?*"

Although the vertical element of the updated TI provided to the Typhoon by DIR at 1500:12 does not correlate exactly with the radar replay, this could be explainable through the differences in display equipment and radar update rates. At the next sweep of the radar on the replay, the Typhoon is indicating 3000ft descending, with the BE200 indicating 2700ft.

Consequently, from an ATM perspective, DIR can be seen to have provided a good level of TI to the Typhoon, that should have enabled the crew to acquire the BE200 visually early enough to discharge their responsibilities for collision avoidance, or to have sought deconfliction advice.

ATSI reports that the Airprox occurred at 1500:40, within Class G airspace 9.5nm SW of DTV.

The BE200, using a Calibrator callsign, was operating VFR and was making an approach to the ILS on DTV RW05, and reported in receipt of a TS from them. Meanwhile the Typhoon T3, was making a TACAN approach to Leeming RW16 and was in receipt of a TS from Leeming Radar.

An Apache helicopter was in transit from N to S towards Leeming and was receipt of a LARS transit service initially from DTV Radar and then it was transferred to Leeming Radar. In addition a BE200(A) was routeing inbound to DTV from the west for a training exercise.

A portion of the Leeming MATZ and DTV Control Area (CTA-2) Class D CAS overlap and the Leeming RW16 CL crosses the DTV RW05 CL at a range of 8.5nm from DTV. A Letter of Agreement (LoA) exists between the two units and is published as Appendix A in the DTV, Manual of Air Traffic Services (MATS), Part 2. Paragraph 1 states:

'This LOA is designed to facilitate the safe and expeditious departure, arrival and transits of air traffic at both Leeming and DTV airfields. It is the duty of care of all ATC staff to provide the best service to all airspace users and also to assist both units in attaining the best possible separation between ac under their respective control. In conjunction with this agreement, ATCOs from both units will make regular liaison visits in order to achieve a better understanding of each other's respective procedures, and visit learning points will be recorded. All radar-qualified ATCO's should have at least one documented visit, however, more detailed liaison visit requirements are set out in the respective unit training documentation.'

CAA ATSI had access to RTF and area radar recordings together with pilot and controller reports. Due to a change in the ATSU impound procedures, the operational telephone calls and RTF recordings either side of the incident were not saved. In consultation with the CAA ATSI transcription unit, the unit procedures have now been updated.

METAR EGNV 241450Z 21010KT 9999 SCT035 20/10 Q1009=

The BE200 Calibrator ac departed from DTV RW23 at 1434, to complete on-board equipment checks. The pilot had pre-arranged to carry out these checks on the RW05 ILS and the ac climbed initially to 2500ft QNH 1009mb.

The Radar controller stated that he had passed Leeming 'generic traffic information' about the BE200 intending to calibrate on board equipment which was not a normal calibration of the ILS and as such the ac 'may be doing the odd strange thing' using RW 05 ILS.

After departure the BE200 tracked W to leave CAS and at 1438:43, radar recordings show the BE200, 9.8nm W of the airfield. The BE200 then turned right, re-entering CAS and positioned to hold to the W of DTV.

The Radar Controller stated that he was aware of the Apache helicopter in transit, as it had earlier been transferred by the Controller to Leeming. The Controller also indicated that when coordinating a previous inbound BE200(A), Leeming had advised him that the Typhoon was carrying out a TACAN hold prior to making an approach to Leeming RW16.

The BE200 was in receipt of a RCS inside CAS and a TS in Class G outside CAS. The MATS, Part 1, Section 1, Chapter 5, Page 1, Paragraph 1.2.2, states:

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

they are operating outside controlled airspace;

or they cross the boundary of controlled airspace.'

At 1457:06, radar recordings show the BE200 holding 3.6nm W of DTV, whilst the crew were setting up their equipment. The Apache helicopter was 11.3nm W of DTV tracking S towards Leeming and squawking 0402.

At 1458:08, radar recordings show the BE200 turn downwind for RW05, indicating FL026, with the Typhoon 17.3nm SW of DTV tracking N, indicating FL040.

At 1458:50, the Radar Controller passed TI, *"(BE200) c/s traffic approximately er eight to the er west of you er positioning for er an approach to to RW one six at Leeming is a Typhoon descending out of three thousand five hundred feet"* and the pilot responded, *"Roger looking for traffic (BE200) c/s er we'll be er turning inbound in approximately two miles";* this was acknowledged. Radar recordings show the BE200, 5.5nm W of the airfield inside CAS. The Radar Controller stated that he expected that the BE200 would shortly turn onto base leg.

At 1459:20, the Radar Controller passed further TI, *"(BE200) c/s the previously reported Apache's approximately three to the west of you also southbound at three thousand feet"* and the pilot replied, *"Roger looking for traffic must be something going on at Leeming that we don't know about.*"

At 1500:05, the BE200 called, *"(BE200) c/s visual with that traffic".* (The BE200 pilot's report indicated that only the Apache was in sight at that point). Radar recordings show the BE200 leaving CAS with the Apache in its 12 o'clock at a range of 2.3nm and 600ft above and with the Typhoon in its 1 o'clock at a range of 2.1nm and 900ft above, crossing from right to left. The DTV Controller's report indicated that as the three contacts closed the labels began to garble. It was noted that the Controller did not notify the BE200 of the change in service as the ac left CAS.

At 1500:40, radar recordings show the BE200 tracking S on base leg, 9.5nm SW of DTV, with the Typhoon on a parallel track, in its 5 o'clock at a range of 0.2nm (CPA) and 100ft above. Both ac indicated FL026 (converts to 2492ft on QNH 1009 with 1mb equal to 27ft). The BE200 pilot's report indicated that the Typhoon was sighted at that point, 'as BE200 turned from 240 to 190 Typhoon was sighted co-altitude in my 5 o'clock position. Left turn continued with increased bank.'

At 1500:52, radar recordings show the BE200 turning towards DTV, with the Typhoon passing 0.5nm behind and 400ft above. Leeming subsequently called to advise that the Typhoon was breaking off its approach.

The DTV Controller stated that neither unit initiated any coordination prior to the conflict. He had not expected the BE200 to extend to 9.5nm and as the situation developed, and then he did not consider that there was sufficient time to coordinate. The DTV Manual of Air Traffic Services Part 2, Appendix A, LoA between Durham Tees Valley Airport (DTV) Ltd and Royal Air Force Leeming, states:

'12. All inbounds to DTV that are likely to affect Leeming traffic are to be notified and co-ordinated if and when necessary. All inbounds to Leeming that are likely to affect DTV traffic are to be notified and co-ordinated if and when necessary.

14. All instrument patterns to Leeming will normally be to the West of the airfield. The exception to this is the short pattern circuit for rwy 16, which due to terrain restrictions will be a left-hand circuit…..

17. Routine traffic arriving to and departing from both aerodromes shall have equal priority and conflictions shall be co-ordinated case by case. It is incumbent on the controller requiring standard separation to initiate any required co-ordination. However, all controllers are encouraged to instigate co-ordination in order to facilitate a safe flow of air traffic.'

19. The confliction between DTV ac inbound to RW05 and Leeming ac inbound to rwy 16 cannot be resolved purely by vertical separation as both ac should be at similar levels at the same position – 8.5 nm rwy 05 and 7.5nm rwy 16. In most cases lateral separation can be used to avoid confliction by agreeing on an order of recovery e.g. Leeming ac extend downwind so as to pass behind DTV ac or DTV ac turn / orbit to pass behind Leeming ac…..'

Both DTV and Leeming were each aware of the others' traffic in general terms. The DTV controller advised Leeming that the BE200, 'may be doing the odd strange thing' and Leeming had earlier advised the DTV Controller that the Typhoon was in the TACAN hold and would be making an approach to RW16. However, as the situation developed there was no further notification or coordination between the two units. The LoA paragraph 17 states:

"Routine traffic arriving to and departing from both aerodromes shall have equal priority and conflictions shall be co-ordinated case by case. It is incumbent on the controller requiring standard separation to initiate any required

co-ordination. However, all controllers are encouraged to instigate co-ordination in order to facilitate a safe flow of air traffic."

It is likely that neither the DTV nor Leeming controller had expected the BE200 to extend to 9.5nm. Had this been known in advance, with the attendant potential for conflict, CAA ATSI considered that one or both units may have attempted to reach an agreed plan and prioritise the arrivals in accordance with the guidance provided in the LoA.

When the BE200 was downwind 5.5nm W of the airfield, the DTV controller had expected that the BE200 would turn close to the boundary of CAS, the pilot calling *"we'll be turning inbound in approximately two miles".* TI was passed on the Typhoon and Apache; however, the BE200 continued for another 4nm before turning. Had the DTV Controller questioned the pilot's intentions, it may have prompted him to coordinate with Leeming. As the two ac converged, the labels started to garble and the DTV Controller considered at that point, that it was too late to coordinate with Leeming. The BE200 reported, "*visual with that traffic*" but it was unclear whether this referred to the Apache or Typhoon (subsequently reported as being the Apache).

It is probable that the Leeming controller was unaware that the BE200 was going to extend to 9.5nm. Once the Typhoon left the TACAN hold to commence the procedure, the Leeming controller did not update DTV on the Typhoon's intentions. The Typhoon pilot's report indicates that as the ac turned onto final at the FAF, the Leeming controller passed TI on the Apache and then a twin ac (the BE200).

CAA ATSI considered that had the specific requirements of the BE200 pilot been known in advance, it was likely that timely and effective action could have been agreed to ensure the safe integration of the traffic. The problems associated with the overlapping approach requirements between the two units are well known and are stated in the LoA.

At the time of the Airprox the BE200 and Typhoon were operating in Class G airspace and both ac were in receipt of a TS and TI was provided to both pilots. CAP774, UK Flight Information Services, Chapter 3, Page 1, Paragraph 1 and 5, states:

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

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

The Airprox occurred when the BE200 and Typhoon came into close proximity whilst operating in Class G airspace, both were in receipt of a TS and both pilots were provided with TI.

The following were considered to be contributory factors:

When the BE200 was 5.5nm from the airfield, the pilot indicated an intention to turn in 2 miles, which may have given the DTV an assurance that the ac would probably remain inside CAS, and may have negated any need to notify or coordinate with Leeming.

The specific requirements of the BE200, in advance of the flight, were not known. The controller considered that the BE200, 'may be doing the odd strange thing' and led to a misunderstanding. CAA ATSI considered that in an environment with ac operating on overlapping approaches, it may have been appropriate to ensure that more accurate information was requested from the BE200 pilot.

CAA ATSI considered that the notification between the two units was minimal and did not meet the stated LoA requirement, 'designed to facilitate the safe and expeditious departure, arrival and transits of air traffic at both Leeming and DTV airfields. It is the duty of care of all ATC staff to provide the best service to all airspace users and also to assist both units in attaining the best possible separation between ac under their respective control'.

Recommendations:

It is recommended the ATSU ensure that controllers are reminded of the need to determine the intentions of pilots conducting unusual types of exercises or approaches, especially in situations that are likely to involve the overlapping RWs and the requirement for close liaison or coordination by both airfields.

It is recommended that the ATSU reminds controllers of MATS Pt1 requirement to advise pilots if a service commences, terminates or changes when they are operating outside controlled airspace or when they cross the boundary of controlled airspace.'

UKAB Note (1): The Great Dun Fell radar shows the incident clearly as depicted in the diagram above.

HQ AIR (OPS) comments that An Airprox is a mandatory reportable occurrence; all personnel who are involved in an Airprox event are to submit an Airprox report, preferably a DFSOR using ASIMS, within 2 working days. This will allow accurate analysis of events before the exact details fade from memory (see MRP RA 1410 for further details). Returning to the circumstances of this incident, the captain of the Typhoon reports that at the time of the incident he was monitoring the student's IF. All aircrew should be reminded that under a TS in class G airspace, lookout must take primacy; in this case it seems that the intent to monitor to the student was prioritised ahead of an effective lookout scan against traffic which had been called to him by ATC. Equally, the BE 200 captain did not alter his flightpath to increase his separation against the Typhoon which he had been informed was joining for Leeming; perhaps if he had assimilated the information more carefully he would have altered his flightpath to avoid the potential conflict. It seems that in both cockpits a desire to complete the task overrode the need to avoid the developing conflict situation.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

Members noted that the BE200 was operating until just before the incident under VFR in Class D airspace and should have been under a RCS. Since the RT transcript did not go back to the beginning of the flight, it could not be determined what clearance it had been given. It was observed that calibration ac normally require freedom to manoeuvre and this would most likely have resulted in a relatively unrestricted horizontal clearance. Notwithstanding that there was an obligation on the DTV controller to change the level of service and remove the clearance when the ac left the DTV Class D airspace and entered Class G, and this did not take place, the Board agreed that the BE200 pilot was not under any misunderstanding about the type of service being provided.

Although it appeared to Controller Members that the DTV APR Controller had acted in the best interests of allowing the BE200 crew to conduct their calibration equipment task, the co-ordination with Leeming was insufficient to deconflict their respective ac. Further they opined that since the DTV traffic was not using the duty RW and was not flying a predictable flight profile, whereas the Typhoon was flying a standard approach to the Leeming duty RW, the onus was on the DTV Controller to initiate co-ordination. Although the whole LoA was not available, only extracts, Members thought it might be unclear and not cover these precise circumstances. Members agreed that the DTV controller had not expected the BE200 to fly as far West as it did, and this may have influenced his perception of the need for coordination.

In the event, by the time of the CPA, despite telling DTV that they would be turning left in 2nm (keeping the ac in or on the edge of CAS) the BE200 pilot continued further, left CAS without a change of service, entered the Leeming MATZ stub and came into conflict with the Typhoon. Controller Members also assessed this evolution as disordered; one Member opined that the BE200 even though VFR under a RCS in Class D airspace, should have been given avoidance on the Typhoon at an early stage rather than TI thus preventing a conflict; others, however, disagreed stating that the BE200 was VFR, the Typhoon was outside CAS and therefore only TI was required, the pilot being responsible for avoidance. Members agreed that the TI had been timely and accurate.

Controller Members agreed that Leeming APP had passed accurate and timely TI to the Typhoon crew regarding the BE200 and the Apache; they updated that TI and informed DTV (ATSA) of the both the presence of the Typhoon and that it was conducting a published TACAN approach. The HQ Air Flight Safety Member noted that it was disappointing that neither crew took any action on receipt of TI and both pressed on into the developing conflict.

After the BE200 left CAS, entering Class G, the respective pilots had an equal and shared responsibility to see and avoid other ac. The BE200 pilot having the Typhoon on her right throughout was required under the RoA (Rule 9 (3)), to give way to it. Since, at least in the latter stages of the conflict she was in a left turn, the Typhoon would have been obscured to her by the airframe, engine or wing so she did not see it until after it was in her 5 o'clock. The Typhoon instructor was in the rear seat and the ac was in a fairly high nose-up attitude and again in the latter stages of the 'merge' in a slow right-hand turn with the BE200 in his 11 o'clock a few hundred feet below. He was instructing the front-seat trainee pilot who was most likely concentrating on flying the instrument approach and the instructor also probably had the opposing ac obscured to him, possibly by the Canard, and did not see the opposing ac until it was ¼nm away tail on and after the CPA.

In summary despite both ac being in receipt of an ATS, and both being provided with accurate TI, the ac were both belly up as they closed and neither crew saw the opposing ac until after it had passed. The Board voted evenly on whether the risk had been B or A so the Chairman decided on a casting vote that there had been a risk that the ac would have collided.

PART C: ASSESSMENT OF CAUSE AND RISK

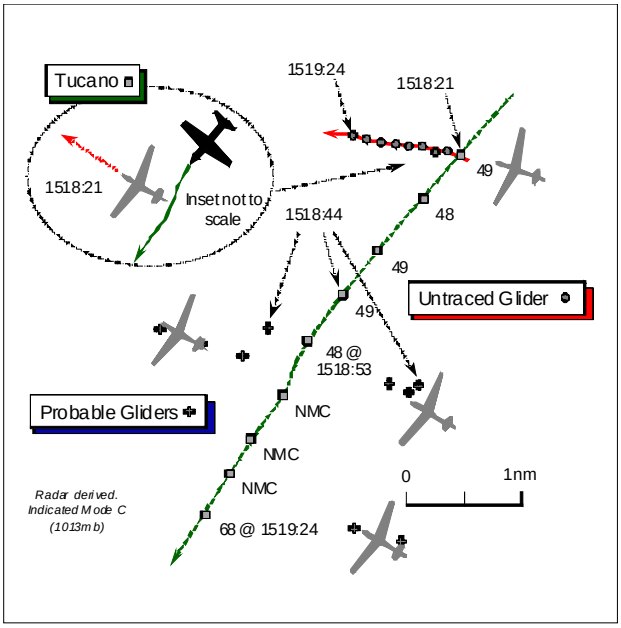
Cause: Effectively non-sightings by the BE200 pilot and the Typhoon Instructor.

Degree of Risk: A.

AIRPROX REPORT No 2011110

AIRPROX REPORT NO 2011110

Date/Time:	22 Aug 2011 1518Z	
Position:	5410N 00059W (12nm NE Linton-On-Ouse - elev 53ft)	
Airspace:	Vale of York AIAA (Class: G)	
	Reporting Ac	*Reported Ac*
Type:	Tucano T Mk1	Untraced Glider
Operator:	HQ Air (Trg)	NK
Alt/FL:	5000ft	NK
	QFE (1017hPa)	NK
Weather:	VMC CLOC	NK
Visibility:	40km	NK
Reported Separation:		
	Nil V/50yd H	NK
Recorded Separation:		
	Not recorded	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE TUCANO T Mk1 PILOT, a QFI, reports he was conducting an advanced training sortie from Linton-on-Ouse (L-o-O) performing aerobatics and general handling (GH). They were not in receipt of an ATS, but a squawk of A4576 [L-o-O conspicuity] was selected with Mode C; TCAS I is fitted without Mode S.

To avoid cloud and other known ac, the exercise was conducted in a large gap in the SCT cloud 15nm NE of L-o-O. On completion of this element of the sortie the ac was positioned for recovery to L-o-O and the ATIS channel selected. The weather was fine, with the cumulus cloud base at 6000ft. Numerous gliders had been observed operating from Sutton Bank and a gliding competition involving up to 45 gliders was known to be taking place from Pocklington aerodrome (NOTAM H3848/11 refers).

As the ac tracked towards Linton at 5000ft, L-o-O QFE (1017hPa) the crew increased their lookout due to the number of gliders in the area. The radio was tuned to the ATIS briefly, before contacting L-o-O APPROACH. Approaching a position 040° L-o-O 11nm, heading 210° at 210kt the crew's attention was drawn to two gliders at a similar height about 2nm away – one at 10 o'clock and the other at 2 o'clock. Two sec later the PF observed a white single-seat glider – possibly a Discus - immediately on the nose, at the same height, less than 100yd away, crossing straight and level from L to R. To avoid this glider he instinctively banked hard L and the glider passed about 50yd down the starboard side with a 'very high' Risk of collision. No traffic was indicated on the TCAS I. Subsequently, the PF climbed above the cloud base as he assessed that the danger posed by the gliders was too great. Linton APPROACH was then contacted for recovery and an Airprox declared on the RT. The ac was recovered to L-o-O without further incident.

RADAR ANALYSIS CELL LATCC (MIL) reports that despite extensive tracing action, the reported glider could not be identified and the pilot remains unknown.

UKAB Note (1): NOTAM H3848/11 promulgated the following activity, sunrise to sunset, between 21 Aug and 28 Aug from the surface to 5000ft amsl:

'MAJOR GLIDING COMPETITION INC X-COUNTRY ROUTES. INTENSE ACTIVITY WI 5NM RADIUS 5356N 00048W (WOLDS GC, POCKLINGTON AD). UP TO 45 GLIDERS AND 7 TUG ACFT MAY PARTICIPATE. GLIDERS WILL NORMALLY OPR BLW THE INVERSION LVL OR BTN TOPS OF ANY CU CLOUDS AND 500FT AGL. FOR INFO ON ROUTES FOR THE DAY CTC GLIDER CONTEST CTL TEL 01759 303579 OR 07769141024. RTF 130.100MHZ.'

THE LINTON-ON-OUSE APPROACH CONTROLLER (APP) reports the Tucano crew reported an Airprox on the APP frequency at 1518UTC, but the flight was not on the controller's frequency at the time of the Airprox. The Tucano crew requested a visual recovery and reported having an Airprox a couple of minutes earlier. The pilot reported he had come within 50m of a glider at 5000ft S of Sutton Bank.

A glider competition had been notified for that day and there were a large number of primary contacts on the screen for most of the afternoon. The gliders routed from Pocklington - Pontefract - Thirsk - Pocklington. They passed within 5nm W of L-o-O and on their return passed within 5 miles E of the aerodrome. At the time of the Airprox there were a large number of gliders transiting to the E of the aerodrome between Full Sutton and Pocklington.

THE LINTON-ON-OUSE ATC SUPERVISOR (SUP) reports the controller's workload was 'low' and that of the unit 'medium to low' at the time of the Airprox, which was simply a case of high intensity glider activity within close proximity to an active military aerodrome. In excess of 40 gliders had been NOTAM'd and monitored on radar as they transited around the North York Moors and Vale of York. Unfortunately the Tucano experienced this Airprox as he commenced his recovery to L-o-O and before he had established two-way RT contact with APP. Had the Tucano crew made contact earlier then this incident may have been avoided by the use of radar; the APP controller fulfilled his obligations to the flight during the visual recovery. Information regarding the notified route of the glider competition had been disseminated to flying units at L-o-O.

LINTON-ON-OUSE ATC commented that Linton crews were aware of the NOTAM for the glider competitions and on such occasions they should be in RT contact with ATC earlier than usual, especially when operating in the vicinity of known glider activity. ATC have also agreed to inform crews when taxying out about glider contacts observed on radar, that might help the pilot determine an alternative route in advance before take-off.

BM SAFETY MANAGEMENT reports that the investigation conducted by Linton-on-Ouse confirmed that the Tucano pilot was not in receipt of an ATS when the Airprox occurred. Consequently, there are no ATM-related issues.

UKAB Note (2): The LAC radar recording does not illustrate this Airprox clearly. The Tucano is shown approaching the reported Airprox location from 1518:00, and a multitude of intermittent primary radar contacts are evident in the vicinity that are probably gliders. The Airprox occurs at about 1518:21, when the Tucano was 12nm NE of L-o-O tracking 210° in a level cruise indicating 4900ft (1013hPa). At that point the untraced glider is not shown at all. Nonetheless, successive sweeps reveal a primary contact in the exact position the Tucano has just vacated maintaining a steady track of about 280°, which seems to have been crossing from the Tucano's L - R as reported, thereby giving credence to the Tucano pilot's reported separation. However, no avoiding action is apparent from the Tucano at that point. The gliders reported by the Tucano pilot in his 10 o'clock and 2 o'clock positions might be those shown later at 1518:44, and on the next sweep a slight descent and jink to the L are evident that accord with the reported avoiding action L turn. Thereafter, no Mode C is evident from the Tucano until 1519:24, when it indicates 6800ft (1013hPa) evincing the Tucano pilot's reported climb to higher levels above the cloud base to avoid the glider traffic.

HQ AIR (TRG) comments that the absence of an ATS was a factor in this incident, and the limited effectiveness of TCAS in an environment where non-transponding traffic proliferates is also noted. Liaison between RAF Linton and the local gliding community has increased over the last few months but there is still room for improvement in the reaction of operators to a warning of intense gliding activity. Balancing the risk of a mid-air collision with non-transponding traffic against the need to achieve a busy training task is an ongoing challenge for the Station.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included a report from the Tucano pilot, radar video recordings, reports from the air traffic controllers and appropriate ATC and operating authorities.

It was evident that the Tucano crew were aware of the potential for encountering the Pocklington Competition gliders as a result of the NOTAM. However, Members were somewhat disappointed that this Airprox should have occurred, following the considerable effort undertaken to improve liaison between RAF Linton-on-Ouse and local gliding clubs. The Board was also aware of the commendable steps to familiarise Unit pilots with gliding activities and how glider pilots operate in different weather conditions. On a thermalling day (with Cu cloud), it would have been wiser if the Tucano crew had remained above the base of the cloud for as long as possible to minimise their

exposure to the gliders operating below. However, each pilot was operating legitimately within Class G airspace and Members were well aware that gliders might be encountered throughout the FIR at any point. Moreover, it was possible that the untraced glider pilot was not a competition participant, none of whom had been identified during tracing action as flying the reported glider. Despite the very positive stance already taken by individual aircrews from this Station to ameliorate the potential for airborne conflict between gliders and military training ac, the HQ Air Trg Member believed it was now appropriate for the Station to prescribe additional measures, if necessary mandating more positive deconfliction procedures. The steps taken by ATC to inform ac taxying out about gliders observed in the locality was noted and should be effective. Moreover, it was suggested that high-level recoveries via the overhead might also reduce the amount of time that aircrews were operating in the same airspace as that used regularly by the competing gliders, thereby reducing their exposure to the potential for conflict.

The Tucano crew had acquired two gliders - one to port and one to starboard - at a similar height about 2nm away, alerting them to the presence of gliders in the immediate vicinity. The PF then observed the subject untraced glider less than 100yd directly ahead at the same height, crossing from L to R. Accepting that white gliders flying straight at the same level are difficult to spot, pilot Members agreed that at this short range, the late sighting by the Tucano crew was part of the Cause. It was unfortunate that the glider pilot could not be traced, but if the glider pilot had been aware of the Tucano passing this close it seemed inconceivable that he would not have responded with an Airprox report. This suggested to the Board that the glider pilot had probably not seen the Tucano as it passed astern, and this was the other part of the Cause. The Board agreed unanimously that this Airprox had resulted from a probable non-sighting by the glider pilot and a late sighting by the Tucano crew.

It was indeed fortunate that the Tucano crew spotted the glider when they did. Pilot Members noted that the avoiding action taken by the Tucano pilot was instinctive. Nevertheless, this avoiding action hard L turn, whilst robust and effective, only achieved 50yd separation on the glider as it passed down the starboard side. This was just sufficient to avert a collision, which led the Board to conclude unanimously that the safety of the ac involved had been compromised.

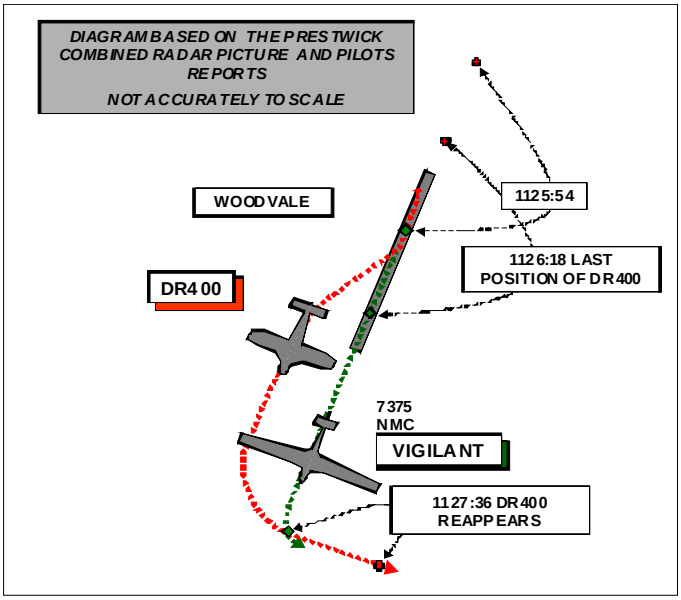
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A probable non-sighting by the glider pilot and a late sighting by the Tucano crew.

Degree of Risk: B.

AIRPROX REPORT NO 2011111

Date/Time:	20 Aug 2011 1127Z (Saturday)	
Position:	5334N 00305W (Woodvale - elev 37ft)	
Airspace:	ATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Vigilant	DR400
Operator:	HQ Air (Trg)	NK
Alt/FL:	600ft↑	1000ft
	QFE (1014mb)	QFE (NK)
Weather:	VMC CLBC	VMC CAVOK
Visibility:	15km	9999km
Reported Separation:		
	100ft V/20m H	500ft V/0.5nm H
Recorded Separation:		
	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

UKAB Note (1): There were irreconcilable differences in the time of this incident. All times discussed have been changed to UTC where possible. The Vigilant pilot reported the incident as taking place at 1400 and the DR400 pilot as 1230 with his flight times logged as 1235–1335. The flight times were confirmed with the pilot in a later telephone call and he confirmed that the incident had taken place towards the end of the flight. The CAA SRG Transcription Unit listened to many hours of RT tapes and the only time that there was a RT call of the DR400 (C/S) asking the Vigilant (C/S) asking if he was about to roll was at 1226:54; although the Transcription Unit believed this to be a UTC time, further investigation with the unit showed it to be BST so all the times in the ATSI report have been adjusted accordingly. The recording of the Prestwick combined system radar, commencing at 1125, shows tracks corresponding to both the Vigilant, squawking 7375, and a primary only track in the cct flying precisely the profile described by the DR400 pilot. It is thought likely therefore, that the incident occurred just after 1127UTC; at that time the non-squawking DR400 had disappeared from radar, reappearing at 1127:36 ahead of the Vigilant as shown above.

THE VIGILANT PILOT reports that he was undertaking a Gliding Scholarship pre-solo training flight with a student pilot in a white glider with Day-Glo patches, in receipt of an A/G service from Woodvale Radio on the Approach frequency and squawking 7535 [Woodvale conspicuity] but Modes C and S were not fitted. The Vigilant student called 'lining up' and proceeded onto RW21L and they then heard the DR400 pilot call 'final' (to roll). The DR400 pilot then called 'Vigilant, are you rolling' and the instructor replied 'C/S rolling …' as student started to roll; they then took off and entered the climb heading 210° at 55kt. At about 500ft the DR400 was first seen climbing roughly parallel to them about 100m to their R and slowly overtaking. At about 600ft with the DR400 slightly ahead, it was seen to commence a L turn and the instructor considered that it would pass very close, so he took control, lowered the nose, reduced power and commenced a descent. The DR400 passed above and slightly ahead of them with an estimated 100ft V and 50ft H separation.

He assessed the risk of collision as being medium and reported the incident on landing.

THE DR400 PILOT reports that this was one of a number of flights flown with an examiner over the last few weeks as P1 under supervision regulations in order to revalidate his licence which had lapsed while his locally-based, group-owned ac was being re-engined. During the period the same examiner/instructor had covered GH, PFLs, ccts etc.

On the day of the incident, two separate flights of one hour each were flown, again with the same examiner with particular emphasis on ccts, particularly on tightening up to conform with RAF requirements and recognising the differential in airspeeds between the Robin, Tutor and Vigilant powered gliders that regularly fly from Woodvale.

At that time three or four Vigilants were in or around the cct giving him valuable hands-on experience in a busy environment. At the time no Tutors were airborne and ATC was not operational although A/G radio from the Vigilant facility was in use.

Half way through the second flight they were downwind for RW21 and a downwind RT call was made; during that time a Vigilant was seen to enter RW21 from the hold and position for take-off. During the base leg the Vigilant was seen to remain in the same position as he made a call of 'finals for touch and go' when turning for the RW. At almost the same time the Vigilant began its take-off roll and a possible go around decision was discounted as the separation was thought to be adequate. By the time of touchdown, the Vigilant was well into its climb-out, so he set his ac for a go-around and the take-off was undertaken. As the climb-out progressed on the RW heading of 210° and at 100kt, the closing speed became obvious and he considered two courses of action. Firstly, because no radio calls had been made from the Vigilant, he thought that there may have been a basic student at the controls and a call by them might have confused the student. Secondly, it was known that some Vigilants had continued to make RH ccts on RW21 for some days after the order to change the direction to LH was issued. He therefore decided to turn 30° to the R (the dead side) while watching the Vigilant closely to ensure that it maintained its parallel track.

As the Robin's climb was continuing, the Vigilant began to descend in what looked like a practice engine failure after takeoff [EFATO]; the separation at that point was considered safe and increasing when he made a L turn, well above the other ac to rejoin a downwind position in the cct.

As they joined the downwind position, his examiner closed the throttle to simulate an engine failure and a successful crosswind landing on RW26 was made to complete flight.

On his return to GA Ops he was aware that the examiner was in a discussion with the Vigilant Instructor.

He does not consider there was any possibility at any time of an Airprox between the two ac as he had the Vigilant continuously in sight and ensured that they were well separated.

THE DR400 EXAMINER reports that he was informed 2 weeks after the flight that an Airprox had been filed and as a result he elected to visit Woodvale ATC the following day.

He confirmed he was examining the pilot for the purposes of the re-issue of the single-engine piston Land Rating qualification of the Handling Pilot (HP).

He clearly recalled the incident. On the climb out, the Robin was gaining on a Vigilant that had departed earlier from the same RW so the HP turned approx 40° to the R and the dead side. On passing 800ft (cct height) they made a L turn to parallel its track. The Examiner asked the HP if the Vigilant was in sight to which he replied 'Yes, he's below on my left and descending'.

No radio calls were received for EFATO or avoiding action which seems to be the norm at Woodvale as Vigilants seem only to communicate with their 'ground wireless' and not with other ac, nor is there acknowledgement of requests for 'radio checks'.

The pilot under test levelled at 1000ft QFE and he (the examiner) commented that the Vigilant was probably on a 'fan stop'. When he asked 'do you still have him in sight' the reply was 'Yes, I intend to pass behind on a left hand turn'. As they passed the examiner observed the Vigilant to his R and well below.

He made the following observations:

Point 1. If the Vigilant took avoiding action at 600ft by descending and they were at or about 1000ft, there must have been at least 400ft separation.

Point 2. The HP turned L to parallel track and the Vigilant instructor might have misconstrued this to be a turn towards them.

Point 3. In his opinion, complete lack of communication had lead to this incident. If there is ever a potential risk of conflict, a radio call is often a good means of resolving the situation.

Point 4, As a result of the ensuing meeting with ATC and OC flying at Woodvale, it was suggested that a third ac (Vigilant) may have been unnoticed and behind them which would corroborate the claim that they were above and in front of another ac posing a possible confliction. His response to that theory 'where did it come from?' and if it was behind them, then the DR400 had the right of way. In any case there is no evidence of any other ac in that part of the cct at that time.

At no time did he feel it necessary to take control of the ac, as he would be obligated to do if safety was jeopardised. Further, he was satisfied with the performance of the HP on that flight and on the previous flight testing, awarding him a pass and re-issue of his Rating.

ATSI reports that at the time of the Airprox the ATS Unit was closed and an A/G Service was being provided by the gliding facility, albeit generally blind transmissions were being made, particularly in the cct.

The DR400 departed for LH ccts on RW21 at 1038. The aircraft was still carrying out circuits at 1113, when the Vigilant reported taxiing to RW21. The DR400 then made four more touch-and-go approaches before reporting, at 1125, downwind 21 LH. During this message there was a part simultaneous transmission but the DR400's call was clearly readable on the recording. The DR400 pilot stated, in his report that, at the time, he saw the Vigilant entering RW21 for departure. No lining up transmission by the Vigilant was evident on the recording of the frequency. The DR400 reported on final approach RW21 for a touch and go at 1126:31, 22sec later the DR400 pilot asked the Vigilant pilot if he was rolling and he replied *"Rolling now thanks"*. [See UKAB Note (1) regarding timings].

No further comments were made on the frequency about any confliction between the two ac.

UKAB Note (2): At the time of the incident the recorded wind at Liverpool (16nm to the S) was 220° at 12kt. After the Vigilant gets airborne its radar derived groundspeed (GS) increases to 60kt but over a 1 minute period from 1127:02 it reduces to an average of 30kt before increasing again to 50kt at 1127:49. A primary return corresponding to the DR400 reappears ½nm away in the Vigilant's 3 o'clock just before the Vigilant turns crosswind behind it. Although not called on the RT or mentioned in the Vigilant pilot's report, its flight profile (although it could not be confirmed by Mode C information) would correspond with that of an EFATO drill.

UKAB Note (3): Woodvale has an 2nm radius ATZ that is active Tue – Sun 0800 – 1800.

Note (1): May close earlier – status from local ATC units. That being the case the ATZ was active.

HQ AIR (TRG) comments that RT practices differ between airfields and there is no common standard. It falls to each airfield operator to set and enforce RT standards amongst its airfield users. In spite of the RT inconsistencies raised in this report, both parties report being fully aware of the other's position, which is reassuring. However, the reason for the differing perceptions of proximity needs to be determined in order to assess the actual 'risk'.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, recordings of the relevant RT frequency, radar recordings and reports from the appropriate ATC and operating authorities.

Members were perplexed by the timing issues but were content that the geometry of incident was as portrayed in the diagram above and the actual time was not particularly significant. A GA Member informed the Board that integrating traffic flying at significantly differing speeds in the visual circuit can be challenging for pilots. The basic rules however, still apply and following ac must conform to the pattern being flown by those ahead regardless of the size. If they cannot conform safely, they should go-around or leave the circuit and rejoin in a more suitable position.

Members noted that Woodvale ATC was closed and that the gliders and DR400 were operating under local radio procedures that had been devised to suit the nature of cadet glider operations. It was pointed out that these are not the same as those used in a civilian A/G service; not all of the usual position reports expected by the DR400 Examiner were being made and both the DR400 pilots' SA might have been less than comprehensive. Further, since he was in the RH seat, his view of the Vigilant to his left and below would probably have been obscured but the HP would have been able to see it; the Board agreed therefore the some of his report was based on what he was told rather than what he saw. Members agreed that despite the limited RT, the DR400 pilot seemed to be broadly aware of the position and intentions of the Vigilant as his limited information permitted and he had allowed for any possible manoeuvring by the ac. Further, he was aware that the ac was most likely being flown by an inexperienced cadet pilot and again he had allowed for that. Notwithstanding these factors the Vigilant Instructor had been concerned by the proximity of the DR400 as it overtook and he was not aware of what the ac was doing; one Member opined that a simple RT call from either pilot might have alleviated that concern or removed it entirely.

Although there was much discussion, Members were not able to resolve positively the significant differences in the separation reported by the two pilots; they agreed however that since there was little doubt that the separation was determined by the DR400 pilot who had a better picture as he climbed from below and behind to overtake he was better placed to make a reasonable estimate. Nevertheless the Board considered that the DR400 pilot may have underestimated the rate of climb of the Vigilant and the time it would take for him to cross ahead of it. Certainly the separation had been close enough to cause the Vigilant Instructor concern although there had been no risk of collision as the DR400 pilot had the former visual throughout and had not turned across its path until he considered that separation was adequate and the Vigilant instructor was alert to the DR400's manoeuvre.

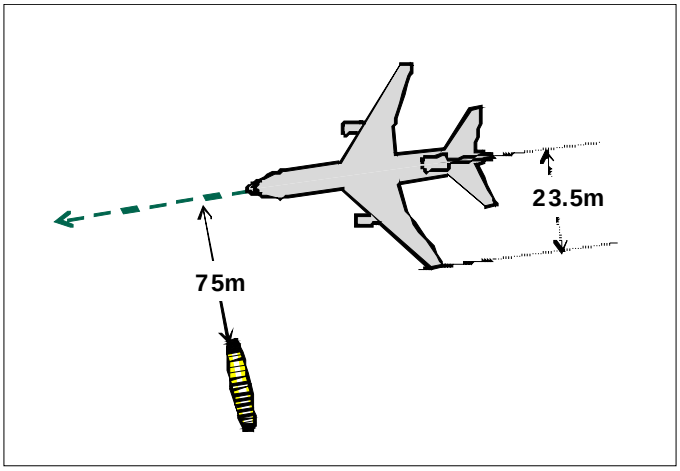
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The DR400 pilot flew close enough to cause the Vigilant instructor concern.

Degree of Risk: C.

AIRPROX REPORT NO 2011112

Date/Time:	29 Aug 2011 1040Z	
Position:	5145N 00146W (8nm W Brize Norton)	
Airspace:	Oxford AIAA	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	TriStar	Untraced Paramotor
Operator:	HQ Air (Ops)	NK
Alt/FL:	FL045↑	NK
	SPS	NK
Weather:	VMC CLBL	NK
Visibility:	9km	NK
Reported Separation:		
	0ft V/75m H	NK
Recorded Separation:		
	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE TRISTAR PILOT reports they departed Brize Norton on the RW26 MALBY SID at 1035Z, in receipt of a TS from Brize Departure, squawking with Modes C and S. On turning onto the 285° radial at 8-9nm the pilot noted large numbers of TCAS contacts with no height information and alerted the flight deck crew to be extra vigilant. This was immediately backed up by ATC who informed them of a large number of contacts in the Kemble O/H. The Crew had initially elected to receive a TS but this was almost immediately upgraded to a DS.

At approx 8-9nm, just as the DS was being requested, the pilot noticed a yellow parachute-sized object in his L, 11 o'clock, approx level with the ac at a distance of ½nm. [On a subsequent telephone conversation it was understood that it was a paramotor]. The 'ac' passed rapidly down their LHS at a distance of about 75m. ATC was informed and the ac turned onto a S'ly heading.

A check of all ac systems was completed as they suspected a collision might have occurred. ATC were passed details of the Airprox but confirmed that they had no contacts on radar.

Of note - even under a DS and with the benefit of TCAS, lookout was the only defence against this potentially catastrophic incident. However, at 250kts indicated airspeed and an all up weight of 234 tons, the pilot believed they would have been unable to manoeuvre the ac in time for avoiding action to have taken effect if the ac had been closer.

He assessed the risk as being very high.

ATC have submitted a similar Airprox report detailing this incident from an ATC perspective.

METAR EGVN 1050Z: 290/09 9999 FEW035 SCT050 BKN250 +16/+7 1018h.

THE PARAMOTOR PILOT could not be traced.

THE BRIZE DEPARTURE CONTROLLER (APP) reported that he was controlling Zone and Approach, when the TriStar was released for a standard MALBY join. The ac called airborne and was identified but he was concerned by a large number of primary contacts in the vicinity of Kemble and negotiated with Sector 23 for a heading towards SIREN to join CAS. The Tristar pilot advised that he would like a TS but he advised him of the large number of primary contacts and explained that he could give him a vector towards SIREN for his join. As the pilot considered this option, he then requested a DS so he immediately gave him an avoiding action turn to a heading of 170°.

At that point, the other pilot, who he thought was the ac commander, advised him that they had just had an Airprox with a coloured paraglider. He told him that there were no radar contacts in his immediate area and noted the time and position. The Controller then updated the pilot on the position of the primary contacts and when he was happy that he would maintain separation, released the ac to London with further climb to FL120, as advised by Sector 23.

The Supervisor was in the TWR and did not witness the incident.

BM SAFETY MANAGEMENT reports that the paramotor does not appear on the radar replay; consequently the investigation was based upon the R/T transcript and the occurrence reports.

The Tristar exited the BZN CTR at 0937:46 en-route to MALBY and was placed under a TS. At 0938:03 APP contacted the LACC S23 Planner and stated that the TriStar was, "*on a MALBY. I've got a lot of primary traffic to…surrounding Kemble…he's a fairly slow climber, are you happy if I put him on a heading towards let's say SIREN initially?*" The LACC S23 Planner agreed this course of action with the landline call completed at 0938:24. SIREN is approximately 10nm E of MALBY.

At 0938:28 APP informed the TriStar of "*multiple primary contacts in the Kemble area, um, all height unknown, all manoeuvring, are you happy to continue or would you like a vector, happy with a vector towards SIREN if that helps?*"; in reply, the Tristar requested a DS.

At 0938:44 APP acknowledged the TriStar's request, stating, "*avoiding action, turn left immediately heading one seven zero degrees, Deconfliction Service*." No TI was provided with this avoiding action; consequently, it has not been possible to determine what the turn was planned to avoid.

At 0938:49, the TriStar read back the avoiding action turn and stated that they had, "*just had a er an Airprox with an unknown er it looked like a er a kite or paraglider*". APP replied that they saw, "*absolutely nothing on radar*" thus suggesting that the avoiding action turn issued at 0938:44 was against un-related traffic.

As identified by the TriStar's crew, given that the paramotor was not displayed on the BZN surveillance display, the ATM related safety barriers were unable to operate and the only defence against this occurrence was lookout.

UKAB Note (1): Although the TriStar can be seen on radar the Paramotor does not show at any time.

HQ AIR (OPS) comments that there is no doubt that a definite hazard existed. The TriStar crew were coordinating effectively with Brize ATC to obtain separation on known contacts. However, this incident highlights the risk of encountering small non-transponding ac in Class G airspace, the defence against which is limited to effective lookout. The operators of such ac must understand the elevated risk they expose themselves to when flying in the arrival and departure lanes of busy airfields such as Brize Norton without ATC coordination.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

Members were surprised that the Paramotor pilot did not submit a report, as they agreed unanimously that his ac would have encountered significant wake turbulence just after the TriStar passed it.

Members agreed with the TriStar pilot and HQ Air Ops that the 'See and Avoid principle' was not designed for these circumstances and does not work as envisaged in them. That being the case, Members considered that flying (any ac) in the departure lane of a busy airfield operating large transport ac and just above its associated airspace (even though it is Class G airspace) is at best ill- advised.

Without a report from the Paramotor pilot, it could not be determined at what stage he saw the approaching TriStar. The Board noted the Controllers were pro-active and did what was required of them but, since the Paramotor did not show on their radar displays and was unknown to them, they were unable to provide the TriStar crew with any warning. Therefore the Board considered that the TriStar crew had seen the Paramotor as early as might reasonably be expected and that the Cause of the Airprox was a Conflict in the Oxford AIAA.

When assessing the degree of risk, Members considered the proximity of the Paramotor to the TriStar, that the former did not paint on the radar so no warning could be issued by ATC and the lack of manoeuvrability of the TriStar (or paramotor) at the very high all-up weight. Bearing these in mind, Members agreed that even if the TriStar crew had seen the Paramotor a short time earlier (say as soon as visually practicable) it is unlikely that they would have been able to change their flightpath substantially and provide 'safe' separation; that being the case this incident had been close to a collision which the TriStar crew could not have prevented.

PART C: ASSESSMENT OF CAUSE AND RISK

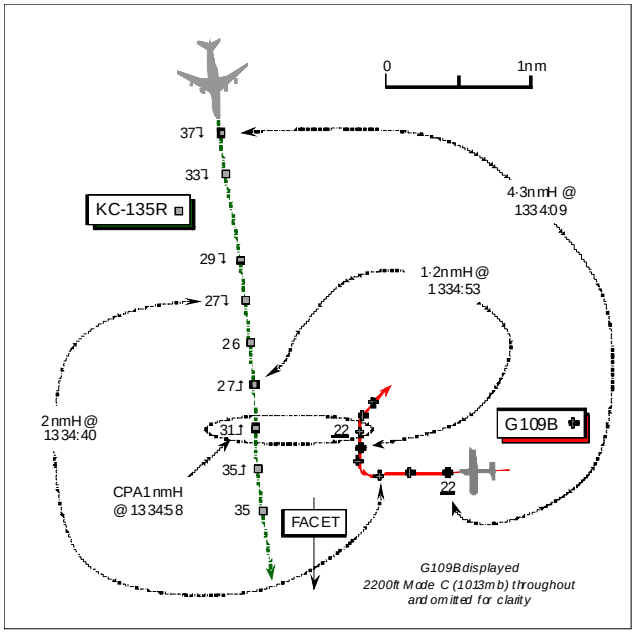
Cause: A conflict in the Oxford AIAA.

Degree of Risk: A.

AIRPROX REPORT No 2011113

AIRPROX REPORT NO 2011113

Date/Time:	31 Aug 2011 1334Z	
Position:	5230N 00013E (14nm NW of Mildenhall)	
Airspace:	London FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	KC-135R	Grob G109B
Operator:	Foreign Mil	Civ Pte
Alt/FL:	3000ft↓	2300ft
	QNH (1016mb)	QNH (1015mb)
Weather:	IMC In cloud	VMC CLBC
Visibility:	9km	10km
Reported Separation:		
	NK	1500ft V/1nm H
Recorded Separation:		
	1nm Min H	
	400ft Min V @ 1·5nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE BOEING KC-135R PILOT (KC-135) reports he was inbound to Mildenhall and in receipt of a TS from Lakenheath APPROACH (APP) on 309·2MHz. The assigned squawk was selected with Mode C; TCAS and Mode S are fitted. Landing lights and HISLs were on.

Descending IMC in cloud from FL60-3000ft, APP cleared them to descend from FL40 to 2600ft QNH (1016mb) and fly direct FACET [the IAF for an RNAV GPS approach to RW11 – 308R Mildenhall 12·5nm]. Breaking out below the cloud base at 3000ft descending at 1000ft/min, heading 195° at 240kt, the crew queried the local altimeter setting. When APP replied with confirmation of the QNH, TCAS enunciated a TA and so the crew attempted to acquire the conflicting traffic visually. TCAS then enunciated a CLIMB RA so they immediately discontinued their descent, applied maximum power, and began a rapid climb as demanded by TCAS of 4000ft/min+ on the Vertical Velocity Indicator (VVI), whilst maintaining their previously cleared flight path. After a few moments, the RA demanded they adjust their vertical speed indicating a level-off. Just as they began to level-off, the RA terminated with a CLEAR OF CONFLICT enunciation. By this time their KC-135 was O/H FACET and they continued the approach. They informed Lakenheath APP they had manoeuvred in response to a TCAS RA. Shortly after initiating the climb in response to the RA, he identified the conflicting traffic – a white low-wing aeroplane - in their 7-8 o'clock position in a R banked turn away from and behind their flight path. The conflicting ac's previous heading prior to conflict is estimated to have been about 290°. He assessed the Risk as 'medium'.

THE GROB 109B PILOT (G109B) reports he was in transit VFR from Old Buckenham to Peterborough/Conington at 85kt. He was not in contact with any ATSU and a squawk of A7000 was selected with Modes C and S; TCAS is not fitted.

About 13nm NW of Mildenhall heading 263°, flying straight and level at 2300ft QNH (1015mb) in VMC, some 1500ft clear below cloud with an in-flight visibility of 10km, a grey 4-engine ac – the KC-135 - was seen about 4-5nm away in his 2 o'clock in level flight well above, but possibly descending. He could see the ac would pass safely above him but in order to avoid its wake turbulence he decided to take up a holding position, orbiting to the R until the KC135 had safely passed. No rapid avoiding action was required, just a cautionary delay along his intended flight path. The minimum separation was estimated to be 1500ft above his aeroplane as the KC-135 passed 1nm away. The Risk was assessed as 'none'. His aeroplane is coloured white with red/blue stripes; the HISLs and landing light were on.

LAKENHEATH ATC FACILITY reports with RT transcript that Lakenheath APP was controlling the KC-135 inbound to Mildenhall from the N under a TS. The flight was instructed to descend to FL40 and then cleared to cross FACET at or above 2600ft for the RNAV GPS approach to Mildenhall's RW11. This clearance put the KC-135 in direct conflict with a civilian VFR flight. The KC-135 pilot filed an FAA Hazardous Air Traffic Report (HATR) and Airprox after landing.

The civilian VFR ac - the G109B - was about 12nm W of Lakenheath squawking A7000 indicating an altitude of 2300ft QNH, westbound on a converging course with the KC-135. Traffic information was issued to the KC-135 crew when the ac were 4nm apart; however, no control instructions were issued to separate the ac and no safety alert was issued. The controller responsible did almost nothing to prevent this situation from occurring.

Subsequent to this Airprox, action considered appropriate by the Unit was taken.

UKAB Note (1): A review of the Lakenheath APP RT transcript reveals that at 1333:33, APP instructed the KC-135 crew to, "….*cross FACET at or above 2 thousand 6 hundred feet cleared G-P-S runway 1-1….",* which was read-back. At 1333:54, APP notified the KC-135 crew of, *"…traffic* [the G109B] *11 o'clock 4 miles northwest bound type unknown indicating 2 thousand 3 hundred".* Moments later at 1334:00, the KC-135 crew reported, *"..we are uh breaking outta the weather traffic below us".* The LAC radar recording at 1334:09, shows the KC-135 descending through 3700ft (1013mb), with the G109B 4·3nm SE some 1500ft below maintaining 2200ft (1013mb) – about 2290ft QNH (1016mb). APP transmitted updated TI on the G109B at 1334:27, *"11 o'clock in 3 miles now 2 thousand 3 hundred".* The separation reduced below 2nm and 500ft after 1334:40, whereupon the G109B turns R onto a northerly reciprocal course to the KC-135. Confirmation of the local altimeter setting – 30·00 inches Hg – (1016mb) was requested by the KC-135 crew whereupon at 1334:48, APP updated the TI on the G109B for the third time, *"Traffic is 11 o'clock for 1 mile 2 thousand 3 hundred appears turning northbound to avoid",* which was acknowledged by the KC-135 crew. Meanwhile, the KC-135 levelled at 2600ft (1013mb) – about 2690ft QNH (1016mb) – before commencing a climb in response to the reported RA at 1334:53. Five seconds later, at 1334:58, when the ac are shown on the radar recording at the CPA, passing 1nm port-to-port abeam one another and the G109B is 900ft below the KC-135, the latter's crew reported, "[KC-135 C/S] *has traffic in sight we got a R-A and uh climbing to 3 thousand 5 hundred to avoid traffic",* which was acknowledged by APP with, "[KC-135 C/S] *roger".* There are no further transmissions relating to this incident on the RT transcript. The G109B then turns further R into the reported orbit maintaining 2200ft Mode C as the KC-135 continues on course for FACET.

HQ 3AF comments that superficially this is a straightforward Airprox where the controller fulfilled the requirements of a TS, albeit within 4nm, and the KC-135R pilot reacted to a TCAS RA. However, Lakenheath RAPCON, who provide radar services to Mildenhall traffic, carried out their own investigation immediately after the Airprox and reached a slightly different conclusion. USAF ATSUs based outside of the USA apply host nation procedures together with their own FAA procedures and where differences occur, the most stringent regulation predominates. In this case, it was found that the controller should have applied the FAA prescribed separation in the traffic pattern which, in turn, should have pre-empted the TCAS RA.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, a transcript of the relevant Lakenheath RT frequency, radar video recordings, a report from the ATC Facility involved and comment from the appropriate Command.

It was clear to the Board that the G109B pilot, in transit VFR at 2300ft ALT, but without the benefit of an ATS, had spotted the KC-135 about 4-5nm away and although content the other ac would pass safely had elected to take up an orbit thereby remaining clear of any wake turbulence generated by the larger ac. The radar recording shows that the G109B pilot turned R into the delaying orbit as the separation reduced below 2nm, just as the KC-135 was levelling at its assigned altitude of 2600ft, some 400ft clear above the indicated level of the G109B. For his part the G109B pilot was unconcerned about the occurrence. Whilst his action certainly forestalled a closer encounter, the G109B's proximity prompted a TCAS CLIMB RA in the KC-135 and shortly afterwards the effect can be seen on the recording, the steady climb achieving 900ft of vertical separation as the ac passed 1nm apart at the closest point.

The KC-135 crew had accepted the TS provided, even though they were flying under IFR in IMC and the MAA Advisor questioned whether they were able to effectively discharge their responsibilities, to see and avoid other

traffic in Class G airspace, before they broke out beneath the cloud base. It seemed that a DS would have been more appropriate here. Good practice dictates that when flying IMC in cloud the principle of asking for the best service available holds sway and a DS should be sought, taking stock again if the proffered avoiding action advice proves incompatible with the flying task. If applied here, it could have prevented this Airprox and would have been in-line with the ATS the KC-135 crew perhaps expected from a USAFE RAPCON facility.

Under the TS provided by APP, three transmissions of TI were given, advising and updating the KC-135 crew of the relative position and altitude of the G109B, whilst they complied with the Lakenheath controller's instruction to route direct FACET and descend to 2600ft ALT. Following normal UK ATSOCAS procedures, under a TS TI will be passed that will be updated if the traffic continues to constitute a hazard; however, the controller is not required to achieve deconfliction minima, no avoiding action will be given and the avoidance of other traffic is ultimately the pilot's responsibility. Some Members were surprised that the KC-135 pilots continued to descend towards the G109B displayed on their TCAS; a reduction in the ac's ROD might have afforded more vertical separation and forestalled the RA whilst also allowing compliance with APP's instructions. However, the KC-135 did not have far to run to the IAF and the crew would have been keen to descend below cloud, nonetheless, controller Members questioned whether the KC-135 crew should have been placed in this situation. APP had instructed the KC-135 crew to fly to FACET and towards the G109B's projected track, which coupled with the descent was effectively a vector in close proximity to the G109B. Controller Members opined this was contrary to the UK rules for a TS mandated under CAP774. Whereas there was no compunction on APP to achieve defined deconfliction minima, Members were aware that when vectoring traffic in an instrument pattern controllers should take into account traffic in the immediate vicinity, so that a risk of collision is not knowingly introduced when following their instructions. Consequently, it was suggested that the Cause was that APP had vectored the KC-135 into conflict with the G109B. However, a civil controller Member contended that as the KC-135 had been stopped off above the observed G109B, APP would have been aware that an element of vertical separation would have been maintained, thereby averting a close conflict. Nevertheless, it was plain from the Command's comments that FAA doctrine held sway. The HQ3AF Advisor stated that the RAPCON's normal practice was to provide control instructions to ensure that separation was maintained against unknown traffic in such circumstances, which had not been accomplished by the controller here as expected. Whilst this factor could not be ignored, the Board had to base their assessment on expected norms in the application of standard UK ATSs in line with what was actually provided. Moreover, the G109B pilot's delaying action was also instrumental here and had effectively forestalled the conflict with the KC-135 before the climb in response to the TCAS RA is evident the recorded radar data revealed. Following a wide ranging debate, the Board concluded that this Airprox had been the result of a conflict in Class G airspace resolved by the Grob G109B pilot.

Turning to the inherent Risk, the radar recording revealed that the G109B pilot had turned onto a parallel course thereby preserving horizontal separation of 1nm at the closest point, whilst retaining visual contact until the ac had passed. As this occurred the KC-135 crew followed their CLIMB RA, which ensured that effective avoiding action was taken in the vertical plane, whilst also identifying the conflicting G109B visually. The Board agreed unanimously that these factors, when taken together, had effectively removed any Risk of a collision in the circumstances conscientiously reported here.

PART C: ASSESSMENT OF CAUSE AND RISK

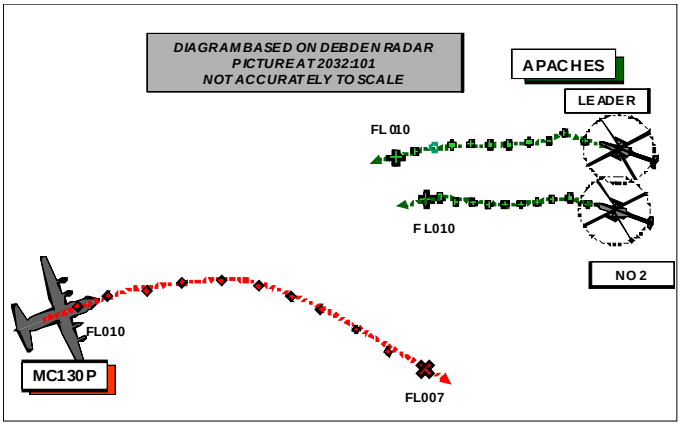
Cause: A conflict in Class G airspace resolved by the Grob G109B pilot.

Degree of Risk: C.

AIRPROX REPORT NO 2011114

Date/Time: 31 Aug 2011 2032Z
Position: 5220N 00111E (15nm NNE Wattisham)
Airspace: UKNLFS NRR4B (Class: G)

	Reporting Ac	*Reported Ac*
Type:	Apache AH1	MC130P
Operator:	HQ JHC	USAFE
Alt/FL:	800-1000ft (QNH 1015mb)	800-1000ft (QNH 1015mb)
Weather:	VMC CAVOK	VMC CAVOK
Visibility:	30km	Untd
Reported Separation:	200ft V/600m H	200ft V/3nm H
Recorded Separation:	300ft V/ 1.5nm H (abeam)	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE APACHE AH1 PILOT reports conducting ACT (evasion and nav) as a pair of ac in an area NOTAM'd as a 'no lights area' for the purpose of this training. They were in receipt of a BS from Wattisham APP, squawking 4527 (Wattisham) with Modes C and S; TCAS was not fitted. While operating between 800 and 1000ft agl and tracking W at 100kt, ATC reported a fast moving MC130 at 6nm in their 12 o'clock at 600ft [Mode C - London QNH 1015mb]. The leader picked up the ac on radar before they were visual with it, by which time it had closed to about 2nm. His wingman was to their 7 o'clock and would have been blind to the MC130. He assessed that there was a real risk of collision as the MC130 came in between their patrol and he called the wingman to increase altitude to avoid collision, which they then did.

At no time did it appear that the MC130 had seen the Apaches or made any change to their route to avoid them.

UKAB Note (1): The radar recording shows the Apaches are squawking 4527 and 4530; it is assumed that leader is squawking 4527.

THE MC130P PILOT reports that they were conducting night low-level training on NVGs in East Anglia en route to overwater flight, tracking 090° at 210kt in receipt of a BS from London Info in a grey ac with nav and strobe lights switched on and were squawking with Modes C and S; TCAS 2 was fitted. Once they cleared Lakenheath ATC control, they were notified by London Info that a pair of AH-64 Apaches were E of their position and they immediately picked up traffic on TCAS at the alt specified at 20nm. They continued Eastbound maintaining SA on the location of the traffic on TCAS. When the traffic was 5nm away they made a slight right turn to the South to maintain appropriate lateral separation from them. They then became visual with one Apache, 3nm to the North of their flight path.

The crew assumed the formation was in a standard separation of 1nm, so they maintained 3nm away and the helo passed 3nm N visually estimated and verified by TCAS but they did not see the 2nd helo. They continued to the E without any knowledge of an Airprox. If the 2nd helo was greater than 1nm away from the lead, and not squawking, they would not have picked him up on TCAS. [See Diagram above].

The unit conducted an internal investigation of the incident and determined the root cause as failure to identify the specific NOTAM for the airspace. As a result, administrative actions were taken to ensure this situation does not occur again.

UKLAB Note (2): The recording of the Debden Radar shows the Apache pair manoeuvring aggressively at about 1000ft agl to the NE of Wattisham in NRR4B as the MC130P gets airborne and tracks E from Mildenhall, climbing

to 2000ft then commencing a descent into the NLFS at 2026:09 (just after the ac passes 00040E - see UKAB Note (3) below) and changing squawk to London Info at 2027:24; thereafter the ac remains broadly at 1000ft agl. At that time the formation is manoeuvring at 18nm in their 11 o'clock. At 2028:30 the formation steadies on 060° and at 2029:00 they turn R initially onto 180° (in 1nm line abreast leader on the left – to the E) before commencing a crossover turn to the R onto a W track (at 2030:15) directly towards the MC130P rolling out with the leader 1nm to the N of No2 and the MC130P in the leader's 11 o'clock at 6.4nm. Thirty sec after they roll out on W, the C130 turned 30° to the right and descended slightly to avoid them to the S, passing 1.5nm abeam them to the S of the No 2 Apache and 300ft below it; it was 1.9 nm S of Leader who was then in the No2's 1.30.

UKAB Note (3): The UK Low Flying Hand Book (Sect 3) [Night] references are as follows:

NRR 4B. The co-ordinates of the NRR 4B area at para 59. Management of this area is undertaken by LFBC with co-ordination of approved Field Landing Site being conducted by 352 SOG. Mildenhall C130 activity is permitted in the area above 1000ft east of 00040E, subject to pre notification to the LFBC Supervisor on the working day prior to flight. RW users will be warned of any C130 activity when making a low flying booking.

No Visible Lighting. Prior approval is to be obtained from OC LF Ops Sqn for flights with no visible lights, except when hovering at a field HLS in LFA1 where lights may cause distraction, in established danger areas or as detailed by sub para c. Avoidance NOTAMS will be promulgated for such activity. Subject to agreement by a deconfliction fax other users may operate within the notified area.

UKAB Note (4): Both ac were correctly booked into the UKNLFS. As far as can be determined, the Apache formation was approved to conduct lights out activity but no deconfliction Fax was issued. There is no record of the Apache unit being warned of C130 activity.

UKAB Note (5): The following NOTAM was issued in respect of the Apache Flight:

(Y3343/11 NOTAMR Y2852/11

Q) EGTT/QXXXX/IV/NO/EW/000/020/
A) EGTT
B) 1108221930
C) 1109100300
D) 1930Z TO 0300Z ON 22ND TO 26TH AND 30TH TO 31ST AUG,
1830Z TO 0300Z ON 1ST AND 2ND AND 5TH TO 9TH SEP
E) NIGHT ROTARY REGION 4B, NIGHT ROTARY REGION 5, NIGHT ROTARYREGION 10

MANDATORY TEMPORARY AVOIDANCE. LIGHTS OUT ACTIVITY.

CREWS ARE TO AVOID HELOS WITHOUT LIGHTING OPERATING WITHIN AN AREA
BOUNDED BY THE FOLLOWING POSITIONS:

N5204.48 E00047.76 TO
N5200.10 E00024.41 TO
N5207.75 E00015.54 TO
N5214.57 E00050.37 TO
N5230.12 E00055.08 TO
N5229.80 E00108.33 TO
N5225.06 E00108.23 TO
N5224.05 E00138.27 TO
N5215.97 E00138.82 TO
N5216.03 E00133.70 TO

N5206.88 E00133.70 TO
N5207.01 E00107.03 TO
ORIGIN.

AVOIDANCE STATUS DOES NOT INCLUDE THOSE PARTS WHICH FALL WITHIN AN ACTIVE MATZ.

POC: 01449 72 8964
F) GL
G) 2000FT AGL)

MoD MIL LF Ops commented that although it was not a factor in this incident, it became apparent that the wording of the [standard] NOTAM was open to differing interpretations and has subsequently been changed to:

'Crews are to avoid the area bounded by the following positions…'

ATSI 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 Mil LF Ops and reports from the appropriate ATC and operating authorities.

The Board noted that the MC130P crew was not aware of NOTAM Y2852/11 and that remedial action has already been implemented; it follows therefore, that the ambiguous wording of the NOTAM was not a factor in the incident, at least as far as the MC130P was concerned. The crew otherwise followed the procedures correctly. It was clear to Members that the intent, but not the wording, of the NOTAM was to provide a protected area for the Apaches to conduct their lights-out manoeuvres and that the dispensation for the MC130P to operate in the NRR4B above 1000ft should not apply in the NOTAMed area (virtually the whole of the Eastern part of the area). The Board therefore agreed that, despite the procedural error by the MC130P crew, the LFBC should have been aware that the ac was planning to operate in the NOTAMed LFA avoidance (up to 2000ft) and should not have accepted their LFA booking (or cancelled it if it was made before the NOTAM was issued). It is possible however, that the LFBC thought that the MC130P crew would be aware of the NOTAM and would operate only outside the NOTAMed area.

The Night Low Flying booking system is designed to provide procedural deconfliction between ac operating in the UKNLFS. Further, any night lights-out activity should be conducted only in NOTAMed avoidance areas. In this case, this procedure broke down and also the MC130P crew was not aware of the, albeit ambiguous, NOTAM. Notwithstanding these factors however, the MC130P crew was made aware of the Apaches by ATC, they saw them initially on TCAS and subsequently with NVDs and initiated visual separation both laterally and vertically. Although the lateral separation was less than the crew reported, probably due to the difficulty of estimating ranges at night, it was sufficient to ensure that there was no confliction and no collision risk.

The Board agreed that the Apache crews had expected to be operating in a 'sanitised' area and had been surprised the see the MC130P when Wattisham App warned them of it. They also (the Board agreed again probably due to night factors) had not assimilated the geometry or miss-distance correctly as shown on the radar recording; Members agreed however, that the miss-distance was sufficient. Bearing these factors in mind, the Board agreed that there had been no risk of collision.

Post Meeting Notes:

Any military rotary-wing user may book NRR4B (MC130P ac may book as at UKAB Note 3, 1 above). Both the Apaches and the MC130P were booked into the area. It is understood that NOTAMs regarding lights-out activity should be available to the LFBC Supervisor but the Board was unable to determine if the Supervisor had not seen the NOTAM or if he had not regarded it as a prohibition.

The UKAB Secretariat was not able to contact the Apache crews for additional information.

AIRPROX REPORT No 2011114

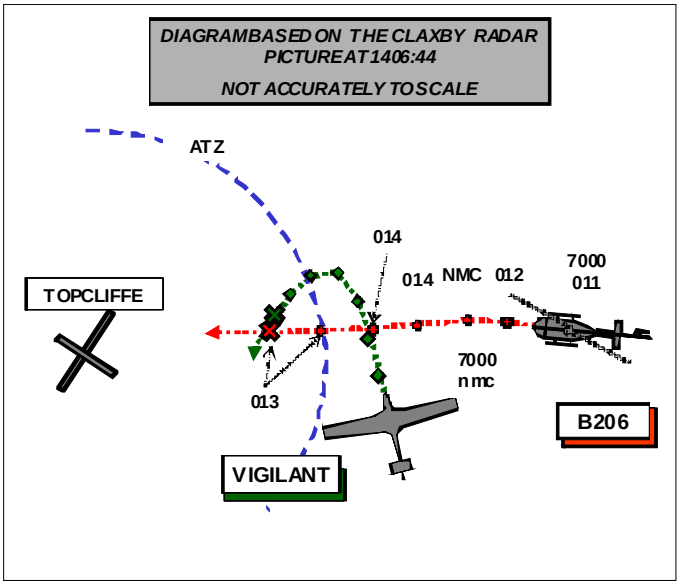
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A breakdown in the Night Low Flying deconfliction process.

Degree of Risk: C.

AIRPROX REPORT NO 2011115

Date/Time:	3 Sep 2011 1407Z (Saturday)	
Position:	5412N 00123W (Topcliffe ATZ - elev 92ft)	
Airspace:	ATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Vigilant	Bell 206
Operator:	HQ Air (Trg)	Civ Pte
Alt/FL:	1300ft	1200ft
	QFE (1001mb)	QNH
Weather:	VMC	VMC (into Sun)
Visibility:	20km	35km
Reported Separation:		
	200ft V/200m H	300ft V/1nm H
Recorded Separation:		
	NR V/0.1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE VIGILANT DUTY INSTRUCTOR (DI) reports that he was supervising flying operations for the day. A helicopter had called Topcliffe Radio previously when flying into Bagby airfield [3nm E of Topcliffe, inside the MATZ] and he had informed the pilot that, although Topcliffe APP was closed and no service was available, the ATZ was active with 6 military motor gliders and he avoided the ATZ.

Later that day the pilot called again and informed of the same; the pilot replied that he would be transiting to the NE of the airfield at 1500ft.

Meanwhile a red and white Vigilant motor glider was heading 290° at 60kt and descending to 1200ft QFE to rejoin the cct, in contact with Topcliffe radio and squawking but Modes C&S were not fitted; it had the engine turned off on a Gliding Induction flight. The helicopter (reg provided) crossed over the airfield from SE to NW about 200ft below and 200m behind the Vigilant, quickly overtaking it before heading away from the airfield still on SW'ly track. Another Vigilant pilot called the helicopter pilot asking if he had seen the engine off ac and he replied that he was visual with it. From his position in the RW caravan, although the distance between the two ac appeared very close, he (the DI) assessed the risk of collision as being low.

No avoiding action was possible by the Vigilant pilot as she would not have seen the helicopter.

THE BELL 206 PILOT reports flying a silver ac on a private VFR flight with all external lights on, from Bagby to a private strip. He was squawking 7000 with Mode C and was in receipt of a BS [he thought] from Topcliffe. He departed from Bagby heading 270° at 100kt and immediately after getting airborne changed from Bagby on 123.25 and called Topcliffe [gliding] on 125.00 asking for traffic and which RW was in use as he climbed to 1200ft; they replied the RW was 20, they were active but would close at 1200 [he thought], he should keep a good lookout and thanked him for call (as they nearly always say). He opined that Bagby and Topcliffe should use the same frequency.

He saw a red and white motor glider at 1500ft, passed 300ft below it and 1nm away and took no avoidance as none was required; he kept the ac in sight and assessed the risk of collision as being none.

UKAB Note (1): Topcliffe is a government airfield with an ATZ which is a circle of 2nm rad centred on 5412.19N 00122.55W up to 2000ft aal (92ft). It is also promulgated in the UKAIP as a glider launch site (HJ) winch/ground tow and tug aircraft/motor glider with no vertical limit published.

UKAB Note (2): Topcliffe A/G frequency is not recorded.

UKAB Note (3): The recording of the Claxby radar shows the incident as shown above. Although both contacts are 7000 squawks there is little doubt that they are the ac involved. Since the Vigilant did not have Mode C and was descending it is not possible to determine the vertical separation. The B206 popped up at 1405.35 about 2nm E of Topcliffe tracking 270° with the Vigilant 1.6nm away in his 11 o'clock. Thereafter the ac close as shown above.

HQ AIR (TRG) comments that the Vigilant pilot was unfortunate in that the B206 approached on each occasion from the opposite side to where her attention would have been focussed i.e. the airfield. It might be reasonable to expect the ATZ to be clear of intruder aircraft but experience shows that this is not a safe assumption and that a sound all-round lookout scan must be maintained at all times. From his report, it does not appear that the B206 pilot was visual with the Vigilant in question, which raises concerns over the integration procedures between Topcliffe and Bagby.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from (or on behalf of) the pilots of both ac, radar recordings and a report from the Vigilant operating authority.

The Board accepted that the B206 pilot had made conscientious efforts to contact the gliding school prior to transiting through their operating area. However, Members struggled to reconcile the B206 pilot's estimate of the horizontal separation between his ac and the glider with the evidence from the radar recording. It is not uncommon for pilots transiting close to glider launching sites to see one or more gliders but pass close to another glider that they have not seen. In this case however, the glider's left turn through approximately 150 degrees offered an alternative explanation. Although it was clear to Members that the B206 pilot had initially seen the glider some distance away, they debated whether he saw it when the ac tracks crossed the second time; a majority thought it unlikely that he had as they thought that he would not have estimated the separation as being 1nm when the radar showed it to be only 0.1nm at the CPA. When the Vigilant crossed ahead of the B206 the first time while the latter was heading W climbing out from Bagby, the helicopter pilot's estimate of 1nm would have been fairly accurate. It seemed possible, therefore, that the B206 pilot had initially seen the Vigilant crossing from left to right about 1nm away, then discounted it as a factor and lost sight of it, possibly as it turned tail-on against a background of cloud. For her part, on her northerly heading the Vigilant pilot might have been able to see the helicopter low on her right hand side, but her focus of attention would have been towards the airfield. Once she started her left turn it would have been almost impossible to see the helicopter behind and below until a very late stage. Although both pilots had a responsibility to see and avoid each other, the B206 pilot was required to give way to the glider on his right hand side. The Board concluded, therefore, that the Cause was that the B206 pilot had flown into conflict with the Vigilant, which he may not have seen at its closest point.

Turning their attention to the Risk, a majority of Members accepted that while the B206 pilot had seen the subject glider earlier in the encounter, he did not see it as it passed almost directly above him at the CPA. Furthermore, since the Vigilant pilot's report was submitted by the DI who was located some distance away, Members could not determine whether the HP had seen the B206 as it came from behind and passed almost directly below her; further again, since the DI was not close to the CPA, his estimation of the separation might have been flawed. However, it was accepted that this was not wholly the case as his estimate of the horizontal separation was radar verified and vertical estimations by experienced observers can be fairly accurate even from some distance. Members therefore agreed that the vertical separation had been about 2-300ft. Since apparently neither pilot had seen or, if necessary, avoided the other ac, a small majority of Members agreed that normal safety standards had probably been eroded.

The purpose of an ATZ is to afford a degree of protection to (powered) aircraft operating therein. They are not established to protect glider (or motorglider) operations; these activities being promulgated in the UKAIP as 'Glider Launch Sites' at ENR 5-5-1-1 et seq and are not afforded any mandatory avoidance or special procedures and they have no promulgated dimensions. Members noted that Topcliffe has an ATZ that is published in the UKAIP [ENR 2-2-2-5] as being open H24; that being the case and that Topcliffe has an ATC unit (albeit closed at the time) the ANO, RoA Rule 45 (3), requires that pilots 'obtain the permission of the ATC unit' to enter (the ATZ) and enable flight to be conducted safely within that ATZ. Since Glider Control reportedly used the callsign 'Topcliffe Radio', implying that an A/G service was being provided, Members considered that the B206 pilot was justified in assuming that he could proceed under RoA 45 (5) which requires only that pilots get information to enable flight to be conducted safely within the ATZ rather than 'permission' to enter. However, in reality Topcliffe Radio is not an A/G service and there is no facility provided for ac to enter Topcliffe ATZ when ATC is closed.

Although the B206 pilot entered the ATZ without permission, Members agreed that this was not a significant factor in this incident, except perhaps that the Gliding Supervisor might have thought that ATZ was established to protect gliders operating therein.

The UKAB Secretariat subsequently contacted HQ Air Cadets to ascertain the situation regarding VGS usage of the callsign 'Radio' implying that the operator is qualified as an Air/Ground Operator rather than a Gliding Supervisor. If this is the case, then locations that provide formal AG services should be promulgated in the AIP 2-2-2-5 – Frequency Purpose A/G.

Post Meeting Note: The MoD is reviewing the operational hours of the Topcliffe ATZ (and MATZ).

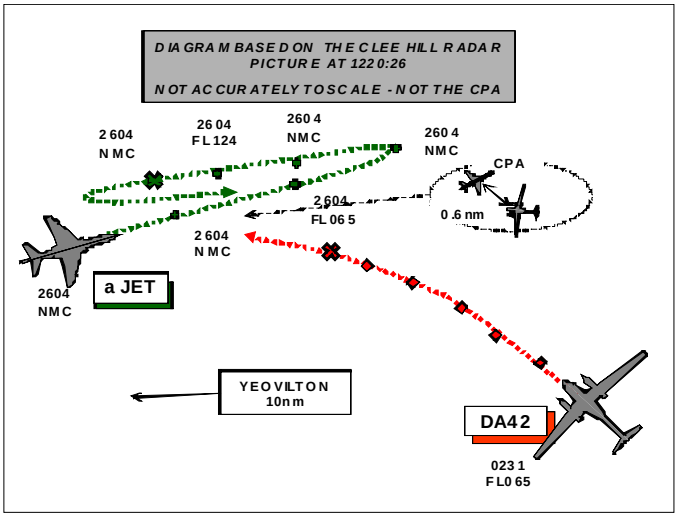
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Bell 206 JetRanger pilot entered the ATZ and flew into conflict with the Vigilant, which he might not have seen at its closest point.

Degree of Risk: B.

AIRPROX REPORT NO 2011117

Date/Time:	1 Sep 2011 1221Z	
Position:	5100N 00221W (1nm N Henstridge)	
Airspace:	Lon FIR/ Boscombe Down ARA	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Alpha Jet	DA42 Twinstar
Operator:	AWC	Civ Trg
Alt/FL:	NK	FL65
	NK	SPS
Weather:	VMC CLAC	VMC
Visibility:	10km	>10km
Reported Separation:		
	0 V/ ½nm H	0 V/1500m H
Recorded Separation:		
	NR V/0.6nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE ALPHA JET PILOT reports flying a local GH sortie with a student Flight Test Engineer (FTE) in the rear seat in a black and white ac with all external lights switched on. They were squawking as directed with Modes C and S and were in receipt of a TS from Boscombe RAD but a CWS was not fitted. While heading 090° just after completing a Vertical 8 manoeuvre, the FTE informed him of a white Diamond Twinstar light ac passing right abeam, co-altitude, about ½nm away. The time was noted and ATC was asked about the presence of other traffic; ATC reported the Diamond Twinstar was 6nm away despite the incident happening only 10-15sec prior to the request (time estimated by the crew).

Assessing the risk as being high due to the dynamic manoeuvre being flown, the crossing angle and relative speed when they saw the other ac precluded any avoiding action; they reported the incident to ATC by telephone on landing.

THE DA42 TWINSTAR EXAMINER reports that the candidate was flying an instrument rating test from the right hand seat under IFR using an 'exam' callsign in a white ac with blue trim and was squawking with Modes C and S while in receipt of a TS from Yeovil Radar (located at Yeovilton); the candidate's external view was restricted by IF screens.

While they were heading 280°, cruising at 140kt, Yeovil Radar advised them of traffic to the SW but he was initially unable to locate it. Shortly after a small military jet trainer was seen about 1500m away, directly ahead of them passing through their level in a near vertical climb. He was unable to take any avoidance as the ac was first seen passing through their level diverging in the climb

THE BOSCOMBE DOWN RADAR CONTROLLER (RAD) reports that the workload was light with only one speaking unit on frequency, the Alpha Jet, and a quiet general traffic picture. The Alpha Jet was conducting GH in receipt of a TS about 20nm W of Boscombe.

The Alpha Jet pilot asked if there was any traffic in his area and he informed him of traffic 6nm away which appeared not to be a factor; no other contacts were seen anywhere closer to the ac. At the time of the request nothing was seen on the screen that could be interpreted as conflicting traffic.

THE YEOVIL RADAR CONTROLLER DSATCO commented that although the unit was informed of the incident well after the event, he later spoke to the Supervisor who investigated it. Due to the delay in their receiving the report, the tapes were not impounded and were returned to service as part of the normal cycle.

Looking at the details reported, it appears that the correct TI was provided by Yeovil Radar iaw the provisions of a TS. Had the incident been reported by the pilot on the RT (or at least on landing), they would have initiated the correct steps regarding investigation and compilation of relevant evidence (tape transcripts etc).

UKAB Note (1): It was initially thought that the DA42 was in receipt of a service from Yeovil (Westlands) who were requested to impound their RT tapes. When this was done it became apparent that the DA42 was not in receipt of a service from them and was in receipt of a service from Yeovilton (Yeovil Radar). By then however, the Yeovilton RT tapes had been returned to service and detailed reports were not available.

BM SAFETY MANAGEMENT reports that this Airprox occurred between a DA42 Twinstar operating IFR in receipt of a TS from Yeovil Radar and an Alpha Jet in receipt of a TS from Boscombe RAD while conducting GH under VFR to the N of Henstridge. RAD assessed their workload and task complexity as low, with only the Alpha Jet on freq throughout the incident sequence.

At 1218:05, RAD passed TI to the Alpha Jet on the DA42 stating, '*traffic east-south-east seven miles, tracking north-west, flight level six five'* which was acknowledged by the Alpha Jet pilot; the radar replay however, commences 36sec later at 1218:41, at which time the lateral separation was 8.9nm. (By extrapolation the separation at the point that TI was passed would have been about 10.1nm.)

Through analysis of the radar replay it has been possible to determine that the Alpha Jet was conducting a series of vertical manoeuvres throughout the incident sequence, leading to the vertical 8 immediately prior to the Airprox. As a result of the manoeuvring, the Alpha Jet's Mode C is intermittent throughout the sequence.

At 1219:19 the Alpha Jet steadied on a track of 075° indicating FL100, with the DA42 6.3nm ESE, tracking NW and indicating FL065. At 1219:43 the Alpha Jet levelled at FL065 with the DA42 3.1nm SE and at 1219:55 the Alpha Jet passed through the DA42's 12 o'clock 1.7nm away. At 1219:59 the Alpha Jet's track on radar appeared to jink right and the ac commenced a climb, indicating FL071; at 1220:03 the Mode C dropped out and its lateral movement on radar reduced, suggesting that the ac had increased its RoC/RoD. At that point RAD updated the TI to the Alpha Jet stating, '*previously called traffic now south, one mile, tracking north-west, flight level six five'* which was acknowledged by the pilot.

CAP 774 states that controllers "shall update…traffic information if it [the ac] continues to constitute a definite hazard, or if requested by the pilot".

The Alpha Jet continued to manoeuvre with its track maintaining between 0.8nm and 1.2nm lateral separation to the N of the DA42's track at varying levels; however, the SSR Mode C remained intermittent throughout. Having initially maintained a NW'ly track with a steady RoD, at 1221:08 the Alpha Jet's SSR Mode C again dropped out and the ac began to track SE. At that point, the DA42 was 1nm to the SE, maintaining its track and flight level.

The [second] CPA occurred at 1221:15 with 0.5nm lateral separation between the ac. Whilst it has not been possible to determine from the radar replay what vertical separation existed at the CPA, the Alpha Jet pilot reports that they were co-altitude with the DA42. Moreover, his report suggests that their first sighting of the DA42 was as it passed right abeam their ac, displaced by 0.5nm and this was subsequently confirmed in a telephone conversation with the Alpha Jet pilot.

The DA42 pilot reports being passed TI on the Alpha Jet to the SW but initially being unable to see it and that shortly after a small military jet trainer passed directly ahead of them about 1500m away in a near vertical climb. As the radar replay started at 1218:41, the Alpha Jet was tracking from a position to the WSW of the DA42; consequently, given that the Alpha Jet remained N of the DA42 throughout the remainder of the incident sequence, it is possible that this was when the DA42 received the TI. Through analysis of the radar replay, it is likely that the near vertical climb manoeuvre described by the DA42 pilot occurred at 1219.54. The DA42 pilot makes no mention of seeing the Alpha Jet again [it was by then behind him] so it is likely that he considered this event to be the reported Airprox.

At 1222:00, the Alpha Jet pilot asked RAD whether there was "*any traffic within now 5 miles of our position*?" and RAD responded that there was "*traffic north-west three mile, tracking north-west, flight level six five* [the DA42] *and there is er intermittent contacts south-west of you four miles, manoeuvring, no height information*" which was acknowledged by the Alpha Jet pilot. In the subsequent telephone conversation the pilot stated that the crew do not recall receiving TI on the DA42 from RAD.

From an ATM perspective, RAD provided TI iaw CAP 774 and that TI was acknowledged by the Alpha Jet pilot. Given RAD's low workload, while it could be considered good practice for them to have provided an additional update of the TI prior to 1220:03, until the Alpha Jet's manoeuvre at 1219:59, the DA42 did not constitute a continued definite hazard to the Alpha Jet and the pilot did not request an update. Moreover, given the continued proximity of the ac and the generally consistent lateral geometry from 1220:03 to 1221:15, it is reasonable to suggest that there was limited utility in RAD passing updated TI on the DA42 after 1220:03. Given the question posed to RAD by the Alpha Jet pilot at 1222:00 and the subsequent telephone conversation, it appears that although they acknowledged the TI at 1218:05 and 1220:03, they did not assimilate that information.

Given the description of the timing of the Alpha Jet's first sighting of the DA42, that the DA42 probably did not have sight of the Alpha Jet after 1222:00, that the Alpha Jet pilot did not assimilate the TI passed and that neither ac was fitted with a CWS, it is reasonable to suggest that the ac were separated by good fortune alone adding further weight to the argument for a CWS that is inter-operable with all ac types operating in Class G airspace.

The Airprox occurred as a result of a breakdown of 'see and avoid' procedures by both pilots; a contributory factor was that the Alpha Jet pilot did not of assimilate (or hear) the TI passed to him.

HQ NAVY CMD comments that an Airprox should be reported to all control agencies concerned so that the correct steps can be taken to investigate. In this instance it is somewhat surprising that Boscombe Down ATC did not contact Yeovilton ATC in order to inform them of the Airprox that had been declared.

HQ AIR (OPS) comments that whilst the Alpha Jet pilot reports not hearing the TI on the DA42, the FTE may have as he gained 'tally' first. The TI came at a point where the pilot would already have been committed to his vertical manoeuvre and would have had reduced lookout capacity. The Alpha Jet's dynamic profile would always make the assessment of a 'definite hazard' difficult so a more relaxed JSP774 criteria might be more appropriate in such cases. Indeed, an 'update on any traffic within xnm' might be appropriate in these kinds of scenarios or exercises. The alternative is for the crew to request an update before every manoeuvre.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, a transcript of the Boscombe Down RT frequency, radar recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

Members were briefed on the reasons for the delay in requesting information from Yeovilton that resulted in less comprehensive reporting than they would have wished.

It was also pointed out to the Board that due to the high-energy vertical manoeuvring by the Alpha Jet causing a paucity of Mode C information, the exact geometry of the incident could not be determined accurately, particularly the relative positions of the ac when the respective pilots first saw the opposing ac. It was clear however, from the radar and the pilots' reports that the Alpha Jet was performing a vertical eight manoeuvre topping at about FL125 and at some time during that manoeuvre the ac was co-alt with the DA42. It was not clear however, whether this was at the CPA (H); when the ac were co-alt they could have been separated by significantly more that the 0.6nm recorded above. It was also thought likely that the ac were co-alt for a second time when the Alpha Jet descended behind the DA42 passing through its level as the ac were diverging.

The HQ Air Advisor, on noting the BM SM report, opined that although the transcript showed that the Boscombe Controller had passed TI regarding the DA42 to the Alpha Jet pilot twice, the pilot had either not heard it or not assimilated it. He was in a busy situation conducting aerobatics and Members (although not familiar with the Alpha-Jet) thought it possible, but unlikely, that the radio antenna was 'shielded'; it was more likely, they thought, that during the busy period he did not assimilate its significance and this view was substantiated by the pilot apparently (the RT transcript is not definitive) acknowledging the TI on both occasions. A military controller

Member suggested that given the controller's low work-load, and knowing the Alpha Jet was performing aerobatics in a specified 'block', although not strictly required to do so, the Boscombe controller could have been more pro-active in highlighting the DA42 to the Alpha Jet pilot; the RT transcript however, shows several significant interchanges in the lead up to the event in addition to those reported by BM SM.

The DA42 was operating under a TS; the Board discussed whether its pilot should have requested a DS. Although there was no Yeovilton transcript to verify that this was not done, one pilot Member thought that, bearing in mind that the DA42 was flying through a congested area and that the examiner had divided responsibilities reducing his ability to look out, the DA42 pilot/crew should have considered requesting a DS from Yeovil Radar. Another observed that pilots often request a TS believing that this will allow them 'tactical freedom' to select a routeing suited to their exercise; a controller observed however, that even when operating under a DS, pilots are at liberty to reject ATC deconfliction vectors if they wish. Another controller observed that a DS can be requested even for relatively short periods when conflictions are known to exist. All Members agreed however, that a DS would have provided a greater degree of protection to the DA42.

A pilot Member opined that although neither pilot requested assistance from their respective agencies, had the controllers looked at the 'big picture' they could have taken action to prevent the confliction. Again although there was no transcript to verify that it was not done, a controller Member opined that on seeing a Boscombe or Yeovil squawk good practice would have been for the respective controllers to contact each other with a view to 'co-ordinating out' the conflict that would have been apparent to both.

Following discussion Members agreed that the prime cause of the incident was a sighting issue. It was agreed that the DA42 pilot had seen the Alpha Jet as early as the latter's high-energy manoeuvring permitted. The Alpha Jet pilot however, did not see the DA42 until it was pointed out to him ½nm away by the FTE, head on but passing behind. Since the pilot did not have time to manoeuvre his ac, a majority of Members agreed that this was an effective non-sighting by the Alpha Jet pilot but due to the separation inherent, there had been no risk of collision.

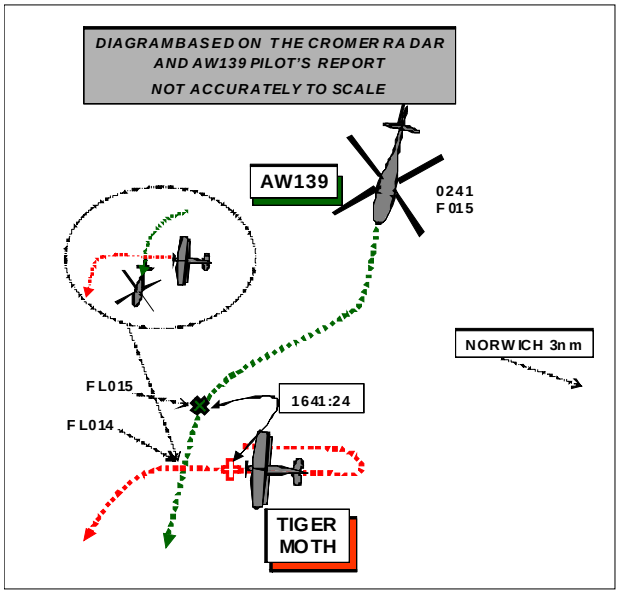
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Effectively a non-sighting by the Alpha-Jet pilot.

Degree of Risk: C.

AIRPROX REPORT NO 2011118

Date/Time:	31 Aug 2011 1641Z	
Position:	5242N 00114E (3nm NW Norwich)	
Airspace:	Lon FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	AW139	Tiger Moth
Operator:	CAT	Civ Pte
Alt/FL:	1600ft	1500ft
	QNH (1016mb)	QNH
Weather:	VMC CLBC	VMC CAVOK
Visibility:	9999	10km
Reported Separation:		
	200ft V/500m H	800ft V/NR H
Recorded Separation:		
	NR (See UKAB Note (2))	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE AW139 PILOT reports flying a red TCAS 1 equipped helicopter inbound to Norwich with all external lights on and squawking with Modes C and S. They had flown their cleared route direct from Excalibur platform (track 190°) and were in receipt of a TS from Norwich APR who cleared them to join left base for a visual approach to RW09. As they were approaching Aylsham [7nm N of Norwich] Radar informed them that there were two contacts roughly in the Felthorpe area [a light ac strip 3nm NW of Norwich i.e. in their 1 o'clock at 5nm].

East abeam Aylsham, they made visual contact with one of the ac in their 1230 position and informed Radar who replied that this was one of the contacts and that the second ac was now no longer a factor. Neither ac had appeared on their TCAS system. With the traffic in sight, Radar asked them to contact TWR. At the same time as being asked to change frequency, the crew agreed that the contact was a bi-plane on a converging course from R to L at a similar level, so they initially took avoiding action turning R to pass behind it.

While taking avoiding action, the bi-plane then turned hard to its R (using about 60° AOB), back through 180-200° which meant it was turning back on itself and towards them. Since they were not sure that its pilot had seen them the PF (P1) took further avoiding action by initiating an immediate descent, as the bi-plane, by then clearly distinguishable as being blue with silver wings, passed down their LH side about 200ft above.

The P2 then contacted TWR and informed them that they had just come close to some traffic whilst trying to join for left base RW09. They asked TWR if the bi-plane was communicating with ATC, to which they answered that he was not. The flight continued and they landed back at base where he reported the incident assessing the risk as being high.

On the ground they informed Norwich ATC that an Airprox was being filed; ATC acknowledged and informed them that the bi-plane was based at Felthorpe Airfield.

THE TIGER MOTH PILOT reports flying a blue ac with no radio or SSR fitted on a private local flight from Felthorpe. At the time he was 3nm N of Felthorpe but he only saw the helicopter after it had passed under him about 1000ft below. He took no avoidance as the ac had passed below him and assessed that there was no risk, but reported the incident to the QFI on landing.

THE FELTHORPE FLYING GROUP representative reports that he understands that the AW139 pilot helicopter reported an Airprox with a blue and silver Tiger Moth near Felthorpe airfield. He spoke to the Tiger Moth pilot who stated that he saw the helicopter clearly before it passed an estimated 500 to 700ft below him; his passenger had

also seen it. The Tiger Moth was at 1500ft at a position near the disused airfield at Oulton, 3nm WNW Aylsham, 6nm N of Felthorpe, in the open FIR.

He further understands from Norwich ATC that that the helicopter pilot was informed about the Tiger Moth, reported seeing it and only later decided to file an Airprox. In the open FIR the rule if 'see and avoid' pertains and if the helicopter pilot saw the Tiger Moth and was concerned about its proximity, he should have taken avoiding action – the Tiger Moth pilot saw no need for any such action.

THE NORWICH APR CONTROLLER reports that the AW139 helicopter was inbound from Southern North Sea gas rigs. On crossing the coast at Cromer he called traffic operating around Northrepps Airfield. Further traffic was then called near Felthorpe, two primary contacts height and type unknown. After about a further 3nm the AW139 helicopter reported that one of the contacts was in sight and since the other contact was no longer a factor he transferred the helicopter to TWR.

The pilot subsequently advised that he would be filing an Airprox.

UKAB Note (1): The Norwich METAR was:

METAR: EGSH 311620Z 05006KT 9999 BKN045 15/07 Q1016=

ATSI reports that the Airprox occurred at 1640:59, 5.6nm N of Norwich Airport in Class G airspace.

The AW139 was inbound to Norwich IFR from the N, having departed the Exalibur Oil Platform and was in receipt of a TS from Norwich Radar.

The Tiger Moth was operating VFR on a local detail from Felthorpe airfield, situated 3nm NW of Norwich Airport. The Tiger Moth was non-radio and not in receipt of an Air Traffic Service. Felthorpe airfield is an unlicensed airfield with two grass runways 16/34 and 05/23.

CAA ATSI had access to RTF and area radar recordings, together with the written reports from the controller and both pilots. Norwich does not currently record their radar, but intend to introduce a recording system in the near future.

At 1633:39, the AW139 helicopter was identified by Norwich Radar at 1600ft on QNH 1016 and a TS was agreed; at the time radar recordings show the AW139 to be 23.3nm N of Norwich airport.

The AW139 pilot requested a visual join for RW09 so the controller instructed the AW139 to join left base for RW09 and to report field in sight. The pilot was advised to keep a good lookout when crossing the coast in the Cromer Northrepps area, due to traffic observed in the vicinity of the Northrepps airfield; the pilot acknowledged the joining instructions and reported good VMC, 'keeping a good lookout for Cromer'.

At 1638:58, the pilot reported field in sight and the controller instructed him to continue for the visual left base join; radar recordings show the positioned 10.3nm N of the airfield. The controller passed TI on two contacts, one overhead Felthorpe airfield and another contact 2nm N of Felthorpe airfield, the helicopter pilot acknowledged the instructions to join left base and reported looking for the traffic. Radar recordings did not show the other traffic.

At 1640:15, the AW139 pilot reported visual with one of the ac in his half past 12 position, the controller responded confirming this to be one of the previously mentioned contacts and added that the second contact was heading to the W of Felthorpe and was no longer a factor. The AW139 was then transferred to the TWR.

The AW139 pilot's report indicated that shortly after being asked to change frequency, the crew identified the other ac as a bi-plane on a converging course and they took avoiding action. At 1640:59 the AW139 is observed commencing a R turn, altering course from 180 to 248° and indicating FL015 (converts to an alt of 1581ft, QNH 1016 with 1mb equal to 27ft). This is considered to be the position of the Airprox.

At 1641:27, radar recordings show the AW139, 5nm NW of Norwich airport turning L towards the airfield indicating FL015.

At 1642:02, radar recording, shows the AW139, 3.7nm NW of the airfield indicating FL012. Another contact then appears in its 5 o'clock at a range of 1.1nm. The two ac are on diverging tracks and it is thought likely that the second contact is the Tiger Moth.

The Airprox occurred in Class G airspace, when the AW139 was in receipt of a TS, and the Tiger Moth being non-radio and not in receipt of an ATS, came into close proximity. CAP774, UK Flight Information Services, Chapter 3, Page 1, Paragraph 1 and 5, states:

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

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

The Radar controller passed TI to the AW139 pilot, which aided the pilot's situational awareness and probably assisted him in acquiring the Tiger Moth visually and taking appropriate avoiding action.

UKAB Note (2): The recording of the Cromer radar shows the incident. The AW139, squawking 0241with Mode C indicating FL015 approaches the CPA from the N (tracking 190°) and commences initially a right turn at 1640:44 onto 230°. At 1641:16 it reverses to the L to pass closely behind a primary-only contact that pops up in its 11o'clock at a distance of less than ½nm and initially tracks W before disappearing for 2 sweeps. At the 1641:46 just after the ac had crossed the primary takes up a heading of 195°. Since the primary had disappeared at the CPA the lateral separation could not be measured accurately but is estimated as being 0.2nm; the AW139 was at FL014 at the CPA but the vertical separation could not be determined.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

This incident took place in Class G airspace where 'see and avoid' is the principal method of collision avoidance. Members noted that as a result of accurate and timely TI by Norwich APR, the AW139 crew had the Tiger Moth in sight throughout the evolution and having it, at least initially, on their right were obliged to give way to it under the RoA (Rule 9 (3)) and manoeuvred their ac in good time to do so. Members also agreed that the Tiger Moth pilot had most likely not seen the helicopter as he headed E since; had he done so, he would not have initiated the tight turn back towards it. This turn, Members suggested, had surprised the helicopter crew but, although the Tiger Moth was by then on their left (and should have given way), its pilot had not seen them but the helicopter pilot had sufficient time to descend and increase the vertical separation as the other ac passed behind them.

Although Members considered that the Tiger Moth pilot had probably not seen the helicopter until after it passed, they agreed that, since the AW139 crew had seen the former throughout and had taken avoiding action twice, there had been no risk of collision.

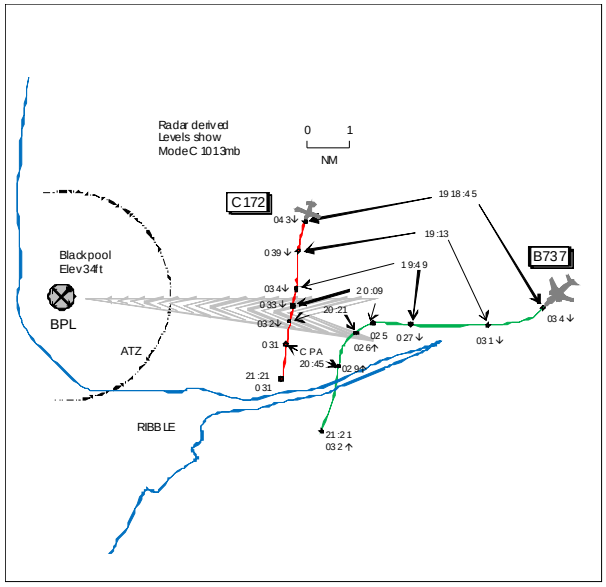
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict in Class G airspace resolved by the AW139 crew.

Degree of Risk: C.

AIRPROX REPORT NO 2011119

Date/Time:	9 Sep 2011 1921Z	(Night)
Position:	5345N 00215W (6nm ESE Blackpool - elev 34ft)	
Airspace:	LFIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	B737-300	C172
Operator:	CAT	Civ Pte
Alt/FL:	2800ft↓	↓3000ft
	QNH (1006mb)	RPS (1002mb)
Weather:	VMC CLBC	VMC CLAC
Visibility:	10km	>10km
Reported Separation:		
	Nil V/1nm H	Not seen
Recorded Separation:		
	200ft V/1·3nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE B737 PILOT reports inbound to Blackpool, IFR and in receipt of a PS from Blackpool Approach on 119·95MHz, squawking with Modes S and C. The visibility was >10km flying 100ft below cloud in VMC and the ac's nav, strobes, inboard and outboard landing lights were all switched on. Following the procedural turn onto final approach for RW28 the controller informed them of traffic that was felt to be in conflict during their ILS approach (the controller had seen this traffic visually and on the radar relay screen). They had a TCAS contact in their 2 o'clock range 5nm 800ft above and descending rapidly on a converging track to their ac and the ILS C/L. At the time they were heading 278° at 150kt at approximately 2800ft QNH at 9nm final and descending. The traffic was not visual to them owing the cloud cover and it was not in contact with Blackpool. The TCAS symbol became 'proximate' traffic but no TA or RA was generated. They made the decision to break-off the approach to the S and began a climb once the traffic was in their 5 o'clock position. He estimated separation to be nil vertically and 1nm horizontally. A climb was made to 4000ft in order to be above MSA and a second procedural approach was made without further incident. An Airprox call was made to Blackpool ATC before the conflicting flight called on frequency, the pilot mistakenly thinking he was talking to Liverpool Approach, before departing to the S. He assessed the risk as high.

THE C172 PILOT reports en-route to Liverpool initially under IFR and under a BS from London Information on 125·475Mhz, squawking 1177 with Modes S and C. The visibility was >10km flying 700ft above cloud in VMC, he thought, and the ac's nav and strobe lights were switched on. Before departure he checked the NOTAMS and AIP to see Blackpool's closing time which was 2000(L), he thought. Whilst en-route from Carlisle to Liverpool he tuned into the Blackpool ATIS but all he received was a carrier wave which confirmed that Blackpool was closed. He commenced descent from 4500ft RPS 1002mb to 3000ft and as he became visual with the ground at 3100ft he carried on to level-off at 2900ft to remain below the Manchester TMA N of Liverpool. As he levelled-off he looked to his R and saw the RW lights at Blackpool. He spoke to Blackpool Approach who asked if he had flown through the C/L of RW28. He informed them that he had and the pilot of a B737 informed Blackpool that an Airprox would be filed. He thought the Airprox occurred about 9nm NE of Blackpool when he was VFR; however, he did not see the other ac.

THE BLACKPOOL APPROACH CONTROLLER reports working ADC/APP combined and providing a PS to an inbound IFR B737; there was no other known traffic on frequency. Once the B737 had completed the procedure turn for the ILS/DME RW28 he saw from the VCR an ac routeing S crossing the RW28 approach. This correlated with a contact observed on the ATM crossing the FAT at 6nm descending through altitude 4000ft. He passed the information to the B737 flight stating he wasn't using a surveillance derived service although he could visually see the ac from the VCR which correlated to the ATM information; the crew reported, "we see him on TCAS 800ft above". The B737 crew elected to turn away from the traffic before it presented a TCAS RA. Once the crew were

happy to take further instructions they made another approach and landed safely. Information on the conflicting ac, the C172, came from its pilot's later erroneous call on frequency against its D/F trace, the pilot's position confirmation and the London FISO, who apparently had the C172 flight under a BS, not realising that Blackpool was open. The B737 crew advised that they were filing an Airprox.

THE SWANWICK FISO reports working the C172 flight from N to S from Carlisle to Liverpool at 5000ft RPS 1002mb. He requested the flight's intending routeing and the pilot responded via Kirkby VRP. A BS was applied and the flight was given the Liverpool Wx. The pilot reported an initial descent to 3900ft then further to 2000ft and when the flight was slightly S abeam Warton (as seen on the FID) he suggested the flight transfer to Liverpool 119·85Mhz. He was relieved for a break several minutes later. The oncoming FISO moments later told him that Blackpool had called to say that a B737 flight had had an Airprox with a 1177 squawk whilst it was on approach to RW28 triggering a TCAS RA, he thought. He later spoke to the Blackpool controller who advised that they were operating procedurally at the time but had a limited display showing the 1177 squawk.

ATSI reports that the Airprox occurred at 1920:22 UTC, in Class G airspace, 6nm on the final approach to RW28 at Blackpool Airport.

The B737 was an IFR flight inbound to Blackpool Airport from Palma and C172 was operating IFR inbound to Liverpool from Carlisle and in receipt of a BS from London FIS (N) on frequency 125·475MHz.

CAA ATSI had access to area radar recordings, together with RT recordings from Blackpool Approach and London FIS, together with written reports from the 2 crews, the Blackpool controller and the London FISO.

METAR: EGNH 091820Z 19008KT 9999 SCT030 18/15 Q1006=

METAR: EGNH 091850Z NIL=

METAR: EGNH 091920Z NIL=

METAR: EGGP 091920Z 20010KT 9999 SCT033 BKN044 19/16 Q1006=

Official night at Blackpool calculated from the UK AIP GEN 2-7-2 was 1915 UTC.

The C172 pilot's written report indicated that the pilot had checked the UK AIP which showed that Blackpool closed at 2000 (Local time). The UK AIP page AD 2 -EGNH-1-5, states:

'Hours of operation: Winter 0700-2100 and Summer 0600-2000.'

The C172 pilot's written report indicated that the pilot had tuned into the Blackpool ATIS and received a carrier wave only, which the pilot indicated, confirmed his belief that Blackpool was closed. (The B737 flight later reported in receipt of ATIS 'F').

The C172 pilot contacted London FIS at 1840:20, reporting 15nm S of Carlisle at an altitude of 4500ft and, requesting a BS. The C172 flight was instructed to squawk 1177 (FIS) with Mode C. This was acknowledged. At 1854 the C172 pilot reported climbing to an altitude of 5000ft and at 1857 London FIS passed the C172 pilot the Liverpool Wx, '1850 17006KT 130V190 9999 SCT033 BKN042 19/16 Q1006='. The pilot acknowledged the QNH 1006. At 1908 the C172 pilot passed an ETA for Liverpool as 1934.

At 1909:22, London FISO advised the C172 pilot that the flight details had been passed to Liverpool. At 1910:28, the C172 pilot confirmed a routeing to enter the Liverpool CTR at Kirkby VRP and the FISO asked the pilot to report 5nm before Kirkby.

At 1911 the B737 flight contacted Blackpool Approach, in receipt of ATIS information 'F' descending to FL050 on course to BPL(NDB). The B737 crew confirmed that the ac had left CAS and a PS was agreed. The B737 was given further descent to an altitiude of 3000ft on QNH 1006. The B737 crew reported 5nm S of the BPL(NDB), passing 7000ft for 3000ft and was cleared for the ILS/DME procedural approach to RW28.

At 1914:34, the B737 crew reported beacon outbound passing 6500ft descending to 3000ft. The controller asked the B737 crew to report procedure turn complete. (The ILS/DME procedure has an outbound QDR of 098° from the BPL and at 6 DME a procedure turn L to establish inbound on the LOC QDM 278° from the N.)

At 1915:54, the radar recording shows the B737 outbound in the procedure indicating FL058 (converts to an altitude of 5611ft on QNH 1006 with 1mb equal to 27ft). The C172 was 6·7nm N of the B737, indicating FL053 (altitude 5111ft QNH).

At 1916:20, the C172 pilot reported to London FIS that he was descending to an altitude of 2900ft. The C172 pilot's written report indicated that he commenced a descent from 4500ft to 3000ft and that at 3100ft the pilot became visual with the ground. The pilot indicated that he then decided to continue descent to 2900ft in order to remain below the Manchester TMA to the N of Liverpool.

At 1916:48, the Blackpool controller instructed the B737 flight to descend with the procedure.

At 1918:47, the Blackpool controller passed TI to the B737 crew regarding an ac observed visually from the VCR that appeared to be crossing final approach at 5nm. At 1919:10, the B737 crew reported the traffic on TCAS 800ft above the B737 at an altitude of 3700ft. The B737 crew then reported established at 9 DME. The controller cleared the B737 to land.

At 1919:49 the B737 crew requested to break-off the approach to the L owing to traffic 600ft above and descending. This was approved and the B737 crew reported turning L onto a heading of 120° and the controller approved a climb to 4000ft. The radar recording shows the B737 at 8nm from touchdown indicating FL027 (2511ft QNH). The C172 is indicating FL034 (3211ft QNH) and crossing from R to L, in the B737's 1230 position at a range of 3nm.

[UKAB Note (1): By 1920:09 separation has reduced to 2nm, the B737 has just levelled at FL025 (2311ft QNH) with the C172 in its 12 o'clock, descending through FL033 (3111ft QNH). Twelve seconds later at 1920:21, the radar recording shows the B737 having commenced a L turn and climbing through FL026 (2411ft QNH), with the C172 indicating FL032 (3011ft QNH) and crossing the RW28 approach, 1·6nm to the W of the B737, which then steadies on a track of 190°, parallel to that of the C172. The CPA occurs at 1920:45, the C172 level at FL031 (2911ft QNH) with the B737 1·3nm to its SE climbing through FL029 (2711ft QNH), 200ft below. Thereafter the horizontal separation increases slowly whilst the vertical separation decreases as the B737 climbs through the C172's level.]

At 1922:02 the C172 pilot advised London FIS that he was descending to 2000ft and at 1922:17, London FIS suggested the C172 flight contact Liverpool on frequency 119·850Mhz and change the squawk to 7000.

At 1924:10, the C172 pilot inadvertently called Liverpool on the Blackpool Approach frequency. When questioned, the C172 pilot confirmed that he had crossed the Blackpool approach working London FIS. The B737 pilot confirmed that he would be filing an Airprox and the C172 pilot acknowledged and apologised before being advised to transfer to Liverpool.

At 1925:11, the C172 pilot again called Liverpool, on the Blackpool frequency. This was corrected by the controller and the C172 flight changed frequency to Liverpool.

The B737 continued on the heading until clear of conflict and then routed to the BPL(NDB) and completed a further instrument procedure to land without further incident.

The B737 flight was in receipt of a PS from Blackpool Approach. The controller was not aware of the C172 in transit but observed an unknown ac from the VCR and passed TI which alerted the B737 crew, who reported observing traffic on TCAS. CAP 774, UK Flight Information Services, Chapter 5, Page 1. Paragraphs 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.'

The C172 flight was in receipt of a BS from London FIS. CAP 774, UK Flight Information Services, Chapter 2, Page 1. Paragraphs 1 & 5, state:

'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 C172 flight descended from 4500ft and became visual with the ground at 3100ft. It is not clear if the C172 flight was IMC, or above cloud at this point although the controller could see the C172 from the VCR. The radar recording shows that the C172 was passing 3300ft as it crossed through the approach for RW28. CAP774, UK Flight Information Services, Chapter 5, Page 1. Paragraphs 1, states:

'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'.

The C172 pilot had assumed that Blackpool was closed and had checked the Blackpool ATIS frequency, but did not attempt to call Blackpool Approach.

The Airprox occurred when the B737 operating IFR and in receipt of a PS came into close proximity with the C172 which was in receipt of a BS with London FIS. The B737 crew became concerned, when the TCAS showed the C172 as being proximate and the B737 crew elected to break-off their approach to by turning to the S.

The Blackpool Approach controller observed the unknown traffic from the VCR and on the ATM, which resulted in the controller passing an appropriate and timely warning to the B737 crew which may have assisted in their early detection of the C172 on TCAS.

The London FISO was not aware of the B737 and under a BS the FISO was not required to monitor the C172.

The C172 pilot considered Blackpool to be closed and did not attempt to establish contact with Blackpool Approach. This was most likely due to the pilot misinterpreting local and UTC time when checking the AIP entry for Blackpool, which states that in summer, the period of operation is 0600-2000.

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 and FISOs involved and reports from the appropriate ATC authorities.

CAT pilot Members commended the actions taken by the B737 crew in recognising the potential for conflict with the C172 and breaking off the approach by turning L away from it. Controller Members also praised the Blackpool APP who saw the C172 visually from the VCR and passed a traffic warning to the B737 crew. As the incident was within Class G airspace both crews were responsible for maintaining separation from other traffic through 'see and avoid' and, even though the B737 was flying under IFR on an instrument approach, under the RoA the IFR C172 flight had right of way. It was unfortunate that the C172 pilot, during his pre-flight planning, had misinterpreted the UTC time stated in the AIP for Local and erroneously thought that Blackpool ATC would be closed. His mindset was further reinforced when he heard only a carrier wave on the Blackpool ATIS frequency, which Members could not resolve knowing the B737 had received the latest WX from the ATIS. Members thought that the C172 pilot could have clarified the situation by either calling on the Approach frequency or by asking the London FISO to check with Blackpool via telephone. If he had called Blackpool earlier, the APP could have given the C172 pilot TI on the B737 which was under a PS which may have prevented the Airprox occurring. As it was the C172 pilot had descended from his cruising level to remain below CAS, levelling-off as he crossed the FAT above the instrument approach flightpath profile. This descent, initially to MSA, was through a cloud layer and it was only when he saw the ground at 3100ft did he notice the approach and RW lights at Blackpool. It was this descent by the converging C172 which had caused the B737 crew concern as they were establishing on the ILS, flying just below the cloud layer and being unable to visually acquire the crossing traffic. The B737 crew, unaware that the C172 was going to level-off, elected to avoid in azimuth by turning away. Members, although cognisant that pilots are strongly discouraged from manoeuvring in azimuth with reference to TCAS indications owing to the known system inaccuracies, realised that the crew were faced with a potential conflict from unknown traffic; from the information available from TCAS and the Blackpool controller's warning, the B737 crew elected to manoeuvre laterally clear of the C172's flightpath, pre-empting a TCAS TA or RA, and monitored its relative track before

climbing through its level. The radar recording shows the CPA as 200ft and 1·3nm with both ac on parallel tracks with the B737 pulling away from the C172. With all parties discharging their responsibilities within this Class G airspace, the Board agreed that this incident had quickly become benign, owing to the B737 crews actions, allowing it to be classified as a TCAS sighting report where normal procedures, safety standards and parameters pertained.

PART C: ASSESSMENT OF CAUSE AND RISK

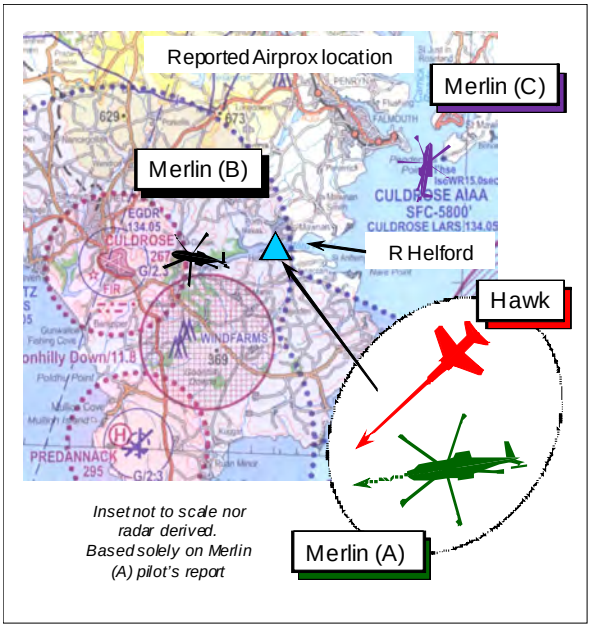
Cause: Sighting report (TCAS).

Degree of Risk: E.

AIRPROX REPORT No 2011120

AIRPROX REPORT NO 2011120

Date/Time:	7 Sep 2011 1521Z	
Position:	5006N 00508W (5nm E of Culdrose - Helford River)	
Airspace:	CMATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Merlin HM Mk1	Hawk T Mk1
Operator:	HQ Navy Cmd	HQ Navy Cmd
Alt/FL:	500ft	NR
	QFE (1007hPa)	NR
Weather:	VMC CLBC	NR
Visibility:	8km	NR
Reported Separation:		
	Nil V/100ft H	½nm H
Recorded Separation:		
	Not recorded	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE AGUSTA WESTLAND MERLIN HM Mk1 PILOT [MERLIN (A)] reports that he was recovering to Culdrose on completion of a maintenance test flight in Falmouth Bay. Flying in VMC some 1300ft clear below cloud, he was following the published local VFR procedure at 120kt along the S bank of the River Helford at 500ft Culdrose QFE (1007hPa). He was in 2-way RT with Culdrose TOWER on 297·775MHz and a squawk of A7030 was selected with Mode C. Mode S is fitted, TCAS is not. Inbound 5nm E of the A/D, heading about 250°, approval to join had been passed by TOWER when a Hawk ac was seen in his 2 o'clock 150ft away at the same height. The Hawk appeared to come from a relative bearing of 'Green 135' – the 4:30 position - crossing ahead from R – L through an estimated heading of S in a 10° AoB L (sic) turn with 100ft horizontal separation and a 'very high' Risk of collision. No avoiding action was taken due to the time available, but given the possibility that the ac might be part of a formation, he descended his Merlin to a height of 200ft QFE, but it rapidly became apparent that the Hawk was a singleton. Once it was clear that there was no further confliction, he climbed back to 500ft QFE and completed the sortie without further incident. The Airprox was reported to TOWER on RT and to SATCO after landing by landline.

THE BAe HAWK T MK1 PILOT reports he was inbound for a visual recovery to Culdrose from E of the A/D and had been advised by ATC of a Merlin helicopter – Merlin (C) - operating over the Falmouth docks area that he reported visual with. He was also advised of another Merlin - Merlin (B) - joining via the River Helford, which he saw and reported that he was visual with the helicopter. Passing behind this traffic, he requested a 'low-break', which was approved by the Aerodrome Controller (ADC). At the IP for RW30, the previously reported Merlin [Merlin (B)] was to the N of his Hawk, approximately overhead Gweek, where he thought ATC had requested the pilot of Merlin (B) to hold, whilst he made his turn onto finals to land on RW30. When on the 'break' into the cct, the pilot of Merlin (A) advised TOWER that he would be filing an Airprox against the Hawk that had just joined the cct. However, he was at all stages visual with the Merlin helicopter, he thought [it seems he was unsighted on Merlin (A)] and never flew closer than ½nm; therefore at no stage was there a flight safety hazard.

THE CULDROSE DUTY AIR TRAFFIC CONTROL OFFICER (DATCO) reports that the subject Merlin helicopter [Merlin (A)] was on recovery to Culdrose via an established VFR route along the S bank of the River Helford (that runs to the NE of Culdrose) at 500ft QFE (1007hPa), with Merlin (B) ahead, also on the VFR route. The Hawk pilot was executing a visual recovery from the NE to RW30 via the IP, which is positioned at 3nm on the extended centre line to RW30 at 1500ft QFE. Whilst joining, the Hawk pilot was only told by the ADC about the Merlin already on the VFR route - Merlin (B), as Merlin (A) was not yet on frequency. The crew of Merlin (A) called on the TOWER frequency and reported established on the River Helford route. The Hawk pilot was given approval

by TOWER for a low break. Shortly after the Hawk joined through the IP, the pilot of Merlin (A) reported an Airprox with the Hawk, alleging that the Hawk pilot had flown at a similar height within 100ft of Merlin (A).

The Culdrose weather: sfc wind 280°/15kt; Vis 12km; SCT @ 1700ft; QFE 1007hPa; CC WHITE.

RNAS CULDROSE reports that a full Defence Aviation Error Management System (DAEMS) investigation was conducted into this Airprox. The following is a summary of the investigation report with additions from the RT transcript provided.

Prior to either ac involved calling for recovery APP, which was manned by a trainee controller screened by a mentor, was working several ac on two other UHF channels (#8 & #10) in addition to operating the UHF and VHF APP frequencies – four frequencies in total. Significantly, up to 4 Merlin helicopters were operating in the Falmouth Bay area; those relevant to the incident were, Merlin (B) that was recovering along the R Helford VFR route ahead of the subject Merlin (A) and Merlin (C) that transited from Predannack to operate in the vicinity of Falmouth Docks.

Sequence of events:

At 1514:40 the crew of Merlin (B) call APP on #8 returning to Culdrose via the S bank of the R Helford: a published VFR helicopter route. APP passes the A/D details and informs the crew to report coasting in.

At 1515:35 Plymouth MILITARY pre-noted the Hawk to the SUPERVISOR (SUP). Following discussion on the landline the Hawk is then handed over to APP, at 2000ft QNH under a BS initially requesting an ILS.

At 1515:55 TOWER is informed by APP of Merlin (B) returning via the S bank of the Helford.

At 1516:40 the crew of Merlin (A) call APP on #8 returning via the S Bank of the R Helford. APP passes the A/D details and informs the crew to report coasting in. As APP is informing the crew of Merlin (A) about Merlin (C) transiting to Falmouth Docks, the Hawk pilot calls APP on UHF. Whilst APP was speaking to the Hawk pilot, the crew of Merlin (B) called coasting in S bank of the Helford.

At 1517:01 TOWER is informed of Merlin (A) returning via the S bank of the Helford by SUP.

At 1517:20, the Hawk pilot is passed the A/D details and informed that it is Radar to Visual recoveries. The Hawk pilot had originally requested an ILS recovery having been informed by Plymouth MILITARY that the weather was worse than it actually was. However, the Hawk pilot deemed that it was suitable for a visual recovery and requested such from APP.

At 1517:35, APP approved the visual recovery, gave the Hawk pilot 'own navigation' and told him to report A/D in sight.

At 1518:08 APP informed the Hawk pilot, "..*be advised got multiple rotary wing operating not above 1300 feet altitude* [QNH 1016hPa] *in the Falmouth Bay region".* At 1518:30, APP informs TOWER that the Hawk pilot is making a visual recovery.

At 1518:59 the Hawk pilot calls, "..*visual with the field and also visual with the rotary in the Falmouth Bay area"* and switches to Culdrose TOWER.

At 1519:09 the Hawk pilot calls TOWER to join who reply "*…join runway 3-0 Q-F-E 1-0-0-7 1 Merlin inbound on the Helford"*. The Hawk pilot has been informed of Merlin (B) inbound via the Helford.

At 1519:30 Merlin (A) (the PIC and PNF) calls APP coasting in S bank of the Helford on #8.

At 1519:38 Merlin (A) (PF) calls TOWER to join, "..*coasting in the Helford, 5 hundred feet 1-0-0-7, squawking 7030*. Merlin (A) is told, "..*roger report at Gweek for runway 3-0, Q-F-E correct 1 ahead"* – Merlin (B). The crew of Merlin (A) was informed of Merlin (B) ahead on the Helford route as they were operating at the same height; they were not informed about the joining Hawk as the VFR Fixed Wing recovery procedure is to join via Initial Point at 1500ft QFE. Therefore, the Hawk should have been 1000ft above the Merlin.

AIRPROX REPORT No 2011120

At 1520:09, TOWER informs the crew of Merlin (B) about the Hawk inbound for RW30, *"…1 Hawk inbound for 30, are you happy to join for 25? Surface wind 280 14 knots"*. The crew of Merlin (B) reply, *"affirm.."* and at 1520:14 TOWER tells Merlin (B) to join for RW25, which is acknowledged with the QFE of 1007hPa set.

At 1520:46 the Hawk pilot requests a low break, then at 1520:50, the crew of Merlin (B) calls at Gweek and final RW25 request long and left. At 1520:58, TOWER approves the Hawk pilot's request *"..low break approved",* which the Hawk pilot acknowledges, *"..initial"* and calls at the IP.

At 1521:03 TOWER acknowledges this and updates the Hawk pilot on the circuit state, "[Hawk C/S] *roger it's just the Merlin short finals for 25..".*

At 1521:05, TOWER issues the pilot of Merlin (B) with clearance to land short for RW25, which is acknowledged.

At 1521:30, the Hawk pilot calls, *"…on the break to land"*, which TOWER acknowledged.

At 1521:39, TOWER requests the pilot of Merlin (A) carry out 1 orbit to allow the Hawk to land. However, the pilot of Merlin (B) incorrectly acknowledges this transmission at 1521:43, "..*we're orbiting at Gweek, visual with the Hawk".* Although Merlin (B) had been given clearance to land short on RW25, the pilot incorrectly acknowledged the transmission addressed to Merlin (A) and believed TOWER was requesting they conduct one right hand orbit.

At 1521:53, the PIC of Merlin (A) informs TOWER that they have had an Airprox with the Hawk that just joined.

All 3 ac subsequently land. Once Merlin (A) had landed TOWER requested the pilot to confirm that he had called an Airprox against the Hawk that joined. The PIC of Merlin (A) confirms this informing TOWER at 1525:58, "..*affirm as we were coming up the Southbank of the Helford he came across about 100 feet in front of us, same level".*

Observations from interviews with the personnel involved

Both the PIC and PF of Merlin (A) each confirmed they were a third of the way along the Helford route when the Hawk passed them. The PIC in the left hand seat spotted the Hawk first. The pilots had begun their pre landing checks and as the PIC read from the flight reference cards he glanced across to the PF in the RHS and saw the Hawk through the window behind him. The PIC of Merlin (A) shouted 'Hawk' and ordered the PF to descend; he believed that the Hawk was part of a formation as the Hawk pilot's callsign was '[C/S Hawk] 3', his initial thought being 'where are 1 and 2'. The PIC of Merlin (A) noted as much information as he could about the Airprox, but explained that the initial descent, re-establishing on the route and attempting to construct the initial report caused a delay with reporting the Airprox to ATC on the RT.

Whilst interviewing the Hawk pilot it was established that he was fully aware of the VFR Fixed Wing recovery procedure and he acknowledged that he was flying below the prescribed height of 1500ft QFE. He was visual with a Merlin at Falmouth Docks - Merlin (C) - and with a Merlin returning along the S bank of the Helford - Merlin (B). Believing that this was the only traffic to affect him, he began descending to join the A/D. When asked at what stage he was aware of the other Merlin on the Helford route - Merlin (A) - the Hawk pilot said he was first aware of it when the pilot declared the Airprox. The Hawk pilot explained that having received his joining instructions he focused on maintaining separation against the Merlin he had been told about on the Helford route - Merlin (B) - and then concentrated on his approach to the A/D.

In subsequent discussion, the Hawk pilot indicated potential for current procedures to be sub-optimal, or where good airmanship might require deviation. Although these were not felt to be germane to the incident in question, it suggested that a review of Culdrose procedures would be appropriate to re-assure their efficacy.

Findings

The Hawk was not flying in accordance with the Culdrose VFR Fixed Wing recovery procedure. The Hawk pilot should have joined via the Initial Point (3nm on the extended centre line at 1500ft Culdrose QFE) and avoided the VFR Helicopter routes. The Hawk pilot admitted that he was flying below 1500ft and did not come through the Initial Point as prescribed. Both the PIC and PF of Merlin (A) believed the Hawk was at 500ft QFE crossing the Helford route as that is the height they were flying inbound on the VFR route.

Contributing Factors

The Hawk pilot considered that it was normal practice to descend below 1500ft before the Initial Point to establish the centreline allowing pilots to enhance situational awareness and visualise cct traffic at the earliest opportunity.

When on recovery the Hawk pilot was informed that there were multiple rotary wing ac operating in Falmouth Bay. Once on the TOWER frequency he was informed of 1 Merlin on the route – Merlin (B). At no stage was he informed that there was another Merlin – Merlin (A) - about to join the route.

The Hawk pilot believed that the Merlin helicopter he was visual with in Falmouth Docks was the rotary wing aircraft APP informed them about. The Hawk pilot was visual with 1 Merlin on the Helford route that TOWER had informed him about. However, as the Hawk pilot was not aware of Merlin (A), he was not fully aware of the situation. The Hawk pilot said that the first point he was aware of another Merlin was when the PIC of Merlin (A) informed TOWER that they had experienced an Airprox with the Hawk.

Observations

Whilst interviewing the crew of Merlin (A) it became apparent that the rear seat crew were not encouraged to keep a lookout whilst on recovery to the A/D. Also it was apparent that the front seat crew did not expect them to lookout. It was observed that the Crew Resource Management was lacking whilst on recovery, which was referred to as a 'pilot's procedure' with the rear crew somewhat detached and uninvolved.

Whilst listening to the ATC RT recordings it was observed that the controller was operating several frequencies at once, and at one point operating 6 speaking units between the frequencies. It was noticed that aircraft had to be asked to repeat information several times and that some calls from aircraft had been missed completely. It was also noticed that there was confusion over the Hawk's call sign. On 2 occasions it was referred to by its formation C/S, instead of the individual element C/S.

It was understood how the Hawk, although flying independently as a singleton, could have been mistaken as part of a formation from its RT C/S.

Whilst interviewing the Hawk pilot it became clear that at no stage had any of the crew of Merlin (A) spoken to him regarding the Airprox. The Hawk pilot knew an Airprox had been called from hearing it on the RT but did not know the full details until he read the DFSOR.

Due to the investigation not being officially initiated until 2 days after the event and personnel not being available to be interviewed until 5 days after the event it was sometimes difficult for them to accurately recall all the information. Fortunately, the Merlin involved had not flown since the event due to weather. Therefore, the Cockpit Voice Recorders were able to be downloaded. However, if the ac had flown there would have been no possibility of capturing this data.

Recommendations

As a result of this Unit investigation 8 recommendations were made, the most significant were:

All aircrew, both Fixed and Rotary Wing, re-familiarise themselves with the current Fixed Wing VFR recovery procedures.

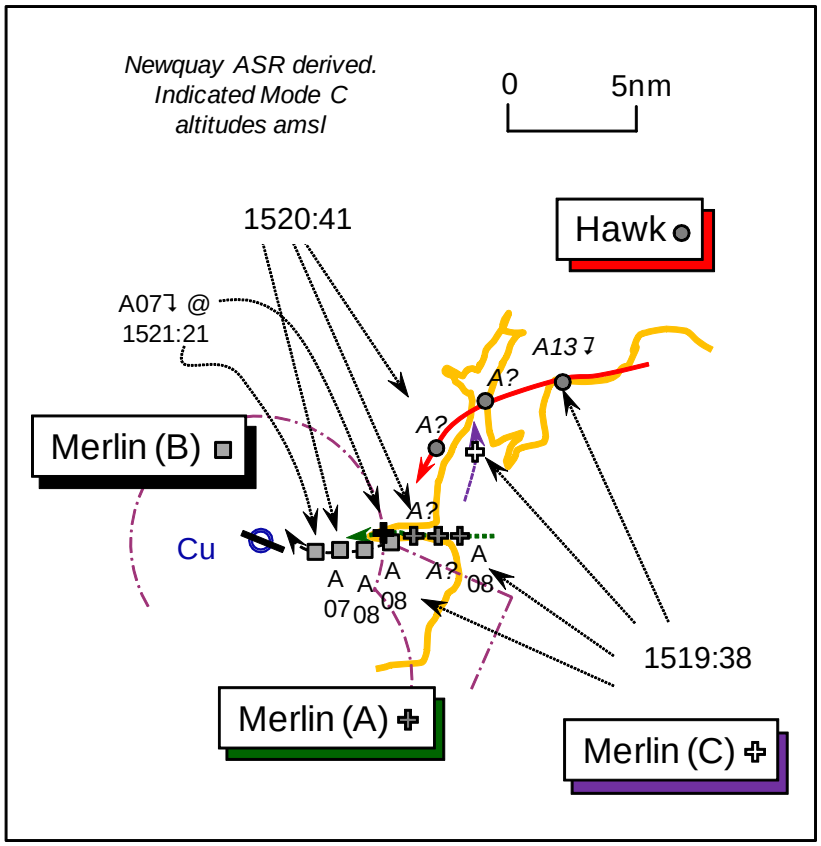
The current Fixed Wing VFR recovery procedures are reviewed with reference to position and run in height to the Initial Point in order to enhance situational awareness.

Crews highlight the importance of whole crew involvement in lookout and Crew Resource Management when close to a high traffic density environment.

The number of frequencies monitored by a single controller is reduced to prevent aircraft having to repeat messages due to the initial message being missed and to prevent calls being missed completely. Also, ensure that standard phraseology is employed when referring to Hawk call signs to prevent confusion and the perception of the presence of a formation.

Procedures for the post incident recovery of Cockpit Voice Recorders/ATC transmission tapes should be established to give investigators maximum information available.

UKAB Note (2): A copy of the Newquay Cornwall Airport ASR recording was helpfully provided for the investigation of this Airprox; however, the incident is not captured at the CPA. The Hawk is shown approaching Culdrose from the NE descending through 1300ft passing to the N of Merlin (C), which is operating between Pendennis Point and Falmouth at 700-800ft ALT. However, the Hawk's contact fades just after 1520:41, 3nm N of Merlin (A) before the Hawk arrives in the vicinity of the Helford River. Both Merlin (A) and the preceding Merlin (B) are shown inbound along the S bank of Helford River between 700-800ft ALT. Merlin (A) is shown at the reported Airprox location 5nm E of the A/D at 1521:21, the helicopter's Mode C indicating a descent through 700ft ALT. Thereafter no Mode C is shown and perhaps indicative of the pilot's reported descent. Merlin (A)'s Mode C is next shown at 800ft ALT climbing and then levelling at 900ft ALT about 3nm E of the A/D.



UKAB Note (3): Culdrose Standing Orders (CSOs) Article 2240 promulgates the A/D fixed-wing cct rules for circuit traffic after passing the IP:

1. All fixed-wing flying from Culdrose is to be conducted in accordance with Military Aviation Authority Regulations except as specifically amended by these Orders.

2. The fixed-wing circuit height is 1000ft. With prior approval of the DATCO low-level circuits down to a minimum of 500ft may be flown.

3. The weather minima for visual circuits are: Visibility 5.0km, Cloudbase 3/8 or more at or above 1200ft.

4. The circuit direction will vary according to the runway in use and a/c type. There is no Deadside.

5. A maximum of 4 aircraft are allowed in the circuit.

6. When intending to circuit to the non-Duty Runway, permission for visual circuits is to be obtained prior to entering the final recovery phase.

7. Pilots of twin-engine aircraft wishing to carry out single engine landing practice are to request permission before joining the circuit.

8. The normal break positions for fixed wing aircraft is south of RW12/30 aligned with the Tower, when over the upwind runway intersection.

9. Fixed Wing run and breaks are to be conducted at 1000ft. However if the circuit is reported as clear, pilots may request a low break (not below 500ft). This may be approved at the DATCO's/Aerodrome Controller's discretion.

HQ NAVY CMD comments that a very thorough investigation was conducted utilising the DAEMS construct recently implemented at Culdrose. CSOs stipulate the VFR recovery routes for helicopters and it is noted that the Merlins were operating iaw this instruction. Article 2245 of CSOs details the procedures for VFR FW recoveries and states that on a visual recovery a FW pilot must join through the IP (3nm/1500ft) 'avoiding the VFR Helicopter Routes' (2. a. (2)). The onus is very much on the FW pilot to comply with this instruction, it is not normal, or required, for helicopters on the VFR routes to be identified to FW aircraft. It is noted in the report that the Hawk pilot is quoted as being fully aware of the VFR Fixed Wing recovery procedure and that he knew he was flying below the prescribed height of 1500ft QFE, furthermore the report also states that this non-compliance was considered normal practice. The Hawk pilot called Tower to join, then 29 seconds later Merlin A called Tower to report on the standard route. Tower subsequently called the two Merlins to each other on frequency as they were co-alt on the same route (the same frequency that the Hawk was operating on). It is after this that the Hawk pilot requested the low break. The Culdrose recovery procedures were reviewed as a result of the DAEMS recommendation, no changes were made. The report confirms that the Hawk pilot was not flying iaw laid down procedures, with which he was most certainly familiar with, having been flying at the station for a significant number of years. I am assured that the Squadrons at Culdrose have re-familiarised themselves with their local orders.

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, together with a report from the Unit and ap

The Unit investigation revealed that the Hawk pilot had focused his attention on remaining clear of the preceding helicopter on the route - Merlin (B) – after being given TI about it by the ADC, "..*1 Merlin inbound on the Helford"*. After this call, the crew of Merlin (A) called TOWER and from this point all the pilots involved were operating on the same frequency, thus the Hawk pilot should have heard Merlin (A)'s 'coasting in' call alerting him to this second helicopter on the Helford River route, but which he remained unaware of and did not see. Merlin (A) was flying at 500ft QFE and concern was expressed that TI had not been given by TOWER about it. However, Members familiar with the nature of operations at this busy helicopter training aerodrome emphasised the implicit responsibility placed on fixed-wing pilots to avoid the Culdrose helicopter patterns. It was stressed that TI is not normally provided by TOWER to recovering fixed-wing pilots about VFR helicopter route traffic as they are procedurally separated by the heights stipulated for the various recovery procedures in local orders. It was evident from the comprehensive Unit report into this Airprox that the Hawk pilot had elected not to fly through the IP to RW30 at the height prescribed for the procedure - 1500ft QFE – whilst inbound for his visual recovery. Furthermore, fixed-wing ac returning for a 'low-break' are not permitted to descend from 1500ft QFE until they have crossed the A/D boundary the Board was advised. It was plain to the Members that this Airprox would not have occurred if the Hawk pilot had complied with the procedure, which afforded 1000ft vertical separation above inbound helicopters established on the Helford River VFR Helicopter Route that were restricted to 500ft QFE (500ft is provided against outbound helicopters that fly at 1000ft QFE). The Command had explained that it was incumbent on the fixed-wing pilot to avoid the VFR Helicopter Routes, and as the Hawk pilot was based at Culdrose he was fully aware of the requirements specified in CSOs. A civilian controller Member was concerned that it had been suggested that such disregard for procedure might be widespread at the unit, but the Board was advised that such deviations as occurred here are rare. The Board agreed unanimously that the Cause of this Airprox was that the Hawk pilot did not follow Culdrose recovery procedures and flew into conflict with Merlin (A), which he did not see.

Turning to the inherent Risk, it would have been difficult for the two pilots flying Merlin (A) to see the Hawk any earlier than they did because it approached his helicopter from abaft the starboard beam. The absence of lookout by the rear cockpit crew had been addressed by the unit, but it was not clear to the Board whether the small black jet could have been detected by them, given their restricted field of view, or whether the relatively slow moving

helicopter would have had time to manoeuvre away from the faster Hawk. Therefore, without any form of TCAS to assist their lookout, the pilots of Merlin (A) were poorly placed and unable to affect the outcome. Similarly, the Hawk T Mk1 did not have any form of TCAS to warn the pilot of any other transponding ac in close proximity. Therefore, in the erroneous belief that Merlin (B) was the only helicopter in the vicinity the Hawk pilot disregarded the stipulated procedure height. Once the procedural safety barrier of vertical separation was breached 'see and avoid' was the only means of averting a conflict with other traffic on the Helford River VFR route. Although the radar data did not illustrate this close quarters encounter, in the Board's view, the Hawk pilot should have been able to see the large helicopter. As it was, the Hawk pilot was unaware of Merlin (A) as he flew past and the separation that did exist – reported as 100ft horizontally at the same height – was fortuitous. The Board concluded unanimously that an actual Risk of collision had existed in these circumstances.

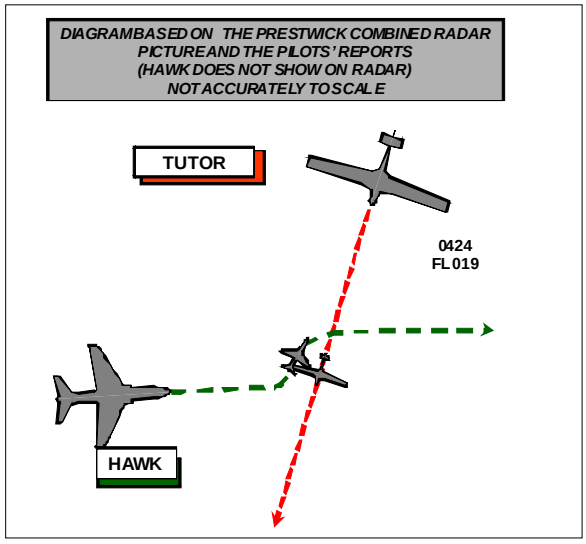
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Hawk pilot did not follow Culdrose recovery procedures and flew into conflict with Merlin (A), which he did not see.

Degree of Risk: A.

AIRPROX REPORT NO 2011121

Date/Time:	8 Sep 2011 1025Z	
Position:	5418N 00152W	(10nm W Leeming)
Airspace:	Lon FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Hawk TMk2	Grob Tutor
Operator:	HQ Air (Trg)	HQ Air (Trg)
Alt/FL:	NR	NR
	RPS (999mb)	NR
Weather:	VMC CLBC	VMC
Visibility:	20km	NR
Reported Separation:		
	50ft V/500ft H	NR
Recorded Separation:		
	See UKAB Note (1).	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE HAWK TMK2 PILOT reports flying dual in a black ac with all external lights (including the nose light) switched on, squawking 7001 with Mode C conducting LL Close Air Support training in support of Forward Air Controller (FAC) training and in communication with them. They were heading 089° out of sun, at 360kt 'heads in' in good weather below cloud, awaiting the RT brief for the second target from the FAC when their TCAS gave a TA; on hearing the alert, the front seat HP looked up and saw a military Grob Tutor crossing from L to R straight and level, on a heading about 240° so he took avoiding action by initiating a 4G descending left turn. The separation between ac was visually judged as being less than 500ft laterally and about 50ft vertically. He assessed the risk as being medium and reported the incident to the Sqn Ops and the SFSO on landing.

On reviewing the mission tape, the Grob Tutor appeared on TCAS as the TA sounded.

THE GROB TUTOR TMK1 PILOT reports that he was contacted on the day after the event. At the time of the reported incident he was flying a white ac with strobes switched on squawking with Modes C and S on a local, dual, sortie from Leeming and in receipt of a TS from Leeming. Although in the area at the time he has no recollection of the incident.

THE LEEMING APP controller reports that he was providing a TS to 3 RAF Leeming-based Tutor ac conducting GH in the local area and the resulting workload was of medium intensity. Two of the ac were operating in a position relatively close to the RAF Leeming overhead and a further ac (visually confirmed by one of the Tutor pilots to be a Tucano) appeared to be conducting general handling autonomously in a similar area and was called to the Tutor ac on several occasions. The 3rd Tutor was operating to the W of RAF Leeming; a fast moving contact squawking 7001 was seen operating in the same area and he thought that it was likely to be operating in and around a NOTAM'd Close Air Support Exercise area. Radar contact with this ac was intermittent but TI on the contact was passed to the Tutor ac during initial climb out although the unidentified ac soon turned away and faded from radar. At the time of the incident, the Tutor ac was approx 11nm W of Leeming. At that point an unknown pop-up contact squawking 7001 appeared on a directly conflicting E track within 3nm of the Tutor; TI was passed to the Tutor ac at that point. The Tutor pilot reported that he had the conflicting ac on TCAS but did not have visual contact. TI on the unknown contact was then repeated. Based on SSR Mode C, the Tutor ac appeared to maintain level flight while the unknown ac appeared to descend close to the point of confliction. TI on the unknown traffic was passed several more times and the Tutor achieved visual contact, reporting it to be a Hawk.

BM SAFETY MANAGEMENT reports that this Airprox took place between a Hawk T2 operating VFR in VMC conducting a FAC exercise within a NOTAM'd area in the URE Valley, just to the S of EGD442 and a Tutor T1 operating VFR in receipt of a TS from Leeming APP.

Although the Tutor was visible on the radar replay throughout the incident sequence, the Hawk was not (at the time of the incident); as a result, the investigation was completed based upon the pilots' and controller's reports and the tape transcript from RAF Leeming.

The radar replay commences at 1018:30 and shows an ac with an SSR code of 7001 operating in the vicinity of EGD442 and the Tutor 2.8nm W of Leeming and tracking W. Based upon the reports of those involved, the ac squawking 7001 was almost certainly the reporting Hawk. APP stated in their report that radar contact of the Hawk was intermittent throughout the incident sequence.

At 1018:05, prior to the start of the radar replay and in accordance with their report, APP passed TI to the Tutor on the Hawk before "*the unidentified aircraft…turned away and faded from radar"*. APP again passed TI to the Tutor regarding the Hawk at 1024:32, after the Hawk 'popped-up' into radar coverage within 3nm of the position of Tutor, stating, *"traffic west, two miles, tracking east, indicating similar levels, fast moving"*. Although the Tutor pilot had no recollection of the incident, he responded to APP that they had 'got TCAS on him, can't see him though'. APP immediately updated this TI at 1024:41, stating *"traffic indicates 100ft below on Charlie, west half a mile".* APP provided a final update at 1024:58 stating that, "*traffic now clearing to the east, north-east, by one mile tracking east, indicating five hundred feet below*" and the pilot replied, "*thank you, nothing seen at all*."

Based upon the Hawk pilot's report of their and the Tutor's respective bearings, the radar replay and the TI passed by APP, it is apparent that the CPA occurred between 1024:41 and 1024:58. The Hawk pilot has reported subsequently that having received the TCAS TA, it is assessed that they first sighted the Tutor at 2000ft laterally and 100ft vertically.

From an ATM perspective, APP provided a good level of TI and discharged their responsibilities under a TS appropriately.

UKAB Note (1): The Great Dun Fell radar was not available but the single source Claxby radar at commencing at 1021 shows both ac; the Hawk squawking 7001 with Modes C (FL018) is in a RH racetrack to the S and W of the incident position and the Tutor squawking 0424 (Leeming) also with Modes C (FL019) and S is manoeuvring to the NE of the position. At 1022.35 the Tutor rolls out on a W'ly track at FL021, 3.5nm ENE of the CPA and the Hawk is tracking 330° about 4.5nm S of the CPA. At 1023:13 both ac disappear from the recording and the Tutor reappears 20sec later at FL019, 2nm NE of the CPA turning L onto 250° directly towards the reported position of the CPA (the Hawk is still not showing). At 1224:54 the Hawk reappears for 1 sweep only in the Tutor's 1 o'clock at 0.4nm, crossing from its R to L and 100ft below it at FL018. The CPA therefore does not show but by projection is 100ft V and about 0.2nm H.

UKAB Note (2): The FAC training exercise was NOTAM'd as follows:

08 0824 EGXTYXYW
xxxx/11 NOTAMN

Q) EGTT/QXXXX/IV/NO/EW/000/020/5417N00204W005

A) EGTT
B) 1109080930
C) 1109081415
E) LFA 17.

WARNING. FORWARD AIR CONTROL EXERCISE.

2X HAWK ACFT WILL PARTICIPATE IN A
FORWARD AIR CONTROL EXERCISE WITHIN A 5NM RADIUS
OF POSITION:

N5417 W00204, HAWES VALLEY

AIRCRAFT WILL BE CONDUCTING INTENSIVE TRAINING
MANOEUVRES AND MAY BE UNABLE TO COMPLY WITH
THE NORMAL RULES OF THE AIR. CREWS INTENDING
TO TRANSIT THIS AREA ARE STRONGLY ADVISED TO
CONTACT JACKPOT CONTROL ON 297. 725 MHZ

POC: JFACTSU LEEMING 01677 456161 OR MOBILE 07855 423912.

F) 250FT AGL
G) 2000FT AGL, ACTIVITY EXTENDS ABOVE)

The CPA however was about 2nm outside the NOTAMed area.

HQ AIR (TRG) comments that crews operating outside of their NOTAM'd area should avoid going 'heads in' unnecessarily. Equally, others should avoid the area if at all possible but there may be pressing needs to operate in the vicinity of such a warning. In the event, both aircraft were equipped with TCAS or traffic alerting equipment and it served its purpose. Had they not been so fitted it is likely that this event would have been much more serious. The Hawk pilot resolved the confliction in a timely manner.

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.

Members were briefed that several NOTAMs, both Medium and Low level, were issued that week for a series of FAC training exercises in the area concerned (the one above is one of two for the period).

The Board noted that both ac were operating legitimately under VFR in Class G airspace, the Hawk both in and above the UKDLFS. Due to the nature of his exercise the Hawk pilot had been necessarily 'heads in' in the lead up to the CPA but, prompted by his TCAS, he looked up and saw the Tutor. A Member counselled that such 'heads in' periods should be minimised and interspersed with short periods of lookout.

Due to his very short report, submitted 2 months after the event due to his being overseas, it was not clear whether the Tutor pilot was aware of the NOTAMed activity; the HQ Air Member thought that had he been aware he would have recalled it. He went on to advise that it is wise to remain well clear of such activity as the participating ac often fly outside the promulgated area of the NOTAM.

Members were reassured that in this instance the Hawk (Mk2) TCAS had revealed the Tutor and (apparently from the controller's report) the Tutor TAS had warned its pilot about the Hawk, thus proving the system.

Although the pilots report stated that there were 2 people in the Hawk, it was not clear to Members whether the rear seat occupant was a crew-member or a passenger; that being the case they assumed that he had no formal lookout responsibility. Since the same applying to the Tutor the Board assumed that only the HPs had a formal lookout responsibility.

Since the Tutor pilot did not recall the event, the Board assumed that he did not see the Hawk; the Hawk pilot saw the Tutor later than he would have wished, but still in time to initiate an effective 4G avoiding manoeuvre and due to the lateness of this manoeuvre the Board agreed that normal safety margins had been slightly eroded.

AIRPROX REPORT No 2011121

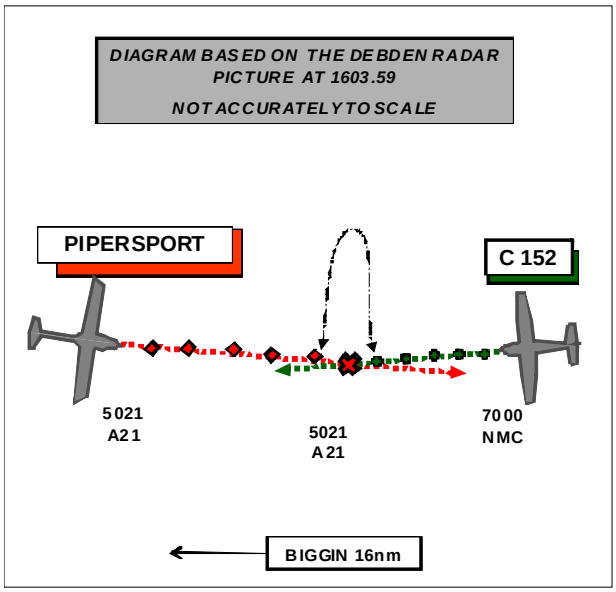
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A non-sighting by the Tutor pilot and a late sighting by the Hawk pilot.

Degree of Risk: B.

AIRPROX REPORT NO 2011122

Date/Time:	14 Sep 2011 1604Z	
Position:	5118N 00025E	(16nm E Biggin Hill)
Airspace:	Lon FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	C152	Pipersport
Operator:	Civ Pte	Civ Pte
Alt/FL:	2200ft	2100ft
	QNH (1018mb)	NK
Weather:	VMC CLBC	VMC NK
Visibility:	>10km	10km
Reported Separation:		
	150ft V/0m H	NK
Recorded Separation:		
	<0.1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE C152 PILOT reports flying a white ac, solo on a private flight from Biggin Hill with the landing light switched on but the nav lights switched off and with SSR (no Modes C or S). He was heading 270° at 90kt flying into sun, while in receipt of a BS from Rochester when he spotted a PA28 [type] ac 0.5-1nm away head-on at the same level, heading 090° but marginally to his R. As the ac was spotted so late, turning R would have increased collision risk and turning L might have presented a further risk if the other pilot had spotted him and followed the flight rules and turned R. With that in mind, he chose to select the throttle to idle and initiate a rapid descent from 2200ft to about 2000ft passing directly below the other ac, which appeared to take no action.

He assessed the risk as being high and reported the incident to Rochester Info before climbing back to 2200ft and returning to Biggin Hill, landing at 16:05.

His flight plan was: Biggin to Biggin, via Sevenoaks, Tenterden, Ash, and Sevenoaks.

THE PIPERSPORT PILOT reports flying a private flight from Blackbushe to Maypole in a white and blue ac with all external lights switched on, initially in receipt of a BS from Farnborough Radar; TCAS was not fitted. He flew to the S of the Fairoaks ATZ then headed directly towards Biggin Hill and was handed over to Biggin Approach for an O/H transit at 2100ft; at 5nm E of the airfield he was handed back to Farnborough Radar and headed direct to DET to fly S of Rochester ATZ.

While E of Biggin tracking 094° at 118kt he saw an ac approaching from the NE (i.e. was in his 10 o'clock) and it appeared to be climbing. His initial impression was that it had departed from Rochester Airfield and was climbing out from the ATZ; the ac then flew above him, climbing and he had it in sight for only 1-2sec but he could not react quickly enough to change course. The ac crossed into his 5 o'clock and could not re-acquire it due to the angle of the sun.

He assessed the risk as being high.

He attached a GPS logger trace of his route.

ATSI reports that the Airprox occurred at 1603:40 UTC, 3nm to the SE of Rochester Airport in Class G airspace.

The Reims Cessna F152 (C152) was on a local VFR flight from Biggin Hill and in receipt of a BS from Rochester Info. The Czech Sport AS Pipersport (Pipersport) was operating on a VFR flight from Blackbushe to Maypole and in receipt of a BS from Farnborough LARS East.

AIRPROX REPORT No 2011122

CAA ATSI had access to area radar recordings, RTF recordings from Rochester Info and reports from both pilots. CAA ATSI did not receive identification of the second ac until the 10 Nov 2011 resulting in the RTF recording from Farnborough no longer being available.

METAR: EGKB 141550Z 27007KT 230V310 9999 SCT040 17/07 Q1018=

The C152 contacted Rochester Info at 1553, reporting S of Sittingbourne returning to Biggin Hill at 2200ft on pressure setting 1017mb and routeing S of the Rochester ATZ. Rochester agreed a BS and passed the QNH as 1018, advising about two Cherokee Arrows and a departure to operate in the local area. Rochester asked the C152 to call overhead or abeam.

At 1559:08, radar recordings show the Pipersport ac, 10.5nm SW of Rochester Airport, squawking 5024, tracking E and indicating an alt of 2200ft. The C152 was shown 5nm SE of Rochester Airport tracking W on a squawk of 7000 with no Mode C.

At 1601:07 the C152 reported passing S abeam Rochester at 2200ft on QNH 1018 and Rochester asked the C152 pilot to report changing frequency.

At 1603:12, radar recordings show the range between the two ac was 1.5nm, on reciprocal tracks.

At 1603:37, the C152 pilot reported, *"Rochester (C152) c/s I've just had to take avoiding action to avoid a Cherokee.*"

At 1603:39 the distance between the two ac was 0.1nm, with the Pipersport indicating an alt of 2200ft. The next radar returns show that the two ac have passed abeam and the Pipersport has descended to 2100ft; the two ac then continued on their respective tracks.

The C152 pilot reported that he had not seen the registration of the other ac, adding that it was travelling E to W (it is believed that the pilot meant W to E) at the same alt of 2200ft.

Rochester asked the pilot to pass any further details he could remember to ATC at Biggin Hill after landing. The C152 pilot reported the approximate position of the Airprox as being 17nm W [meaning E] of BIG (DME). Radar recording showed the position of the Airprox was 16nm E of BIG (VOR) and 3nm SW of Rochester Airport.

The Pipersport pilot's report indicated being in receipt of a BS from Farnborough. The pilot did not report that any TI or warning was passed by the Farnborough controller.

The C152 was in receipt of a BS from Rochester Info and the Pipersport was in receipt of a BS from Farnborough LARS. CAP 774, UK Flight Information Services, Chapter 2, Page 1. Paragraphs 1 & 5, State:

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

'Basic Service relies on the pilot avoiding other traffic, unaided by controllers/FISOs. It is essential that a pilot receiving this service remains alert to the fact that, unlike a Traffic Service and a Deconfliction Service, the provider of a Basic Service is not required to monitor the flight.'

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

The Airprox occurred when the two ac operating VFR came into close proximity. Rochester was not aware of the Pipersport ac and the Pipersport pilot's report does not indicate that any TI or warning was given by Farnborough LARS. Under a BS there is no obligation placed upon the controller to provide TI and there was no requirement for the controller to monitor the flight.

UKAB Note (1): The recordings of several radars showed the incident. The geometry is as outlined in the ATSI report and depicted above. However the reported Pipersport passed 100ft directly below another C152 (tracking 180°) 2min before the CPA with the reporting C152.

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 authority.

The Board noted that both pilots were operating legitimately in the Class G airspace to the S of Rochester and shared an equal responsibility to see and avoid other ac. The C152 was under a BS from Rochester while flying into sun, and the Pipersport a BS from Biggin following its transit immediately above their ATZ. While understanding why the respective pilots were under a BS from the respective units, the Board pointed out that a higher level of service would most likely have been available from Farnborough and either a TS or a DS would probably have identified the opposing ac significantly earlier.

The Board was informed that the radar recording showed another ac (identified as a second C152 and not shown on the diagram) transiting from NE to SW and crossing the Pipersport's track about 2 min before the CPA. Since the geometry of the incident as described by the Pipersport pilot did not match that described by the reporting pilot, but did match the earlier encounter, it was agreed that he had probably seen the first ac but not the one flown by the reporting pilot.

The Board noted that the C512 pilot had been faced with unenviable geometry and his late but rapid descent, although not verified by the radar, had most likely been effective in removing the risk of collision; its lateness however, had resulted in a reduction of normally accepted safety margins.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A non-sighting by the Pipersport pilot and a late sighting by the C152 pilot.

Degree of Risk: B.

AIRPROX REPORT No 2011123

AIRPROX REPORT NO 2011123

Date/Time:	14 Sep 2011 1927Z (Night)	
Position:	5314N 00425W (4nm E Valley - elev 37ft)	
Airspace:	Valley MATZ/ Mona ATZ	(Class: G)
	Reporting Ac	*Reporting Ac*
Type:	Hawk(A)	Hawk(B)
Operator:	HQ Air (Trg)	HQ Air (Trg)
Alt/FL:	1650ft Valley QFE (1017mb)	1200ft Mona QFE (1011mb)
Weather:	VMC NR	VMC CLBC
Visibility:	NR	25km
Reported Separation:	200-300ft V/Nil H	250ft V
Recorded Separation:	NR	

Not radar derived nor to scale

BOTH PILOTS FILED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE HAWK(A) PILOT reports flying a night currency flight from Valley and in communication with Valley on Stud 2, squawking 7005 [High Energy Manoeuvres conspicuity code] with Mode C; nav and red strobe lights were switched on. He was the rear seat Capt and NHP at the time and owing to another flight requesting a Practice Engine Failure After Take Off (PEFATO) at Valley the decision was made to extend downwind to initial for RW31. At approximately 1650ft Valley QFE heading 135° and roughly 3nm E of Valley he became tally with an ac in his 10 o'clock low and very close, <0·5nm, approximately 1sec before it passed beneath and reappeared in their 3 o'clock. Subsequently he learned the other ac was a Valley-based Hawk that had extended upwind from Mona RW22 to 1200ft Mona QFE; this put vertical separation at 200-300ft. He assessed the risk as high.

THE HAWK(B) PILOT reports flying a cct sortie at Mona and in communication with Mona Tower, squawking 7000 with Mode C. The visibility was 25km flying 2000ft below cloud in VMC and the ac's nav and red strobe lights were switched on. On climbout from a touch and go RW22, about 2nm from the RW04 threshold, heading 220° at 210kt the HP levelled the ac at 1200ft Mona QFE 1010mb and then commenced a L turn to position the ac downwind to route to initials for a 1200ft PFL. As the ac began to roll he, the NHP, caught a glimpse of an ac immediately in his R 1 o'clock and perceived its flightpath to go straight over the top of them with not much vertical separation. He immediately took control and commenced a bunt but he had already observed the ac go directly above. The outline shape of the other ac was very defined and although difficult to assess its range he estimated the distance to be no more than 400-500ft. He informed Mona Tower about the incident and asked for any available info on the ac. He was informed the other ac was in contact with Valley Tower and had been routeing to position for initials for RW31 RH cct which was in use at the time. He informed ATC that he may be filing an Airprox. Subsequently he was told by the other ac's Capt that the other ac was at height 1600ft Valley QFE resulting in vertical separation of 250ft. He assessed the risk as high.

BM SAFETY MANAGEMENT reports that this Airprox occurred shortly after 1927 between 2 Hawks operating VFR at night in VMC. Hawk(A) was operating in the visual cct at Valley, with Hawk(B) operating in the visual cct at Mona.

Given the height at which the Airprox occurred and the distance from NATS radar heads, the Airprox was not visible to those radars used to provide the radar replay. Consequently, this investigation has been completed

utilising the reports of the aircrew and ATM personnel involved and is based upon the investigation conducted by Valley.

At the time of the occurrence, Valley was operating to RW31 RH cct, whilst Mona was operating to RW22 (see Fig 1). Mona receives a feed for its High-Brite display from the Valley PSR/SSR; however, at the time of the occurrence, Valley's SSR was unserviceable and the performance of the PSR close to Valley and Mona is known to be poor and highlighted as such in the Valley FOB. The ATC Tower at Valley is sited N of RW31/13 and E of RW19/01, with the layout of the VCR favouring the main instrument RW, RW31/13, with the cct behind the Tower. The ATC Tower at Mona is sited W of RW22/04.

[UKAB Note (1): Valley elevation is 37ft amsl, Mona 202ft amsl.]

Figure 1: Valley and Mona Local Area

At 1923:57, Hawk(A) flight rejoined the Valley visual cct from radar and, at 1924:11 following a request from TWR, agreed to orbit at 1500ft QFE to permit an unrelated Hawk to conduct a PEFATO to RW19.

At 1925:43, Hawk(B) flight was cleared by Mona TWR to, "*touch and go.*" At 1926:47, during the PEFATO being conducted by the unrelated Hawk, Hawk(A) flight stated their intention to remain at, "*one thousand five hundred feet, extending to initials*." The pilot of Hawk(A) states in his report that, albeit that the ac was at 1650ft QFE, they routed towards the IP for RW31 by extending downwind RH (as shown on Fig 1).

At 1926:59, Hawk(B) flight stated that they would position, "*downwind for a twelve hundred foot PFL*." This was followed at 1927:17 by them informing Mona TWR that, "*there's another aircraft in the overhead.*" Based upon their Defence Air Safety Occurrence Report narrative, this is a clear reference to Hawk(A), indicating that the Airprox had just occurred.

In their report, Hawk(A) Capt reports that Hawk(B) had extended upwind from RW22 at Mona; however, in the absence of a radar replay it has not been possible to substantiate this assertion. That notwithstanding, based upon the reports of the pilots of both Hawk(A) and Hawk(B), it is clear that they had not sighted each other until effectively the CPA.

Following this incident, the unit investigation revealed an omission in the FOB whereby the ability to extend downwind on RW31 RH to reach the IP was not ruled out, which carried with it an inherent risk of confliction with the Mona visual cct.

BM Safety Management agrees with the analysis conducted by RAF Valley into this incident. The latent condition that existed within the FOB by not specifically excluding an extension downwind on RW31 RH during Mona operations was the root cause of this Airprox.

Notwithstanding the responsibility of both pilots to "see and avoid," understandably, the pilot of Hawk(A) extended downwind to position for the IP for RW31 RH but seems to have been unaware of the potential risk of confliction with the Mona visual cct. Similarly, the pilot of Hawk(B) had no reason to believe that there may have been conflicting traffic in the vicinity. From an ATM perspective, whilst the ADCs at Valley and Mona may have been able to use the High-Brite display to ascertain that a confliction was evident, the contextual conditions must be borne in mind. It was night and, therefore, a continuous lookout is required such that visual contact may be maintained with all ac in the visual cct. The SSR was unserviceable and the PSR performance is poor; consequently, the chances of obtaining positive tracks on the High-Brite display were reduced. The Valley ADC's focus would have been the safe handling of the unrelated Hawk conducting the PEFATO to RW19, which would have targeted their attention to the NW of Valley, whilst the CPA was to the E. From the Mona ADC's perspective, Hawk(A) was approaching from behind them with only nav lights and red strobes showing and they had no information to suggest that Hawk(A) was extending downwind towards their visual cct.

Disconcertingly, this is a further failure of "see and avoid" which lends further evidence to the continued debate over the risk of mid-air collision.

As a result of the investigation conducted by Valley an immediate change was made to the FOB mandating a turn onto the deadside when re-positioning for the IP. Moreover, a wider review of the FOB was initiated which will specifically assess the relationship between the Valley and Mona traffic flows.

HQ AIR (TRG) comments that the immediate investigation and changes made following this incident by RAF Valley are welcomed. However, changes to orders are not a panacea and there is no substitute for good awareness and 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, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

Members welcomed the procedure changes that had taken place post incident. With Hawk(A) leaving the Valley cct to carry out a rejoin, deconfliction procedures were needed to ensure safe separation against the Mona cct pattern. The HQ Air Trg Member believed that Hawk(A) crew should have been cognisant that Mona was also active during night flying and climbed to 2000ft to remain well clear of the Mona cct pattern or asked ATC for Mona activity information. Hawk(B) pilot had climbed straight ahead to 1200ft QFE from RW22 at Mona and was rolling in to a level turn to position for a PFL. Hawk(A) pilot had extended downwind from RW31 at Valley and climbed to 1650ft Valley QFE (~1450ft Mona QFE) to position towards the IP. Without ATC intervention, since both ADCs were unaware of the potential confliction, the only means of collision avoidance was through see and avoid. However, it was clear to Members that both of the Hawk crews only saw each other moments before the CPA, with no time to take avoiding action, effectively non-sightings and the cause of the Airprox.

In trying to assess the risk Members were torn between there being an actual collision possibility or the lower category of safety not being assured. Luck had certainly played some part, with Hawk(A) pilot extending downwind, towards the RW31 IP at an arbitrary level 250ft above Hawk(B) which was maintaining 1200ft on the Mona QFE. The ac passed in level flight with no pilot inputs consciously to select or increase the separation, but the vertical separation was 250ft, which may have had an impact on the crews' visual acquisition. In the end Members agreed that, while there may have been an actual collision risk, it was certain that the ac passed with margins reduced to the point that safety had been compromised.

PART C: ASSESSMENT OF CAUSE AND RISK

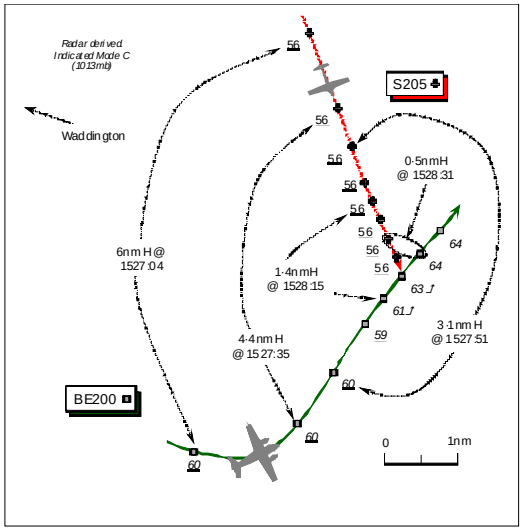
Cause: Effectively non-sightings by the pilots of both ac.

Degree of Risk: B.

AIRPROX REPORT NO 2011124

Date/Time: 15 Sep 2011 1528Z
Position: 5308N 00021W
(6nm ESE Waddington - elev 231ft)
Airspace: Lincolnshire AIAA (Class: G)

	Reporting Ac	*Reported Ac*
Type:	BE200 King Air	Marchetti S205/R
Operator:	HQ Air (Trg)	Civ Pte
Alt/FL:	FL60	FL55
Weather:	VMC CLAC	VMC CLAC
Visibility:	50km	>10km
Reported Separation:	300ft V/½nm H	>500ft V/½nm H
Recorded Separation:	300ft V/0·5nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE BE200 KING AIR PILOT, a QFI, reports he had departed from Cranwell on a conversion training sortie and was inbound to Waddington under a TS from Waddington APPROACH on 250·85MHz for an instrument approach for training. The assigned squawk was selected with Modes C and S; TCAS is fitted. The ac has a blue/white colour-scheme and the HISLs were on.

After the radar pick-up, heading 040° at a position about 6nm SSE of Waddington A/D, VMC in a level cruise at FL60 at 170kt, APP reported a contact in their 10 o'clock at a range of 5nm 300ft below them. They could not see the ac but noted its position on the TCAS display. The cloud tops appeared to be about 1000ft to 1500ft below them. Then he thought APP instructed them to turn 20° L onto a heading of 020° that would take them closer to the previously mentioned traffic. They were still unable to see the other ac but then TCAS enunciated a TA. Very quickly afterwards TCAS enunciated an RA, demanding a climb at 6000ft/min. Full power was selected and the climb initiated; APP was advised of the TCAS RA and that they were climbing. Once clear of conflict, they descended back to FL60.

From the ac's TCAS display, he estimated the minimum separation was ½nm horizontally and 300ft vertically with a 'medium' Risk of collision. An Airprox was reported to Waddington APP on RT.

THE SIAI MARCHETTI S205 20/R PILOT reports he had departed from Milfield glider launch site and was in transit to Crowland glider launch site under VFR whilst in receipt of a BS from Waddington LARS (ZONE) on 127·35MHz. The assigned squawk was selected with Mode C on. The HISLs were on and the ac has a white/ green colour-scheme.

Southbound at 120kt in a level cruise at FL55 in clear air, the low-wing twin was spotted at 2 o'clock about 2nm away, more than 500ft above them, as it crossed from R - L ahead; no avoiding action was required.

He did not really see a reason to report this Airprox as the crew of the other ac had them on their TCAS and he had sighted the twin visually. He commented that he has always found Waddington ATC to be very helpful and they provide a good service.

THE WADDINGTON APPROACH CONTROLLER (APP) reports that the BE200 crew free-called APP at FL60. After receiving initial details he called TI on traffic – the SM205 - 4nm N of the BE200 tracking S 400ft below. After validating the BE200's Mode A and placing the flight under a TS, he called the traffic again, now 3nm to the N, tracking S, still indicating 400ft below on Mode C. At this point the BE200 pilot reported climbing due to a TCAS avoid.

BM SAFETY MANAGEMENT reports that a transcript of the APP RT frequency was available for his the investigation but a report and transcript for ZONE were not submitted by the unit, whose investigation states that due to the medium to high workload of the controller, no TI was passed to the S205 about the BE200.

The BE200 was on recovery to Waddington in receipt of a TS from Waddington APP; the Marchetti S205 pilot was operating VFR in receipt of a BS from Waddington ZONE (LARS). At 1527:06, the BE200 crew called APP for recovery 5.5nm SE of Waddington, tracking 115° at FL60, *"Waddington Approach request radar recovery with information kilo".* The S205 was 4.8nm ENE of Waddington, tracking 160° at FL56. At 1527:11, the BE200 commenced a L turn, rolling out onto a heading of 040° at 1527:29. Within an initial exchange of RT calls the BE200 pilot stated, *"..simulated asymmetric request radar pick up for ILS..".* When issued a squawk of A3616 and asked what type of ATS was required the BE200 pilot replied at 1527:30, *"request traffic service heading 0-4-0 flight level 6-0"*. Before APP formally identified the BE200, at 1527:37, the controller passed TI to the crew about the S205 stating, "*traffic believed to be you has traffic north 4 miles, southbound last indicated 400 feet below*." The BE200 crew did not acknowledge this TI but stated in reply that they were, "*on your 150 turn 11 miles*." On radar the BE200 is WAD 130° - 6 nm. At 1527:49, APP replied stating that the BE200 was identified, applied a TS and updated the TI on the S205, "*previously reported traffic north 3 miles southbound 4 hundred feet below*." This TI was acknowledged by the BE200 crew, stating that they were, "*looking*." At 1528:01, the BE200's SSR Mode C indicates FL059, reducing the indicated vertical separation between the BE200 and the S205 to 300ft before the tracks cross. The next transmission on the freq was at 1528:12 when the BE200 crew advised APP, "*climbing TCAS avoid*." The CPA is shown at 1528:31, after the BE200 crew's response to the TCAS RA had resolved the confliction, with 0.5nm horizontal separation and 800ft vertical separation indicated on Mode C. The BE200 crew reported clear of conflict and, *"..happy to descend now to 6-0"* at 1528:39

In his written report the S205 pilot states being visual with the BE200 in his 2 o'clock at a range of about 2nm – equating to about 1528:05 on the radar recording – and estimated minimum separation as at least 500ft vertical and 0.5nm horizontally. The BE200 crew did not see the S205, although they 'noted its position on TCAS' and estimated minimum separation as 300ft vertically and 0.5nm horizontally.

The BE200 crew report that APP issued a vector turning the ac left 20° onto a heading of 020° towards 'the previously mentioned contact'. However, this turn was issued at 1529:01, after the Airprox and the crew had reported that they were clear of confliction having followed the TCAS RA so APP did not turn the BE200 into conflict with the S205.

From an ATM perspective, APP provided the BE200 crew with accurate TI. Whilst the BE200 crew was unable to acquire the S205 visually, the remaining safety barriers – TCAS and the S205's ability to 'see and avoid' – operated effectively to resolve this confliction in Class G airspace.

HQ AIR (TRG) comments that both ac had good information about each other, one visually and the other from accurate TI and TCAS information. However, no action was taken by either party until prompted by TCAS. It should have been apparent to the BE200 crew that a TCAS RA was imminent and would have had to have been followed so it may have been prudent to have taken steps to avoid the RA being triggered. In the event, the fact that the S205 pilot, who was required to give way, reports being visual from 2nm suggests that there was no risk of collision.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The Board was dismayed that no report had been provided by the Waddington ZONE controller (LARS) who was providing a BS to the B205 pilot, and that the ATSU had not impounded the ZONE RT recording so no transcript was available either. The BM Safety Management Advisor agreed a report and transcript should have been provided. The Board was concerned that aspects of the ATS provided to the B205 pilot were not able to be scrutinised by Members to substantiate whether it had a bearing on this Airprox. Whilst there was no reason to doubt the veracity of the Unit's assertion that ZONE did not provide a warning about the presence of the BE200 to the B205 pilot because of a reported 'medium to high' workload, there was no means of verifying this view independently. Indeed an experienced controller Member raised a point on aspects of the ATS provided by Waddington ATC that might have been resolved with the benefit of a report from ZONE or a landline transcript; viz,

whether any liaison had been effected between APP and ZONE, or whether APP was expecting to fulfil his responsibilities under ATSOCAS by simply issuing TI to the BE200 crew. The Member was concerned that ATSOCAS was being applied too rigidly and enquired if any attempt had been made to co-ordinate or liaise between the two controllers in an effort to forestall this occurrence, both ac being under the control of the same ATSU. No formal co-ordination had been attempted the Board was told, but it was not clear if APP, who was only working the BE200, had liaised with ZONE who was apparently quite busy. Military controller Members opined that APP had fully discharged his responsibilities for the provision of a TS under ATSOCAS and the potential for criticism as a result of 'over control', had he done more, was discussed. Whilst the Unit said no TI was given by ZONE because of the controller's workload, ZONE could have proffered a warning to the S205 pilot under a BS if ZONE had considered there was a risk of a collision. None was alluded to in the S205 pilot's narrative, but a warning might have been prudent when the ac were only 300ft apart. However, the S205 pilot says he spotted the BE200 at a range of 2nm away at 2 o'clock, but that did not quite gel with the radar recording as the BE200 was a lot further away when it was in his 2o'clock. Nevertheless, the S205 pilot flying VFR, as recommended at the correct quadrantal, was evidently unconcerned as the BE200 crossed ahead and above – climbing in response to the TCAS RA– hence he took no action to avoid it himself. However, this Airprox illustrated that although pilots might consider separation to be satisfactory, there was still potential to trigger RAs in TCAS-equipped ac at these distances. Furthermore, the BE200's momentary descent to an indicated FL59 whilst crossing ahead of the S205 would also have been a factor.

As it was, APP was in the process of identifying the BE200 and establishing the crew's requirements when the conflict arose. It was unfortunate the BE200 crew, flying IFR, were not at the correct quadrantal level when they steadied on their new heading; conversely, it is also fortunate that they did not descend to FL50, which could also have precipitated an RA. Controller Members recognised that APP had shrewdly issued initial TI about the S205 quite soon, about 30 sec after the crew called and moments after the crew steadied on their own selected heading of 040°. Indeed the Board recognised that no vectors had been issued by APP during the period before or during the occurrence when the crew were under their own navigation. Therefore, the BE200 pilot was mistaken in his impression that APP had instructed them to turn L into closer proximity with the S205. Once APP had agreed to provide the TS requested by the BE200 crew, where plainly they remained responsible for their own separation, another transmission of TI was immediately issued when the S205 was about 4nm away. Members were somewhat concerned that the BE200 crew had not made better use of this TI and noted the Command's comment that the BE200 crew did not attempt a manoeuvre that might have forestalled the RA. Once the RA was triggered the crew was duty-bound to follow the demanded CLIMB RA which increased the vertical separation successfully to 800ft as the BE200 crossed ahead of the S205 at the point of minimum range. This, coupled with the S205 pilot's earlier visual sighting prevented a serious situation from developing. In assessing the Cause, the Board was mindful that in Class G airspace there are no stipulated separation criteria. Notwithstanding that the BE200 crew was required to respond to the TCAS RA, since the S205 pilot was visual throughout, Members assessed the encounter as a sighting report (TCAS). Whilst the criteria for reporting the Airprox had been met, the BE200 pilot would be reassured to learn that APP had applied the ATS requested and in the Board's view, the investigation had revealed that normal safety standards and parameters were not contravened.

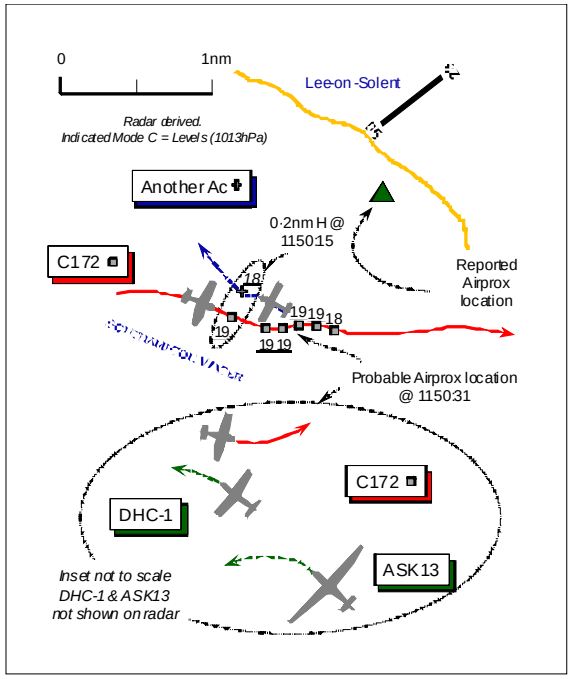
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Sighting Report (TCAS).

Degree of Risk: E.

AIRPROX REPORT NO 2011125

Date/Time:	24 Sep 2011 1150Z (Saturday)	
Position:	5047N 00113W (1½nm SSW THLD RW05 Lee-on-Solent - elev 32ft)	
Airspace:	London FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	DHC-1 & ASK13 Glider	C172
Operator:	Civ Club	Civ Pte
Alt/FL:	1700ft↑ aal	2000ft QNH
Weather:	VMC CLOC	VMC CLBC
Visibility:	15-20km	8km
Reported Separation:	150ft V/500m H	~200ft below
Recorded Separation:	Not recorded	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PILOT-IN-COMMAND OF THE DHC-1 CHIPMUNK 22 TUG & ASK13 GLIDER COMBINATION reports that the gliding club was conducting winch and aerotow glider launching from RW23 at Lee-on-Solent. The DHC-1 pilot was executing an aerotow launch of the ASK13 glider, piloted by a gliding instructor in the rear seat with a student pilot occupying the front seat; both ac were in contact with Lee RADIO on 118·925MHz. The DHC-1 is coloured blue/white; SSR is not fitted.

After take-off from RW23 the tug-glider combination climbed straight ahead to 500ft and about 200m off-shore, before making a 90° L turn to head towards Browndown, a point of land about 2nm to the SE. On this SE'ly track both the tug pilot and the gliding instructor saw a light ac (LA) above them, about 2nm to the S heading NW. After allowing the LA to pass clear behind, the combination made a 180° R turn climbing through a height of about 1000ft, to return towards Lee-on-Solent on a heading of 315° at 60kt tracking about ½nm off-shore. After about 1½-2min on this NW'ly track at about 1700ft aal the instructor in the ASK13 glider – the PNF - saw an ac at 11 o'clock, but he was unsure of its aspect, suspecting that it might be the previously sighted LA. After a second or two, the ASK13 instructor realised the LA was closing rapidly so he immediately released the glider from the DHC-1 and performed a climbing L turn; there was insufficient time to advise the tug pilot on RT. Upon release, the tug pilot lowered the nose and for the first time saw a red and white high-wing aeroplane, similar to a C172, in his 1 o'clock about 500m away some 150-200ft below him flying on a reciprocal heading so he turned L 10° to a remain on a parallel track. Both the tug pilot and ASK13 instructor immediately reported an Airprox to Lee RADIO. The unknown LA was not in contact with Lee RADIO. The Risk was not assessed.

THE CESSNA F172H (C172) PILOT reports he was flying VFR from Bristol to Goodwood and was in receipt of a BS from SOLENT RADAR; a squawk of A3663 was selected with Mode C on. His aeroplane is coloured white.

He had transited beneath the Solent CTA, below 2000ft QNH along the Stoney Cross – Beaulieu Corridor, before following an E'ly heading from Beaulieu climbing to 2000ft after clearing the end of the Solent CTA. His routeing took him to the S of Lee-on-Solent and the Glider Launching Site marked on the 1:500,000 VFR chart (confirmed by GPS). SOLENT RADAR passed a warning of another ac, which was spotted and avoided by a slight deviation in course to the S for additional clearance as the opposing traffic deviated slightly to the N. Very shortly afterwards, heading 100° at 105kt in a level cruise at 2000ft (1014mb), a glider tug appeared from below his ac at about 3 o'clock (he did not specify the distance). The blue tug ac appeared to be pitching up steeply and then banked away towards the S, so to avoid the tug he banked towards the N as soon as he saw it. The glider passed by in

his 2 o'clock several hundred feet below and some distance away from his aeroplane. SOLENT RADAR gave no advance warning of this traffic. He assessed the Risk as 'low'.

UKAB Note (1): The UK AIP at ENR 5-5-1-4, notifies the Glider Launch Site at Lee-on-Solent A/D as active every day from Sunrise to Sunset. Aerotow and winch launching is notified to 2000ft above the aerodrome elevation of 32ft amsl.

ATSI reports that the C172 pilot had departed Bristol International for a flight to Goodwood and was in receipt of a BS from SOLENT RADAR on 120.225MHz.

The Southampton 1150Z METAR: 21005KT 170V240 9999 FEW020 SCT048 17/12 Q1014.

The C172 pilot called Solent RADAR and at 1136:10, the flight details, position, level and intentions were passed. A BS was agreed, the pilot instructed to squawk A3663 and the QNH read-back correctly.

The C172 was instructed to remain clear of CAS and, having passed the Stoney Cross VRP, routed around the southern edge of the Southampton CTR. The C172's SSR was validated and verified by the Solent RADAR controller at 1142:20.

At 1149:40, as the C172 was mid-Solent, N abeam Cowes, the Solent RADAR controller passed TI on an unknown LA [not the tug-glider combination] ahead of the C172 by 1.5nm, tracking NW at an altitude of 1900ft. The C172 pilot called visual with this ac at 1149:50. The unknown ac was not transmitting any Mode S identification information and remains unidentified.

The C172 continued on a course towards the Spinnaker Tower, Portsmouth, indicating 1900ft Mode C (1013mb). At 1151:19 the C172 crossed the coast at Browndown Point.

The reported Airprox was not visible on the available surveillance replay and, given the lack of transponder and initial low-level manoeuvring of the DHC-1, it is possible that there was no position indication symbol displayed to the SOLENT RADAR controller. Solent primary surveillance radar is provided by a Watchman 10cm radar sited on Southampton Airport; SSR is supplied by the Pease Pottage Radar. The primary surveillance information from SOLENT RADAR was not available for this investigation.

It is likely that, as the C172, heading SE'ly, crossed with another ac on a NW'ly course, the C172 was not clearly visible to the DHC-1 pilot. Cloud in the area was FEW and SCT which, when combined with the white colour-scheme of the C172, might make visual acquisition of the ac difficult. The DHC-1 pilot executed the 180° R turn after the unknown ac on a NW'ly course cleared astern. Before doing this the DHC-1 pilot had not seen the C172 astern as they were flying towards the same land feature.

There is no requirement for SOLENT RADAR to be informed of traffic activity at Lee-on-Solent. Manual of Air Traffic Services Part 2 (Southampton) Edition 1/11, 3 May 2011 (NATS) Section 4 paragraph 3.10 notes to unit ATCOs that:

'there are numerous airspace restrictions and obstacles within the proximity of the airspace under their control and..ATCOs are to have an awareness of those relevant to the normal operation of the unit.'

Under a BS a controller with access to surveillance derived information may issue a warning to a pilot if it is considered that a definite risk of collision exists.

The Airprox occurred in Class G airspace when the DHC-1 pilot turned and climbed into proximity with a previously unseen C172.

Contributory to the incident was:

Another ac in the vicinity that may have initially masked the C172's presence.

The potential difficulty of visually acquiring the white C172 against the prevailing cloud and into sun.

UKAB Note (2): The LAC Swanwick radar recordings do not illustrate this Airprox as the DHC-1 Chipmunk 22 tug and ASK13 glider are not shown at all, either individually or as a combination. However, the C172 is shown maintaining 1900ft Mode C (1013mb) passing abeam another ac at 1150:15, that is probably the LA seen by the pilots involved on a NW'ly course before the Airprox occurred. The C172 makes a short L turn at 1150:31, 1·7nm SSW of Lee-on-Solent, before reversing back on course, which may be indicative of the pilot's avoiding action L turn upon sighting the DHC-1 and ASK13. The C172 then continues on track for the Spinnaker Tower VRP at Portsmouth Harbour. At an indicated 1930ft QNH (1014mb), the C172's Mode C suggests the ac was in the order of 200ft above the DHC-1 tug pilots reported equivalent altitude of 1732ft amsl.

HQ NAVY COMMAND comments that whilst the Gliding Club operates under the rules and assurance of the BGA, Navy Command HQ maintains an overview of the operation of the club. The report suggests that all parties involved did everything required of them and that the Airprox was the result of late sightings of ac that are difficult to spot due to their colour schemes and definition against the cloud cover and sun.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

Although not compelled to do so, the controller had helpfully provided a warning to the C172 pilot about the other ac shown to be in the vicinity. Although he was only providing a BS, SOLENT might also have warned the C172 pilot about the DHC-1 and glider combination if the controller had been aware of it so it is unfortunate that the DHC-1 is not fitted with SSR as this would make it more conspicuous to radar-equipped ATSUs such as SOLENT Radar. The BGA Member reaffirmed the BGA's recommendation to fit SSR to aerotow ac where possible for this purpose. When seen, the C172 pilot had elected to avoid the other ac by turning to the S, unfortunately bringing his aeroplane closer to the tug-glider combination that was at that stage unseen. Nevertheless, it was clear from the C172 pilot's report that he subsequently saw the DHC-1 in his 3 o'clock as it appeared from below his aeroplane, just as the instructor pilot in the glider released the tow and about the same time as the DHC-1 pilot saw the C172 and turned away. The C172 pilot had a responsibility to remain clear of the tug-glider combination under the RoA, but could only do so if he saw it in time. Here it was plainly the glider instructor and the DHC-1 pilot that had initiated avoiding action beforehand. The Members concluded that a late sighting by the C172 pilot was part of the Cause.

Earlier, the DHC-1 pilot had taken account of the other ac before he turned the combination onto its NW'ly heading, but was unaware of the conflict that would develop with the C172 when he turned about. Nevertheless, it was there to be seen in the prevailing good visibility on the inside of the R turn as the DHC-1 pilot turned about. The BGA Member highlighted the limited visibility from the DHC-1's cockpit whilst towing a glider; the high nose-up attitude whilst towing is not conducive to an efficient all-round scan and consequently it is imperative to weave the aeroplane to clear the airspace directly ahead of the nose. The Member explained that this inherent nose-up attitude might be why the the glider instructor spotted the C172 before the tug pilot, who was the PIC of the combination. The instructor PIC would, however, have been focused on what his student was doing as an aerotow demands concentration, so it was fortunate that the instructor spotted the C172 in time to release his glider from the tug and initiate a climbing turn to the L. This not only ensured he could avoid the C172, but also allowed the tug pilot greater freedom of manoeuvre if needs be. As it was, as soon as the weight came off the tow and the DHC-1 pilot lowered his aeroplane's nose, he saw the C172 in his 1 o'clock about 500m away, some 150-200ft below him he reports. Members agreed the other part of the Cause was a late sighting by the DHC-1 tug pilot.

Because of the absence of radar data on the DHC-1, the relative geometry could not be ascertained independently. Although the C172's Mode C suggests the ac was in the order of 200ft above the DHC-1 tug pilot's reported equivalent altitude of 1732ft amsl when the Airprox occurred, the DHC-1 pilot also reported the C172 to be below his aeroplane when he saw it. As the C172 pilot says the tug/glider appeared from below it might be that the DHC-1 had already climbed up through the C172's altitude when the tug pilot saw the C172 but this could not be resolved with certainty. Nevertheless, robust avoiding action was not apparently required by the DHC-1 tug pilot with only a 10° L turn necessary to remain on a parallel track and maintain horizontal separation at a minimum of 500m. This convinced the Members that no Risk of a collision had existed in these circumstances.

AIRPROX REPORT No 2011125

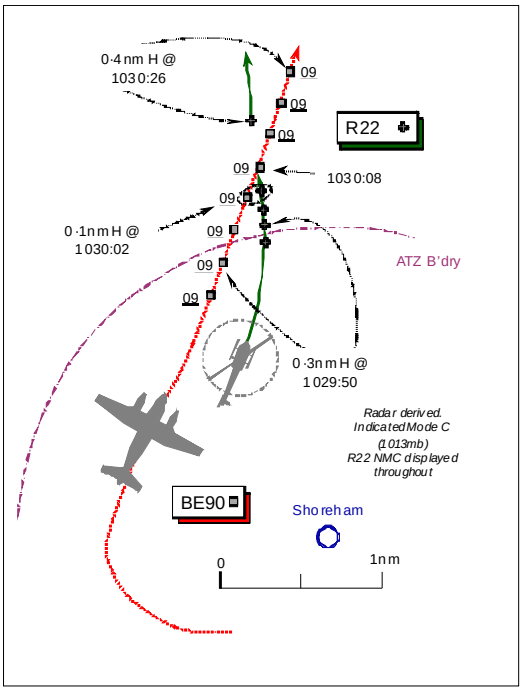
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Late sightings by the DHC-1 and C172 pilots.

Degree of Risk: C.

AIRPROX REPORT NO 2011126

Date/Time:	24 Sep 2011 1030Z (Saturday)	
Position:	5052N 00018W (2·4nm N of Shoreham Airport - elev 7ft)	
Airspace:	London FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	R22B	BE90
Operator:	Civ Pte	NK
Alt/FL:	650ft↑	NK
	QNH (1014mb)	NK
Weather:	VMC CAVOK	NK NK
Visibility:	>10km	NK
Reported Separation:		
	80-100ft V/nil H	NK
Recorded Separation:		
	<0·1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE ROBINSON R22B HELICOPTER (R22) PILOT reports that he had departed from Shoreham on a local 'hours building' VFR flight with a passenger who also has flight experience. He was in communication with Shoreham APP on 123·150MHz under a 'controlled' ATS. A squawk of A7000 was selected with Mode C on, he thought. [However, no Mode C was evident on recorded radar throughout the incident.] Neither TCAS nor Mode S are fitted. His helicopter has a dark-blue colour-scheme; the HISLs were on.

After a 10-15minute delay between his initial call and a departure clearance being given, he lifted and hover-taxied to point X-ray, whence he departed into a SW'ly wind with a R turnout to the N, crossing RW20 and climbing. APP had given him a 600ft height limit in the zone which he adhered to. Shortly after crossing the ATZ boundary at the cement works heading N, following his post take-off cockpit checks, he began to reduce airspeed and pull in power to begin his accent to his planned cruising altitude of 1200ft. Climbing through 650ft QNH (1014hPa) at an IAS of 70kt, he suddenly noticed a BE90 King Air directly O/H flying from directly astern straight and level about 80-100ft above his helicopter, as estimated by himself and his passenger at the time of the Airprox. He lowered the collective to avoid the BE90, which then began a turn to the R. He assessed the Risk as 'high', but following the Airprox carried on his flight 'as normal', routeing N towards Dunsfold A/D before returning to Shoreham. On completion of his post-flight documentation, he spoke to two instructors who advised him to call ATC on the telephone to report the Airprox, which he did.

UKAB Note (1): Despite repeated requests from the UKAB Secretariat and several indications that an account would be provided, to date the Beechcraft King Air BE90L (BE90) pilot has not submitted a report.

THE SHOREHAM COMBINED AERODROME AND APPROACH CONTROLLER (ADC) reports that the runway in use was RW20. The R22 had cleared to the N VFR when the BE90 pilot, operating VFR, in the RH cct was told to extend downwind. The BE90 pilot asked to turn R base and was given permission to do so, whilst the ac was at the ATZ boundary. The R22 was ascending from 600ft also at the ATZ boundary. The King Air descended in the cct for a 'touch and go' and the two ac passed with about 100ft vertical separation. TI was not issued.

ATSI reports that the Airprox occurred at 1030:06UTC, 2.4nm to the NNW of the Shoreham Aerodrome Reference Point (ARP), within Class G airspace and just outside the Shoreham ATZ, which is a circle, radius 2nm, centred on RW02/20 and extending to 2000ft above the aerodrome elevation of 7ft.

AIRPROX REPORT No 2011126

The pilot of the R22 helicopter was departing from Shoreham to the N on a local VFR flight. The BE90 King Air was operating VFR in the right hand visual cct for RW20, in order to complete a pre-arranged requirement to film the ac.

The Shoreham controller was operating a combined Aerodrome and Approach Control position, without the aid of surveillance equipment; his workload was assessed by ATSI as high. A left hand traffic pattern at 1100ft aal was also in use on RW20, with helicopter operations up to 600ft aal on the W side of the A/D. Aircraft were joining overhead at 2000ft aal and the controller was also utilising 1600ft for some ac joining downwind. The controller had also agreed a departure from RW13. The BE90 was instructed to operate in the right hand circuit (RHC) for the filming exercise. The UK AIP page AD 2-EGKA-1-7 (29 Jul 10), paragraph 6, states:

c) Circuit heights are 1100ft aal for all runways.

d) Variable circuits at discretion of ATC.

e) Unless otherwise instructed ac joining the circuit will overfly the aerodrome maintaining 2000ft aal, until instructed to descend to circuit height on the inactive (dead) side of the runway in use and join the circuit by crossing the upwind end. Pilots should note that there would frequently be helicopters operating both 'liveside' and 'deadside' in the ATZ up to 600ft.

ATSI had access to NATS Ltd radar recordings provided by Swanwick, together with written reports from the R22 pilot, the controller and the ATSU investigation report. No report has been received from the BE90 pilot. To reflect the controller's busy workload, the number of RT transmissions between calls from the subject ac has been included in brackets.

The Shoreham 1020Z METAR: 18007KT 9999 SCT017 18/14 Q1014= (QFE 1014).

The BE90 had been operating the previous day and had arranged permission with the Shoreham controller to complete an hour's filming exercise, which involved the BE90 completing visual circuits whilst a film crew, located on the W side of the A/D, filmed the ac. The controller commented that he had hoped that the BE90 would start earlier than was the case, but no time had been agreed. The cct was active when the BE90 called for start with two slower ac in the left-hand circuit (LHC) for RW20. Because of the speed differential the controller decided to put the faster BE90 into a RHC.

At 1015:07, the BE90 was operating in the right-hand circuit for RW20, when the R22 helicopter pilot called for lift, *"..is an R 22 two P O B outside of* [Company] *request lift..and for a departure to the North for a local flight".* The controller was busy and responded, "[R22C/S] *just hold position there Break....."* The controller then cleared another ac for take off.

[26 transmissions in the next 1.5 minutes.]

At 1016:53, the BE90 pilot called, *"passed..downwind abeam"* and the controller replied *"and break* [BE90 C/S] *number 1 report final."* This was acknowledged, *"Roger will report final number 1* [BE90 C/S]".

[12 transmissions in the next 50 seconds.]

At 1017:50, the BE90 pilot reported on Final and was instructed to continue approach.

After a broken transmission the BE90 was cleared for a touch and go, "[BE90 C/S] *clear touch and go into the righthand circuit wind 1-7-0/7."* The BE90 responded, *"Clear touch and go.*"

[25 transmissions in the next 1.5 minutes.]

At 1019:34, the R22 pilot called, *"????? outside* [Company] *ready to lift for a northerly departure."* The controller replied, "[R22 C/S] *air taxi line up..correction cross 2-5 to X-ray*." The R22 pilot acknowledged, *"Lift and cross 2-5 to X-ray* [R22 C/S]".

[6 transmissions in the next 20 seconds.]

At 1020:03, the BE90 pilot reported, *"just passed downwind abeam."* The controller replied, *"Break* [BE90 C/S] *can* [you] *extend downwind on the right hand leg."* The pilot replied *"will extend.*"

[20 transmissions in the next 1 minute 20 seconds]

At 1021:30 the BE90 pilot called "[BE90 C/S] *are we clear for base"* and the controller responded *"not yet sir no".* The BE90 pilot responded, "*and say again...",* whereupon the controller transmitted, "[BE90 C/S] *and turn base now you'll be number 3 following 2 Cessnas on final."* The BE90 replied, *"Cessnas in sight turning base* [BE90 C/S]".

[3 further transmissions.]

At 1021:58, the R22 pilot called ready and was asked to hold position.

At 1022:12, the controller transmitted to an ac which had shut down on the taxiway. The controller indicated that this had been a distraction and required the oncoming controller to delay taking over, in order to arrange for the ac to be moved off the taxiway.

[11 transmissions in the next 36 seconds.]

At 1022:56, the BE90 pilot called on a long final and was instructed, "[BE90 C/S] *roger number 2 following the Cessna ahead who's making a touch and go."* The pilot acknowledged *"Roger following the Cessna.*"

[19 transmissions in the next minute.]

At 1024:12, the controller transmitted to another ac followed by, *"...break* [BE90 C/S] *clear touch and go into a right hand circuit wind 1-8-0/7."* The BE90 pilot replied, *"Clear touch and go* [BE90 C/S]".

[21 transmissions in the next 1 minute 10 seconds.]

At 1025:25, the R22 called again, "[R22C/S] *at X-ray an ready for departure."* The controller replied, "[R22C/S] *hold position."* The pilot acknowledged, "*Holding position."* The controller gave another ac clearance for touch and go.

At 1025:39, an inbound ac requested an RNAV approach for RW20. This was approved by the controller and the pilot was asked to report at BITLI with a conspicuity squawk A0401 and a Procedural Service was agreed. This was acknowledged.

Another ac was cleared for a touch and go and shortly afterwards the BE90 was cleared to final number 1. An ac was instructed to line up RW20.

[7 transmissions.]

At 1026:52, the R22 was advised, "[R22 C/S] *after that Cessna on your righthand side clear for take off cross 2-0 to the west caution the 1 at..the slopeing ground."* The R22 pilot replied *"Clear for take off after the er the landing Cessna er caution the helicopter on Whiskey* [R22 C/S]".

[3 transmissions.]

The controller called the R22, *"take off now please immediate"* and the pilot responded, *"Clear for take off* [R22 C/S] *crossing 2-0 right turn out.*"

[2 transmissions.]

At 1027:26,the BE90 pilot called joining final and was instructed to continue approach.

The controller was waiting for the R22 helicopter to depart from X-ray across RW20 before giving a take off clearance to another light ac on the runway . The R22 had been slow to cross and the controller judged that there was not sufficient spacing to depart the light ac with the BE90 on short final.

At 1027:35, the controller transmitted, *"and* [BE90 C/S] *it's not gonna work go around not below 4 hundred feet maintain Runway centreline."* The BE90 pilot responded, *"er we're already below 4 hundred we're at 3 hundred feet going around on the centreline* [BE90 C/S]". The BE90 continued straight ahead and the R22 tracked N. The controller indicated that at this point the two ac were going in opposite directions and he did not consider that TI at this point was nesessary.

[27 transmissions.]

At 1029:28 the BE90 called, "[BE90 C/S] *ready for base."* The controller replied, "[BE90 C/S] *extend downwind you're number 3 number 2 is a Cherokee on leftbase."* The BE90 pilot acknowledged, *"extending number 3* [BE90 C/S]".

[At 1029:50, radar recordings show the R22 tracking NNW and leaving the ATZ with no Mode C level reporting evident. The BE90 was in the R22 helicopter's 8 o'clock position at a range of 0.3nm and converging maintaining 900ft (1013hPa) – about 930ft QFE.]

The controller indicated that at this point the R22 was no longer in sight and he considered that it was operating to the N of the ATZ. The controller acknowledged that TI in general terms would have aided the situational awareness of both pilots.

At 1030:08, radar recordings show the BE90, crossing ahead of the R22 from L - R at a range of less than 0.1nm. The BE90 was indicating 900ft Mode C - about 930ft QFE 1014. No report has been received from the BE90 pilot and it is not clear if the pilot had acquired the R22 visually as the BE90 extended downwind.

At 1030:18, the controller instructed the BE90, *".. turn base your traffic about to turn one and a half mile final."* The pilot replied, *"Roger* [BE90 C/S] *turning base.*"

[33 transmissions.]

At 1031:40, the BE90 reported, "[BE90 C/S]..*1 mile."* The controller replied, "[BE90 C/S] *continue approach the 1 ahead is..making a touch and go."* At 1032:01 the BE90 pilot was cleared for a touch and go.

The BE90 continued in the cct and at 1032:38, the R22 requested a frequency change to Farnborough.

Neither of the two pilots reported the incident to the controller on RT. The R22 pilot subsequently telephoned Shoreham ATC and reported the Airprox.

The controller stated that traffic levels started as light, increasing to medium and did not consider it was necessary to introduce traffic management measures. The controller agreed that RT recordings showed that traffic levels prior to the Airprox had gradually increased, but believed that TI had not initially been passed because the two ac were departing in opposite directions.

The controller was operating a combined Aerodrome and Approach Control position and commented that he was unable to split the positions because no staff were available.

As a result of this incident and the ATSU's own investigation, the Unit considered that workload was a factor and issued a MATS Pt2, Supplementary Instruction 01/2011, which states:

'This SI is to be read in conjunction with Shoreham MATS 2 and serves to remind all ATS staff of the need to regulate traffic as necessary in order to avoid a traffic overload situation. This may mean for example:

Saying no to circuits or landing circuit traffic.

No to IFR training traffic.

Holding traffic outside the ATZ, asking them to call in 10 minutes, etc.

Limiting the use of runways to ONE only and advising ac requesting other runways of the delay or unavailability of the runway at that time as per MATS Pt 1.

Limiting helicopter training if this impacts in a negative way.

Reducing the traffic as you need to subject to your experience levels, the weather, events etc.

The traffic situation at Shoreham is highly dynamic and the complexity depends on numerous factors such as weather, the number of students involved, the mix of slow and fast traffic, etc. As such it is not appropriate to lay down a fixed number of ac to be worked at any one time. ATCOs and ATSAs should use their judgement, taking into consideration both present and future situations as far as practicable.'

The Manual of Air Traffic Services (MATS) Part 1, Section 2, Chapter 1, paragraph 2.1, states:

'Aerodrome Control is responsible for issuing information and instructions to ac under its control to achieve a safe, orderly and expeditious flow of air traffic and to assist pilots in preventing collisions between:

a) ac flying in, and in the vicinity of, the ATZ;

b) ac taking-off and landing.'

The controller was operating a complex cct pattern whilst operating a combined aerodrome and approach position. Left and right hand ccts to RW20 were in use. The controller allowed a departure from RW13 and as traffic levels and his workload reached a high level, the controller accepted instrument traffic for an RNAV approach. A parking ac had shut down on the taxiway, which was a distraction and required the oncoming controller to leave the Tower to resolve the issue.

This experienced Shoreham controller believed he was accustomed to handling such levels of traffic. Whilst the controller believed that the workload was only medium, ATSI considered that workload was excessive and a significant factor in the controller's ability to recognise the potential for conflict and the need for pertinent TI. An excessive workload can result in a situation when an overworked controller may: have difficulty in maintaining situational awareness; overlook a developing unsafe situation; make errors of judgement; become confused or be unable to cope with a sudden increase in workload. The traffic levels at Shoreham are affected by weather, seasonal factors, weekends, training and instrument training requirements, runway in use and helicopter operations. Forward planning is essential in identifying busy periods and determining the optimum traffic management measures, rather than reacting to circumstances, when it may be too late.

Notwithstanding the fact that the controller did not pass TI, both pilots were aware that the cct was busy. It is not clear why the two ac did not acquire a visual sighting of each other. The CAA Safety Sense Leaflet 13a (June 2005), which is based on the ICAO Circular 213-AN 130, states:

'See-and-avoid' is recognised as the main method that a pilot uses to minimise the risk of collision when flying in visual meteorological conditions. 'See-and-avoid' is directly linked with a pilot's skill at looking.'

The Rules of the Air Regulations (2007), Section 4, General Flight Rules, states:

'Avoiding aerial collisions

Rule 8 (1) Notwithstanding that a flight is being made with air traffic control clearance it shall remain the duty of the commander of an ac to take all possible measures to ensure that his ac does not collide with any other ac.

Converging

Rule 9 (3) …when two ac are converging in the air at approximately the same altitude, the ac which has the other on its right shall give way.'

The Shoreham controller's ability to provide an appropriate level of service to the ac under his control was affected by the increased levels of traffic, workload and RT loading. The controller approved multiple runway departures, with two directions of cct pattern on RW20, together with helicopter operations at 600ft. This allowed a complex situation to develop with RT loading reaching saturation levels and resulted in the controller not detecting the potential for conflict. The controller did not pass traffic information to either ac that would have aided the situational awareness of both pilots, in order to assist them in preventing collision whilst operating within, or in the close vicinity of the ATZ.

The following were considered to be contributory factors:

The controller was not aware and did not recognise that traffic levels were increasing to the point when traffic management measures were appropriate.

The two ac were travelling in opposite directions after departure [the R22 to the N and the BE90 executing the go-around on RW20. When the BE90 turned downwind, the R22 helicopter was no longer visual to the controller.

The R22 helicopter had crossed the ATZ boundary to the north and the BE90 pilot was instructed to extend downwind which took the ac outside the ATZ.

Notwithstanding the absence of TI, both pilots were operating in Class G airspace outside the ATZ [but in the vicinity of the ATZ boundary]. The R22 helicopter pilot did not acquire the BE90 ac visually, until they were in close proximity. It is not known if the BE90 pilot sighted the R22 helicopter.

ATSI Recommendations:

a. It is recommended that the ATSU in consultation with SRG, review the levels of staffing and service provision, to ensure that Aerodrome and Approach control services can be provided from separate position when warranted.

b. It is recommended that the ATSU in consultation with SRG, ensure that the controller is suitably apprised of the issues raised by this Airprox.

c. It is recommended that the ATSU review the guidance for operational staff in predicting, managing and limiting traffic levels, with an emphasis on the human factor effects of overload and highlighting the need for early planning and preventative measures.

d. It is recommended that the ATSU remind controllers of the requirement to pass TI to ac flying in and in the vicinity of the ATZ to achieve a safe, orderly and expeditious flow of air traffic and to assist pilots in preventing collisions.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the R22 pilot (see Post Meeting Note, below), transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controller involved and from the appropriate ATC authority.

The Board discussed the workload experienced by the combined ADC/APP controller and agreed that he was overloaded. Members recognised that the onset of an overload situation can be insidious, once reached it is a difficult situation to resolve singlehanded and it was clear there were no additional personnel available to assist. Although the oncoming controller might have been able to help when he arrived in the VCR, he had been sent to deal with the ac that had shut down on the taxiway adding another distraction to the overloaded ADC who was operating a very complex traffic scenario indeed. The ATSI advisor mentioned the recommendations made to address the staffing levels at Shoreham and that manning levels are being closely scrutinised by CAA SRG, especially the issue of 'splitting' the ADC and APP positions when appropriate. The Board was briefed that the ADC now recognised that traffic management measures should have been implemented to reduce the traffic flow to more manageable proportions and the SI issued by the Unit had illustrated what might be done.

Thus the Board understood the background to this Airprox was one of a large amount of traffic, flying diverse patterns on the aerodrome when the ADC instructed the BE90 to extend downwind in the RH cct as No3 in the

sequence and follow another aeroplane in the LH cct. Noting that 'variable' ccts are specified in the AIP, a pilot Member who operates at Shoreham advised that the RH cct to RW20 is very rarely used for fixed-wing ac and therefore the R22 pilot might not have encountered traffic here before. Because the faster BE90 was overhauling his helicopter from directly astern, the R22 pilot would not have been able to see it at all until it was at close quarters above his helicopter. Thus the appearance of the BE90 overhead would have come as a surprise unless the R22 pilot had been paying close attention to the RT and developed his SA from the instructions passed by the ADC to the BE90 pilot; the R22 pilot's account gave no indication at all that he was aware of the other ac from the RT transmissions and Members agreed that, given the rapidity and quantity of RT, it would have been extremely difficult for the R22 pilot to develop an accurate mental air picture and anticipate the appearance of the BE90 above him. Moreover, even if he had detected the ADC's extend downwind instruction to the BE90 pilot, without TI, the R22 pilot had no way of knowing the BE90 pilot would fly outside the ATZ. It was not unreasonable, therefore, that with no prior warning of other ac in the vicinity that the R22 pilot should initiate his climb clear of the ATZ to his transit altitude of 1200ft. However, a warning call, if he could get in on the RT, advising that he was leaving the ATZ and initiating his climb might have been appropriate and prompted the BE90 pilot to look for the R22.

In the absence of an account from the BE90 pilot (see Post Meeting Note), it was not clear to the Board whether he had seen the R22 helicopter before he overtook it some 80-100ft directly below him, the R22 pilot estimated. The Board was aware that the R22 helicopter's small size makes it difficult to see, so tail-on, below the horizon and against the landscape, it would have been very difficult to acquire indeed, especially with no prior warning of its presence. The radar recording reflected that both ac were outside the ATZ, some 2·4nm N of the A/D when the BE90 passed within 0·1nm – 185m – of the R22. It seemed inconceivable that the BE90 pilot would have flown this close if he had seen the small R22 and some pilot Members surmised that he had not seen it, suggesting that the Cause was: in the absence of TI, the BE90 pilot flew too close to the R22 which he may not have seen. However, the radar recording suggests that the vertical separation might not have been quite so close as the R22 pilot estimated; the BE90 maintained 930ft (1014hPa) throughout, 280ft above the R22 pilot's reported passing altitude of 650ft (before he lowered the collective and descended). It was not possible to resolve whether the BE90 pilot had seen the R22 or not and whilst the Board accepted that the lack of TI was part of the Cause, some Members perceived this to be a conflict at the boundary of the ATZ. The ATSI advisor suggested the BE90 pilot was alert to all that was going on in the cct. However, as No 3 in the pattern, the BE90 pilot would have been monitoring the No 2 closely to judge his interval in the pattern; the No 2 was in the opposite LH cct for RW20, so the BE90 pilot would have been looking cross-cockpit to starboard to spot it and possibly concentrating on this ac. Therefore, without TI from the ADC it was entirely feasible that he had not spotted the R22 before he overflew it and then turned R onto base-leg. Weighing all these factors carefully, the Board concluded that this Airprox had resulted because, in the absence of TI, the BE90 pilot overtook the R22 causing its pilot concern. Moreover, in these circumstances the Members agreed unanimously, that the safety of the ac involved had been compromised.

Post Meeting Note: A report was eventually received from the BE90 pilot on 24 Jan 2012, too late to inform the Board's discussions. It did not provide any additional information relevant to the Airprox and made no reference to his sighting the R22 during this cct.

PART C: ASSESSMENT OF CAUSE AND RISK

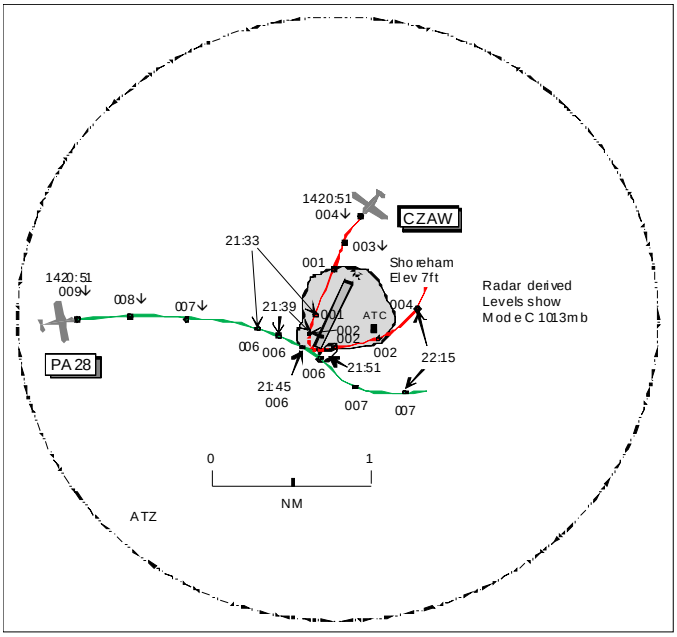
Cause: In the absence of TI the BE90 pilot overtook the R22 causing its pilot concern.

Degree of Risk: B.

AIRPROX REPORT No 2011127

AIRPROX REPORT NO 2011127

Date/Time:	27 Sep 2012 1422Z	
Position:	5050N 00018W (0·25nm SW Shoreham - elev 7ft)	
Airspace:	Shoreham ATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	PA28	CZAW SportCruiser
Operator:	Civ Club	Civ Pte
Alt/FL:	1100ft QFE	800ft↑ QFE
Weather:	VMC VCFG	VMC VCFG
Visibility:	>10km	5nm
Reported Separation:	300ft V/300m H	500ft V/0·5nm H
Recorded Separation:	*400ft V/<0·1nm H*	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PA28 PILOT reports flying a dual training sortie from Shoreham VFR and in communication with Shoreham Approach on 123·15MHz, squawking 7000 with Mode C. The visibility was >10km in VMC and the ac was coloured white/burgundy; no lighting was reported. They proceeded to join crosswind for RW20 as instructed by ATC at 1100ft QFE. Once established on crosswind, heading 135° at 100kt, the student reported "crosswind" and was told to report downwind. About 5sec after passing over the upwind end of the RW he heard the pilot in another ac call 'going-around'. A few seconds later the student spotted the ac, a SportCruiser, turning towards them from the go-around approaching from their LHS from underneath. The student attempted to point the ac out to him but he was unable to see it owing to his position, seated in the RH seat. At this point he took control and made a R turn to avoid the ac, estimating it passed 300ft below and 300m clear to their L. He assessed the risk as medium. At the time there was sea fog approaching the aerodrome slowly from the SE but it was still outside the aerodrome boundary.

THE CZAW SPORTCRUISER PILOT reports inbound to Shoreham VFR and in receipt of an Information service from Shoreham on 123·15MHz, squawking with Mode C. The visibility was 5nm flying into sun but clear of cloud and about 3nm clear of fog in VMC and the ac was coloured white/silver/red; no lighting was mentioned. He was going around having overshot his approach to RW20 in calm conditions with another ac in the O/H. He climbed out heading 200° at 80kt and turned L to commence a new circuit whilst visual with the other ac, estimating it passed 500ft above and 0·5nm clear on his R. No avoiding action was needed. He heard ATC asking the other pilot if he wished to file an Airprox but the pilot said that he would chat with ATC when on the ground. ATC did not ask whether he (the CZAW pilot) wished to report an Airprox, which gave him the impression that ATC considered the event to have been his fault. As far as he was concerned there was little chance of collision as he was visual with the other ac, which was several hundred feet above him. He suspected that the angle that ATC saw of the event made the ac seem closer than they were.

THE SHOREHAM ADC reports that the SportCruiser went around at approximately 300ft whilst the PA28 was on a crosswind join. The SportCruiser climbed rapidly into conflict with the PA28 whilst making an early L turn, apparently to avoid a fog bank. The PA28 turned sharply R to avoid the SportCruiser. Both ac subsequently landed safely.

Shoreham METAR EGKA 271420Z 15006KT 9999 3500SE VCFG FEW003 18/15 Q1029=

ATSI reports that the Airprox occurred at 1421:50, 0·25nm to the SSW of the Shoreham ARP, within Class G airspace and within the Shoreham ATZ, which consists of a circle, radius 2nm, centred on RW02/20 and extending to 2000ft above the aerodrome elevation (7ft).

The PA28 was operating on a local VFR flight from Shoreham and was in the process of joining the circuit in crosswind position for RW20.

The CZAW SportCruiser was VFR inbound from Baynards Park near Dunsfold and had already joined the cct with 2 other ac ahead, one of which was making an approach to land on RW13.

The Shoreham controller was operating a combined Aerodrome and Approach control position, without the aid of surveillance equipment. Workload was assessed by CAA ATSI as light - medium. RW20 was in use with a LH traffic pattern. The UK AIP page AD 2-EGKA-1-7 (29 Jul 10), para 6, states:

'c) Circuit heights are 1100ft aal for all runways.

d) Variable circuits at discretion of ATC.

e) Unless otherwise instructed aircraft joining the circuit will overfly the aerodrome maintaining 2000ft aal, until instructed to descend to circuit height on the inactive (dead) side of the runway in use and join the circuit by crossing the upwind end. Pilots should note that there would frequently be helicopters operating both 'liveside' and 'deadside' in the ATZ up to 600ft.'

CAA ATSI had access to RT and area radar recordings, together with written reports from both pilots, the controller and the ATSU investigation report.

At 1414:22 the SportCruiser pilot established contact with Shoreham, reporting 3nm N on QNH 1029, with information 'Mike'. The controller instructed the SportCruiser flight to join O/H at 2000ft, RW20 LH cct. This was acknowledged correctly by the SportCruiser pilot.

Due to sea fog offshore which was approaching the airfield from the S, the controller asked another ac's pilot to relay a message to the PA28 flight suggesting that it would be a good idea to land unless he wanted to divert to Goodwood. At 1415:45, the PA28 pilot responded, *"Thank you that's copied we are inbound we're just at Littlehampton at the moment two thousand feet*."

At 1415:51, the SportCruiser pilot reported O/H and the controller replied, *"(SportCruiser c/s) roger descend deadside report downwind Runway two zero lefthand circuit there are two aircraft ahead of you in the circuit*." The SportCruiser pilot acknowledged with c/s and at the same time another ac's pilot reported on final.

At 1418:12 the SportCruiser pilot reported late downwind and the controller instructed the flight, *"(SportCruiser c/s) thank you take up a righthand orbit you're number two to a cub in the one three circuit."* The SportCruiser pilot acknowledged with c/s.

At 1418:54, the PA28 flight reported, *"(PA28 c/s) P A twenty eight overhead Worthing Pier at two thousand feet request joining crosswind."* The controller responded, *"(PA28 c/s) join crosswind Runway two zero report established crosswind."* The PA28 pilot acknowledged, *"Report crosswind (PA28 c/s)."*

At 1419:12, the SportCruiser pilot reported on L base and the controller replied, *"(SportCruiser c/s) thank you report final Runway two zero you're number two number one is a cub on a quarter mile final for Runway one three*."

At 1419:57, the SportCruiser pilot called final RW20 and was instructed to continue approach and shortly afterwards was cleared to land, *"(SportCruiser c/s) clear to land Runway 20 surface wind's one four zero six."* The pilot replied, *"(SportCruiser c/s)."* The the controller repeated, *"(SportCruiser c/s) clear to land Runway 20"* and the SportCruiser pilot responded, *"Clear to land two zero*."

At 1420:51 the radar recording shows the SportCruiser on short final for RW20 and the PA28, 1·6nm W of the airfield approaching crosswind indicating FL009 (converts to an altitude of 1332ft on QNH 1029mb with 1mb equal to 27ft).

AIRPROX REPORT No 2011127

The ATSU investigation report indicated that the SportCruiser positioned poorly onto final and was too high, resulting in the go around.

At 1421:33 the radar recording shows the SportCruiser passing the mid-point of the RW. The PA28 is approaching crosswind at FL006 (converts to an altitude of 1032ft) with the SportCruiser in the PA28's 11 o'clock at a range of 0·4nm crossing L to R and indicating 500ft below.

At 1421:42, the SportCruiser pilot reported going around, *"(SportCruiser c/s) going around sorry screwed it up."* The controller acknowledged, *"(SportCruiser c/s) thank you report lefthand downwind Runway two zero there is an aircraft on a crosswind join above you."* The SportCruiser pilot replied, *"(SportCruiser c/s)*". The SportCruiser pilot's written report indicated that he was visual with the PA28 several hundred feet above.

[UKAB Note (1): The sweep at 1421:39 shows the PA28 maintaining FL006 (1032ft QNH) with the SportCruiser in its 11 o'clock range 0·2nm indicating FL002, 400ft below. The next sweep 6sec later at 1421:45 shows the PA28 crossing the upwind end RW20 at FL006 with the SportCruiser having faded from radar. Six seconds later at 1421:51 the radar shows both ac again, the SportCruiser at FL002 (632ft QNH), having made a sharp L turn, and now turning through heading 080° 0·1nm NE of the PA28 which is seen to be turning R and diverging, still maintaining FL006 (1032ft QNH). The CPA occurs between 1421:39 and 1421:51, whilst the SportCruiser has faded, and it is estimated to be <0·1nm H and 400ft or less.]

At 1421:53, the controller called the PA28 flight, *"(PA28 c/s) er Shoreham were you visual with that Sportcruiser that just cut you up.*" The PA28 pilot replied, *"er (PA28 c/s) we are visual.*" The controller responded, *"(PA28 c/s) er thanks that looked quite close erm would would you like to file an Airprox on that."* The PA28 pilot indicated that he would call ATC when on the ground.

At 1422:15 the radar recording shows the SportCruiser turning downwind for a short cct pattern indicating FL004(832ft). The PA28 continues for a normal cct pattern indicating FL007(1132ft). The 2 ac continued in the cct and landed without further incident.

The controller was aware of sea fog approaching from the SE and advised the PA28 pilot, who elected to rejoin. The 1420Z METAR was giving visibility to the SE as 3500m.

The SportCruiser pilot had already joined the cct. The ATSU and controller's written report indicated that the SportCruiser positioned poorly onto final and was too high on the approach, resulting in the go around. The controller passed TI to the SportCruiser pilot on the PA28 joining crosswind. The SportCruiser pilot's written report indicated being visual with the PA28 several hundred feet above.

It was not clear why the SportCruiser turned very quickly so soon after the go around into a very tight low-level cct. The ATSU investigation report suggested that this may have been to avoid the sea fog (base about 200ft). However radar recordings show the PA28 make a normal circuit pattern at 1132ft. The precise geometry and movement of the fog, the base and top of the layer was unknown. The SportCruiser pilot's written report does not mention turning to avoid fog.

The radar recordings show the SportCruiser was indicating 400ft below the PA28. The PA28 pilot's written report indicates 300ft and the SportCruiser pilot's report stated several hundred feet. It is likely that the controller and PA28 pilot were concerned, when the SportCruiser made a tight L turn below the PA28 into a short lower level cct. It was not clear why the SportCruiser pilot carried out this manoeuvre.

The incident is attributed to the SportCruiser going around and making a non-standard manoeuvre below the PA28, which caused the controller and PA28 pilot to be concerned about the safety and proximity of the 2 ac. The controller passed appropriate TI to the SportCruiser pilot, who in his written report indicated that he was visual with the other PA28 above, with little chance of collision.

The following were considered to be contributory factors:

The SportCruiser pilot was considered to have positioned poorly onto final resulting in the approach being too high, resulting in the go around.

The sea fog was likely to have been a factor in the SportCruiser pilot making the unusual early L turn into the cct.

The nature of the unusual turn and manoeuvre into a non-standard cct directly below the PA28 caused the controller and PA28 to be concerned.

CAA SRG FOI (GA) comments that it appears that the PA28 had priority as it was already establishing in the pattern formed by ac intending to land when it joined crosswind with the controller's permission. The SportCruiser's early turn exacerbated the situation; however, it is difficult to judge, from the information available, whether the pilot did so deliberately to position ahead of the joining PA28 in order to position in front of it in the cct or as a manoeuvre to avoid a conflict. Clearly the correct thing for the SportCruiser pilot to have done would have been to climb ahead to cct height or until he was well clear of the upwind end of the RW, altering to starboard if necessary to avoid the PA28, and then to have turned port onto the crosswind leg and fitted into the cct astern of it. We are aware that the performance characteristics of some of the latest Microlights and light sport ac mean that they can climb rapidly to cct height with a much steeper climb angle than earlier GA types and that this has the potential for conflict with ac joining the cct crosswind. We are publishing an article in the next edition of GASIL to address this. Although not entirely convinced that this incident merited an Airprox report, we wonder about the controller's relative attitude and behaviour towards the pilots of the 2 ac. Firstly the SportCruiser had been instructed to orbit late downwind because of an ac making an approach to another RW (13) from that which the SportCruiser was landing on. Whether this had an effect on the SportCruiser pilot's positioning on final approach to land on RW20 we can't judge but as the pilot, from his own admission, "screwed it up" to the extent that he needed to go-around, this cannot be ruled out. Having ac landing on 2 different RWs can make it difficult for pilots who are either inexperienced or unfamiliar with the aerodrome, to position correctly for their landing if they are keeping the other landing traffic in sight. We were also concerned about:-

1. The PA28 requesting and being allowed to join crosswind when the notified procedure in the AIP is to join O/H as the SportCruiser had done (although we acknowledge that the AIP entry does state 'Unless otherwise instructed').

2. The controller's question to the pilot of the PA28, "were you visual with that SportCruiser that just cut you up?" The use of the past tense suggests this message was not necessary and the allocation of blame by the controller to the SportCruiser pilot implicit in this transmission was both inappropriate and unprofessional.

3. A possible presumption that as the PA28 was a training ac operating from Shoreham and was thus a well known 'local' it should be afforded greater priority or consideration than the SportCruiser.

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.

Prior to the Airprox, the controller had instructed the SportCruiser pilot to orbit R when late downwind, owing to a Cub making its approach to RW13. Board Members questioned the wisdom of an orbit on the downwind leg and particularly a right hand orbit in a left hand circuit. As it was, the SportCruiser had then positioned onto L base and then onto final approach RW20 and was issued landing clearance in good time before the pilot executed a go-around. Members were emphatic that, notwithstanding what subsequently occurred, the SportCruiser pilot was absolutely correct and should be commended for going around from an approach that he was not happy with.

At the time of the Airprox the cct traffic and controller's workload were light and Members considered whether the crosswind join by the PA28 had contributed to the incident. The PA28 pilot had requested it and the ADC judged that it was allowable as it was more expeditious, taking the adjacent fog bank into account. The notified procedure for joining O/H is usually standard practice when the cct becomes busy but joining via base leg, downwind or crosswind does afford the controller flexibility for integrating traffic into the cct expeditiously. Moreover, given the position of the encounter O/H the upwind end of the RW, the PA28 would have been in the same position over the upwind end of the runway at cct height after carrying out an O/H join albeit at a later stage allowing for its passage to the O/H and descent via the deadside. The ATSI Advisor acknowledged that the phraseology used by ADC, when the SportCruiser turned L below the PA28, was inappropriate; however, the controller was reacting to a what he saw from the VCR which he considered were 2 ac coming into close proximity. This aspect and the implied

bias towards inviting the PA28 to file an Airprox have been addressed by the ATSU. Up until the Airprox the controller had performed in an entirely professional manner.

When the SportCruiser pilot called going-around the ADC passed TI on the PA28; there was no other requirement of the ADC. It appeared that the controller had an expectation that the SportCruiser pilot would climb straight ahead and adjust his flightpath to pass below the PA28 and then turn L behind it and Members shared this view. It was agreed that the SportCruiser pilot should have integrated better but without any positive instruction by the ADC to position No2 to the PA28, the SportCruiser pilot had positioned himself as he saw fit. Notwithstanding that the PA28 had priority, its crew still had a responsibility to look for ac to their left taking off or going-around. The PA28 instructor did not see the SportCruiser initially but, on hearing its pilot call going around, he turned his ac to the R and then saw the SportCruiser as it passed 300ft below and 300m clear on their L. The SportCruiser pilot had estimated 500ft vertical separation and the radar recording shows 400ft. It was this LH climbing turn that had caused concern to the controller from his viewpoint in the VCR and subsequently to the PA28 pilot and this led to the filing of the Airprox.

Turning to risk, the SportCruiser pilot had seen the joining PA28 and chosen the separation distance whilst manoeuvring his ac, which had quickly made the incident benign. This left the board in no doubt that any risk of collision had been quickly and effectively removed.

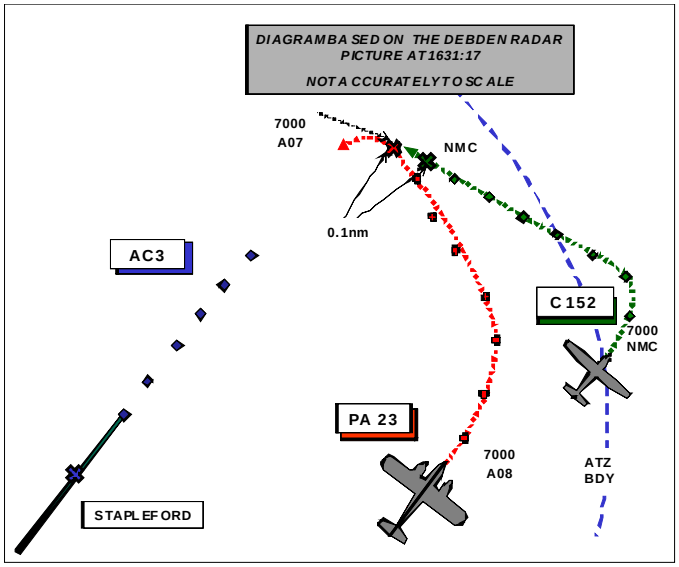
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The SportCruiser's flightpath caused the controller and PA28 pilot concern.

Degree of Risk: C.

AIRPROX REPORT NO 2011128

Date/Time:	29 Sep 2011 1632Z	
Position:	5141N 00010E (Stapleford CCT- elev 185ft)	
Airspace:	Lon FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	C152	PA23
Operator:	Civ Trg	Civ Pte
Alt/FL:	1000ft↓	1000ft↓
	QNH (1023mb)	NK
Weather:	VMC	VMC
Visibility:	15km	9999
Reported Separation:		
	200ft V/400m H	NK
Recorded Separation:		
	NR V/0.1nm (180m) H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE C152 PILOT reports that they were flying a white ac on a training flight, squawking 7000 with Mode C but TCAS was not fitted, in receipt of an A/G service from Stapleford while conducting cct training on RW22 (LH). They were established on base leg in the descent, heading 310° at 90kt and while passing through 1100ft QNH, he became aware of a PA23 ac, lower than them and turning inside the base leg from downwind. The PA23 stopped the turn and proceeded to fly underneath their ac so they immediately conducted a climbing right turn having by then descended to 1000ft QNH. The PA23 appeared in front of them and slightly to the L now conducting a climbing left turn onto final approach; he estimated its height at that stage to be below 700ft QNH and it was about 400ft in front of them. Had they not observed the PA23 fly from behind and underneath the nose of their ac they would have collided whilst both making the final turn.

He estimated the risk as being high.

THE PA23 PILOT reports flying a white ac with a red stripe with all external lights switched on, on a private VFR flight from Bembridge to Stapleford via MAY VOR, QE2 Bridge, squawking with Modes C and S, but TCAS was not fitted and initially he was in receipt of a BS from Farnborough East Radar. At the QE2 Bridge he changed to Stapleford Radio, received the airfield information, the QNH and QFE and was told that the RW in use was 22(L).

As he came from the E and Stapleford has a LH cct, he overflew the airfield at 2000ft, reported 2000ft overhead and descended on the dead side. He crossed the end of RW22 at 1200ft and then turned downwind, there was one ac [ac3] about 1.5nm ahead of him also on the downwind leg and he reported downwind one ahead. He turned base for RW22 at 90kt and at the normal distance out of about 2.5nm from touchdown and by that time the ac ahead of him was well into its final approach. He turned final descending at .9nm then called final.

By that time an ac that he later realised was behind and above him called TWR informing them that he turned finals in front of it. He did not know where it came from, didn't see it on the downwind leg or on base and continued to make a safe approach and landing; while continuing his approach and landing the ac behind him went around.

He could not estimate the separation as the ac was behind and assessed the risk as being low.

UKAB Note (1): The Stansted METAR was:

METAR EGSS 291620Z 13010KT CAVOK 25/16 Q1023

UKAB Note (2): The recording of the Debden Radar shows the incident. Although all 3 ac are squawking 7000, from the timings and pilots' reports, there is little doubt that these are the ones involved. At 1630:09 the PA23 is in the mid-downwind position displaced 1.5nm laterally from RW midpoint, at an alt of 1000ft, ac3 is at the end of the base leg, about to turn final at an alt of 900ft and about 1.5nm from the displaced threshold and the C152 is 1.2nm from the PA23 in its 1230 o'clock but not displaying Mode C info (its DW track was displaced 1.7nm laterally from the RW). At 1630:44 ac3 is short final at 600ft alt, abeam the PA23 at 800ft and the C152 is in the PA23's 1230 o'clock at 0.7nm, 2.2nm from the threshold having started its turn onto base leg 18sec previously. As the C152 is crossing the PA23's nose at 0.7nm the latter commences its turn onto base leg inside the C152 at an alt of 800ft. The two ac close to 0.1nm, the C152 always being behind the PA23 and the former commences a go around falling further behind the PA23 which continues inbound and disappears from radar at 1629:41. The vertical separation cannot be determined.

ATSI reports that Stapleford provides an A/G service that is not recorded; that being the case they had nothing to add.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

Accepting that smaller aerodromes are not necessarily required to record their RT, the lack of an RT recording/ transcript limited the inquiry since it cannot be determined what the respective pilots transmitted or were in a position to have heard.

Aerodrome ccts are visual environments where 'see and separate' is the principal means of collision avoidance and joining ac are required by the RoA to fit in with the pattern established by preceding ac. Regardless of the size of the pattern being flown by ac ahead, following ac should conform to it, go around or depart the cct and rejoin later.

Members noted that this incident took place in good weather and light conditions and in a fairly quiet visual cct.

The PA23 pilot had clearly thought that there was only one ac ahead of him, saw an ac on the final approach and was satisfied that he was fitting in with the traffic pattern. However, in reality there were 2 ac ahead and he did not see the C152 and therefore could not fit in with the pattern it was flying. Although the PA23 pilot reported that he transmitted 'one ahead' this part of his transmission was either not heard or its significance was not assimilated by the C152 pilot or the A/G operator which would most likely prompted a clarification request.

Although the C152 pilot saw the PA23 in sufficient time to initiate effective avoidance, since the latter pilot did not see the C152 nor was he aware of its presence until after the event, Members agreed that safety was not assured.

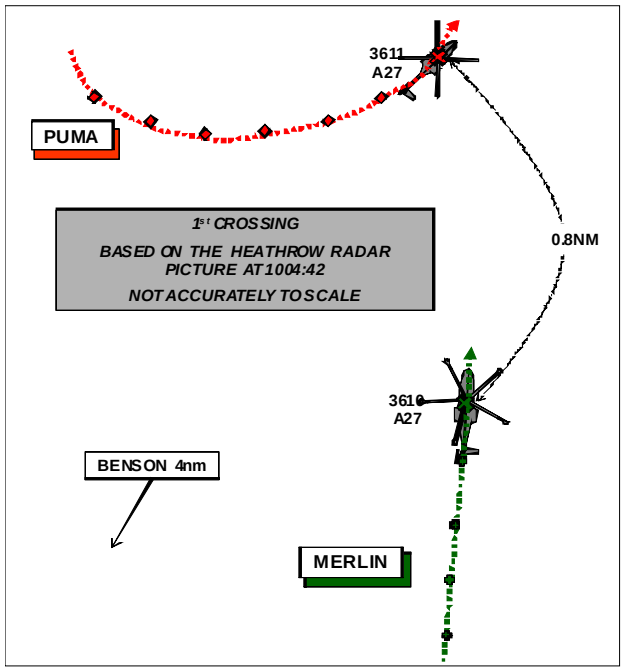
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The PA23 did not conform to the pattern being formed by the C152 and flew into conflict with it on the base leg/final turn.

Degree of Risk: B.

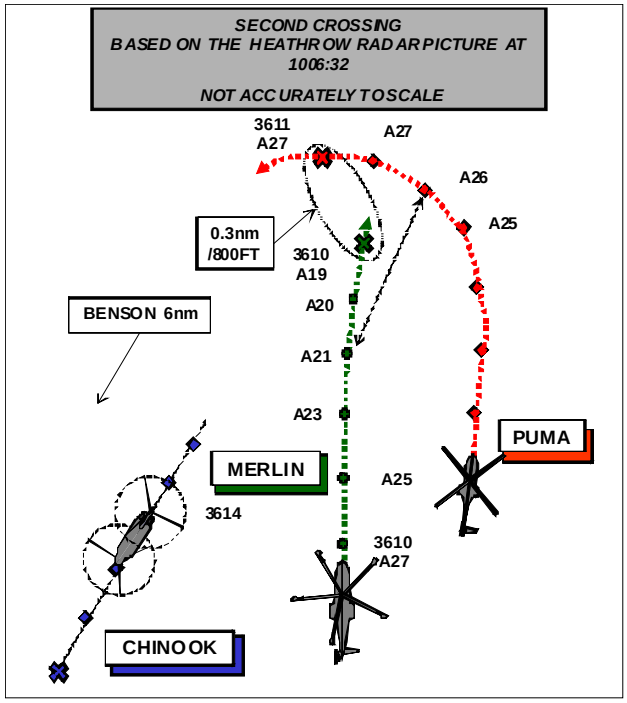
AIRPROX REPORT NO 2011129

Date/Time:	26 Sep 2011 1007Z	
Position:	5141N 00058W	(6nm NE Benson)
Airspace:	Benson MATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Merlin	Puma
Operator:	HQ JHC	HQ JHC
Alt/FL:	2500ft	2500ft
	QFE (1012mb)	QFE (1012mb)
Weather:	IMC CLBL	IMC CLBL
Visibility:	1km	10km
Reported Separation:		
	NK	NK V/ 0.5nm H
Recorded Separation:		
	800ft V / 0.3nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE MERLIN PILOT reports that they were conducting a local Procedural IF sortie for a Merlin Re-role Course, squawking as directed with Modes C and S but ACAS was not fitted. Having completed a S'ly SID to CPT, the ac was repositioned to conduct the 'Copter TAC RW19' with holding at the IAF. Although IMC conditions prevailed, there were gaps in the Cumulus cloud formations that made occasional visual identification of 'ATC called' traffic possible. The ac was in receipt of a TS and it was evident that the instrument traffic density markedly increased during this period. The crew were aware that a Puma was conducting a VOR to ILS/DME RW19 profile [ahead] and a visiting Chinook had also joined the procedural pattern for an ILS [also ahead]. Following completion of the training holds at 3500ft QFE, ATC clearance was given to track outbound for the procedure. Iaw the TAP, the ac was flown outbound on 006° (at 120kt) and descended to maintain the outbound height of 2500ft QFE. ATC communications between all previously mentioned ac became busier but it was perceived that the Chinook was holding at 3500ft QFE in the vicinity of the IAF for the ILS approach; visual contact with this traffic was established for a short period.



Of greater concern was the Puma which was known to be holding at 2500ft QFE at the IAF for the ILS. All crewmembers were looking out to try to obtain visual contact when not in cloud and when ATC provided information on the location of the Puma. Visual contact was then established with the Puma in the 1 o'clock at a similar level and at a range of about 800m. At that point, the Puma was directed to complete another hold. On realising that this would be to the L and across the flightpath of the Merlin, the crew decided to descend since the now 'stationary' position of the Puma in the windscreen indicated a collision course. In addition, the flight path of both ac would have shortly taken each into the same cloud. ATC directed the Merlin to descend to 2000ft QFE

but the Captain elected to continue a descent to 1600ft QFE to remain VMC and remove all doubt regarding the orientation of the ac as they converged laterally. They then lost sight of the Puma as it entered cloud.

He reported the incident to ATC and informed them that it would be discussed on the ground on completion of the sortie; the flight was continued without further incident. He assessed the risk of collision as being high.

THE PUMA PILOT reports flying a training flight in receipt of a TS from Benson APP, squawking as directed with Modes C and S; ACAS was not fitted. They were tracking 320° at 120kt and on turning to enter the hold at the IAF for the Benson VOR-ILS RW19 at 2500ft QFE, the NHP in the LHS saw a Merlin in their 9 o'clock on a similar track to the inbound for the hold and at the same level. The NHP then called for a descent to ensure separation from the Merlin whilst maintaining VMC (maintaining height or climbing would have put the Puma in IMC) so they rolled wings level and descended. The Merlin was visual with them and also took avoiding action and reported the incident on the RT.

Both ac were under a TS at the time and the Merlin was instructed to descend to 2000ft QFE but only after avoiding action was deemed necessary by the pilots of both ac.

After re-establishing at 2500ft QFE in the hold and continuing with the procedure the ac was recovered to RAF Benson without further incident. He assessed the risk as being medium.

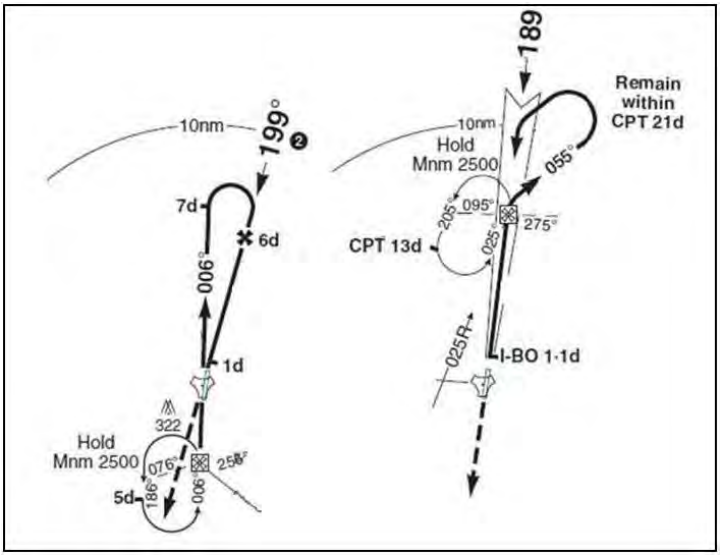


Figure 1: RAF Benson COPTAC (left) and VOR ILS/DME Procedure (right) RW19.

THE RAF BENSON CONTROLLER (DIR) reports that she was screening a UT DIR when the incident developed. They had a Merlin in the TAC Hold at 3500ft S of Benson 3-4nm, a Puma in the ILS Hold at 2500ft NW Benson 2-3nm, an AAC Squirrel in the normal RTC and a VHF police helicopter joining from the E for a radar vectored ILS when they were handed a Chinook from the S also for the ILS Hold. At that point the UT controller was beyond his

As there were two talkdown controllers she cleared the Merlin for the procedure at the same time as she turned the police helicopter inbound for the localiser. She then instructed the Merlin pilot not to descend until advised as the Chinook was then in the ILS hold (which is to the NW of Benson) at 3000ft. As the Merlin tracked through the O/H the controller called the Chinook to the Merlin and instructed the pilot to report visual. When the Merlin called visual, she instructed the pilot to descend on the procedure as required. The controller then called the Puma to the Chinook and vice versa as they were both in the ILS hold at 2500ft and 3000ft respectively but she did not think the Puma would be a factor to the Merlin on the TAC approach as they were heading away from each other at that time.

There was then an information code change with new weather which changed the QFE so she did an all-stations broadcast and obtained readbacks from all 4 ac. She then tried to get up to date with some basic admin as she

was still sitting off-centre to the radar screen and the UT controller was still in position and managing all her logging. She saw that the Puma and Merlin were then in confliction and immediately called the Puma to the Merlin as it was in its 12 o'clock at 1nm. She had mistakenly believed that the TAC procedure would take the Merlin to the E of the inbound lane. Her mistake then became apparent; she had confused the TAC procedure with the ILS procedure, the ILS goes outbound heading 055° and the TAC goes outbound on a 006° heading.

The Merlin called visual and shortly afterwards asked for further descent as they would shortly be going IMC on the procedure, so she gave a descent to 2000ft since the Puma was maintaining 2500ft in the Hold. During this time a 7000 squawk contact popped up about 8nm NW of Benson tracking SE, which she called to the Merlin. As the Merlin was turning inbound for the FAF she noted its Mode C reading 014, she asked its height which was reported at 1400ft and the pilot said he had elected to descend further to gain separation against the Puma. When the controller told him that 2000ft would have been enough as the Puma was maintaining 2500ft, the pilot said he had seen a potential risk of collision and added that he would phone to discuss the situation after landing. In descending to 1400ft, the Merlin pilot placed himself into confliction against the previous 7000 squawk which by then had a Benson Zone squawk and she was told that it was routeing into an unofficial helicopter landing site within the MATZ; she called this traffic when they were a 1nm and 300ft apart and the pilot called visual. The Merlin was then transferred to Talkdown for the TAC procedure to be monitored.

DIR was working to capacity with little input from the Supervisor who was in the ACR but dealing with other problems elsewhere. There were many people in the ACR, all positions were manned and there was a standards check in progress with one of the Talkdown controllers; the UT did not move away from the radar screen so she was offset for the whole period, because of this it was a noisy and frenetic environment.

THE RAF BENSON SUPERVISOR (SUP) reports that he was busy attending to a myriad of tasks in the ACR and had briefly switched off the DIR frequency in order to concentrate on something else and therefore missed the moments of the incident. He had most, if not all, of his controlling staff plugged in on a console in a bid to maximise training and 'grab' the traffic that had presented itself.

Some PDs had been accepted by the APP controller while the SUP was in a meeting earlier in the morning and between them they had not realised that 2 station-based helicopters would also be getting airborne for the RTC at a similar time. This led to an unusually busy period with traffic levels significantly higher than normal. The UT DIR, although well advanced in training, rapidly became 'snowed under' and he witnessed his Screen Controller step in and at this stage was content that she had the experience and ability to recover the situation. He made a number of liaison calls (prenotes to TWR) to assist and he incorrectly assumed that the APP controller had informed DIR; this ironically served to increase the DIR's workload. During the moments when he was attending to other matters he lost SA on exactly what DIR was doing and was struggling to regain this SA. The ACR was extremely busy and, with a number of seats between him and the DIR's flight strips, he could not see what was being done (there were 4 controllers in the DIR and TD 1 seats). The SUP at Benson does not have his own radar display and has to peer over the APP controller's position to see the DIR display and his flight strips. Had he stepped in to ask what was happening, this would have been counterproductive as the DIR would not have had time to reply. The APP controller was occupied handing over traffic to Zone and DIR. In consultation with DIR he held off another PD and asked Odiham to hold onto their traffic until they could take it.

After being informed by DIR of what had happened with the Merlin ac descending through the other ac levels, he elected to wait until the traffic situation had calmed down as to attempt a controller handover at that point would have been dangerous; in any case he had no other qualified controllers available. In addition he wanted to get a full description of the event from the controller once she had been relieved.

He impounded the tapes and had a tape transcript produced. He spoke at length with the pilot of the Merlin on the telephone and both of them were keen for lessons to be learnt from the incident. Following a period of reflection, he elected to ensure the controller was given a standardisation check as he believed that suspending her endorsement and conducting further training would have been of no benefit. In hindsight, although he was busy, he is disappointed that he put his controller in this position; he should have anticipated the traffic surge and stemmed the flow in order to protect both the UT and the screen controllers. Furthermore, once the traffic was on frequency, he should have focused most, if not all, his attention on assisting DIR. In the debrief that he gave the controller he advised that the Merlin should have been instructed to maintain outbound heading and height until advised, in order to ensure procedural separation; the controller also recognised that this is what should have been done.

AIRPROX REPORT No 2011129

BM SAFETY MANAGEMENT reports that this Airprox occurred between a Merlin conducting a COPTAC approach and a Puma conducting a VOR ILS/DME approach to RW19 at RAF Benson. Both ac were flying in prevailing IMC with occasional gaps between clouds. Both ac were in receipt of a TS from Benson DIR.

For the purpose of the investigation, the incident sequence commenced at 1001:20. At that point, while DIR reports that she was screening a trainee, she took over the console at about 0958. Subsequent to filing the incident report, DIR confirmed that the trainee remained in place throughout the incident sequence completing the logging on their flight progress strips (FPS); consequently, DIR was offset from the console. Moreover, at the time of the incident, both PAR consoles were manned; PAR 1 had both a controller and a Standards Officer conducting a controller standards check; Zone had a further trainee and instructor in position. Consequently, 10 controllers were on console. The radar room at RAF Benson is relatively narrow and precludes movement of personnel behind the consoles to allow sight of the radar and FPS at each control position; the console layout is at Figure 2 below. It should be noted that the SUP does not have a dedicated radar screen, nor a wireless/long-lead headset to facilitate movement around the ACR.

Figure 2: Console Layout in the ACR at RAF Benson.

Figure 1 above depicts the COPTAC and VOR ILS/DME procedures to RW19; the base height for the hold for both procedures is 2500ft QFE. The COPTAC approach requires aircrew to maintain 2500ft QFE from the IAF to 7d on the outbound leg of 006°. The VOR ILS/DME approach requires aircrew to maintain from 2500ft QFE until they pass the IAF on the outbound leg of 055°.

Given the height of the outbound leg of the COPTAC procedure and the base height of the VOR ILS/DME hold, there is no procedural deconfliction between these procedures. RAF Benson ATC has confirmed that there is a local procedure to deconflict level allocation between the two holds. The specific scenario encountered in this Airprox is covered in local training material and Benson controllers receive synthetic based training and consolidation on IFR hold deconfliction.

At 1001:20, DIR had five ac on freq in the positions at Figure 3 and described their workload and task complexity as high. The incident ac were a Puma in the VOR ILS/DME hold at 2500ft QFE, SSR 3A 3611, and a Merlin departing the COPTAC hold at 3500 ft QFE, SSR 3A 3610. There were three further unconnected ac: a Chinook flying towards the VOR ILS/DME hold at 2500ft QFE, SSR 3A 3614; a Squirrel in the RTC, SSR 3A 3617 and a Police helicopter, SSR 3A code-callsign converted to P252.

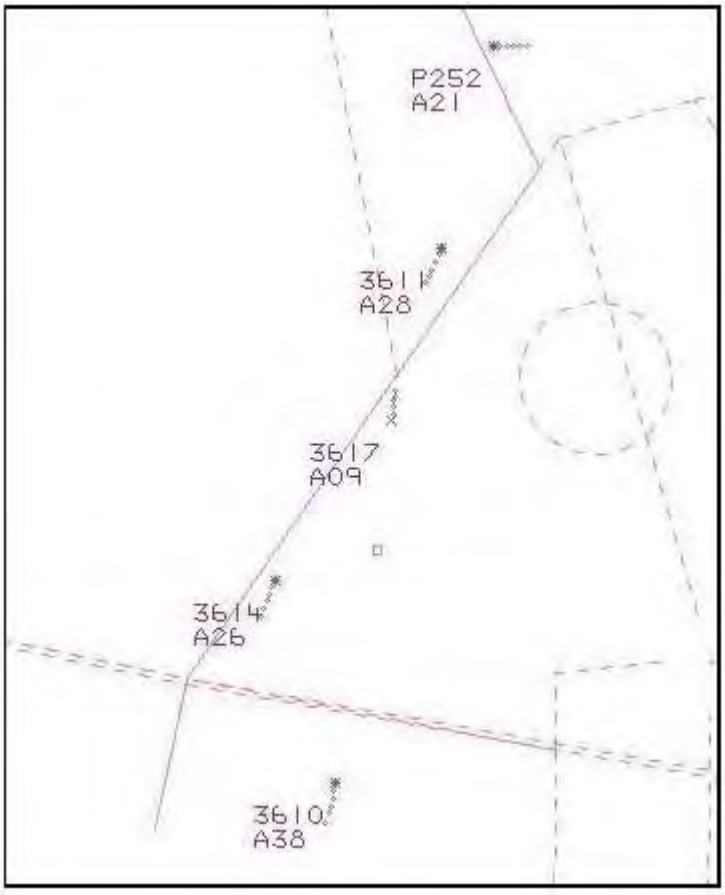


Figure 3. Position of DIRs Traffic at 1001:20.

While the unconnected ac, through the taskload that they represented, undoubtedly played a part in raising DIR's level of psycho physiological stress, which will have thus affected her task performance, they had no involvement in the incident sequence itself; consequently, except where relevant, the following timeline does not include their presence to avoid further confusion.

At 1001:58 the Merlin reported approaching the IAF ready for the procedure and DIR replied that the Merlin was, "*clear the procedure"* but not to, "*descend until advised"*. DIR reported that this descent restriction was put in place due to the Chinook being in the hold at 3000ft, 500ft beneath the Merlin's height. This is supported by later events where DIR questioned whether the Merlin was visual with the Chinook prior to allowing it to descend on the procedure. At 1001:58 the Merlin was 4nm SSE of the Chinook on a similar heading, flying at 140kt G/S, with the Chinook flying at between 130-140kt. Although the Chinook was instructed to climb to 3000ft QFE at 1001:37, it did not commence that climb until 30sec later.

Between 1002:14 and 1004:03, DIR was involved in a continuous exchange of RT and landline liaison, including passing a series of TI to the ac on their freq about each other. No TI was passed to the Puma or Merlin on each other, although it is clear from their reports that the respective crews were aware of each other. At 1003:28, DIR instructed the Merlin to, '*descend on the procedure as required',* necessitating the Merlin to descend from 3500ft QFE to 2500ft QFE; the instruction was readback by the pilot. At that point the Merlin was in the Benson overhead, the Chinook was 3.4nm N of it, tracking NE and the Puma was 5.4nm N of the Merlin, tracking SW at 2500ft QFE. At 1003:52 the Merlin commenced a descent to 2500ft QFE; the Puma was then 4nm NNW, tracking SW at 2500ft QFE. At 1004:16, the Merlin descended through 3000ft QFE with the Puma 2.5nm NW in a L turn onto 025°.

DIR stated in her report that she mistakenly believed that the COPTAC procedure would take the Merlin to the E of the inbound lane and had confused the COPTAC procedure with the ILS procedure, 'the ILS goes outbound heading 055° and the COPTAC goes outbound on a 006° heading'. Subsequent to filing the report, DIR has

confirmed that she believed that the Merlin would route outbound from the Benson overhead on a heading of 055°. Between 1004:03 and 1005:10, DIR passed a new QFE to, and obtained read-back from, the ac on freq, then obtained the DH and intentions from and passed climb-out instructions to the Chinook. During this exchange at 1004:52 the Puma passed from L to R through the Merlin's 12 o'clock, 0.8nm away with the Merlin levelling co-altitude with the Puma at 2500ft QFE. Based on the Merlin and the Puma crews' reports, though aware of each other, neither crew was visual with the other at that time.

At 1005:11, DIR passed TI on the Puma to the Merlin stating, '*Puma, twelve o'clock, one mile, similar height, two thousand five hundred feet QFE'* and the Merlin pilot replied that they were, '*visual'*. DIR then passed TI on the Merlin to the Puma; the Puma did not acknowledge the TI but stated that they were approaching the IAF. DIR instructed them to maintain in the hold which the Puma pilot readback, informing DIR that they were visual with the Merlin. DIR states in the report that the point at which she noticed the confliction between the Merlin and the Puma was immediately prior to passing this TI.

CAP 774 states that in providing a TS,

"Controllers shall aim to pass information on relevant traffic before the conflicting ac is within 5nm, 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. However, high controller workload and RTF loading may reduce the ability of the controller to pass traffic information, and the timeliness of such information'. DIR did not reduce the service to any ac on freq due to high workload."

From 1005:42 to 1006:09, DIR's attention was taken by a call from the unconnected Squirrel until, at 1006:09, the Merlin stated that they were, "*about to be IMC in the descent to maintain clear of the Puma"*. The Merlin's crew reported that they had realised that if the Puma were to maintain the hold, it would have to turn L and across their flight path and that the flight paths of both ac would shortly take both into the same cloud. At 1006:19 the Merlin's SSR Mode C indicated that it had commenced a descent. The CPA occurred at 1006:32 following the Merlin's avoiding action descent with 0.3nm lateral and 800ft vertical separation existing.

While the MMATM states that the DIR is responsible for the 'control and sequencing of ac in the radar circuit' (RTC), neither CAP 774, MAA RA 3011, MAA RA 3024 nor the MMATM stipulate separation criteria for ac operating within the RTC under a TS. Best practice in this regard suggests that, where possible, DIR provides standard or reduced vertical and lateral separation between ac within the RTC, regardless of ATS.

The Supervisor has stated frankly in his report both the difficulties associated with monitoring DIR from the Supervisor's position and that he 'lost SA on exactly what DIR was doing' as a result of a 'myriad of tasks'. Moreover, he states that he had not anticipated the traffic surge and did not stem the traffic flow to protect DIR; however, this lack of anticipation was grounded in a lack of information on which to base a plan. The system by which ATC received flight details from Stn based crews was long-term unserviceable; consequently, ATC had no visibility of any late changes to flight details. In this case, both the Merlin and the Puma were not originally planned to conduct IF Trg; hence ATC had accepted requests for PDs from non-Station-based ac. That said, once the traffic situation started to develop, opportunities still existed to manage the flow.

While the RAF Benson FOB states that a TS will be automatically applied to flights operating IFR, unless pilots ask otherwise, CAP 774 states,

"pilots should be aware that a Traffic Service might not be appropriate for flight in IMC when other services are available."

From the aircrews' perspective, both the Puma and Merlin crews maintained good situational awareness and became visual with each other enabling both to take robust action to resolve the deteriorating situation. That said, the Merlin's crew reported that IMC prevailed and, notwithstanding the policy in the RAF Benson FOB, it is reasonable to argue that a TS was not wholly appropriate. That is not to say that the provision of a DS would have necessarily affected the outcome of this occurrence; however, it is a notable observation and a feature that has been identified in the investigation of other Airprox. This Airprox was caused by both a systemic failure involving IFR procedure design and through ATM Human Factors related errors.

The design of the COPTAC and VOR ILS/DME procedures, specifically the confliction between an ac on the outbound leg of the COPTAC and an ac at the base of the VOR ILS/DME hold, provides no element of procedural deconfliction. Although there is a local procedure to manage this confliction, it is wholly down to the ability and/or capacity of the DIR to identify this issue and to take corrective action; this means that the procedure is susceptible to ATM human error. In this instance, for a number of reasons, DIR specifically and ATC generally did not perceive the confliction.

DIR stated that she confused the COPTAC and VOR ILS/DME procedures, mentioning that she expected the Merlin to route outbound from the overhead on a heading of 055°, the implication being that this would have provided lateral separation. However, whilst this suggests both negative transfer of information from Long Term Memory and a Working Memory capacity issue, it also highlights a deeper misunderstanding of the two procedures, given that the VOR ILS/DME procedure requires an outbound heading of 055° from the hold, not the overhead.

While DIR provided TI between those ac that were already vertically separated, TI was not prioritised to the 2 ac that were becoming proximate. Specifically, neither the Merlin nor the Puma received TI on each other until a range of 1nm, after the Puma had crossed co-altitude, through the Merlin's 12 o'clock, 0.8nm away at 1004:52. While this error is linked with DIR's confusion between the 2 IFR procedures, given that she did not detect the confliction until 1005:11, it also suggests that her visual scan of the surveillance display was affected, which is an error of perception and vigilance rather than memory. Given her high workload and perception of task complexity, it is possible that this was caused by attention tunnelling, caused in turn by her elevated level of psycho physiological stress.

From an ATM perspective, the final issue that requires examination is the Supervision of the radar room. Firstly, at key points in the incident sequence the Supervisor's attention was diverted, necessarily, to other tasks which, at the time, were of sufficient importance to require attention. This is a matter of circumstance, rather than omission. Secondly and critically, it is clear that the ergonomics of the radar room do not permit the Supervisor to maintain effective oversight of all control positions; the factors include the physical design of the radar room, the positioning of the Supervisor away from the DIR console and the lack of direct access to a surveillance display. The impact of the ergonomics of the radar room is then heightened by the lack of provision of a wireless/long-lead headset for the Supervisor, effectively forcing him to choose between maintaining situational awareness and physically overseeing and managing operations. As suggested by the Supervisor, it appears reasonable to argue that had they been able to maintain their situational awareness, then they would have been better able to perceive the developing confliction.

Overall, there was no deliberate act or omission on the part of ATC that caused this Airprox. All those involved were trying to make the most of the trg opportunity that had presented itself, in a burst of relatively high intensity taskload. A series of disparate events conspired to create a period of high workload and task complexity, especially for DIR and removed the mitigatory barrier provided by the Supervisor. During this time, errors by DIR relating to memory, perception and vigilance combined with the latent weakness of the COPTAC and VOR ILS/DME procedures to cause an Airprox. This weakness in the IFR procedure design, through the inevitable action of human error, caused the system at RAF Benson to fail unsafe.

This Airprox has identified a number of ATM and safety issues that are being addressed by a number of Defence organisations including JHC, MAA and ATM Force Commander.

Although not as a result of this Airprox, RAF Benson ATC, in association with AIDU, has undertaken a review of IFR procedures with the aim of reducing the current level of complexity by reducing the number of IFR holds, in accordance with PANSOPS procedure design guidelines.

UKAB Note (1): The recording of the Heathrow 10cm Radar shows the incident clearly as depicted in the diagram(s) above. All contacts suffer from track jitter and have been adjusted accordingly.

HQ JHC comments that a number of ATM and safety issues has been identified and are being addressed by several Defence organisations. JHC are investigating whether Benson ac have been operating IMC under a TS and how this should be addressed specifically regarding the Mid Air Collision risk on the ODH risk register.

AIRPROX REPORT No 2011129

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 photographs and recordings, reports from the air traffic controller involved and reports from the appropriate ATC and operating authorities.

It was clear to Members that the traffic situation at Benson was both busy and complex with three ac flying two different instrument procedures, another one inbound to the field and a fifth helicopter inbound to a site within the MATZ; this was compounded by relatively poor weather. Controller Members opined that the supervisor should have noted this and given most of his attention to the Approach position as this was, in their view, the most important task. Members discussed whether the Screen Controller had waited too long before stepping in to take over from her student, noting that it is often difficult for instructors to realise when situations deteriorate beyond the capabilities of their students. However, in this case, not being in possession of the full scenario, the Board decided not to make any further comment. Controller Members agreed however, that on taking over the position, despite the physical awkwardness, the Screen Controller should have positioned herself directly behind the workstation rather than remaining offset, thus removing any parallax, giving a clearer, more familiar view of the radar picture and the flight progress strips.

It was also clear to Members that the TACAN procedure and the ILS procedure overlap and, if they are to be flown simultaneously, then deconfliction by the Approach Controller is required. A Controller Member pointed out that this is not unique to Benson and the 'approach plates' should be displayed prominently so that controllers, who should in any case be familiar with the procedures, can refer to them readily and, if necessary, take appropriate action to prevent conflicts. The Board discussed whether it was appropriate for the ac to be operating under a TS while IMC. Although both ac involved were in receipt of a TS, both were in the MATZ where ATC instructions are mandatory and in any case the default at Benson is to provide a TS to IFR flights (unless a DS is specifically requested). Although a DS does in most situations provide ac with safe separation, in this case had the procedures been correctly implemented the ac would have been safely separated under the TS. Prior to the reported CPA, Members noted that the two ac had been separated by 0.8nm while co-alt and IMC as the Puma rolled out of its turn at the S end of the ILS Hold; although aware of each other in their respective Holds, neither crew were in visual contact with each other at that stage. Therefore the Board decided that the entire incident should be assessed as a single Airprox event that could be attributed a single cause (and degree of risk).

Controller Members thought that the Approach Controller could have been operating under a self-imposed urgency to get the ac on the ground quickly when a safer action would have been to build in more separation between them, if necessary by requiring the Merlin to conduct a further hold in order to feed the Puma approach safely ahead of it. Although there were several less than ideal ATC aspects of this incident, Members agreed unanimously that the cause had been the Controller descending the Merlin on the TACAN procedure into conflict with the Puma that was already established in the (conflicting) ILS hold. While accepting that the controller had made an error, the Board could not endorse the BM SM view that "Overall, there was no deliberate act or omission on the part of ATC that caused this Airprox" believing this to be an oversimplification, and they determined the erroneous clearance for the Merlin to descend on the procedure had been the cause of the incident. (Members accepted, however, that this had not been a deliberate act as the controller believed that the ac would be laterally separated).

It was clear to Members that the Merlin pilot had maintained good SA and that he had been both fully justified and correct in descending to remain below cloud so that he could 'see and avoid' the Puma that before entering cloud was co-alt with him and would most likely cross his flightpath from R to L shortly thereafter; further, he correctly informed ATC of this action.

Members could not agree the degree of risk, being evenly split between A and B, roughly along controller/pilot lines. When considering his casting vote the Chairman pointed out that there had been 0.8nm separation on the first crossing, therefore the ac were not going to collide, and on the second both the Merlin and the Puma descended below the base of the cloud thereby remaining in visual contact. Although this prevented any collision risk between the ac there had in his view been a degradation of normally accepted safety margins; he therefore voted for a B.

The Board commended the Supervisor for his open and honest report which clearly and self-critically addressed the part he played in this incident.

The Board also noted the actions already put in place by HQ JHC, BM SM and other MoD agencies to resolve the issues arising from this incident.

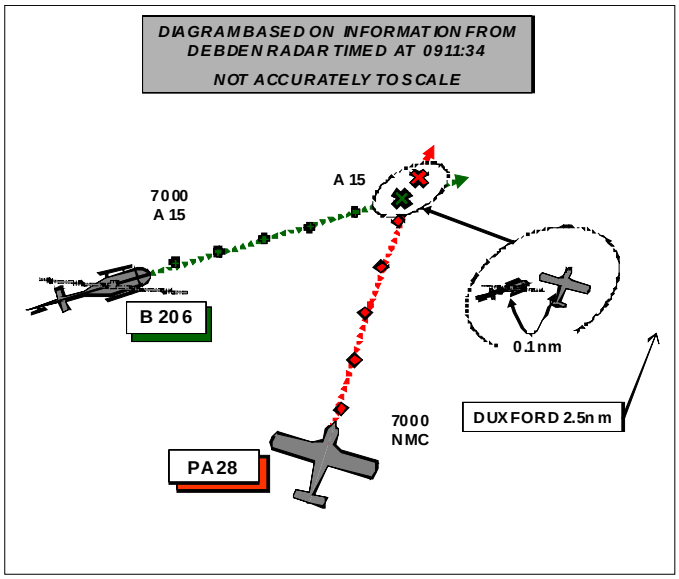
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: DIR instructed the Merlin crew to descend on the TACAN approach into conflict with the Puma in the ILS hold.

Degree of Risk: B.

AIRPROX REPORT NO 2011130

Date/Time:	28 Sep 2011 0912Z	
Position:	5204N 00005E (2nm SW Duxford - elev 125ft)	
Airspace:	FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Bell 206	PA28
Operator:	Civ Pte	Civ Pte
Alt/FL:	800ft	1100ft
	QFE	QNH
Weather:	VMC NR	VMC NR
Visibility:	>40nm	3000m
Reported Separation:		
	0ft V/50ft H	0ft V/150m H
Recorded Separation:		
	NR V/0.1nmH (See UKAB Note (2).	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE BELL 206 PILOT reports flying a private flight to Duxford in a white and blue helicopter with strobes and nav lights switched on, in receipt of an A/G [BS see ATSI report] service from them. Due to an event at Duxford there was a NOTAM and an AIC outlining the Special Procedures in force for Duxford. They were heading 060° at 100kt having joined the cct downwind for RW24 at 800ft QFE when they were overtaken from the 4 o'clock by a rapidly descending PA28 which passed an estimated 50ft away. There were 3 very experienced pilots on board the helicopter at the time and they all considered they were very lucky that the PA28 had actually missed them. He provided a diagram showing the track of the PA28 and they agreed that its pilot clearly had not seen them. In their view the PA28 pilot demonstrated a lack of airmanship by joining a busy and active circuit incorrectly and dangerously.

He considered the risk as being very high and reported the incident to A/G.

THE PA28 PILOT reports that he rented the PA28 from a flying school and had flown to Panshanger to collect a passenger who occupied the P2 seat on the following short flight to Duxford to visit the Museum. The ac was blue and white with strobes switched on and they were squawking 7000 with Mode C; Mode S and TCAS were not fitted. He had received PPR from Duxford and was aware that an exhibition was taking place and had the AIC describing procedures for the event in the ac. They made contact with Duxford Info about 10nm S, were given a BS and were heading 060° at 100kt, having been instructed to join left downwind for RW24. He was aware of a helicopter that had also been advised to join downwind from the W but did not see it until he was established midway downwind when he saw it at a similar altitude in his 4 o'clock position [UKAB Note: The ac had already crossed]. Its speed appeared similar to his. His passenger saw it at the same time and kept it in sight. Given their relative positions, he suggested to the FISO that he could make a short approach to land from his present position, but he was advised that was not approved for fixed wing ac and was instructed to continue downwind for a normal approach avoiding Duxford village. He turned slightly right to avoid the village with the helicopter traffic in sight, anticipating that the B206 would then turn behind him to make a short approach; he heard it being cleared accordingly and saw it land as he was on base leg. He heard no mention of an Airprox until after landing when the marshaller mentioned that the helicopter pilot intended to file an Airprox. The marshaller also stated that he had seen both ac downwind and felt there was no conflict. He immediately visited the tower and spoke to staff who advised that the other ac's pilot had not visited them. He visited the tower again at about 1245Z prior to departure and spoke to one of the FISOs who mentioned that a passenger from the helicopter had visited the tower. They had spoken to him, reviewed the R/T tapes and did not feel there was any need for him to leave details as they felt no report was required.

He was only advised of this Airprox report on 9 Dec by the successor company to the flying school which had ceased operations at the end of Sept.

He considered the risk to be none.

ATSI reports that Duxford has an ATZ, which comprises a circle radius 2nm, centred on the midpoint of RW 06/24 and extends to a height of 2000ft aal (elevation 125ft).

The B206 helicopter, inbound from Thruxton and the PA28, inbound from Panshanger, were both operating VFR, in receipt of a BS from Duxford Information.

Duxford Airport is promulgated as being subject to PPR and an Aerodrome Flight Information Service is provided (Duxford Info). During the period 27-29 September 2011, a special exhibition event, 'Helitech 2011' was promulgated.

CAA ATSI had access to RTF and area radar recordings and reports from both pilots.

The Stansted weather was:

METAR EGSS 280850Z 13006KT 7000 NSC 17/16 Q1028=

METAR EGSS 280920Z 13007KT 8000 NSC 17/16 Q1028=

At 0907:02, the PA28 contacted Duxford Info reporting at 2000ft; the FISO advised the PA28 pilot, RW24 LH cct was in use, QNH 1028, QFE 1024. The radar recording at that time shows the PA28, squawking 7000 with no Mode C positioned 10.2nm SW of Duxford Airport. The FISO asked the PA28 pilot to report downwind LH.

The B206 helicopter contacted Duxford at 0907:45, reporting at Bassingbourne; the FISO advised RW24 LH cct, QNH 1028, QFE 1024. The radar recording at that time shows the B206, squawking 7000 with Mode C indicating 1800ft, positioned 6.1nm W of Duxford. The FISO asked the B206 pilot to report downwind LH routeing via Royston to avoid Fowlmere. At 0908:41, the radar recording shows the B206 turn onto a SE'ly track to avoid Fowlmere and then turn ENE towards the LH traffic pattern for Duxford RW24.

At 0911:16, the B206 reported, *"B206 C/S is now downwind left-hand for Runway two four".* The FISO replied, *"B206 C/S roger…*". Radar recordings show the B206, indicating an alt of 1500ft, outside the ATZ and 2.4nm SW of the ARP, tracking 080°, with the PA28 converging from its right on a NE track, in the B206's 2 o'clock at a range of 0.6nm.

At 0911:28 radar recordings show the two ac in close proximity, still outside the ATZ, with the PA28 crossing the B206 from right to left.

At 0911:30 the PA28 was advised, *"PA28 C/S er you're welcome to do as you wish but you will find it easier overall if you park southside there's a very efficient minibus service across make it easier for your departure".* The PA28 pilot replied, "*PA28 C/S and we're just entering left downwind for two four."* The FISO responded, *"PA28 C/S roger are you visual with the er Bell Jet-ranger"?* The PA28 pilot transmitted, *"Negative position".* The FISO advised, "*Just reported downwind".* At 0911:34, the radar recording shows the ac tracks had crossed, with the PA28 in the B206's eleven o'clock at a range of 0.1nm with the B206 indicating an altitude of 1500ft.

At 0912:01 the PA28 pilot reported, "*Yeah we're visual now he's in our er three o'clock we're just outside him tight inside him*". The PA28 pilot's report indicated that the pilot*, "*was aware of a helicopter also advised to join downwind from the west but did not see it until I was established midway downwind when I saw it at a similar altitude in my 4 o'clock position". [After the Airprox] Radar recordings show the PA28 turning downwind 0.3nm N of the B206.

At 0912:09, the FISO advised the B206 pilot, *"and er B206 C/S are you visual with the fixed wing on your inside".* There was no immediate response from the B206 pilot but the PA28 pilot transmitted, *"Round the Village PA28 C/S or could we make a short approach from here if you prefer";* the FISO replied, *"er no sorry that doesn't work for*

non-Duxford based fixed wing so er right around the village for a two mile final please" and the PA28 pilot acknowledged, *"Wilco PA28 C/S*".

At 0912:47, the FISO transmitted, *"...break er Jetranger B206 C/S from your present position do you want to make an early left turn for Runway two four",* the pilot replied, *"Affirmative Sir thanks very much for that and I think we ought to report an Airmiss…".*

At 0913:58 the B206 reported, *"short final for two four",* and the PA28 reported, *"two mile finals two four";* both ac landed without further incident.

Both ac were in receipt of a BS from Duxford Information (FISO). CAP774, UK Flight Information Services, Chapter 2, Page 1, Paragraph 1, states:

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

The Manual of Flight Information Services, CAP410 Part B, Chapter 1, Page 1, Paragraph 1, states:

'1.1 The FISO's area of responsibility is the aerodrome, the aerodrome traffic zone and the immediate surrounding local area.

1.2 The FISO **may** pass traffic or essential aerodrome information to anyone who calls on RTF. Any traffic information passed can relate only to known traffic operating, or intending to operate within the area of responsibility.'

Paragraph 7.4, states:

'Landing direction and traffic information on known traffic flying within the ATZ and the immediate surrounding local area is normally passed when the ac is still some distance away from the ATZ. This enables the pilot to determine if it is safe to proceed with the flight as planned and to intelligently position the ac in relation to other ac in the circuit pattern….'

The PA28 was already on frequency when the B206 contacted Duxford and the PA28 pilot indicated being aware of a helicopter joining; however, the B206 may not have been aware of the PA28. Had the FISO passed TI, this would have aided the situational awareness of both pilots. CAP774, UK Flight Information Services, Chapter 2, Page 1, Paragraph 5, states:

'Whether traffic information has been passed or not, a pilot is expected to discharge his collision avoidance responsibility without assistance from the controller/FISO.'

Both ac were positioning to join downwind and routed to a point 2.4nm SW of the airfield. The inbound PA28 on a N'ly track crossed in close proximity to the B206 which had reported 'downwind'. Both ac were still outside the ATZ at this point. CAP774, Chapter 1, Page1, Paragraph 2, states:

'Within Class F and G airspace, regardless of the service being provided, pilots are ultimately responsible for collision avoidance and terrain clearance, and they should consider service provision to be constrained by the unpredictable nature of this environment.'

The PA28 pilot did not acquire the B206 helicopter visually until after they had crossed; it is not clear from his report when the B206 pilot first sighted the PA28. PA28 pilot's report indicated a flight visibility of 3000 metres in haze and the B206 pilot indicated 40nm plus. The CAA Safety Sense Leaflet 13a (June 2005), which is based on the ICAO Circular 213-AN 130, states:

'See-and-avoid' is recognised as the main method that a pilot uses to minimise the risk of collision when flying in visual meteorological conditions. 'See-and-avoid' is directly linked with a pilot's skill at looking'.

The Airprox occurred when the two ac, positioning SW of the airfield, to join downwind, came into close proximity while outside the Duxford ATZ. In Class G airspace, regardless of the service being provided, pilots are ultimately responsible for collision avoidance.

Had TI been passed it may have aided the SA of the respective pilots.

UKAB Note (1): Although the PA28's altitude cannot be determined, the radar recording showed that both ac appeared to be complying with the special procedures in force, the B206 joining from Gate W (Royston) and the PA28 from Gate S (Barkway/Nuthampstead).

UKAB Note (2): The recording of the Debden Radar shows the incident as depicted above with both ac heading almost into sun. Further it shows that the incident took place 2.5nm SW of Duxford, not in the cct as reported by the B206 pilot. The B206, squawking 7000 with Mode C, turns left at 0910.27 and approaches the CPA tracking about 080° at an alt of 1500ft. After the turn the PA28, squawking 7000 with no Mode C, is in its 2 o'clock closing on a line of constant bearing but pulling slightly ahead (of the B206). At 0911:25 the ac are 2.3nm SW of Duxford (about to enter the ATZ) with the PA28 0.3nm in the B206's (still indicating an alt of A15) 1.30. On the next sweep the separation is 0.2nm the PA28 still in the B206's 1.30. On the subsequent sweep, as the ac cross the ATZ boundary, the PA28 had crossed under 0.1nm ahead of the B206.

The radar recording shows that at the CPA the B206 is indicating an alt of A15 (1375ft agl). The PA28 reported that he was at an alt of 1100ft, but this might refer to the point when he first saw the B206, some time after the CPA. The radar also showed that the B206 did not descend to cct height (1125ft amsl) until 0912:28 (established), 53sec after the ac had crossed.

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 authorities.

The Board noted that the radar recording showed that the incident took place on the boundary of the ATZ at 0911:34; this, however, was 18sec after the B206 had called 'downwind' at a position about 2.4nm from the ARP. At that time the PA28 was already on frequency but was still in transit from Gate S in the descent from 2000ft. Members agreed that this call would have misled the PA28 pilot into believing that the B206 was much further ahead and not a threat, when in reality it was very close to him closing from off his left wing. Members also agreed that the ac had crossed unseen to the PA28 pilot, who at the time was in a fairly lengthy, largely non-operational conversation with ATC from a point 4 sec before he passed just ahead of the B206. Members found it more difficult to ascertain when the B206 pilot first saw the PA28 on his right descending from above and closing. A helicopter pilot Member familiar with the B206 informed the Board that the view from the right hand seat that the pilot would have occupied to the right and above, is relatively uncluttered and fairly good; that being the case they could not determine why the B206 pilot had not seen the PA28 until it passed close (reported as 50ft and radar verified as less than 0.1nm) in front of him. Bearing this in mind and that the B206 did not take any avoiding action Members agreed that the B206 pilot had not seen the PA28 (which had right of way under the RoA) until too late to take any avoidance. Members noted that at the CPA the B206 was level at an alt (radar verified) of 1500ft and the PA28 had no Mode C but the pilot reported that he was in the descent from 2000ft to cct height (1000ft); that being the case they could not determine the vertical separation but opined that it was also very close.

Since neither pilot had seen the opposing ac in time to take any evasive action and the flight vectors were very close, Members agreed unanimously that there had been a risk that the ac would have collided.

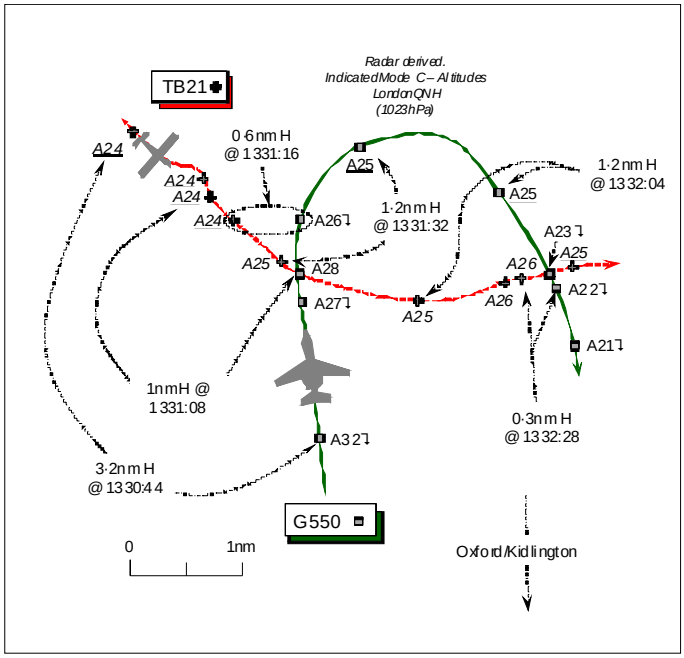
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A non-sighting by the PA28 pilot and effectively a non-sighting by the Bell 206 pilot.

Degree of Risk: A.

AIRPROX REPORT NO 2011131

Date/Time:	2 Oct 2011 1331Z	(Sunday)
Position:	5158N 00119W (8nm N of Oxford/Kidlington - elev 270ft)	
Airspace:	Oxford AIAA	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	G550	Socata TB21
Operator:	Civ Comm	Civ Pte
Alt/FL:	3500ft↓	2400ft
	QNH (1025hPa)	RPS (1022hPa)
Weather:	VMC NR	VMC CAVOK
Visibility:	>10km	>10km
Reported Separation:		
	500ft V/4000m H	Nil V/1nm H
Recorded Separation:		
	a: 200ft V/0·6nm H @ 1331:16	
	b: 0·3nm H/400ft V @ 1332:28	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE GULFSTREAM AEROSPACE G550 PILOT, the PIC and PF, reports he was inbound to Oxford/Kidlington from Rotterdam in VMC under IFR. He was in receipt of an ATS in 'uncontrolled airspace' from Oxford TOWER on 133·925MHz. SSR Mode C and S was on; TCAS II is fitted.

Whilst cleared for an NDB ILS DME procedure to RW19 by Oxford ATC he was outbound from the OX NDB overhead heading 354° at 180kt descending from 3500ft to 1800ft QNH. Just as they were about to reach the OXF D6.5 waypoint, TCAS enunciated a TA - TRAFFIC TRAFFIC, immediately followed by a RA CLIMB CLIMB that was complied with. His co-pilot – the PNF – gained an immediate visual contact on the intruder 4000m away, about 500ft below his ac. When CLEAR OF CONFLICT was enunciated by TCAS, a descending R turn inbound was executed to continue with the published approach and intercept the LLZ. On course to intercept the LLZ, another TCAS TA was enunciated that was immediately followed by another RA - DESCEND DESCEND. The PNF again had immediate visual contact with the same intruder – a white single engine aeroplane – in their 2 o'clock. After CLEAR OF CONFLICT was enunciated by TCAS, his ac was levelled off and he proceeded to intercept the ILS, which was followed by an uneventful approach and landing. He assessed the minimum vertical separation as 500ft and horizontally 4000m; he did not specify if this was for the first or second encounter, or both. The Risk was assessed as 'high'.

UKAB Note (1): An unrelated PA28's registration was mentioned in the G550 pilot's account, however, the flight was merely operating on the Oxford APP frequency at the time and was not the reported ac.

THE SOCATA TRINIDAD GT TURBO (TB21) PILOT reports she had departed from Bidford Gliding Club on a direct track to Westcott (WCO) bound for Southend. The ac was crewed with two pilots and this VFR transit would have taken them through the ILS approach 7nm N of Oxford. A squawk of A7000 was selected with Modes C and S on; TCAS I is fitted.

After take-off they flew to the WCO NDB on a track of 120° at an altitude of 2400ft RPS. Although windy, it was clear VMC conditions with no significant cloud. Approaching Bicester at 140kt, they were monitoring the gliding frequency of 129.975MHz and maintaining a good lookout for gliders, but about 10nm before Bicester they received a TA on the ac's TAS Traffic Warning System. This was first noted in their 1 o'clock position at a range of about 2nm and they saw the other ac – a Gulfstream G550 twinjet - flying towards them on what appeared initially to be a converging course, crossing from R - L. They commenced a turn to the R to avoid the G550 until

the twinjet had passed down their port side at a distance estimated at less than 1nm at about the same altitude. After the ac had passed they turned L to resume their track whilst continuing to keep the G550 in sight. Shortly afterwards, they saw that the G550 pilot had commenced a turn to the R and that continuation of this trajectory would introduce the possibility of a further conflict; a further warning was received from the ac's TAS. Therefore a course to the R of their original track was maintained in order to maximise the separation, they then saw that the G550 had commenced a descent as if picking up the LLZ for Oxford. Once certain that the G550 would pass safely below them, they resumed their original course towards Westcott. The other ac passed well beneath them as it descended into Oxford and they continued en-route. Minimum separation was estimated at 1nm at the same altitude and the Risk assessed as 'medium'.

They were not in receipt of an ATS and they were not in RT contact with the other ac, but once they saw that the G550 pilot was turning for Oxford they considered switching frequency to Oxford APPROACH. However, by this time it was clear that the ac would pass a safe distance away and therefore they did not establish contact with Oxford ATC. They subsequently established radio contact with Farnborough North on 132.8MHz at Westcott, which is the usual limit of their radar coverage in this area.

Although unusual to see such a large ac at that altitude and proximity, at no time did they feel unduly stressed by its presence as the visibility was extremely good and avoiding action was easy and straightforward.

UKAB Note (1): This Airprox occurred in the Oxford AIAA that is promulgated in the UK AIP at ENR 5-2-9 as Class G airspace permanently active from the surface to 5000ft amsl.

ATSI reports that the Airprox occured at 1331:18 UTC, 8nm N of Oxford Airport in Class G airspace.

Oxford were using RW19, operating a separate Aerodrome and Approach Control Service, without the aid of surveillance equipment. A PA28 was also operating VFR in the vicinity of Barford Saint John, which lies 10nm to the NNW of Oxford Airport.

It was noted that RTF recording times were a few seconds behind that of the radar and an appropriate allowance should be made when reading this report. The G550 pilot reported to Aerodrome Control (ADC), that two TCAS RAs had been received. The G550 pilot did not specify that an Airprox was being filed and no controller report was submitted.

The METAR for Brize Norton is provided:

EGVN 021250Z 22007KT CAVOK 27/10 Q1023 BLU NOSIG=

The 1326:54, the G550 contacted Oxford APP descending to 5000ft on course to Oxford. The G550 was cleared to the OX NDB at 5000ft QNH (1022hPa) and was instructed to report with 10 DME to run and to expect the RW19 ILS approach with no traffic delays.

At 1327:44, the G550 crew reported 10 miles to run and the controller issued further descent to 3500ft QNH. APP instructed the G550 to route to the OX NDB and cleared the G550 pilot for the procedure, to report beacon outbound.

At 1329:09, radar recordings show the G550 overhead the OX. The TB21 is shown 12.2nm NNW of Oxford Airport, tracking SE squawking A7000 and indicating an altitude of 2400ft Mode C. Another contact is shown manouevring 2.5nm further to the N of the TB21 - believed to be the PA28. At 1329:22, the G550 pilot reported outbound and the controller instructed him to descend with the procedure and to report localiser established.

At 1331:08, radar recordings show the G550 tracking N and indicating an altitude of 2800ft. The TB21 is shown tracking SE, in the G550's 10 o'clock at a range of 1nm, indicating an altitude of 2400ft and crossing the track of the G550 from L - R.

At 1331:08, the G550 pilot reported, "[G550C/S]..*TCAS climb we have traffic 11 o'clock 2 miles."* The controller responded, "[G550C/S]..*roger..Oxford does have a P-A 28 somewhere north-northwest bound..that's operating VFR."* The G550 pilot replied, *"That is copied we're now resuming our descent the guy was about 2 thousand 5 hundred feet and its too close to this approach."* The controller responded, *"roger*."

AIRPROX REPORT No 2011131

At 1331:16, radar recordings show the two ac passing abeam at a range of 0.6nm with the TB21 making a R turn of 20° and indicating an altitude of 2400ft, the G550 descending through 2600ft tracking N after ascending to a maximum altitude of 2800ft. The TB21 pilot's written report indicated that a traffic warning had been received on the ac TAS warning system. The TB21 pilot indicated that she had sighted the G550 and made a turn to the R until the G550 had passed abeam.

At 1331:30, the PA28 pilot contacted Oxford Approach, *"Oxford Approach* [PA28 C/S] *is visual with the jet and the..1-9 approach we're currently operating at..about 3 thousand feet over at Barford Saint John."* This was acknowledged by the controller. [This was not the ac involved in the Airprox although it was erroneously mentioned in the G550 pilot's account as the reported ac.]

[At 1332:04, radar recordings show the G550 turning onto a southerly track, 8nm from touchdown, to intercept the LLZ and indicating an altitude of 2500ft. The TB21 is shown in the G550's 1 o'clock at a range of 1.2nm crossing from R - L and also indicating 2500ft.]

The TB21 pilot's written report indicated that she had received a further warning from the TAS system and the G550 was seen turning R and descending as if intercepting the LLZ at Oxford. The TB21 pilot indicated that she had tracked R of the normal track to maximise separation and when certain the G550 would pass well beneath, she continued en-route.

[At 1332:28, radar recordings show the G550 and the TB21 passing at the CPA of 0·3nm, the G550 indicating an altitude of 2200ft on a SE'ly track some 400ft below the TB21 indicating an altitude of 2600ft that is in a slight L turn to pass behind the G550.]

At 1333:44, G550 reported fully established. The controller instructed the G550 to descend with the glideslope and transferred the flight to TOWER.

After the G550 had landed, the pilot advised TOWER, *"...we would like..to report that..we had two resolution advisories..caused by the same airplane one at the end of the outbound leg the other one when turning to final and..we have to do some paperwork about that.*" TOWER replied, *"understood I'll make sure he does the ?????."* The G550 pilot added*, "Yeah that..was far too close to us I'd say he was about..2 thousand 5 hundred feet so it triggered the first one on the outbound and then er triggered again while we were turning."* The controller responded, *"That's understood I'll speak to his operator as well thank you for that.*" [At this point, the controller considered that the other ac involved was the PA28].

The ATSU reported that after a subsequent discussion with the pilot of the PA28, it became apparent that the PA28 was not the ac involved. The second ac was therefore unknown and ATC were not in a position to contact the operator. The ATSU were not aware that the G550 pilot intended to file an Airprox at the time and no further action was taken by the ATSU.

The G550 was in receipt of a Procedural Service. The TB21 was unknown to the Oxford APP controller. The Manual of Air Traffic Services (MATS) Part 1, Section 1, Chapter 11, Page 10, states:

6.1.1 'A Procedural Service is an ATS where, in addition to the provisions of a Basic Service, the controller provides restrictions, instructions and approach clearances, which if complied with, shall achieve deconfliction minima against other aircraft participating in the Procedural Service. Neither traffic information nor deconfliction advice can be passed with respect to unknown traffic.'

The TB21 was not in receipt of an Air Traffic Service and was listening out on a gliding frequency 129.975MHz.

The Airprox occurred when the G550, operating IFR in receipt of a PS in Class G airspace, came into close proximity with the TB21 which was operating VFR and not in receipt of an Air Traffic Service. This resulted in the G550 pilot receiving two TCAS RAs, which caused the pilot to be concerned. The TB21 was unknown to the APP controller and therefore it was not possible for the controller to pass appropriate TI.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

This Airprox occurred in the Class G airspace of the Oxford AIAA, where 'see and avoid' prevails. The Board was aware that Oxford ATC is not currently provisioned with aerodrome surveillance radar although this is due to change in the near future. [Post Meeting Note: The new Oxford ATC surveillance radar system with Mode S Monopulse SSR has been installed and is currently undergoing testing. It is scheduled to be operational in Spring 2012.] The ATSI report made it clear that the Approach Control Service provided here was a Procedural Service and, as the TB21 pilots had not contacted Oxford APP, the controller was completely unaware of its presence. This was contrary to what the G550 crew might have believed immediately following the incident as ATC originally percieved, incorrectly, that the reported ac was a PA28 in communication with APP. Therefore, the combined TOWER and APP controller was unable to provide a warning to the G550 crew about the TB21 flight. A GA Member thought it might have been more benificial if the TB21 pilot had contacted Oxford ATC rather than listening out on the Bicester Gliding frequency, especially at this range from the launching site. Alternatively a LARS is available within the AIAA from Brize RADAR that could, potentially, have provided the TB21 pilot with TI on the G550. As it was, the TB21 pilots were alerted by their ac's TAS and first saw the G550 at a range of 2nm in their 1 o'clock. With the G550 to their R, the TB21 pilot had a responsibility to avoid it under the Rules of the Air (RoA) and turned R to ensure separation until it had passed. This turn was reflected on the radar recording which shows the TB21 pilot had turned onto a broadly reciprocal course to the G550 when the range had reduced to 1nm thereby resolving any conflcit. Similarly, the IFR G550 crew had been alerted by the TCAS TA to the TB21 and then saw the aeroplane at a range of 4000m – just over 2nm away and before the TB21 pilot turned away. A CAT pilot member opined that TCAS is not always compatible with the mixed VFR/IFR environment of Class G airspace, but once the RA was triggered Members recognised the crew was required to comply with the demanded RA. However, pilot Members opined that it should have been evident to the G550 crew that whilst following the procedure another conflict would ensue once they turned inbound to intercept the LLZ. This turn inbound also changed the geometry of situation as the TB21 pilot now had right of way. Clearly the TB21 pilot did not know the G550 pilot's intentions but she wisely surmised what they were doing and ensured her course did not compromise separation against the G550, which remained in sight throughout. Once they had turned about, the G550 crew regained visual contact with the TB21 but they were still required to comply with the DESCEND RA. It was plain that the G550 crew recognised that they were operating in Class G 'uncontrolled' airspace, but they appeared to be surprised that there is no obligation on the VFR pilot to remain clear of the approach pattern. The TB21 pilots were flying quite legitimately in the 'Open FIR' and could not be expected to be familiar with all of the Oxford IFR arrival procedures, albeit that the approach 'feather' for RW19 is shown on CAA VFR charts. The chart also reflects the choke point along the TB21 pilot's route caused by Croughton Aerials and EGD129 – Weston-on-the-Green – with a gap of only 2-3nm to the E of Upper Heyford disused A/D before encountering Bicester Glider Launching Site. Given the confined airspace in this vicinity the Board recognised that it is difficult for transit pilots to avoid the approach entirely; whilst flying over or under the glidepath could also trigger a TCAS RA with traffic on final, a GA pilot Member emphasised the importance of communicating with Oxford here and to avoid the approach 'feathers' by as wide a margin as good airmanship permits. As it was, the VFR TB21 pilot avoided the G550 visually, whereas the IFR G550 crew avoided the TB21 by complying with the TCAS RAs, in addition to sighting the other ac visually. The Board agreed, therefore, that this Airprox had resulted from a conflict between VFR and IFR traffic resolved by the pilots of both ac. This ensured that throughout the encounter a minimum of 0·3nm was maintained horizontally and TCAS had ensured vertical separation, leading the Members to conclude unanimously that no Risk of a collision had existed in these convoluted circumstances.

PART C: ASSESSMENT OF CAUSE AND RISK

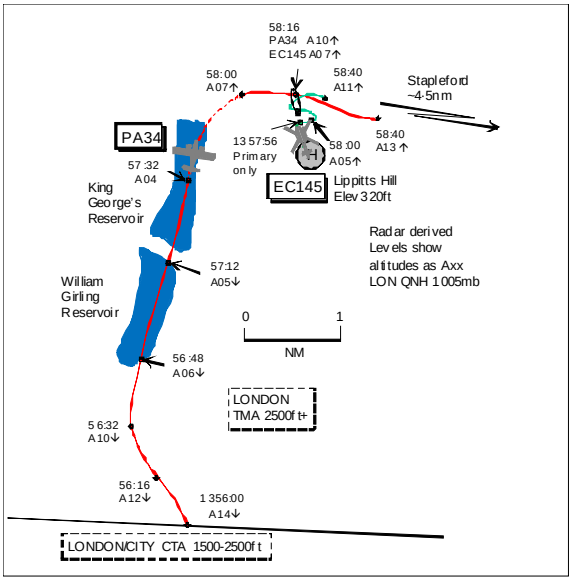
Cause: A conflict between VFR and IFR traffic resolved by the pilots of both ac.

Degree of Risk: C.

AIRPROX REPORT No 2011132

AIRPROX REPORT NO 2011132

Date/Time:	17 Sep 2011 1358Z (Saturday)	
Position:	5140N 00001E (5nm W LAM)	
Airspace:	LFIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	EC145	PA34
Operator:	Civ Comm	Civ Club
Alt/FL:	100ft↑	600ft
	QFE (994mb)	QNH (1004mb)
Weather:	VMC CLBC	VMC CLBC
Visibility:	>10km	10km
Reported Separation:		
	100-200ft V/ 1000m H	Not seen
Recorded Separation:		
	300ft V/>0·1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE EC145 PILOT reports on departure from a private site at Lippitts Hill, VFR and in communication with his base operations, squawking a discrete code with Modes S and C. The visibility was >10km flying clear below cloud in VMC and the ac was coloured white/red/orange with nav, anti-collision beacon and HISLs all switched on. He was departing via a clear area to the NW and as he cleared the trees at the far end of the RW TCAS issued an alert (circular symbol indicating +100ft about 1000m away). Heading 340° at 60kt and climbing through 100ft QFE 994mb the crew member in the rear informed him of the presence of a white coloured twin-engine ac flying extremely low up the reservoirs in an erratic fashion, ~1000m away. In response to this and the TCAS alert he elected to manoeuvre his helicopter down and R before visually searching for the ac. Once confident that he was clear, he rolled L and looked for the contact. He saw it in a climbing R turn towards him and he positioned his helicopter below the ac so that he could read its registration. He followed the ac at distance and filed an Airprox on contacting Heathrow SVFR. He was confident the ac was from Stapleford so after landing he telephoned Stapleford Operations and informed them that he was filing an Airprox against the twin engine ac. He assessed the risk as high.

THE PA34 PILOT reports flying a local sortie from Stapleford, VFR and in communication with Heathrow SVFR and then Stapleford Radio, squawking with Modes S and C. The visibility was 10km flying clear below cloud in VMC and the ac was coloured white/purple with strobe lights switched on. He was returning to Stapleford from a pleasure flight over London. Stapleford was using RW22 for arrivals and departures and the cct was very busy with training traffic. He elected to return from London on a N'ly route via the Lee Valley Lakes [Reservoirs] as this allowed him to conveniently and more safely join the Stapleford cct from the deadside. Once clear of the London City CTR he descended to altitude 600ft QNH 1004mb to afford his pax a pleasurable view of the lakes and Epping Forest. Heading 360° at 120kt upon reaching W abeam LAM he entered a climbing R turn, eventually levelling at altitude 1200ft to position for a crosswind join at Stapleford. He did not see any rotary craft which he was subsequently told was on climb out from the Epping Forest area.

THE HEATHROW SVFR CONTROLLER reports mentoring a trainee when the PA34 flight, which had been conducting a pleasure flight over central London, reported leaving his frequency to return to Stapleford. About 2min later at 1401 the EC145 flight made its initial call on frequency and reported, "…a twin-engine plane with the registration (PA34 reg) flying low over the reservoir…we nearly hit it". He took over from the trainee and asked the EC145 pilot if he wished to file an Airprox. The pilot replied in the affirmative and it was agreed the event would be logged at Swanwick and the pilot would complete the Airprox paperwork when he returned to base. A contact showing 7000 was seen close to the EC145, TI was passed and the EC145 pilot reported that this was the other ac concerned. This radar contact was identified using Mode S as PA34 c/s. The non-standard flight paperwork relating to PA34 c/s listed the PA34 registration as one of the ac used for this operation.

ATSI reports that this was an AIRPROX in Class G uncontrolled airspace between an EC145 and a PA34, reported by the EC145 pilot, in the vicinity of Lippitts Hill, NE London at a height of 100ft QFE 994mb [420ft amsl]. The EC145 departed a helipad in the vicinity of Lippitts Hill on an operational flight. The pilot reported manoeuvring at low level to initially stay clear of the PA34.

The PA34 had departed Stapleford earlier in the day and had been conducting a pleasure flight over London. LTC Heathrow Special VFR (LL SVFR) was providing a RCS to the PA34 flight on 125·625MHz whilst it operated inside the London City CTR. Outside CAS the PA34 flight was provided with a BS. The EC145 pilot called LL SVFR on the same frequency after lift-off. LL SVFR services were being provided by an ATCO on extension training under the supervision of an OJTI.

ATSI had access to the following in the course of its investigation: both pilots' reports, LL SVFR controller report, transcript of frequency 125·625MHz, recorded area surveillance. NOTE: radiotelephony is not recorded at Stapleford or at Lippitts Hill.

METAR EGLC 171350Z AUTO 25012KT 210V280 9999 SCT045/// 18/07 Q1004=

The PA34 exited the London City CTR at 1355:37 (UTC) displaying a LL SVFR SSR code and flew outside CAS to Banbury Reservoir where it turned onto a N'ly track to fly low-level along the centre of William Girling and King George's Reservoirs.

At 1357:32 the PA34 disappeared from surveillance coverage displaying an altitude of 400ft.

At 1357:56 the first, primary only, surveillance position indication symbol of the EC145 appeared 0·3nm N of the Lippitts Hill Helipad (LHH).

At 1358:00 the PA34 pilot requested a frequency change to Stapleford Radio, which was approved, and LL SVFR's service was terminated.

At 1358:00 the PA34's position indication symbol reappeared 0·9nm NW of the LHH at an altitude of 700ft. The EC145 was now also displaying Mode C information and was at altitude 500ft having tracked E from its previous position.

The PA34 continued climbing on an E'ly track as the EC145 also climbed whilst executing a LH turn.

At 1358:16 the ac passed abeam each other, on reciprocal tracks, laterally distant by 0·15nm: the PA34 was at altitude 1000ft and the EC145 at altitude 700ft. The ac were approximately 0·6nm N of the LHH.

At 1358:20 the EC145 pilot called LL SVFR stating that a twin-engine ac had been sighted over 'the reservoirs' and that the EC145 nearly collided with it. By 1358:40, when the EC145 flight's initial RT message ended, the EC145 had climbed to 1100ft and turned R, following the E'ly track of the PA34. The PA34's SSR code had changed to 7000 and the ac was at altitude 1300ft.

There followed a dialogue between the LL SVFR controller and EC145 during which the ac sighted by the EC145 was identified as the PA34.

A map of the Lippitts Hill area is provided at Appendix A. The map has been annotated with the position indication symbols for both the PA34 (in red) and the EC145 (in yellow). The PA34's flight along the King George Reservoir was at a level such that it disappeared from surveillance coverage for 28sec. During this time it is assumed that the ac continued on a N'ly track to the end of the reservoir where it turned on to an E'ly heading. It climbed from altitude 400ft to altitude 700ft in this time.

The initial lift profile of the EC145 was not visible on the surveillance recordings therefore it is not possible to verify the orientation of the ac prior to it being recorded on an E'ly track at 500ft. It is likely that, prior to this, the EC145 crew had observed the PA34's flight along the reservoir. The distance between the LHH and the last observed position of the PA34 over the King George Reservoir is 1·3nm.

The minimum distance (CPA) between the 2 ac occurred at 1358:16; this was equal to 280m.

The LL SVFR controller had access to surveillance derived information; however, neither ac were displayed on the controller's situation display immediately prior to their recorded CPA. Therefore, the LL SVFR controller could have been of no assistance to either flight with regard to the Airprox that was subsequently reported.

As the Airprox occurred the PA34 flight was transferred from the LL SVFR frequency, its BS having been terminated. The EC145 pilot called LL SVFR thereafter. Given the very low-level of the Airprox it was not possible to fully verify either pilot's account using surveillance derived information.

Appendix A

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 noted that the Airprox per se occurred when the MD902 climbed through 100ft QFE (430ft QNH) on a NW'ly departure track with the PA34 passing 1000m to the W of the landing site tracking N'ly and showing 100ft above on TCAS. A crewman in the MD902 saw the PA34 flying low over the reservoirs and alerted his pilot to it. The PA34 pilot reported flying at 600ft QNH whilst recorded radar shows the PA34 fading from radar at altitude 400ft 1·3nm WSW of the helicopter site tracking N'ly. It appeared to Members that the MD902 crew were concerned that the PA34 was low-flying and closing towards their projected flightpath. Members believed that the PA34 pilot had not broken any rules flying low over the reservoirs; his only need was to comply with Rule 5 of the RoA (500ft clear of persons, vessels, vehicles or structures on the ground). The MD902 pilot had taken action quickly to increase separation by turning R away from the PA34 before he judged that it would be safe to turn L back to the W while looking for it. It was then that he saw the PA34, as it was turning R towards the E and climbing, and he elected to pass close to it to identify the ac. This resulted in the measured CPA but it was a separation distance chosen by the MD902 pilot, post the initial evolution of the encounter. Although the PA34 pilot was

unaware of the helicopter's presence, the site is marked on the topographical charts and it should have been given 'due regard' during the flight planning phase. While flying low it would have been more difficult for the PA34 pilot to see the helicopter until it lifted-off and climbed above the tree line from its elevated site on a hill and this would be exacerbated by his cross-cockpit view from the LH seat.

Members were in no doubt that the MD902 crew was concerned during a critical stage of flight. However, in the circumstances, with both crews discharging their responsibilities in this Class G airspace, the Board agreed that this incident had quickly become benign, owing to the MD902 crews actions, allowing it to be classified as a sighting report where normal procedures, safety standards and parameters pertained.

PART C: ASSESSMENT OF CAUSE AND RISK

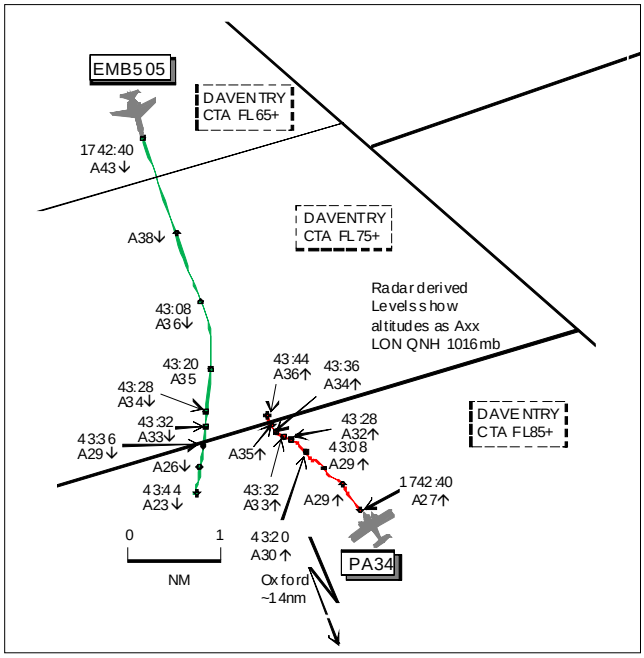
Cause: Sighting report.

Degree of Risk: E.

AIRPROX REPORT No 2011133

AIRPROX REPORT NO 2011133

Date/Time:	3 Oct 2011 1744Z	
Position:	5203N 00129W (14·5nm NW Oxford)	
Airspace:	LFIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	EMB505 Phenom 300	PA34
Operator:	Civ Comm	Civ Trg
Alt/FL:	↓3500ft QNH (1015mb)	~3000ft↑ QNH
Weather:	VMC CAVOK	VMC NR
Visibility:	10km	NR
Reported Separation:	Nil V/<0·5nm H	Not seen
Recorded Separation:	Nil V/0·9nm H Or 500ft V/0·8nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE EMB505 PILOT reports inbound to Oxford, IFR and in receipt of a RCS from London and then a BS from Oxford on 125·325MHZ, squawking 5015 with Modes S and C. The visibility was 10km in CAVOK VMC and the ac was coloured white/grey/black; ac lighting was not reported. A request for a HON direct arrival had been pre-noted to Oxford via RT and to London Control prior to descent. Late and insufficient descent clearance was given by London to comply fully with the procedure and they were kept on radar headings until almost out of CAS. Heading 180° at 200kt descending to 3500ft QNH just prior to changing frequency to Oxford, London warned them of "traffic 2800ft unverified" which was seen on ACAS 5-10nm ahead so they turned R to avoid. During the frequency change a TCAS RA 'descend' was generated and complied with but the high ROD resulted in a GPWS 'sink rate' and 'pull up' warning. The crew were visual with the ground but at no point did they see the other ac which passed <0·5nm away on ACAS at the same level. They repositioned onto a 10nm final for RW19. He assessed the risk as high.

THE PA34 PILOT reports flying a local dual training sortie from Oxford, VFR and in receipt of a BS from Oxford on 125·325MHz, squawking 7000 with Modes S and C. The Wx was VMC and the ac was coloured blue/white with strobe and nav lights switched on. At the time of the Airprox they were carrying out GH at about 3000ft 15nm SW of DTY heading NW at 100kt and were aware of an EMB505 inbound to Oxford but they did not see it.

ATSI reports that the Airprox occurred at 1743:34 UTC, in Class G airspace, 14·3nm to the NW of Oxford Airport.

The EMB505 (Phenom 300) was an IFR flight, inbound to Oxford from Leeds-Bradford Airport and the PA34 was operating VFR on a local training flight from Oxford Airport.

The LTC (Welin W) controller was providing a BS to the EMB505 after the ac had left CAS in the descent and was in the process of transferring the flight to Oxford Approach.

The Oxford controller was providing a combined Aerodrome and Approach control service without the aid of surveillance equipment.

CAA ATSI had access to area radar recordings, together with RT recordings from Swanwick TC (Midlands) and Oxford Approach, together with written reports from the two pilots and the Oxford Approach controller. The

Eurocontrol Automatic Safety Monitoring Tool (ASMT) recorded 2 resolution advisories via the Mode-S downlink. Both messages originated from the EMB505. The PA34 was not TCAS-II equipped.

METAR: EGVN 031650Z 22006KT CAVOK 23/13 Q1015 BECMG SCT020=

METAR: EGBB 031720Z 24017G27KT 7000 BKN040 21/15 Q1014=

METAR: EGBB 031750Z 26019KT 9999 BKN025 20/14 Q1015=

METAR: EGVN 031750Z 26012KT 9999 FEW045 BKN250 20/16 Q1016 NOSIG=

[UKAB Note (1): Sunset was 1742Z.]

At 1728:10, the EMB505 pilot contacted Oxford whilst still working Scottish Control, requesting the latest Wx and RW in use. The Oxford Approach controller advised, "RW19, surface wind 230/10-15KT, CAVOK, QNH 1015, QFE 1005, 21/13". The pilot acknowledged the Wx and reported overhead Manchester estimating the the Oxford NDB OX at 1744 and looking for a straight in arrival from HON. The Oxford controller advised that this, "...shouldn't be a problem" and the EMB505 pilot returned to the Scottish Control frequency. The EMB505 was pre-noted to Oxford Approach by London FDS MIDS, with an estimate for HON of 1733 together with the request for a direct arrival via HON R151, for RW19. This was approved by Oxford Approach with an acceptance level of 3500ft on QNH 1015.

At 1735:42, the EMB505 was transferred by Scottish Control to LTC (Welin W). The LTC controller approved a direct routeing HON direct Oxford. At 1737:21 the LTC controller instructed the EMB505 flight, *"...descend flight level one five zero continue present heading."* This was acknowledged correctly by the EMB505 pilot. The radar recording shows the EMB505's position as 12·5nm NNW of HON.

At 1738:02, the PA34 pilot operating VFR on the Oxford Approach frequency reported, *"Just between you and Moreton now just giving you an idea for that Phenom [EMB505] is he er on his way in now."* The Oxford controller replied, *"er yeah he called me over Manchester he's gonna be coming towards the Oscar Xray coming from Honiley."* The radar recording shows the PA34 positioned, 10·5nm NNW of Oxford Airport, indicating an altitude of 2900ft.

At 1738:41 the radar recording shows the EMB505 passing FL154 with 4·1nm to run to HON. The pilot requested further descent and the LTC controller gave the EMB505 further descent to FL100.

At 1739:11, the Oxford Approach controller updated the PA34 pilot, *"(PA34 c/s) just been ca- er just coordinated the (EMB505 company) inbound he will be doing the Honiley arrival."* This was acknowledged by the PA34 pilot.

At 1739:41, the EMB505 pilot requested further descent and the LTC controller gave descent to FL090.

At 1741:02, the EMB505 pilot again requested further descent. The LTC controller responded, *"(EMB505 c/s) you're cleared to leaving* [sic] *controlled airspace by descent Oxford will accept you at altitude three thousand five hundred feet QNH one zero one five millibars."* This was acknowledged correctly by the EMB505 pilot. The radar recording shows the EMB505 on the HON 163 radial, indicating FL090, with the PA34 indicating an altitude of 2200ft, in the EMB505's 1130 position at a range of 13nm. It was noted that the previous instruction to continue on present heading had not been changed by the LTC controller. It was not clear if the EMB505 was still on a radar heading or following the HON151 radial for the direct arrival.

At 1742:32 STCA activated low severity alert (white).

At 1742:42, the LTC controller advised, *"(EMB505 c/s) just leaving controlled airspace it's now a Basic Service and for information about three miles ahead of your current position I've got an unverified aircraft showing altitude two thousand eight hundred feet."* The EMB505 pilot responded, *"Er we're gonna have to turn right to avoid him I think (EMB505 c/s) are we clear to do that."* The LTC controller replied, *"(EMB505 c/s) er yeah at your own discretion."* The radar recording shows the EMB505 indicating an altitude of 4300ft with the PA34 in the EMB505's 11 o'clock at a range of 5·1nm, indicating an altitude of 2700ft and opposite direction.

At 1743:03 STCA changed to high severity alert (red).

At 1743:10, the LTC controller passed a further warning, *"(EMB505 c/s) just left of your eleven o'clock now two an half miles opposite direction three thousand feet."* The EMB505 pilot responded, *"Looking.*" The radar recording shows the 2 ac converging at a range of 2·5nm, with the EMB505 indicating an altitude of 3600ft and the PA34 indicating an altitude of 2900ft.

At 1743:19, the radar recording shows the EMB505 turning R onto a S'ly track to avoid the PA34.

At 1743:27, the EMB505 received a TCAS RA (ASMT) 'descend, crossing descend' and almost immediately at 1743:34 a TCAS RA 'descend descend' (ASMT).

The Eurocontrol ASMT reports the CPA at 1743:34, with horizontal separation of 0·86nm and vertical separation as 376ft.

[UKAB Note (2): The radar recording at 1743:28 shows the EMB505 heading 190° descending through altitude 3400ft with the PA34 1nm to its ESE at 3200ft climbing. The next sweep (1743:32) shows the lateral separation as 0·9nm with the EMB505 and the PA34 both level at 3300ft. The CPA, 0·8nm, is shown on the next radar sweep at 1743:36, the EMB505 descending through altitude 2900ft with the PA34 now in its 8 o'clock climbing through 3400ft, 500ft above.]

At 1743:42, as the separation between the ac increased, the LTC controller transferred the EMB505 flight to Oxford Approach.

The radar recording shows that the EMB505, in complying with the TCAS RA descended to an altitude of 2300ft [spot elevation in the area is shown as 784ft]. The pilot subsequently reported a GPWS "terrain warning" which was believed to have occurred at about this time. [The MSA to the NW is 2300ft].

At 1744:01, the EMB505 contacted Oxford Approach, *"Oxford Approach (EMB505 c/s) er turning left to self establish one nine climbing back to three thousand five hundred feet following an R A."* The Oxford controller responded, *"(EMB505 c/s) your cleared for the Honiley arrival Runway one nine report localiser established and you're number one traffic for Runway one nine."* The pilot replied, *"Clear to self establish on the one nine approach (EMB505 c/s)."* The Oxford controller advised the pilot about the PA34, *"(EMB505 c/s) there is one Seneca* [PA34] *that I am aware of to the north-northwest of the airfield that traffic is VFR height and position unknown."* This was acknowledged by the EMB505 pilot.

At 1745:02 the EMB505 pilot asked the Oxford controller what indications the Seneca (PA34) had received on TCAS. The PA34 pilot responded, *"...sorry we're not fitted with TCAS."* The Oxford controller added, *"(EMB505 c/s) the er Seneca's not fitted with TCAS and wasn't - he was aware you were approaching from the Honiley area but didn't see you.*"

The EMB505 continued with the approach without further incident and after landing at 1752:17, reported, *"....we're gonna have to save tapes for that one because it was a TCAS that er led to the er terrain warning as well."* This was acknowledged by the Oxford controller.

The Airprox occurred whilst the EMB505 was in receipt of a BS from the LTC controller. As the EMB505 departed CAS, the LTC controller changed the service to a Basic Service and observed traffic ahead and passed a warning, with TI. The EMB505 pilot asked if they were clear to make a R turn to avoid. This request was most likely due to the EMB505 pilot having been instructed to "continue present heading".

After receiving an updated warning and a TCAS TA, the EMB505 pilot commenced a R turn to avoid the unknown traffic. The EMB505 pilot then received a TCAS RA 'Crossing Descend' and immediately a TCAS RA 'Descend Descend'. This resulted in the pilot descending and then receiving a GPWS - terrain warning, 'pull up'.

The PA34 pilot was operating VFR to the N of Oxford and the pilot was aware of the inbound EMB505. The Oxford Approach controller updated the PA34 pilot on the intention of the EMB505 to carry out the "Honiley arrival". No level information was provided by the PA34 pilot or requested by the Oxford controller. It was not clear if the PA34 pilot was aware that the EMB505 was descending to an altitude of 3500ft. The PA34 was indicating an altitude of 3400ft as the 2 ac passed abeam. The PA34 pilot did not acquire a visual sighting of the EMB505.

The LTC controller (using surveillance equipment) had retained the EMB505 until the 2 ac had passed abeam. When the EMB505 called Oxford Approach, the Oxford controller was unaware that an Airprox had occurred and was not in a position to pass timely TI on the PA34 (VFR) to the EMB505 (IFR).

The EMB505 was in receipt of a BS from the LTC controller and the PA34 was in receipt of a Basic Service from the Oxford controller. CAP 774, UK Flight Information Services, Chapter 2, Page 1. Paragraphs 1 & 5, 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.'

'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.'

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 questioned whether the EMB505 was under the appropriate service after leaving CAS by descent. The NATS Advisor reminded Members that a DS or TS was not available on any London Control frequency below FL070 [UK AIP ENR 1-6-1-1]. The LTC WELIN controller informed the EMB505 crew that they were leaving CAS; however, best practice would have been to inform the flight in advance where and/or when this would occur to give the crew a 'heads-up' and the opportunity to negotiate a revised service and/or a change of frequency to be effective on leaving CAS. There also appeared to be some confusion whether the EMB505 was still on a radar heading; although the RT transcript showed the assigned heading was not cancelled, the service was changed to a BS. The flight should have been released onto its own navigation when the assigned heading was no longer pertinent but this could have been inferred when the service was downgraded as the flight left CAS. One Member suggested that the EMB505 flight could have called Brize Norton for a radar service. Although this was possible in theory, in practice the small track distance involved after leaving CAS and establishing on the RW19 ILS from the HON procedure would have precluded a timely call to Oxford approach to establish a PS. Had the EMB505 been released earlier by LTC WELIN, Oxford APP could have provided the EMB505 with TI on the PA34 but this would have been generic. In the event, the LTC WELIN controller alerted the EMB505 crew to the PA34's presence at 2800ft when he gave a traffic warning to the flight shortly after STCA activated. Under a BS controllers are not obliged to pass TI; however, a controller with access to surveillance derived information may pass a warning to pilots if that controller considers a definite risk of collision exists and Members commended his actions in doing so. The EMB505 crew saw the PA34 on TCAS and, believing that they were still on a radar heading, asked if a R turn to avoid was approved. This request was approved and WELIN updated the warning, informing the crew that the PA34 was indicating 3000ft. At this point the radar recording shows the EMB505 turning R onto a S'ly track which resolved the conflict. Members also wondered why the EMB505 crew had continued their descent to the acceptance level of 3500ft and did not stop off their descent at a higher level. In not doing so, their descent and the PA34's climb had breached the TCAS RA 'bubble' which then commanded a descent through the PA34's level. The PA34 pilot was aware of the EMB505's impending arrival both from listening to the RT exchanges with Approach and from the TI passed. One Member thought the PA34 pilot could have been more helpful by manoeuvring his ac away from the area where he knew the EMB505 would be flying, having knowledge of its arrival at least 15min before the CPA. However, the EMB505 was off the direct arrival HON procedure, having been put on a radar heading by LTC which routed the ac about 5nm W of the HON 151° arrival track, so the PA34 pilot may have believed his ac was clear of the inbound EMB505. The EMB505 crew appeared to have taken robust action in response to the TCAS RA and their high ROD (>3000fpm) had generated a GPWS terrain warning. Members agreed that pilots should ensure that they follow the TCAS guidance closely as it was thought

the RA would have 'softened' quickly, after the ac's levels had crossed, well before the GPWS parameters were breached.

In the end, the PA34 pilot flying VFR did not see the descending EMB505 crossing 1nm ahead. The EMB505 was initially approaching head-on, from above and descending. This would have presented a small target aspect to the PA34 pilot which, when combined with the nose high attitude of the climbing ac would have made visual acquisition more difficult. The EMB505 crew flying IFR only saw the PA34 on TCAS and reacted to the TI given, passing 0·8nm W of and 500ft below the PA34 whilst complying with the RA. Members discussed whether the cause of the Airprox was the failure of both pilots to see the other ac in Class G airspace. However, Members agreed that both crews had discharged their responsibilities appropriately in the circumstances and the sequence of events had led to a conflict. Although the EMB505 passed unsighted to the PA34 pilot, the EMB505 crew had reacted well to the information presented and turned their ac R which had resolved the conflicting flightpaths. The subsequent TCAS RA had increased the vertical separation at the CPA. These elements were enough to persuade the Board that any risk of collision had been effectively removed.

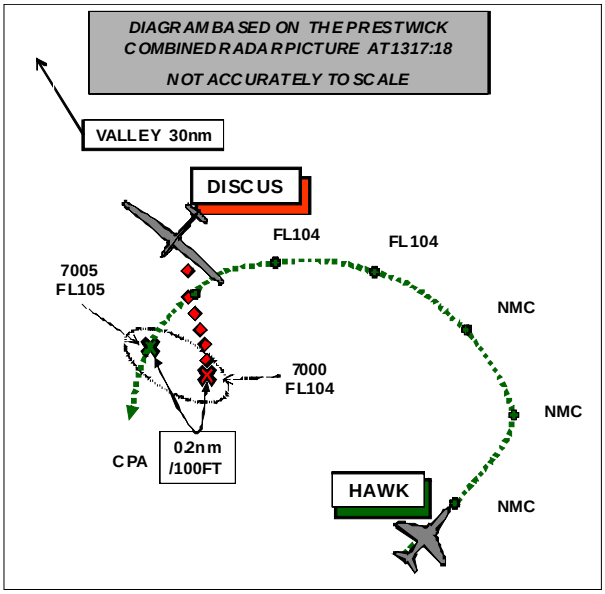
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict in Class G airspace between IFR and VFR traffic.

Degree of Risk: C.

AIRPROX REPORT NO 2011134

Date/Time:	4 Oct 2011 1317Z	
Position:	5258N 00351W	(30nm SE Valley)
Airspace:	Valley ATA	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Hawk TMk1	Duo Discus
Operator:	HQ Air (Trg)	Civ Pte
Alt/FL:	10500ft	12000ft
	RPS (1012mb)	NK
Weather:	VMC CLBL	NK
Visibility:	30km	
Reported Separation:		
	0 V/300ft H	NR V/300ft H
Recorded Separation:		
	100ft V/0.2nm H (~1200ft)	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE HAWK (A) PILOT reports leading a pair of black ac with all external lights (including the nose light) switched on, on a local, medium level, tactical training sortie in the Valley Aerial Tactics Area (VATA), squawking 7005 with Mode C; ACAS and Mode S were not fitted. On terminating a 1v1 fight, Hawk (A) levelled at 10500ft, at 300kt and began a left hand turn onto a SW heading (240°); during the turn the front seat pilot called tally on a glider in the left 10 o'clock. At the time of the sighting they were still on a tactical frequency and not under an ATC service. The glider was white in colour with the registration clearly visible, was in a left hand turn and was estimated to have been about 400ft laterally from Hawk (A) initially on a similar heading and at the same level. On hearing the call the (rear seat) handling pilot simultaneously rolled wings level and gained tally with the glider. The glider passed 300ft from Hawk (A) and about 1nm from Hawk (B) who was not visual with it at the time. The formation was then moved to the SW of the glider and the glider's position was reported to Valley APP on first contact; he backed this up with a telephone report on landing.

He assessed the risk as being high.

THE DUO DISCUS GLIDER PILOT did not consider there to have been an Airprox but provided a comprehensive written account of the incident. He was soaring in the RAF Valley ATA to the W of Betwys-y-Coed over Snowdonia, at about 12000ft. A transponder was fitted and he was squawking 7000 with Modes C and S; he was also in communication with Valley APP and continuously monitoring their frequency.

He observed a couple of Hawks 'dog fighting' above him and admired their skill.

A couple of minutes later he was heading about W he thought, soaring at about 50kt (thus almost stationary over the ground (the wind speed being W at about 40kt) when a Hawk overtook him off his starboard wing about 100yds away but certainly not close enough to cause him any anxiety or turbulence. The Hawk then dived away towards the SW.

He cannot recall if the Hawk 'waggled' his wings, but he had the distinct impression that the pilot was conducting a close pass to either 'say hello' or to note his registration. He believes that the Hawk's speed would have precluded noting his registration but he thought that this would have been available from Valley ATC through his squawk.

He had no doubt that the overtaking Hawk had both seen him visually and probably observed his squawk. He was quite content that the Hawk's pass was carried out at a safe distance.

The curious question remains as to why an overtaking ac in such a situation should have filed an Airprox on a perfectly visible ac in VFR with transponder on; he thought that the Hawk 'cockpit camera and voice recording' might provide further information. Also he was content that the radar replay would verify that there was no danger in the Hawk's manoeuvre.

RAF VALLEY APPROACH CONTROLLER reports he was working as a screen controller on the Radar console monitoring the VHF frequency 125.225. A glider (callsign given) called informing them that he was soaring overhead Betwys-y-Coed at 10000ft and asked if the VATA was active. A check on the electronic tote confirmed that a formation had departed from VATA East and that they were still airborne so the glider was told that the VATAs were active. There appeared to be a formation manoeuvring in the area of VATA East but they were not within 10nm of the glider's reported position.

RAF VALLEY SATCO reports**:** this incident was subject to Airprox action as a Valley based formation reported that they encountered a glider. Valley ATC were not in contact with the Hawk formation at the time of the Airprox, but were in contact with the glider.

The RT tape was retained and a transcript for the frequency was sent to the SFSO.

Valley was operating without SSR at the time of the reported incident. PSR coverage over the Snowdonia mountain range is weak and the chances of the PSR detecting a glider are very small. The glider could not have been identified on radar and furthermore, the Hawk formation would not have been identified by ATC as without SSR they would merely have been non-squawking contacts.

The VATAs are designated blocks of airspace used for the deconfliction of RAF Valley training sorties; they lie entirely within Class G airspace and have no recognition outside Valley. RAF Valley ATC does not provide any type of ATS to Hawk ac operating in the VATAs and ac work autonomously under VFR and are not in contact with Valley ATC; however, ATC does have the ability to contact these formations through the use of discrete frequencies but this is normally limited to changes in the flying phase or weather recalls. Valley ATC provides radar services to ac transiting the VATAs, both visiting ac inbound to Valley and medium level transits when requested.

BM SAFETY MANAGEMENT reports (abbreviated to avoid duplication) that this Airprox occurred between one of a pair of Hawks operating VFR in the VATA and a Discus glider operating VFR in the vicinity of Betws-y-Coed.

Of note is the fact that the Discuss was equipped with a Mode S capable transponder.

At the time of the incident, the SSR at RAF Valley was unserviceable. Moreover, PSR coverage in the area of the Snowdonia mountain range is known to be poor and SATCO RAF Valley believes that there was a minimal likelihood of the Discus being detected by the PSR.

At 1312:02 the Discus pilot called Valley Radar to enquire as to whether the VATA was active and stated that they were, '*soaring at ten thousand feet overhead Betws-y-Coed'*. Based on the radar recording, the Discus and the Hawk were operating within the same area for at least 4min and 33sec prior to the call to Valley Radar, no request for an ATS was made by the Discus pilot.

At 1316:40, the Hawk can be seen to be in a left turn, passing 0.4 nm through the Discus's 12 o'clock indicating FL136, with the Discus tracking SE indicating FL103. The Hawk continues this left turn with the SSR Mode C dropping out at 1316:46 and re-appearing at 1317:07 indicating FL104; the Discus also indicates FL104.

The CPA occurs at 1317:18 with 0.2nm lateral and 100ft vertical separation indicated on the radar replay.

The Hawk pilot reports first seeing the Discus in their 10 o'clock with about 400ft lateral separation, on a similar heading and at the same level. The Discus pilot reports that whilst he was visual with both Hawks of the formation up to a couple of minutes prior to the Airprox, the Hawk overtook him on his starboard side, thus removing any possibility of him being visual prior to the CPA.

Given that SSR information was not available to RAF Valley ATC, from an ATM perspective there is little that could have been done to affect the outcome of this occurrence. A hindsight-bias argument could be constructed that suggests that having received the call from the Discus pilot at 1312:02, Valley Radar could have advised the Hawk

of its presence; however, any TI passed would have been generic in nature and would probably not have had any bearing on the outcome of the occurrence.

Based on analysis of the radar replay and the Hawk pilot's report, their first sighting of the Discus appears to be approximately co-incident with the CPA. Moreover, given the geometry of the incident, the Discus pilot was not in a position to see the Hawk since it approached from his 6 o'clock. This suggests that provenance was the sole remaining safety barrier to this occurrence. Mitigations that could be put in place to reduce or remove the risk are to operate this type of sortie within segregated airspace or to provide a collision warning system (CWS) [UKAB Note (1): TCAS 2 is fitted to the Hawk T Mk 2] that is inter-operable with all types operating in Class G airspace.

UKAB Note (2): The recording of the Prestwick combined radar picture was showed the incident as outlined in the B

HQ AIR (TRG) comments that training exercises such as Air Combat Training are essential for preparing military pilots for combat and can affect the ability of participants to detect other traffic. Therefore, exercise areas are selected to minimise the likelihood of encountering civilian traffic and the AIAA and VATA are notified in the AIP for that reason. The limitations on the Valley radar capabilities, combined with the poor radar visibility of the glider, meant that he could not have been provided with a radar service had he requested one, nor could the Hawk formation have been alerted to his presence other than with a general warning. The fitment of TCAS to the Hawk TMk1 has been considered but is not affordable given the imminent retirement of the fleet at RAF Valley. So, whilst the fact that the Discus was operating a transponder is welcome it was not effective in this case.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The Board commended the glider pilot for his fitment of SSR and with Modes C and S; this allowed easy identification of the glider on area radars and a full investigation. Clearly the pilot was also aware of the nature and intensity of military operations in the N Wales area. One Member reminded the Board that the fitment of SSR (Mode S Elementary) will become mandatory if operating above FL100 later this year.

The Gliding Member briefed the Board that the glider was probably soaring in a narrow wave with substantial sink behind it and although, as shown on the radar, he was 'beating' N/S just W of the edge of the mountains, the ac was most likely experiencing considerable drift in the moderate Westerly wind and had been pointing well to the right of its ground-track (while heading South). That being the case, the pilot's view would have been away from the approach path of the Hawk making it invisible behind him in the latter stages of closing.

The HQ Air Trg Member reminded the Board of the position and dimensions of the VATA and that, although it is Class G airspace, it is almost continuously busy on weekdays.

The Secretariat informed the Board that, although not shown fully on the diagram above, the Hawk completed a full descending left-hand orbit dropping from FL140 to about FL105 before levelling and coming into conflict with the glider and that was probably why its Mode C had dropped out (as shown on the diagram).

Unfortunately, in this case circumstances conspired to negate the utility of the comprehensive glider avionics fit and the good intentions of its pilot. Firstly the RAF Valley SSR was unserviceable due to technical issues therefore the ATC controller would not have been able to see the glider and secondly the ac Hawks involved were non-ACAS equipped T Mk 1s so they were 'blind' to the glider's SSR.

Notwithstanding these factors, some controller Members considered that since the glider pilot had gone to some effort to inform Valley ATC of his position and intentions, the controller should have not only disseminated the information internally, but passed an 'all stations' generic warning on the RT (on Guard if that was the only option) of glider activity at medium level in the Betws-y-Coed area and this would have prompted the Hawks to avoid that area or increase their lookout. Members discussed the efficacy of the Hawks operating on a discrete frequency without an ATS; however, bearing in mind the type of exercise being performed, they agreed that it was justified.

Notwithstanding the issues discussed above, both ac were operating legitimately in Class G airspace where both pilots had an equal and shared responsibility to see and avoid other ac. As noted above the Hawk descended and approached the glider from his rear, making it invisible to the glider pilot. On the other hand, although perhaps difficult to see the white glider against a white background, in the Board's view, the Hawk crew should have seen the glider earlier than they did (400ft away). Although the Hawk crew just had time to take effective avoidance, Members agreed that there had been a compromise of normally accepted safety margins.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A late sighting by the Hawk crew.

Degree of Risk: B.

AIRPROX REPORT NO 2011135

Date/Time:	5 Oct 2011 0726Z	
Position:	5818N 00620W (6nm N Stornoway Airport)	
Airspace:	Scot FIR	(Class: G)
	Reporting Ac	*Reporting Ac*
Type:	SF340	SF340
Operator:	CAT	CAT
Alt/FL:	2000ft	2000ft
	QNH (993mb)	NK
Weather:	IMC KLWD	IMC KLWD
Visibility:	0	0
Reported Separation:		
	200ft V/1nm H	0ft V/NK H
Recorded Separation:		
	500ft V/0.1nm H	

BOTH PILOTS REPORTED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE SF340 (A) PILOT reports that they were cleared for the [LOC/DME/NDB (L)] procedure for RW18 and were inbound heading 180° at 160kt under a PS from Stornoway, squawking 7000 with Modes C and S. Just before, as they were turning base, another ac was cleared for the same procedure but instructed to maintain 3000ft until informed. They [ac A] were level at 2000ft and as they approached the descent point at about 7nm, traffic was seen on TCAS at the same level. The crew had a quick discussion to prepare for any following TCAS command; a TA was issued, followed by a RA 'descend descend' now at a commanded rate of 2000fpm. ATC was told of the RA and they replied, "that should be a company ac at 3000ft".

They received a 'clear of traffic' at 1300ft and then performed a go-around to re-join the hold.

He assessed the risk as being high.

THE SF340 (B) PILOT reports flying a scheduled passenger flight inbound to Stornoway under IFR and in receipt of a PS from them while squawking 7000 with Modes C and S. They were No2 behind another scheduled passenger ac, were heading 315° at 200kt, on the STN (VOR) 321° radial to join the RW18 LLZ NDB DME approach. The ac ahead had followed the same initial approach for RW18 and was established inbound on the Localiser at 2000ft. They [ac B] had been cleared for the procedure from the STN at 2000ft by Stornoway ATC and had descended to 2000ft (he suggested that the ATC tapes be checked as he was unsure as to whether ATC, the pilot or both had made the error) as (with hindsight) he realised that they should have been at 3000ft until the preceding ac had landed; he could not recall how he got to that position.

Initially they observed the other ac on TCAS as proximate traffic (blue) then TCAS enunciated 'traffic'; they were yellow 01 [TA 100ft relative alt], becoming 02 and then they received an RA. The RA was 'do not descend' (red arc, lower VSI) and the other ac had an 'RA climb'. Both ac followed their respective RAs; the other ac then commenced go around climbing to 3000ft, he thought, and they (SF340 (B)) were instructed to continue as No1.

He was uncertain of the range of the other ac as he was aware of it only from its TCAS indication.

He submitted an ASR to the company FSO and an Airprox report, assessing the risk as Medium to High.

UKAB Note (1): The pilot included a copy of the Approach Plate in use at the time.

AIRPROX REPORT No 2011135

ATSI reports that SF340 (A) was inbound Stornoway from Aberdeen and in receipt of a PS from Stornoway APP; meanwhile SF340 (B) was inbound Stornoway from Inverness also in receipt of a PS from Stornoway APP on the same frequency.

The Stornoway controller was providing a combined PS and ACS, had been on duty for 1:50 and was assisted in the Tower by an ATSA. The controller had been at the unit since January and, although previously validated elsewhere, was validated as a controller at Stornoway on 21 June.

The controller considered the operational duty as a 'normal' day and the workload, complexity and RTF loading were all described as 'moderate'. RW18 was in use, the surface was declared as 'wet' with no equipment unserviceabilities affecting the operation and there were no noted distractions.

ATSI had access to both pilots' reports, the controller's report and unit investigation, a transcription of the RT frequency in use and a radar recording of the Prestwick Multi-Radar Tracking system.

The METARS were:

METAR EGPO 050650Z 21014KT 9999 FEW009 SCT024 13/12 Q0993=

METAR EGPO 050720Z 21012KT 9999 FEW009 SCT012 BKN020 13/12 Q0993=

The controller stated that a functioning DF was available in the tower and that he did not recall any 'visibility' to the NW i.e. neither ac was visible as they approached or left STN (VOR/DME).

SF340 (A) called Stornoway at 0713:08 descending to FL070 with 11nm to run to STN; a PS was agreed and the QNH was confirmed.

Inbound estimates for the STN are provided by Prestwick Centre (PC) about 7min in advance of the estimate for the beacon; a release is agreed and PC will ensure inbound ac are level separated. On receipt of the estimates for the two SF340s, the controller stated that he performed a mental check of all the details: level, release point, time; and ensured that the details were correct.

When determining which approach procedure to allocate the controller stated that ac order, QNH, and RW in use are all factored in. Commercial SF340s approaching from the SE generally fly the 'Initial Procedure' via STN when the weather precludes visual manoeuvring.

The controller stated that when two or more ac are presented in succession and their estimates are less than 10min apart, the second and successive ac are issued with an EAT. The landing interval at Stornoway is 1 every 10 min. The controller also stated that he perceived a need for expediency. This, he stated, came from the local operators who are reluctant to enter the hold if it is for only one hold. The controller noted that it remained at the controller's discretion as to whether or not successive ac are 'brought in' at intervals of less than 10min.

At 0713:38 the controller cleared SF340 (A) for the 'Initial Approach' and instructed the pilot to descend to altitude 2000ft. The Stornoway Initial Approach VOR STN RW18 procedure is promulgated as:

Arrival not below MSA. Overhead VOR/DME STN (IAF) at **3000** or as instructed by ATC (lowest altitude to start procedure from hold is **2000**). Fly outbound on VOR STN R330 (CAT A, B); VOR STN R321 (CAT C, D) descending to **2000**. At STN D14 turn right onto VOR STN R338 (QDM 158^{O}) inbound to intercept and establish on LOC or FAT. When established continue with appropriate LOC or NDB(L) procedure.

SF340 (B)'s first call was at 0714:14, descending FL85 with 25nm to run to STN; a PS was agreed and the QNH confirmed.

The controller calculated that the two ac would arrive at STN with only 3min separation, which would have the effect of 'taking away the option of building in expediency' and the second ac [to arrive] would have to hold; therefore, he asked SF340(A) pilot for his STN estimate, which was given as 'minute 17'. The controller then asked SF340 (B), "*if you can reduce your speed what will be your estimate for the S T N";* the pilot replied with an estimate of minute 24 and the controller informed him that, based on that estimate, there would be no delay.

The controller explained that the requesting a speed reduction by SF340(B) had the effect of increasing the time separation (based on estimates) to 7min and created a 'different scenario' to manage, stating that, with only 7min between the ac there was still a option to send SF340(B) around the hold once; however, he judged that he could manage both the flights 'without delay' by making use of vertical separation and a "MATS Part 2 local separation, whereby the second ac could be descended once 5 DME or more from the STN outbound". (The unit report states that the second ac should not be descended until the first ac has landed).

At 0716:39 the controller instructed SF340 (B), "*not below flight level 85 initially you are cleared the initial approach from the S T N runway 18."* This was read-back correctly by the pilot.

The controller stated that it was quite normal to have two ac in the approach procedure during the first morning rotation; he also observed that the operator's schedule had four ac arriving at the aerodrome within 15min of each other (3 commercial passenger flights and one newspaper flight). However, all 4 corresponding departures were timed as being at 10 minute intervals.

At 0717:41 SF340 (A) reported overhead STN passing alt 5200ft and beacon outbound. The controller instructed SF340 (A), "*you're number one report localiser established or visual";* SF340 (B) was then given descent to FL065 and SF340 (A) was instructed to report passing 3000ft.

At 0720:37 SF340 (A) reported passing 3000ft. The controller then instructed SF340 (B) to descend to altitude 3000ft. [UKAB Note (2): This was correctly readback by the pilot at 0721:00.] The controller requested a level check from the SF340 (B), which was given as passing 5900ft, and instructed SF340 (B) to report beacon outbound.

SF340 (B) reported beacon outbound at 0723:41 and the controller replied, "*Roger you are number two report localiser established"* and the pilot replied, "*Wilco*". [ATSI Note: Based on actual report times, there was then 6min between the ac].

The unit MATS Part 2 states:

'If there is a need to restrict descent, this should be stated **before** issuing a clearance for the IAP e.g. 'not below altitude 3000ft until advised, cleared LLZ/DME/NDB Runway 18, report Beacon outbound.' And stated **AGAIN** once the pilot has reported 'commencing the procedure' e.g. 'not below altitude 3000ft, report LLZ established'.

The radar replay showed that at 0723:41, SF340 (A) was at FL026 (altitude 2060ft) [Mode S SFL020] turning right to intercept the localiser and SF340 (B) was less than 1nm from STN descending through FL040 (altitude 3460ft) [SFL030].

At 0724:00 SF340 (B)'s SFL changed to 020 as the ac descended through FL036 (A3040).

SF340 (A) reported, *"localiser established nine and a half miles"* at 0724:01; the controller cleared the ac to land and at that point he assimilated that it would take it a further 3min to land. Estimating SF340 (B) as having with a speed of 4nm/min, he calculated that it would then be at about 12nm on the outbound leg. The controller stated that he was comfortable with this situation as, should the first inbound require a go-around, the unit's MATS Part 2 local separation standard would allow the second ac to be level changed with the first if the second ac was more than 5nm outbound.

At 0725:03 the radar replay showed SF340 (A) at 7.5nm on the final approach indicating FL026 (A2060) with SF340(B) in its 11 o'clock at a range of 5.3nm converging, also at FL026 (A2060). By 0725:24 the distance between the two ac had decreased to 3.2nm, the relative bearing and level being unchanged.

At 0725:32 SF340 (A) commenced a descent, passing FL024 (A1860) 6.5nm from touchdown with SF340 (B) at FL025 (A1960) converging from the left at a range of 2.5nm.

At 0725:48 SF340 (A) was 6nm from touchdown passing FL023 (A1760), SF340 (B) was still in its 11 o'clock, range 1.1nm at FL025 (A1960).

At 0725:49 SF340 (A) called, "*TCAS RA*" and the controller replied, "*It's a company Saab er in descent to altitude 3000 feet*" and gave a further wind check.

The controller recalled his mental checklist: he was particularly aware that in TCAS RA situations the controller response is 'Roger' (MATS Part 1). The controller looked at his strips, which again gave him procedural confirmation that SF340 (A) was at 2000ft and SF340 (B) was at 3000ft. The controller felt that his knowledge of the situation must be incomplete and that it was important for him to re-establish control of the situation using standard phraseology.

When the controller heard SF340 (A) call *"TCAS RA"* he recalled that his initial thoughts were 'from what?' his mental picture told him that he only had one other ac under his control, which was separated from SF340 (B) by 1000ft. He stated that it is common for pilots to request information on ac in the vicinity showing on their TCAS display. He also pointed out that, being in Class G airspace, there *could* have been other traffic in the vicinity but that this would be highly unusual in such a position on the final approach. The controller noted again that so far, the day had been 'normal' but yet there might be traffic that he did not know about.

The controller recalled that his immediate actions included using the binoculars to look out the window to obtain any visual information. The RTF was on loud speaker in the tower and the ATSA, also aware of SF340 (A)'s statement, was also looking out for any visual clues. No visual sightings were apparent and both staff were left wondering 'what' had happened.

At 0726:00 surveillance replay showed SF340 (B) pass behind SF340 (A) by less than 0.1nm. SF340 (A) was at FL020 (A1460): SF340 (B) was at FL025 (A1960). Four sec later SF340 (A) reached FL019 (A1360) before starting a climb along the final approach track in reaction to the RA. SF340 (B)'s reported Mode C remained constant at FL025 (A1960) before, during and after the encounter.

At 0726:12 the controller requested SF340 (A)'s intentions, the pilot replied, "*going around,"* and the controller instructed a standard missed approach.

The controller recalled saying to the assistant "with TCAS, don't the ac talk to each other"; this he recalled was a confirmatory statement in his own mind that he would have expected a similar call from the second ac.

The controller noted that he had received no notification from either pilot that they were 'clear of conflict'.

At 0726:38 the controller requested a level report from SF340(B) pilot who replied, "*My mistake we're now at we're at 2000 feet climbing to 3000 feet...we're one one miles outbound to the northwest."* When the controller heard SF340 (B) report its level as 2000ft, he immediately thought 'have I given him any indication that he can go to 2000ft?' The controller also decided that, given the ac position, he would use the local separation standard (see above) and instruct the ac to remain at 2000ft. At 0726:58 the controller instructed the ac to descend to altitude 2000ft and report localiser established.

SF340 (A) had been instructed to climb to 3000ft and the controller judged that by the time SF340 (A) was in the left hand turn back to the SAY [Locator], the ac would be at 3000ft thus restoring separation.

The controller stated that the duty of care he had towards ac under his control was important and during the incident it was important for him to establish that both ac were 'OK' and to try and establish if there was a third unknown ac in the equation. His plan was then to land SF340 (B) and hold the SF340 (A), thereby 'settling the situation'.

The controller believed that the SF340 (B) pilot must have believed he was cleared for the *full* procedure with no vertical restriction i.e. the previous restriction of 3000ft had become non-applicable.

At 0727:12 SF340 (A) was instructed to continue RW track and climb to alt 3000ft. The pilot requested entry into the SAY hold [overhead the airfield] and he replied, "*initially report reaching altitude 3000 feet".*

At 0727:53 the controller instructed SF340 (B) to report reaching 2000ft, to which the pilot replied that the ac was maintaining alt 2000ft; he then instructed SF340 (A) to take-up the SAY hold at 3000ft.

SF340 (B) continued its approach and was cleared to land from a 10nm final.

SF340 (A) remained in the SAY hold for a short period before commencing the alternate NDB procedure and landing without further incident.

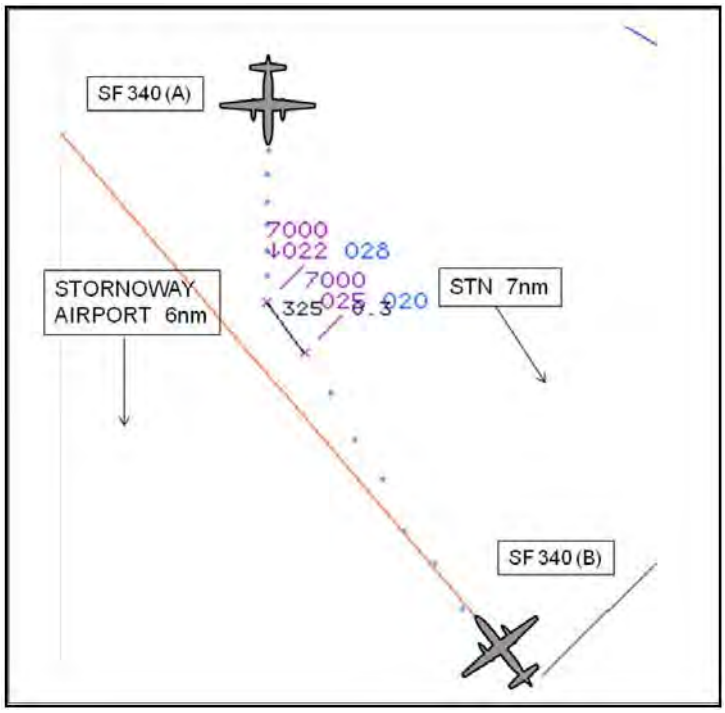


Fig (2): Four sec before the CPA.

When discussing ways of preventing a re-occurrence the controller stated that re-iterating the 3000ft restriction was a possibility but he considered that pilots were 'aware' of their place in the arrival sequence. He also stated that during his training with various OJTIs, only 1 had practiced the repetition of level instructions and the other 2 had not. He noted that it was not normal at the unit and was perceived as increasing RTF traffic.

The controller observed that there was potential for 'tonal' feedback by pilots when previously stated clearances were re-iterated; and this too fostered a reluctance to re-iterate clearances.

The controller stated that he was familiar with the 'voice' of the SF340 (B) pilot and considered that this particular pilot's RTF, being of a highly standard nature, gave him confidence in the pilot's actions. The controller described an implicit feedback of 'trust', as opposed to a pilot that he was unfamiliar with, or a pilot that was unfamiliar with the aerodrome. The controller stated that he was used to hearing this particular pilot on 3 or 4 mornings each week.

The controller was presented with two commercial IFR inbound flights without the standard arrival time separation of 10min. He formulated a plan based on increasing the time separation between the two flights. He would then use vertical clearances to maintain procedural separation until such time as he considered he could use a local separation standard to descend the second ac for an approach.

Having extended the arrival interval between the two ac from three to seven minutes and calculating that his proposed plan would work, the controller cleared SF340(B), "*not below flight level 85 initially you are cleared the Initial Approach from the S T N runway 18".* This clearance contained a vertical restriction.

It is assumed that SF340 (B) crew were aware of SF340 (A) ahead. This should have been re-enforced by the controller's provision of sequence information and that the ac was then descended procedurally following the first arrival.

After SF340 (B) went outbound from the STN the sequence of events on the flight deck is unknown as no comprehensive investigative interview was available to ATSI. However, from the evidence provided, it is assumed that there was a likelihood of some degree of automaticity on the flight deck with regard to selecting altitude 2000ft once outbound. This is supported by:

The SF340(B) pilot's recognition on the RTF that an error had been made;

His subsequent report statement, '…3000ft is where my ac should have been…', and;

His reporting '…I can't state without doubt how I got to this position.'

The Stornoway controller was operating in the belief that SF340 (B) would adhere to the level instructions given sequentially: i.e. 'not below FL085', amended by 'descend FL065' and then 'descend to altitude 3000ft'.

HERA Analysis [see ATSI note below] of the incident determined that the main Error Mode on the part of the controller was in planning and decision making: in so far as the controller's decision not to re-iterate the 3000ft level restriction removed a warning to the SF340 (B) crew that they should not descend when outbound from the STN. In mitigation the controller had taken several factors into consideration when he chose to state, *"…number two,"* to SF340 (B) when it went beacon outbound:

The trust he gained from familiarity with the pilots known voice and demeanour;

The professional balance of 'restating' previously issued instructions, and;

All the indications that, so far, the controller's plan was working to its desired effect.

[ATSI Note (1): Eurocontrol HERA-JANUS analysis on file including ICAO Human Factors issues affecting human performance in ATS proforma.]

It is not known what the SF340 (B) crew's actual interpretation/understanding of the subsequent level clearances was: or if this was allied to or contrary to the controller's belief that the levels assigned (FL065 and 3000ft) were not to be descended below until further instructed. There may therefore have been an inherent miss-match of the controller's expectations and pilot's actions in this Class G non-surveillance Approach - PS environment.

The Airprox occurred when SF340 (B) went outbound from STN and descended from 3000ft to 2000ft and crossed the RW18 final approach in confliction with SF340 (A).

The controller made a judgement not to re-iterate the level restriction when SF340 (B) was beacon outbound based on several factors; however, the MATS Part 2 required that, if there was a need to restrict descent, it is reiterated once the pilot has reported commencing the procedure.

The controller's provision of a PS was predicated upon his belief that, having formulated a safe, orderly and expeditious plan for the benefit of the arriving ac, SF340 (B) would adhere to the previously issued 3000ft level instruction until further advised.

The exact human factors sequence of events on the flight deck of SF340 (B) was not able to be determined by this investigation.

Recommendation:

It is recommended that the CAA's Regional ATS (Northern) Inspectorate in conjunction with the unit should ensure that MATS Part 2 procedures for management of multiple ac in the approach pattern are reviewed and followed as prescribed.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

Members were concerned that flexibility and expediency appear to have led the use of non-standard procedures at Stornoway. A Controller Member observed that, while standard procedures can at times appear unwieldy or inefficient, they are in place almost without exception to ensure ac safety. In assessing this incident, controller and pilot Members alike noted instances of non-standard RT and procedures that they would have expected to have been identified and corrected during routine checks.

The Board noted that the operator's arrival schedule required [and on a further check on 27 Apr still requires] arrivals at intervals closer than the IMC separation on RW18 of 10 minutes between landings. Clearly, on the many occasions when visual approaches can be conducted this is not a problem, but controllers should not allow themselves to feel pressurised into accepting a greater flow rate than (MATS Pt 2) procedures permit. Similarly, recognition of pilot's voices must not be allowed to prompt abbreviated RT.

Members considered that although the instrument approach procedure for the approach being used is satisfactory and allows for both full instrument and instrument-to-visual approaches from the VOR, it is lengthy and complex and its full use necessarily restricts traffic flow and may require following ac to hold or, as in this case, reduce speed; however, a pilot Member observed that in this case even this speed reduction achieved only 6min separation rather than the 10 required by MATS Pt 2.

Pilot Members (including one with experience of operating in the Highlands and Islands) observed that from 0716:39 the controller passed an ambiguous series of instructions to the crew of SF340 (B), beginning with "*not below flight level 85 initially you are cleared the initial approach from the S T N runway 18…",* followed shortly by, *"SF340 (B) callsign descend Flight Level Six Five" and then "(SF340 (B) callsign) descend to altitude Three Thousand Feet on the QNH ...".* Since the clearances to FL65 and altitude 3000ft did not re-clear the SF340 (B) for the Initial Approach, the crew could have inferred that they were cleared to descend to the relevant FL/alt, but no longer cleared for the procedure. The pilot of SF340 (B) apparently, and also some Members, interpreted the instructions to mean that the ac was cleared to the STN at 3000ft, and also cleared for the 'Initial Approach Procedure', as per [and descending in accordance with] the Approach Plate, without any altitude restriction after the procedure had been commenced at the VOR. Some Members considered that, since the pilot was familiar with Stornoway and being aware of SF340 (A) ahead of him, he should have known about the MATS Pt 2 requirement to maintain 3000ft outbound until the ac ahead had landed. Certainly, he immediately realised what had happened when the TCAS RA was reported by the other pilot. Further, a pilot Member opined the there might have been a CRM/HF issue whereby the 1st Officer did not question the altitude restriction before changing the SFL to 2000ft. Notwithstanding this, Members agreed that the crew should have been reminded that they were not cleared below 3000ft by ATC when they called 'Beacon Outbound' in accordance with the MATS Pt 2.

Due to the complexity and crossing of flightpaths on the instrument approach procedures, the situation whereby two consecutive ac follow the same approach, requires careful monitoring and positive procedural deconfliction by the controller. MATS Pt 2 requires the preceding ac to have landed before that following one is cleared to descend bellow 3000ft; controller Members observed that this is clear, unambiguous and inherently safe. Further, a pilot familiar with the SF340 pointed out that there is no difficulty in descending such ac relatively quickly from 3000ft to attain the glidepath as soon as cleared to do so. This rule (procedure) was however, not fully assimilated by the controller who had a different perception of the descent profile and this had (apparently) not been identified and corrected during routine checks.

One pilot Member opined that the Instrument Approach procedure is unnecessarily complicated but another (familiar with Stornoway) considered it flexible in that it facilitated a 'cloudbreak' close enough to the airfield to be followed by a visual approach should conditions permit. There was also discussion regarding the provision of radar at Stornoway and although Members agreed unanimously that this would enhance safety and flexibility, an Advisor informed the Board that he thought the NATS SSR at Stornoway was unsuitable for use as an Approach Radar.

[Post Meeting Note: It is understood that the airline, the airport operator and DAP are examining, with a view to revising, clarifying and simplifying the instrument approach procedure for RW18. Until a revised procedure is introduced company pilots have been instructed to maintain 3000ft outbound in the procedure until they are clear of any inbound traffic ahead of them.]

Members agreed unanimously that clear and concise RT, as promulgated in CAP413 almost always removes ambiguity in the minds of controllers and pilots alike; all too frequently, as in this case, non-standard RT leads to incidents.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: 1. Stornoway APP did not reiterate the alt restriction of 3000ft to the crew of SF340 (B) as required by MATS Part 2.

2. The crew of SF340 (B) descended below 3000ft without clearance.

Degree of Risk: C.

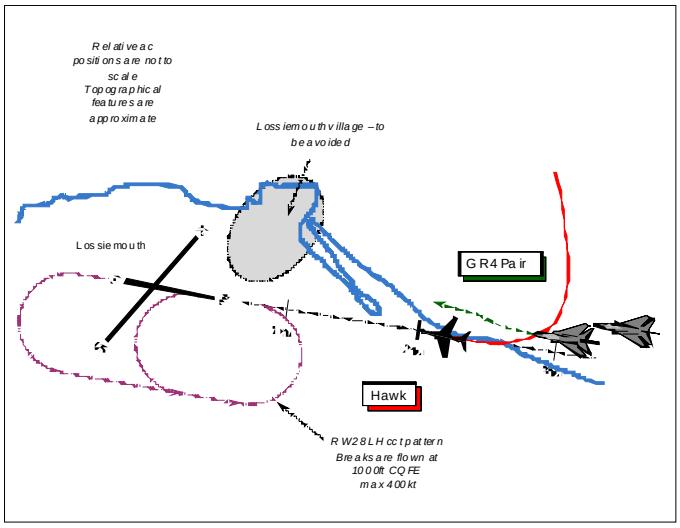
AIRPROX REPORT NO 2011136

Date/Time: 6 Oct 2011 1628Z

Position: 5742N 00315W (Initials to RW28 at Lossiemouth - TDZE: 36ft)

Airspace: Lossiemouth CMATZ (Class: G)

	Reporting Ac	*Reported Ac*
Type:	Tornado GR4 pr	Hawk T Mk1
Operator:	HQ Air (Ops)	HQ Navy
Alt/FL:	1000ft	900ft↓
	CQFE (991mb)	CQFE (991mb)
Weather:	VMC CLBC	VMC CLBC
Visibility:	10km	9km
Reported Separation:	Nil V/250m H	Nil V/250m H
Recorded Separation:	Not recorded	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE TORNADO GR4 PILOT reports he was leading a pair of GR4s on a visual recovery at Lossiemouth at the completion of an evasion sortie. They were informed that RW28 was in use and, realising there was a large number of ac recovering to the aerodrome, remained with APP to gain SA on the other ac. Flying an arc from NW of the aerodrome out to the E at about 16nm prior to running in to the aerodrome on a heading of 280º, APP cleared them to continue their visual approach and at about 10nm they switched to TOWER. Under a BS from TOWER they positioned themselves on the Deadside and gained visual contact with the 3 other ac in the cct. He was just about to call Initial when the pilot of a Hawk ac was heard on the frequency calling to join for a visual straight-in from 2nm Final to land. A few seconds later, inside Initial heading 280° at 1000ft Clutch QFE (CQFE) (991mb), he caught sight of a Hawk directly in front of them 0·3nm away and 200ft above crossing from R – L in a descending RH turn. The black Hawk with lights on and undercarriage down was slightly above their height initially, but it continued to descend, belly-up to his GR4 pair and passed very close in front of them. To avoid the Hawk he made a slight gentle right-hand turn (in close formation) as the Hawk passed 250m away at the closest point down the port side with a 'medium' Risk of collision. He immediately called Initial and advised TOWER that they had gained sight of the Hawk joining the cct. On the subsequent break into the cct he was sufficiently distracted by the Airprox that he lowered the gear instead of the flaps at 265kt. The Airprox was subsequently reported to the ATC Supervisor after landing by telephone.

The ac has a drab grey camouflage scheme; the white strobes were on. SSR was selected off.

THE HAWK T MK1 PILOT reports he was on a radar to visual recovery to Lossiemouth from the W. About 5nm NW of Lossiemouth at 1500ft CQFE (991mb), ATC requested that he maintain E as there was radar traffic at 10nm. He was then told that the radar traffic was at 8nm but this was then amended to ac joining visually. Given the deteriorating weather and four further ac recovering behind him, he was keen to help by landing as promptly as possible. Visual with a clear gap in the cct and radar traffic on finals, believing the traffic joining [the GR4 pair] to be at a range of 8nm from the A/D, he requested to join straight to a RH Final from his position 3nm N of the A/D. ATC said 'roger contact TOWER' which he did. Switching to TOWER, he called his position at 'RH Final' and then at 'straight-in 2nm' and was cleared to Land. Descending wings level, passing 900ft, at 150kt a pair of Tornados were first seen at 3 o'clock - 250m away - as they passed down his starboard side at a range of 250m overtaking at the same height with a 'medium' Risk of collision.

He cited deteriorating weather visible to the SW of the A/D and 9 ac inbound via visual and radar ccts as significant factors. The ac has a Black colour-scheme; the white strobes were on. SSR was selected on.

AIRPROX REPORT No 2011136

THE LOSSIEMOUTH AERODROME CONTROLLER (ADC) reports that during a busy recovery wave of mixed ac in deteriorating weather, the Tornado GR4s were joining as a pair through Initial. Shortly afterwards a call was received from the Hawk pilot to join straight-in on Final. At this point he was not visual with the Hawk, so he queried the pilot on his position. The Hawk pilot stated 2nm, visual with the one ahead. He instructed the Hawk pilot to join at Initial, stating that there was a pair joining at Initial. The Hawk pilot again reported final visual with the one ahead, which was the first point that he was visual with the Hawk; upon receipt of a gear check the Hawk pilot was given a clearance to land, the Tornado pair then broke into the cct. An Airprox was not mentioned on frequency at any point.

THE LOSSIEMOUTH ATC SUPERVISOR (SUP) reports that at the time of the Airprox Lossiemouth was on RW28 with multiple ac recovering either visually or radar to visual. At this stage both the radar and visual cct were busy, so with the amount of traffic recovering he asked someone else to supervise the ADC as an extra pair of eyes and ears. The GR4 pair was on a visual recovery and the leader called visual with the A/D about 15-16nm to the E of the A/D. At about 10-12nm the GR4 pair switched to TOWER for their visual join. The Hawk pilot was recovering from the NW for a radar-to-visual approach and flew to the S of Tain Range, before being vectored to the E and descended. About 4nm NE of Lossiemouth the Hawk pilot called visual with the A/D; at this point he was informed of radar traffic – another pair at 3nm - and the subject GR4 pair joining visually at 8nm. The Hawk pilot called visual with the radar traffic at 3nm and the SUP instructed the APP controller to send the Hawk to TOWER thinking that the Hawk was joining through Initials and would be well ahead of the GR4 pair joining visually from 8nm. The APP controller was never informed that the Hawk pilot was doing anything other than a normal join through Initials, he thought.

BM SAFETY MANAGEMENT reports that this Airprox occurred between a Hawk T1 on a radar-to-visual and a pair of GR4s in the latter stages of a visual recovery to RW28 at Lossiemouth, during an Exercise JOINT WARRIOR recovery wave. The Hawk was operating from Lossiemouth as part of the Exercise and was considered to be Station-based having been briefed on A/D procedures.

Due to the distance of Lossiemouth from NATS' radar heads, the Airprox was not visible on radar; consequently, the radar replay was only used to confirm the position of the Hawk in the early stages of the Airprox sequence.

The incident sequence can be considered to have commenced at 1625:20. At this point, a stream of fast-jet ac was recovering for radar to visual and visual recoveries, including the subject ac. The SUP describes the ADC's and the unit's workload as 'high to medium'; the ADC has described his workload as 'high', albeit of 'low' task complexity.

The Hawk pilot and GR4 crews describe the weather conditions at the time of the incident as VMC, with good visibility in nil weather and BKN cloud between 1800 and 2000 ft – CC was BLUE.

Given the often high intensity operations at Lossiemouth, no landline liaison is conducted between the ACR and VCR to 'warn-in' ac joining visually. The APP Assistant annotates the ac's remarks column on the Electronic Tote system with an asterisk for those ac recovering visually, which is then seen by the ADC, GROUND or the Tower Assistant. The standard visual join is the 'Run-in and Break' through the IP, other forms of visual join would warrant a liaison call on landline between the ACR and VCR.

Having held off to the N and E of Lossiemouth to sequence against ac ahead, at 1625:20 the leader of the GR4 pair advised APP that they were, "*15 miles to the east, are you happy for us to turn inbound for visual recovery*?" APP replied, "*Roger, visual recovery approved, radar traffic is at 6 miles finals*" which was acknowledged by the leader. At this point, both ac can be seen on the radar replay; the GR4 pair is 16.5nm ENE of Lossiemouth tracking S'ly, whilst the Hawk is 8nm WNW, tracking E'ly.

APP was then continuously engaged with other recovering ac from 1625:35 until 16:26:16 when the controller asked the GR4 leader (the lead ac's SSR contact faded from the radar recording at 1625:41) whether they were, "*visual with the aerodrome*?" The GR4 leader replied, "*we're now visual with the field, happy, to TOWER*." APP re-stated that the, "*radar traffic is about 3 miles*" and the GR4 leader replied at 1626:24, "*that's copied, we're visual with that traffic,* [C/S GR4 pair] *to TOWER...*[C/S GR4 pair] *stud 2 main go*."

Figure 2 depicts the Hawk's approximate ground track, based upon the radar replay; the grey shaded area is Lossiemouth village which is a noise-abatement avoid. At 1626:29, at a position 3.1nm NNW of Lossiemouth, the

Hawk pilot informed APP that he had the, "..*field in sight.*" APP replied, "[Hawk C/S] *maintain please and maintain eastbound, got radar traffic 2 miles and visual joiners about 10 miles*" which was acknowledged by the Hawk pilot. During this transmission, at 1626:37, the Hawk pilot turned to track 105°. APP then informed the Hawk pilot that it, "*won't be much of an extension*" to which the Hawk pilot replied, "*Okay, I can't go far...shall I remain this or go to TOWER now*?" At 1626:52, APP asked the Hawk pilot to, "*confirm you're visual with the ones* [the GR4 pair] *at 8 miles*?" The Hawk replied, "*..negative this time*." APP then stated, "*radar traffic at 8 miles, correction, visual joiners at 8 miles*" that was the GR4 pair. The Hawk was 2.9nm NE of Lossiemouth tracking 105° when the pilot stated at 1627:00 that he was, "*visual with the one at 3* [radar traffic] *but I can fit in behind him if I join downwind and turn finals now*." APP replied at 1627:06, "[Hawk C/S] *roger, continue inbound, call TOWER, good-day*" which was acknowledged by the Hawk pilot at 1627:08 stating, "*To TOWER, squawking standby.*"

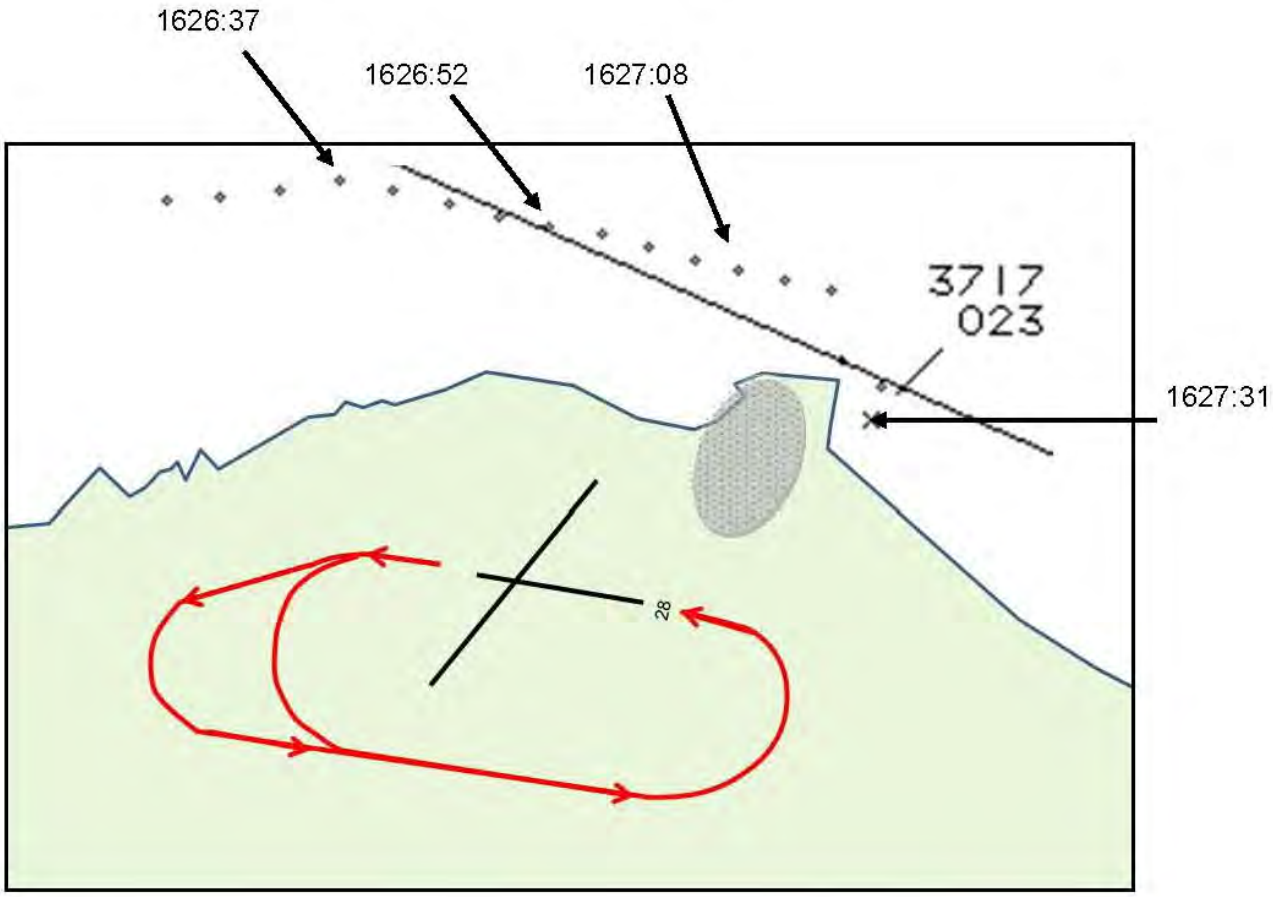


Fig 2: Approximate ground track of Hawk

[UKAB Note (1): Fig 2 Indicated Hawk Mode C of 2300ft is based on 1013mb and equates to a height of about 1640ft Clutch QFE (991mb).]

The SUP reported that having heard the Hawk's transmission at 1627:00, he instructed APP to send the ac to TOWER, thinking that the Hawk would join through Initials and would be well ahead of the GR4 pair joining visually at 8 miles. Although the Hawk pilot mentioned that "*I can fit in behind..if I join downwind and turn finals now*" it is clear that the SUP and APP believed that the Hawk would join though Initials. No landline liaison was conducted between the ACR and VCR to pass on any amendment to the Hawk's joining details.

The Hawk pilot has stated that the deteriorating weather to the SW of Lossiemouth, coupled with the high volume of traffic in the radar and visual circuits, were factors in his decision to land 'as promptly as possible'.

At 1627:00, the GR4 leader called TOWER and requested to join, which was approved; the A/D details were passed with the cct state – 3 in. The GR4 leader reported that having 'positioned on the Deadside he gained visual

contact with the 3 other ac ahead in the circuit.' This accurately reflected the cct state at that moment as passed by the ADC and did not include the Hawk.

Shortly after 1627:16, at a position 057° the A/D 3·5nm, the Hawk commenced a R turn to track S'ly to the E of Lossiemouth village. At 1627:31, about 079° the A/D 3.3nm, indicating 2300ft Mode C - about 1640ft CQFE (991mb) - the Hawk pilot called TOWER *"..join for straight-in turning finals*." TWR responded "[Hawk C/S] *Lossie TOWER join runway 2-8 clutch Q-F-E 9-9-1 4 5 in* [5in was the correct cct state including the GR4 pair] *confirm position"*, as the ADC was not visual with the Hawk. The Hawk pilot replied at 1627:42, "*2 miles finals now, coming down through 1 thousand feet*." [At this point, the Hawk was slightly N of the extended RW28 centre-line on a R base leg 3·3nm E of the A/D, maintaining about 1640ft CQFE, moments before the contact fades on recorded radar.] The GR4 leader reported that he became visual with the Hawk prior to calling Initial 'directly in front of them in a descending R turn' and stated on the frequency at 1627:54, that they were, "*visual with that traffic and Initials*." In reply to the Hawk pilot's transmission at 1627:42, the ADC instructed the Hawk to, "*join at Initials 1 thousand feet pair joining*"- GR4 pair. However, the Hawk replied, "*finals 2 miles visual with the 1 ahead*." Having confirmed with the Hawk pilot that the gear was down, the ADC cleared the Hawk to land at 1628:17. It is likely that the CPA occurred shortly after this as the GR4 pair passed down the starboard side of the Hawk, with both pilots assessing that nil vertical and 250m of lateral separation existed. The GR4 leader was able to take some avoiding action albeit a 'slight gentle R turn' as they were in 'close formation.'

The GR4 pair did well to maintain their situational awareness, visually acquiring both the known traffic within the visual cct and the unexpected Hawk. Given their close-formation and likely speed, it is unlikely that they could have done more to sight the Hawk earlier, or to increase separation further.

From the ADC's perspective, when the Hawk pilot called at 1627:31 he would have expected it to be executing a 'run-in and break' as no additional landline liaison had been effected. To the ADC's credit, he immediately requested the Hawk's position. Moreover, the term 'straight-in' has a specific meaning that suggests a position on the extended centre-line; in reality, the Hawk was conducting a right-base join through the deadside. With little time to assimilate the Hawk pilot's intentions to route through dead-side and cognisant of the GR4 pair approaching Initial who had reported visual with the Hawk at 1627:54, the ADC's instruction to the Hawk pilot to join through Initials was the ADC's only option to attempt to sequence the singleton Hawk with the GR4 pair. When the Hawk pilot then re-stated "*finals 2 miles, visual with the 1 ahead",* after receiving a positive gear check, the ADC correctly issued a clearance to land. BM SM contends that the ADC acted appropriately in dealing with a complex event.

In terms of the SUP's instruction to APP to authorise the Hawk's approach at 1627:06, the two controller's perception of the Hawk pilot's intentions is critical. Although the Hawk pilot clearly stated that he would join "*downwind and turn finals*," the SUP believed that the Hawk would continue to join normally through Initial. This could be from mis-hearing the Hawk pilot's transmission, or only hearing the first part of the transmission where the Hawk pilot stated that they could "*fit in behind*" the radar traffic. Such a 'failure to hear' would have been coupled with confirmation bias of the Hawk's intention to route through Initial, exacerbated by the high taskload. Alternatively and most likely, the SUP may have interpreted the Hawk pilot's transmission as a statement of what the Hawk pilot would do having conducted a 'run-in and break'. This is given weight by the SUP's report that states that the Hawk's 'join through Initials would be well ahead of the [GR4] pair joining visually at 8 miles', which would have provided a more expeditious recovery for the Hawk without delaying the GR4 pair. Unfortunately, it has not been possible to contact the SUP concerned to confirm one or other of these hypotheses. What is clear, is that at the point when the Hawk left the APP frequency the Hawk was 2.9nm NE of the A/D tracking 105°.

From the Hawk pilot's perspective, due to the deteriorating weather to the SW of Lossiemouth and the high volume of traffic in the radar and visual circuits, his desire to recover expeditiously is understandable. However, the Hawk pilot's decision to recover from what was effectively a right-base join suggests that his level of situational awareness was low. Routeing through the deadside would inevitably place the Hawk in conflict with other ac recovering through Initials and by entering the finals turn without being visual with the approaching GR4 pair it is clear that the Hawk pilot had not assimilated the relative speed of his ac and the GR4 pair. Finally, taken literally, the Hawk pilot's statement at 1627:00 that he would join "*downwind and turn finals*", might also indicate that he believed the visual cct was right-hand on RW28.

Whilst it has not been possible to confirm the ATC SUP's understanding of the Hawk's intentions, the main causal factor in this Airprox was the Hawk pilot's decision to join from R base, through the dead side, without being visual with the joining GR4 pair.

HQ AIR (OPS) comments that the Hawk assumed that the GR4 pair was further from his intended recovery track than was actually the case. When joining a *visual* circuit it is the responsibility of the joining traffic to *visually* de-conflict with all circuit, and other joining, traffic. Visual deconfliction *cannot* be based upon assumption. The Hawk pilot should not have joined the visual circuit as he did, he should have joined through Initial as he was told to by the ADC.

HQ NAVY comments that during what appears to have been a particularly busy recovery period at Lossiemouth, in deteriorating weather conditions, the pilot of the Hawk made a decision, based on the information provided to him, to recover as expeditiously as possible. He was told that ac were at 8nm and he informed ATC of his intention to join and land immediately rather than route through Initial. It is for the very reasons described in this Airprox that RN Control Towers are manned with both a Radar Supervisor and a DATCO to supervise the VCR, thereby allowing the 2-way flow of information at the supervisory level.

THE HAWK PILOT'S COMPANY comments that the Hawk pilot was fully aware of the recovery procedures at Lossiemouth. He elected to carry out a radar-to-visual recovery from the west to route to the initial point (IP) via the north of the aerodrome. The weather was deteriorating with a high rate of radar to visual and visual recoveries. As the Hawk pilot reported *"field in sight"* APP instructed the Hawk pilot to maintain an easterly heading and passed TI on radar traffic at 2nm and the GR4 formation at about 10nm. APP later passed further TI on the GR4 formation and requested if the Hawk pilot was visual, who replied *"Negative this time"*. APP immediately passed further TI on the GR4 formation as *"radar traffic at 8 miles, correction, visual joiners at 8 miles".* The Hawk pilot replied he was *"visual with the one at 3 but I can fit in behind him if I join downwind and turn finals now".* The Hawk pilot judged that by converting from a standard visual recovery through initial to a right base join would reduce impact on the already busy circuit and allow for an expeditious recovery as he was getting low on fuel. The Hawk pilot erroneously reported downwind when in fact he was downwind right hand. The reply the Hawk pilot received from APP was *"..roger, continue inbound, call TOWER..".* This was taken, understandably, as approval to turn finals. The Hawk pilot initiated his turn inbound and flew into conflict with the GR4 formation. The Hawk was painting on radar until after the transfer to TOWER.

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 air traffic controllers involved and reports from the appropriate ATC and operating authorities.

It was explained that this Exercise produced an extremely busy period for ATC at Lossiemouth and the importance of following standard procedures had been emphasised to the Hawk pilot's detachment during Station briefings on local procedures. The lead pilot of the Lossiemouth-based GR4 pair was conducting a conventional run-in-and-break visual approach from the E. It was stressed that APP was not required to sequence the GR4 pair recovering visually against the singleton Hawk and no TI had been provided to the GR4 leader about it. A civil controller Member opined that in busy periods it is often simpler to take charge and sequence all traffic by issuing radar vectors. Nevertheless, other Members countered that visual formation recoveries were the speediest and most efficient method of recovering large volumes of fast-jet traffic.

The GR4 leader had switched from APP to TOWER before the Hawk pilot transmitted his proposal to APP to join visually from R base direct onto final. Therefore the GR4 leader had no prior knowledge of the Hawk before he heard its pilot call on the TOWER frequency and confirm his position in response to the ADC's query. The lead GR4 pilot was responsible for fitting in with visual traffic and it was clear the ADC had provided the correct cct state originally as he knew it; the GR4 leader had identified all the cct and radar traffic before he joined through the IP. Quite understandably, therefore, the lead GR4 pilot would have been surprised by the sudden appearance of the Hawk, belly-up gear down, joining from a R base leg as they ran in through the IP.

The Hawk pilot's company had commented that the Hawk was getting low on fuel, but the Navy Member contended that this was not a significant factor that contributed to the Airprox. Nevertheless, Members were keen to point out that pilots with concerns over their fuel-state should notify ATC at the earliest opportunity for a 'fuel-

priority' recovery. It was evident here that the Hawk pilot had endeavoured to assist ATC during this busy recovery by converting his standard radar-to-visual approach through the IP for a run-in-and-break into the cct, into a non-standard visual recovery via a R base join to RW28 – which has a LH cct - to land. Whilst he had transmitted this proposal to APP, the phraseology he used "..*join downwind and turn finals now"* was evidently not clear enough and thus open to interpretation because he actually meant a R base-leg join direct to final. The lesson here was keep RT standard whenever possible, however, Members recognised that the controller's subsequent reply, *"..roger, continue inbound, call TOWER.."* had to all intents and purposes acceded to the Hawk pilot's proposal. Furthermore, the SUP's misunderstanding of the Hawk pilot's intentions was also key to this Airprox. The BM SM report postulated that the SUP believed that the Hawk pilot would execute a normal join through the IP prior to breaking into the cct, but this was evidently contrary to what the pilot had told APP. From this point APP ceased issuing vectors to the Hawk pilot for his radar-to-visual recovery; without ensuring he was visual with the GR4s and under a misunderstanding as to how the Hawk would approach the aerodrome, the SUP instructed APP to allow the Hawk pilot to continue inbound as the latter had proposed, which seemed like an abrogation of the controllers' responsibilities rather than sequencing the radar-to-visual recovery. The Board agreed this was part of the Cause, insofar as ATC did not prevent the join through right base, which resulted in the subsequent conflict with the GR4 pair as the Hawk descended through their level onto final ahead of them.

Nonetheless, even if the SUP thought the Hawk pilot would keep the speed on and fly through Initial a conflict could still have ensued and it was plain that no attempt had been made to forewarn the ADC of what was happening. A civil controller Member questioned the SUP's instructions to APP and was surprised that the SUP had the authority to intercede. The BM SM Advisor explained the SUP's executive role here in directing the watch, that he had full cognisance of the traffic situation from monitoring the RT and should, therefore, have been aware of what the Hawk pilot was telling APP. Pilot Members agreed that a breakdown in communication was fundamental to the Cause but were critical of the Hawk pilot for acting as he did. Whilst the Hawk pilot might not have realised how close the GR4 pair was as he turned onto final ahead of them, he had been told about the visual recovery by APP and should have been looking out for them. The Board agreed that the Hawk pilot's proposal to join in a non-standard manner through R base was the other part of the Cause of the conflict. Combining all these causal factors the Board agreed that this Airprox had resulted because the Hawk pilot requested, and ATC did not prevent, a join through right base, which resulted in a conflict with the GR4 pair.

Controller Members contended that as APP had acceded to his proposed cct join, the Hawk pilot might reasonably have expected APP to have co-ordinated this with the ADC. Despite co-ordination not being stipulated by the unit for radar-to-visual and visual recoveries, controller Members perceived an absence of critical teamwork within ATC. Without co-ordination the ADC was left to sort it out himself unaware of the Hawk turning and slowing down onto finals from R base as the GR4s ran-in at speed. Controller Members were, therefore, critical of the lack of co-ordination here with the Hawk pilot having been switched to TOWER whilst in conflict with the GR4 pair. Members understood the ADC's immediate reaction to the Hawk pilot's call, instructing the pilot to join through the IP, because the controller had not spotted the ac at that stage and was unaware of the Hawk pilot's intentions to turn direct onto final. Moreover it was evident that the Hawk pilot was unaware of the relative proximity of the GR4s until he first saw the pair overtaking him. Other pilot Members recognised how much the GR4 lead pilot had been affected by the close quarters encounter when he mixed-up the gear and flap selections downwind. All this led some Members to conclude that safety had not been assured. However, the leader of the GR4 pair had spotted the Hawk in time to manoeuvre further into the deadside by making a slight RH turn, leaving the Hawk 250m away to port, the latter subsequently descending having been cleared to land. Weighing all these factors carefully, by a majority of the Members, the Board concluded that no Risk of a collision had existed in the circumstances conscientiously reported here.

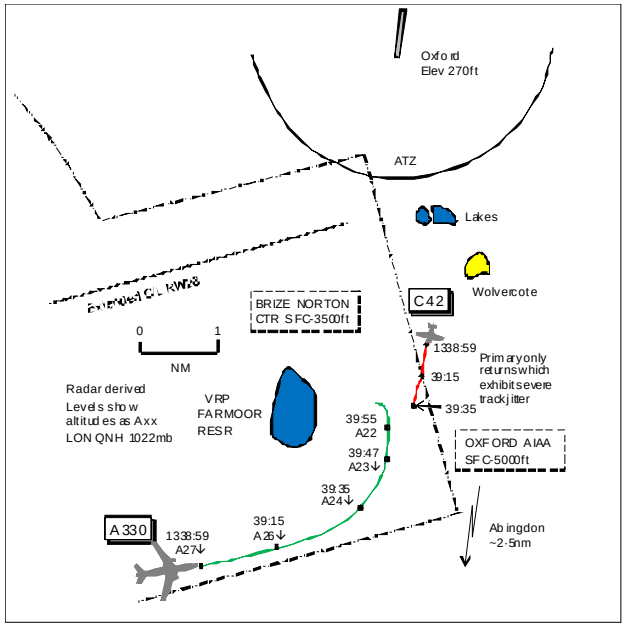
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Hawk pilot requested, and ATC did not prevent, a join though right base, which resulted in a conflict with the GR4 pair.

Degree of Risk: C.

AIRPROX REPORT NO 2011137

Date/Time:	8 Oct 2011 1340Z (Saturday)	
Position:	5145N 00119W (10nm E Brize Norton - elev 288ft)	
Airspace:	CTR	(Class: D)
	Reporting Ac	*Reported Ac*
Type:	A330	Ikarus C42
Operator:	CAT	Civ Club
Alt/FL:	2800ft	2200ft
	QNH (1026mb)	QNH (1021mb)
Weather:	VMC CLOC	VMC CLBC
Visibility:	50km	>10km
Reported Separation:		
	500ft V	500ft V/0·25nm H
Recorded Separation:		
	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE A330 PILOT reports inbound to Brize, IFR and in receipt of a DS from Brize, squawking an assigned code with Modes S and C. The visibility was 50km flying clear of cloud in VMC and the ac was coloured white/blue with strobe, nav and landing lights all switched on. Turning through heading 300° to establish on the ILS level at 2800ft QNH, he thought, 1026mb at 200kt traffic was seen, after a warning from ATC, to turn R in their 2 o'clock range 5nm and 500ft below crossing from R to L. The relative bearing remained almost constant with other traffic, a white coloured light ac, appearing to pass 500ft below. He assessed the risk as high.

THE IKARUS C42 PILOT reports outbound from Oxford, VFR at 80kt and in receipt of a BS from Oxford Approach on 125·325MHz squawking 7000. Earlier, when trying to reach Turweston from Old Sarum, they had diverted into Oxford owing to worsening Wx after reaching Bicester. During their stop-off they refuelled and put some marks on the map and considered going back direct to Old Sarum by the quickest route. During their walk back to the ac across the apron they decided the Wx was unpalatable for a trip to the N, the cloud base looked 2300-2500ft, so they decided to fly back via Newbury and Andover. Once airborne from RW19 things started to go awry. In retrospect he thought they should have stayed in Oxford's airspace and climbed to transit height or headed E over Oxford staying well clear of Brize airspace. When planning his route he had decided to fly down some water meadows and a reservoir near Wolvercote [Oxford ARP 170° 2·5nm], which he could see on his 1:250,000 map, following a river to the S of Kidlington. However, as they climbed out, he must have gone further than he intended – he had a slight tailwind. Instead of making a sharp turn and heading for Oxford he continued straight ahead, perhaps steering slightly further R of 190°. He could see a reservoir very clearly in the distance but it could not have been the one S of Kidlington. In retrospect it must have been Farmoor Reservoir much further to the SW. As they drew level with the reservoir his pilot colleague asked him where they were in relation to Brize Norton; he pointed out that they were drawing level with the extended centre-line of the main RW, 3-5nm away in their 3 o'clock. At this point he realised that the main N-S RW at Abingdon was directly in their 12 o'clock and much closer than expected. He had dialled up Brize frequency on the radio before leaving Oxford and was in the process of leaving the Oxford frequency when he saw an airliner high in his 2 o'clock about 3nm away crossing his path from R to L and climbing, he thought. His co-pilot spotted it at the same time and pointed as it began to turn towards them, about 1nm away and about 300-400ft higher. He made a remark to Oxford that he was taking immediate action to turn and descend out of the way of a large jet ac. He commenced a steep descending LH turn which took him out of the airliner's flightpath. His pilot colleague maintained visual contact with the airliner, which passed about 500ft above and >0·25nm away to their R. He thought he then switched to Brize frequency to request a BS but did not obtain a response. The call would probably have been too late anyway but he suspected that he may not have been heard because Brize was talking to other flights at the time. At no time did he think that his ac

caused a hazard to other ac or the other ac cause any danger to his. Clearly he was several miles W of their intended course and could see Abingdon ahead which he wanted to avoid overflying. He tracked S towards Lambourn and successfully made contact with Brize and obtained a BS. Later he was asked by Brize if he had passed by an airliner which he confirmed. Also later he telephoned Brize Supervisor at his request to discuss the incident. He opined that several factors had occurred. This had been their first visit to Oxford and, owing to their unexpected landing, they did not have the relevant airfield plate or procedures. The unexpected diversion had led to him being more flustered and less pragmatic in his actions. Although Oxford had told him to avoid Brize airspace, he didn't appreciate how quickly he would find himself in that airspace and he did not turn sharply enough to the L when he departed. On passing 1000ft he should have turned on course immediately away from Brize airspace. He did not carry a copy of an airfield flight guide and should have sought one at Oxford or should have found the briefing room and briefed himself more thoroughly on the airspace restrictions. Failing that he should have obtained a more detailed brief from ATC. Before leaving Oxford he had spoken to Brize to find out if the Salisbury Plain Danger Area E was active but omitted to ask about any procedure for avoiding Brize airspace. He concluded that his planning had been poor. He had drawn a line from Oxford to Old Sarum which passed through the Brize CTR which was clearly an error and his co-pilot /navigator would have been confused by this when he handed the map to him. The number of reservoirs had also led to his confusion. When he saw a reservoir ahead it was probably Farmoor but he mistook it for a smaller patch of water near the junction of the A34 near Wolvercote which put him 2-3 miles off track, inside Brize airspace. It was only his good lookout and prompt action in diving away which prevented this incident from being more serious. He did not believe there was any risk of collision.

THE BRIZE RADAR CONTROLLER reports working the inbound A330 charter flight. When it was on base leg RW26 descending to 2300ft QNH a faint radar contact appeared on the radar E of Farmoor VRP tracking SW. This unknown ac was not squawking and could have been above the CTR. Presented with this confliction the A330 was given an immediate avoiding action turn inbound; however, the turn still resulted in the primary contacts merging. When clear of confliction the A330 crew was asked if they had seen the unknown ac and they replied yes and that it passed below. The unknown ac at this point had faded from radar. The A330 continued inbound making a normal ILS approach to land. Later the C42 pilot called LARS giving his position W of Abingdon at 1800ft requesting a BS en-route to Old Sarum. As the C42 had departed Oxford the pilot was asked if, during his initial departure, he had flown close to a heavy jet ac inbound to Brize. His reply indicated that the C42 was the ac that had infringed the Brize CTR without an ATC clearance. The pilot later contacted ATC and explained that he was staying clear of Abingdon, owing to the aerodrome being active with motor-gliders, which resulted in the ac infringing the CTR E of Farmoor VRP. The pilot reported being visual with the A330 and had turned L and descended to avoid. Although the A330 crew did not report an Airprox, he thought that this incident was far from satisfactory and could have resulted in a potential collision.

BM SAFETY MANAGEMENT reports that the Airprox occurred between an Airbus A330 operating IFR in the Brize Norton CTR and a C42 Ikarus operating VFR, in receipt of a BS from Oxford Approach.

All heights stated are based upon SSR Mode C from the radar replay unless otherwise stated.

Brize DIR, also acting as the ATCO IC, was an experienced controller and reported that his and the Unit's workloads were low, with low task complexity.

The A330 was being vectored for an ILS to RW26 at Brize, descending to 2300ft Brize QNH 1022mb and, at 1339:06, was issued a L turn onto a base-leg heading of 330°. This L turn is evident on the radar replay at 1339:15.

[UKAB Note (1): Earlier the A330 crew had requested a DS, shortly after initial contact, and this was agreed by Brize DIR at 1334:27, *(A330 c/s) deconfliction service outside controlled airspace reduced traffic information from all around due limits of surveillance cover"*. After issuing descent and a radar heading, at 1336:47 DIR informed the crew, *"(A330 c/s) entering controlled airspace"* which was acknowledged.]

A primary radar contact, believed to be the Ikarus appears on the radar replay at 1338:24, 0·4nm E of the CTR, 10·4nm E of Brize and 6·4nm NE of the A330. The Ikarus then enters the CTR tracking SW at 1339:15, 3nm NE of he A330.

DIR reported that a "faint radar contact" with no associated SSR Mode 3A or C information appeared on their surveillance display "east of Farmoor VRP, tracking south-west." Immediately thereafter, at 1339:33, DIR issued

the A330 flight with an "avoiding action turn inbound" stating, *"(A330 c/s) avoiding action, turn left immediately heading three-zero-zero degrees, traffic was north-east, one mile, south-west bound, no height information."* This was read back by the A330 crew. DIR has subsequently confirmed that at the point the avoiding action turn was issued, the primary contact was within the CTR.

Immediately thereafter, at 1339:47, the A330 pilot reported, *"we have the traffic in sight (A330 c/s) it's below us*." This statement was roughly co-incident with the CPA with zero lateral separation evident from the radar replay. Both pilots estimated vertical separation as 500ft, with the Ikarus pilot estimating that they passed 0·25nm behind the A330.

Subsequent to the Airprox at 1342:48 the Ikarus pilot contacted Brize LARS for a service and confirmed that it was his ac that had come into close proximity with the A330. Moreover, he reported that his transponder was operating and that a SSR 3A code of 7000 was selected throughout the incident sequence.

Although the Ikarus pilot reported that his transponder was operating, the fact that this was not detected by the BZN MSSR or NATS radars until after the Airprox at approximately 1344, suggests that the transponder was either u/s, selected to stand-by or off. The absence of this information prevented the operation of the safety barrier afforded by the A330's TCAS and, based upon the time of detection of the Ikarus on the Brize PSR, shortened DIR's available time to react.

On the basis that at 1339:33 the Ikarus had only recently "painted" on the Brize surveillance display, there was little track data available to DIR on which they could base a decision. Given the late detection of the Ikarus by the Brize PSR and that the A330 was already established in a L turn onto 330°, DIR had little option other than to issue an avoiding action turn to position the A330 further inside the CTR. However, the radius of turn of the A330 was such that separation between the 2 ac continued to decrease, resulting in the radar contacts merging.

The key causal factor in this incident was the infringement of the Brize CTR by the Ikarus which, based upon the report of the Ikarus pilot, was the result of a chain of events culminating in a number of HF-related errors.

From an ATM perspective, given the limited time between the Ikarus "painting" on PSR and the CPA, the lack of SSR information and the radius of turn of the A330, DIR had no opportunity to take action that could have prevented this incident.

This Airprox was caused by the infringement of the Brize CTR by the Ikarus, aggravated by the lack of SSR information from the Ikarus and the late detection of the Ikarus on the Brize PSR.

ATSI reports that the Airprox occurred at 1339:50 UTC, 9·5nm to the E of Brize Norton and within the Brize Norton Control Zone (CTR) Class D airspace, which lies to the S and SW of Oxford airport and extends from the surface to an altitude of 3500ft.

The A330 was operating an IFR flight from Larnaca (LCLK) to Brize Norton and was in receipt of a RCS.

The Ikarus C42 Microlight was operating on a VFR flight from Oxford to Old Sarum and was in receipt of a BS from Oxford Tower.

The Oxford controller was providing a combined Aerodrome and Approach control service without the aid of surveillance equipment.

CAA ATSI had access to area radar recordings, together with RT recordings from Oxford Tower, together with written reports from the 2 pilots.

METAR: EGVN 081250Z 27008KT 9999 BKN024 14/08 Q1022 WHT NOSIG=

METAR: EGVN 081350Z 28009KT 9999 BKN022 15/09 Q1021 WHT NOSIG=

The C42 had landed at Oxford earlier after aborting a planned flight from Old Sarum to Turweston. This was due to deteriorating weather conditions to the N of Oxford. After refuelling the pilot decided to return to Old Sarum via Newbury and Andover.

At 1325:48 the C42 pilot contacted Oxford Tower requesting the airfield information for a flight to Old Sarum. The controller passed the QNH 1021, RW19 and the C42 was cleared to taxi to the holding point for RW19.

At 1333:49 the C42 pilot reported ready for departure. The Oxford controller replied, *"(C42 c/s) Runway one nine remaining outside the Brize Control Zone you're cleared for take off two seven zero zero eight."* The C42 pilot responded, *"(C42 c/s) er ready for take off we will avoid the Brize Zone er two seven zero zero eight."* The controller transmitted, *"(C42 c/s) confirm you are cleared for take off Runway one nine,"* which the pilot acknowledged.

At 1336:01, the C42 pilot reported, *"(C42 c/s) er we're turning left to avoid Brize."* The controller replied, *"(C42 c/s) roger as you clear the circuit to the -at- as you clear the circuit the southeast sorry Basic Service report changing enroute."* The C42 pilot replied, *"(C42 c/s)*."

At 1339:15, the radar recording shows the A330, 8·2nm ESE of Brize Norton, within the Brize Norton CTR (Class D airspace), positioning downwind LH for RW26 and passing 2600ft in the descent to an altitude of 2300ft. The radar recording also shows a primary contact, 10·2nm E of Brize Norton, tracking SSW and crossing the boundary of the Brize Norton CTR. From the evidence available to ATSI, it was considered that this contact was the C42 which was at an altitude of 2200ft (see para below). The distance between the 2 converging ac was 3·3nm.

At 1339:18, the C42 pilot transmitted, *"Oxford (C42 c/s) three miles to your south currently at two thousand two hundred..."* The Oxford controller replied, *"(C42 c/s) I got that you were s-to the south at two thousand two hundred the rest was broken off."* The C42 pilot advised, *"Visual with a very large airliner we are losing height rapidly."* The Oxford controller responded, *"Roger that's understood that will probably be traffic inbound to Brize Norton.*"

[UKAB Note (2): At 1339:35, the radar recording shows that the distance between the 2 ac was 1·5nm, with the A330 commencing a L turn onto base leg. The next sweep 4sec later shows the C42 having faded from radar.]

The written statement from the C42 pilot indicated that at this point he initiated a steep descending L turn and saw the A330 pass well above.

At 1341:42, the C42 pilot reported changing to the Brize frequency 124·275MHz, which the Oxford controller acknowledged.

The C42 departed Oxford in receipt of a BS. CAP774, UK Flight Information Services, Chapter 2, Page 1. Paragraphs 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.'

As part of the departure instructions, the Oxford controller instructed the C42 pilot to remain outside the Brize Norton Zone. This was acknowledged by the C42 pilot and after departing from RW19, the C42 pilot reported, *'turning left to avoid Brize'*. The Oxford controller was providing a service without the aid of surveillance equipment and was unaware the C42 had mistakenly routed towards the Brize Norton CTR.

The C42 entered the Brize Norton CTR without a clearance and into conflict with the A330 in the radar pattern. The UK AIP Page, ENR 2-1-19 (20 Oct 11) states:

1.1 Brize Norton Control Zone

1.1.1 Pilots wishing to enter the Control Zone must observe the normal procedure for joining Controlled Airspace and should make their request for entry when 15nm or 5 minutes flying time (whichever is earlier) from the Control Zone Boundary. Pilots should make their request for Control Zone entry to BRIZE ZONE.'

Rule 29 (1b) of the RoA, 'VFR flight plan and air traffic control clearance in Class B, Class C or Class D airspace', states:

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

(b) obtain an air traffic control clearance to fly within that airspace.'

The Oxford controller, operating without surveillance equipment, issued departure instructions to the C42 pilot which required the pilot to remain outside the Brize Norton CTR. The C42 pilot mistakenly infringed the Brize Norton CTR, without an ATC clearance and flew into conflict with the A330 which was operating inside CAS and in receipt of a RCS.

The Brize Norton DIR issued avoiding action to the A330 and the pilot of the C42 acquired a visual sighting of the A330 and initiated a steep descending LH turn.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

Members commended the C42 pilot for his open and honest report. The crux of the incident was the lack of planning prior to his departure from Oxford, which had led to him entering the Brize CTR without clearance and then flying into conflict with the A330. Following the appearance of the C42 as a faint radar contact crossing the CTR boundary, DIR had reacted well. As the A330 was already in a L turn onto 330°, he issued an avoiding action turn onto 300°, as well as TI on the C42, in the belief that the turn would tighten such that the A330 would turn further into the CTR and pass W of the unknown traffic. The A330 crew quickly acquired the C42 visually and watched it pass clear 500ft below. The C42 pilot had seen the A330 whilst it was positioning downwind and when it commenced its L turn onto base leg he realised the potential for conflict and executed a descending L turn, estimating separation of 500ft as the A330 passed to his R. It was noted that whilst the ATC and 'see and avoid' safety measures worked, the TCAS safety barrier was inhibited owing to the C42's SSR not working. The ac's squawk only became apparent after the pilot called LARS, 3min post Airprox, who issued an allocated code which was then displayed on his radar. That said, the actions taken by all parties and the visual sightings by both crews were enough to allow the Board to conclude that the collision risk had been quickly and effectively removed.

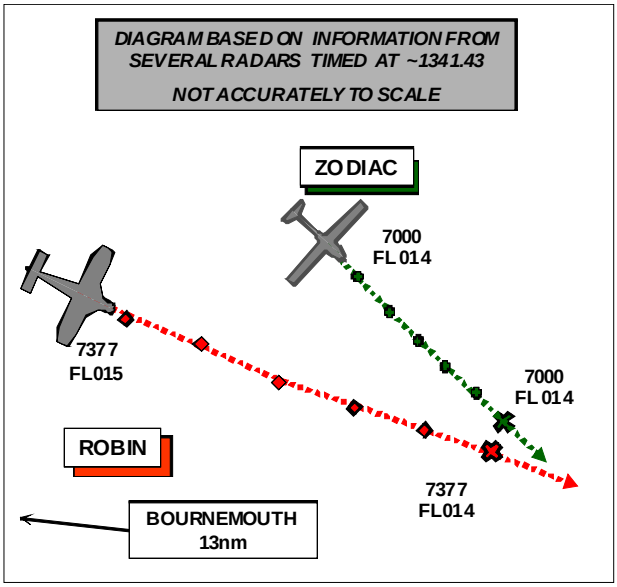
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Ikarus C42 pilot entered the CTR without clearance and flew into conflict with the A330.

Degree of Risk: C.

AIRPROX REPORT NO 2011138

Date/Time:	2 Oct 2011 1342Z	(Sunday)
Position:	5046N 00130W (13nm E Bournemouth)	
Airspace:	London FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Zenair Zodiac	Robin 2160
Operator:	Civ Pte	Civ Pte
Alt/FL:	1700ft	1400ft
	QNH (1024mb)	NK
Weather:	VMC CAVOK	VMC CLBC
Visibility:	>10km	30km
Reported Separation:		
	0 V/30m H	400ft V/1nm H
Recorded Separation:		
	0 V/0.1nm H (See UKAB Note (1))	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE ZENAIR ZODIAC PILOT reports that he was en-route from Old Sarum to Bembridge under VFR in a blue and white ac with strobes fitted, squawking 7000 with Mode C, but Mode S and ACAS were not fitted and he was listening out on Solent Radar. He was flying straight and level heading 130°, outside controlled airspace, at 75kts and at 1700ft on the QNH of 1024mb. Approaching abeam Beaulieu Disused Airfield he first noticed a previously unseen ac in his 2 o'clock position, about 50-100ft ahead, and level with him; the ac crossed from his R to L, passing immediately in front of him. He had no time to take any avoiding action as the whole incident was over in seconds and he considered the risk to be high. The ac was a red and white, low-wing, single engine, tricycle-undercarriage type similar to a PA28.

After the incident, while he continued onwards towards Bembridge, he saw the ac tracking along the N coast of the IoW towards Cowes. Neither he nor his passenger (who is a PPL holder) was at any point aware of the ac prior to the incident.

THE ROBIN 2160 PILOT reports flying a VFR private flight, in a red and white ac with a strobe fitted, from Compton Abbas to Goodwood squawking as directed (7377 with Mode C) while in receipt of a BS from Bournemouth LARS. While heading 135° at 105kt, midway between Stoney Cross and Beulieu he saw an ac 2nm away on a slowly converging course from the L at same level, but moving more slowly than his ac. He recognised that there might be a confliction and so he decided to descend from 1800ft to 1300-1400ft to pass well below and safely in front of the other ac; he did not consider that the incident was an Airprox nor was there any risk of collision.

In retrospect however, he thought that the safety of this course of action was dependent on the other ac maintaining height, course and speed and the accuracy of his judgement of its level and speed; passing behind is usually a better option but, in this case this would have involved a major course alteration.

The Bournemouth controller didn't alert him to any potential conflict.

ATSI reports that the Robin was operating VFR and, at the time of the incident, was in receipt of a BS from Bournemouth LARS. Meanwhile the Zodiac was also operating VFR but was maintaining a listening watch on the Solent Radar frequency; the Solent Monitoring Code of 0011 was not displayed.

ATSI had access to RTF and radar recordings together with written reports from both pilots. The radar recordings displayed the Mode C indications of both ac in terms of flight level on the standard pressure setting of 1013mb. For the purposes of adjusting the Mode C indication to altitude the ratio of 1mb = 27ft has been used.

The Bournemouth METARs are provided for 1320 and 1350 UTC:

METAR EGHH 021320Z 19005KT 130V200 CAVOK 23/14 Q1023=
METAR EGHH 021350Z 18006KT 130V200 CAVOK 23/13 Q1023=

At 1328:40 the Robin pilot contacted Bournemouth Radar requesting a BS; a BS was agreed by the controller and the Robin was instructed to squawk the Bournemouth Conspicuity Code of 7377 and to report passing Stoney Cross. At 1336:20 the Robin reported passing Stoney Cross and the controller instructed him to report at Cowes.

The written report of the Zodiac pilot states that he was flying on a track of 130° at 1700ft while squawking 7000 in the vicinity of Beaulieu Disused Airfield at the time of the Airprox.

At 1339:38 radar recordings showed the Robin (identified using Mode S) 2nm to the W of an ac squawking 7000 indicating FL014 (which converts to altitude 1700ft); both ac were N of Beaulieu disused airfield. Given the reported track and level of the ac, it is assumed that the ac squawking 7000 was the Zodiac.

At 1340:52 the two ac were 1nm apart with the Robin indicating FL015 (1800ft) and the Zodiac at FL014 (1700ft). The speed of the Robin was such that it was overtaking the Zodiac.

At 1341:32 the lateral distance between the two ac had reduced to 0.2nm. At this point the Mode C indications of both ac were not visible.

The written report from the pilot of the Robin stated that he saw the Zodiac on a slowly converging course and descended to pass in front and below the other ac.

At 1341:46 the radar recording shows that the returns of the two ac merge with the Robin crossing right to left in front of the Zodiac. The two tracks then diverged.

The Zodiac pilot's report states that he saw the Robin in his two o'clock position at the same level approximately 50 to 100ft ahead shortly before the ac crossed in front of him R to L. The pilot stated that there was no time to take avoiding action.

At 1343:40 the Robin was instructed to squawk 7000 and contact Solent Radar on 120.225 MHz.

The Solent APR controller was unaware that the pilot of the Zodiac was maintaining a listening watch on 120.225 MHz so would have been unable to offer assistance in the form of traffic information.

It is unclear whether or not the Bournemouth Radar controller was aware of the presence of the Zodiac; however, under the terms of a BS there is no requirement to pass TI.

Both ac were operating in class G airspace. CAP 774, Chapter 1, Paragraph 2 states:

'Within Class F and G airspace, regardless of the service being provided, pilots are ultimately responsible for collision avoidance and terrain clearance, and they should consider service provision to be constrained by the unpredictable nature of this environment. The Class F and G airspace environment is typified by the following:

It is not mandatory for a pilot to be in receipt of an ATS; this generates an unknown traffic environment;

Controller/FISO workload cannot be predicted;

Pilots may make sudden manoeuvres, even when in receipt of an ATS.'

The Airprox occurred at 1341:32 UTC between a Zodiac, and a Robin when the ac came into conflict in Class G airspace, 1.8nm to the E of Beaulieu Disused Airfield.

The Zodiac pilot believed that the Robin passed in front of him at the same level, 50 to 100 feet ahead whereas the pilot of the Robin reported that he had given sufficient room to the other ac in order to pass it safely; the Radar recording was unable to determine the exact geometry of the encounter.

UKAB Note (1): The Pease Pottage Radar shows the incident. The Zodiac, squawking 7000 with Mode C approaches the CPA tracking 130° at FL014. Meanwhile the Robin (G/S 112kt) is to the S of the Zodiac (G/S 70kt) tracking 105° and slowly closing with and overtaking it as shown above. At 1336:30 the Robin is at FL017 and continues to close with the Zodiac at FL014, while descending to FL015. At 1337:30 the Zodiac (FL014) is in the Robin's (FL016) 11 o'clock at 3.3nm. At 1339 the Zodiac is 2nm in the Robin's 11 o'clock. At 1340 the Zodiac is 1.7nm in the Robin's 1030, the levels unchanged. At 1341:12 both acs' Mode C drops out while the Robin is 0.5nm in the Zodiac's 4 o'clock. At 1341:42 the Robin is in the Zodiac's 2 o'clock at 0.1nm, overtaking it, the Robin's Mode C still not showing (on last seen sweep (1341:07) it showed FL015 and on the sweep 6 sec after the CPA also FL015). The Swanwick system and the Jersey recordings at 1341:43 show both ac at FL014, 0.1nm apart as the Robin overtook the Zodiac on its starboard side.

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 a report from the appropriate ATC authorities.

The Board noted that both ac had been operating legitimately in, albeit busy, Class G airspace where 'see and avoid' is the principal method of collision avoidance. The ac were closing at almost the same alt on line of constant bearing with very little relative motion to cue a visual acquisition. Although the Zodiac had the Robin on the right, the Robin was slowly overtaking so the ANO requires both to give way; however, the Robin was always behind the Zodiac and more difficult to see so the Zodiac pilot was not well placed to 'see and avoid'. The Robin pilot had a better view of the situation developing ahead of him and Members opined that he could have initiated a turn to the left to go behind the Zodiac rather than opting to give way by descending (although not discernable on the radar recording and therefore of a small magnitude manoeuvre and/or of short duration). While descending is by the letter of the law giving way, Members agreed that a lateral and vertical solution makes pilots' intentions more visible and clearly signs that one has seen, and is giving way to, another ac.

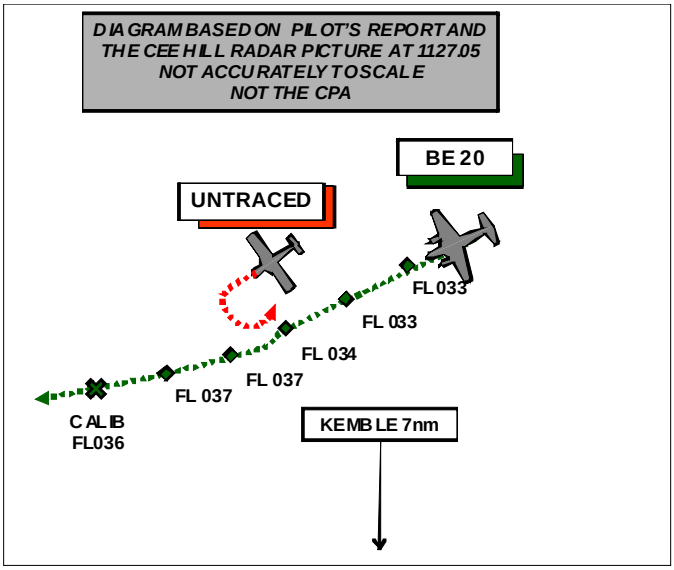
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Robin flew close enough to cause the Zodiac pilot concern.

Degree of Risk: C.

AIRPROX REPORT NO 2011139

Date/Time:	13 Oct 2011 1127Z	
Position:	5146N 00205W	(7nm N Kemble)
Airspace:	Lon FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	BE200	Untraced
Operator:	Civ Com	NK
Alt/FL:	3500ft	NK
	QFE 1018mb	NK
Weather:	VMC CLBC	NK
Visibility:	NR	NK
Reported Separation:		
	0ft V/100m H	NK
Recorded Separation:		
	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE BE200 PILOT reports flying a blue and white ac with all external lights switched on, on a calibration flight of the Brize Norton PAR (RW 08) under VFR; he was squawking as directed with Modes C and S, was in receipt of a TS from Brize DIR and TCAS 1 was fitted. While long downwind in the radar pattern outbound for a calibration run, heading 270° at 180kt but about to turn base, they were busy looking ahead and below for traffic that had been called by Brize, when the PNF, in the RH seat, became visual with a white, low-wing, single-engine light ac in level flight in their 0230-0300 o'clock and about 300m away. She initiated a climbing LH turn to avoiding the ac and this was continued by the PF and collision was averted. There were no TCAS indications.

He assessed the risk as being high and reported the incident to DIR.

UKAB Note (1): The other ac appeared on the Clee Hill radar as an intermittent primary only contact on a similar track to the BE200 before turning. Despite extensive procedural tracing action the ac could not be identified. The CPA appeared to take place at about 1126:45 as the BE200 was squawking 'ident' (no request was apparent on the RT transcript). At that point the ac commenced a climb levelling 200ft above its cruising alt before descending again and then turning L on to the base leg. Although the radar recording appears to show a slight right hand turn commencing at 1126:53, the left hand turn reported by the pilot probably took place at about 1126:40 and was between radar sweeps; consequently it could not be seen on the recording.

RAF BRIZE NORTON CONTROLLER reports controlling on a busy DIR session with a C130 conducting Tactical Landing Training, a VC10 in the instrument pattern and a BE200 calibrating both the RW08 and RW26 PARs. The BE200 left the CTR to the W of Brize to self position for a 3500ft QFE run. The ac was under a TS, had been flying VFR in the Brize CTR, was warned of the high traffic density to the N of Kemble and he believes that he also warned them of possible late warnings of traffic. When trying to ascertain from the crew whether they required to fly O/H Kemble, as the controller wanted to pass TI to them, he was asked to 'Standby' and then was informed that the BE200 had an Airprox with an unknown ac. The incident occurred ivo 5145.53N 00209.48W on a radial of 330° at 7nm from Kemble. It was called at 1128Z with the BE200 at 3500ft QFE 1018mb against traffic believed to be a PA28 type tracking S at the same alt. He does not recall the BE200 pilot passing their heading, but they had taken action to avoid a collision. He asked Kemble for TI on any traffic of that type but they were not working any ac in that area. The tapes were impounded should they be required. The aircrew reported that they would submit their report on their return to base.

BM SAFETY MANAGEMENT reports that this Airprox occurred between a BE200 operating VFR in VMC in receipt of a TS from Brize Norton Director (DIR) and an untraced light ac. DIR stated that the workload at the time of the incident was high to medium.

At 1124:51 DIR provided TI to the BE200 as, "*traffic west, four miles, two contacts, no height*" which the pilot acknowledged. The radar replay shows one primary-only contact in the position reported by DIR.

At 1125:44 LARS initiated coordination with DIR on traffic unrelated to the incident, with the landline conversation ending at 1126:05. At 1126:15, DIR updated the TI to the BE200 stating, *"previously called traffic twelve o'clock, half mile, similar heading, no height"*. The previously mentioned primary-only contact faded from the radar replay at 1126:13, one mile west of the BE200 in its right one o'clock.

DIR then asked the BE200 whether they intended to route through the Kemble overhead, mentioning that there was "high traffic density to the south". The BE200 pilot instructed DIR to *"standby"* at 1126:32 and then at 1126:46 transmitted *"Er, standby Calibrator"*. DIR was then involved in liaison with unrelated traffic before the BE200 called them at 1127:16 stating "we've actually just had an airprox with a light aircraft that was er approaching from the north".

Although no conflicting traffic can be seen on the radar replay, at 1126:45 the BE200 can be seen to have climbed 200ft and, at 1126:48 to have climbed a further 200ft. Based upon the BE200 HP's description of the initial avoiding action taken by the NHP on sighting the unknown ac, this suggests that this was the point when the Airprox occurred.

While it cannot be proved conclusively, based upon the evidence it appears that the ac that was the subject of the TI passed to the BE200 by DIR, was the reported ac. In this instance the ATM related safety barrier operated effectively in that the BE200 was provided timely and accurate TI in accordance with CAP 774. Unfortunately, the lack of an operating transponder on the unknown ac prevented the operation of the additional safety barrier offered by the BE200's TCAS, leaving 'see and avoid' as the remaining safety barrier. Whilst it has not been possible to determine whether the pilot of the unknown ac was able to 'see and avoid', the BE200 NHP was able to visually acquire the unknown ac in time to take avoiding action.

This Airprox adds further weight to the argument for a traffic/collision warning system that is interoperable across all types operating within Class G airspace.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the BE200 pilot, transcripts of the relevant RT frequency, radar recordings, reports from the air traffic controller involved and reports from the appropriate ATC authority.

The Board noted that this incident took place in Class G airspace where both pilots had an equal and shared responsibility to see and avoid the other ac. Due to the turn of the untraced ac towards the BE200 and the resultant bank angle, the ac could have been 'belly up' to the BE200 and therefore (at least in the latter part of the turn) the pilot would not have been able to see the BE200; the radar recording, however, was inconclusive regarding the untraced ac's actual track.

The BE200 pilot was given accurate and timely TI by Brize Norton regarding the unknown contact and could have taken a lateral separation based on that information; however, there were several other ac in the area just outside the zone (particularly to the S where they had been warned that Kemble was busy) that they could have conflicted with had they made a precautionary avoidance turn. The untraced light ac would initially (before its turn) have been tail-on to the BE200 and would have been very hard to see; that being the case in the Board's view, the BE200 crew had most likely seen the ac as early as practicable. The Board therefore concluded that the incident had been a conflict in Class G airspace.

Members observed that although late, the BE200's avoiding action was effective and, combined with the 300m separation extant, had removed any risk of collision. The relative lateness of the BE200's manoeuvre, Members agreed, had resulted in a reduction of normally accepted safety standards.

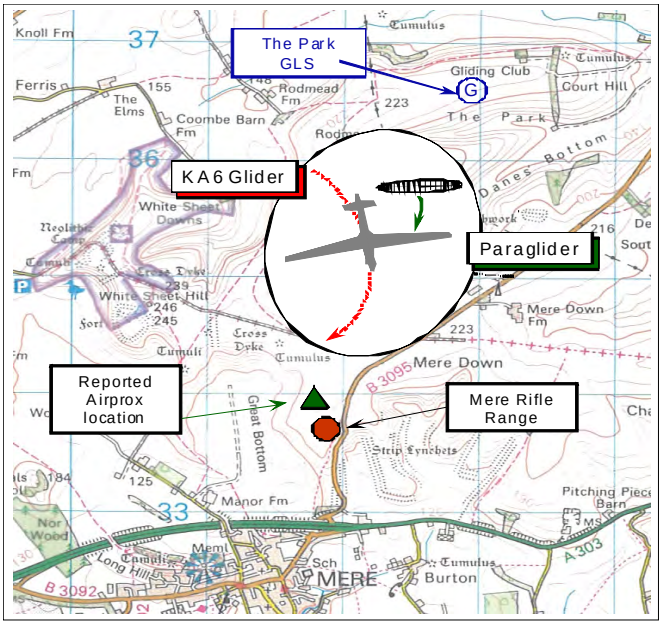
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict in Class G airspace.

Degree of Risk: B

AIRPROX REPORT NO 2011141

Date/Time:	15 Oct 2011 1315Z (Saturday)	
Position:	5106N 00216W (1½nm SSW of The Park GLS - nr Mere, Wilts)	
Airspace:	London FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Sigma Paraglider	KA6 Glider
Operator:	Civ Pte	Civ Pte
Alt/FL:	2400ft amsl	1535ft aal
Weather:	VMC CLBC	VMC CLBC
Visibility:	>10km	>5nm
Reported Separation:	5ft V/Nil H	100ft V/Nil H
Recorded Separation:	Not recorded	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE SIGMA 8 PARAGLIDER PILOT reports he was flying his bright orange paraglider just to the N of the town of Mere, Wiltshire. He had been flying for about 1hr in a gentle autumn thermal between 1400ft and 3400ft ALT up to the cloudbase for most of this period, and so he must have been clearly visible to all the pilots operating from the nearby Park Glider Launching Site. Other gliders had earlier flown across the location and it is common for paraglider pilots to fly there in S'ly winds. He pulled forward to join a white glider that was below him, and well ahead, over the town of Mere. The glider appeared to be in light lift, turning very gently and they were the only two ac in the vicinity. The paraglider pilot tried to head to the centre of where he gauged the thermal to be and was flying straight, maintaining altitude as he entered the gently rising air. The glider pilot continued to fly slow lazy RH turns and at this stage the glider's presence give him no cause for concern or to alter his track.

He saw the glider pass to his R, perhaps 50ft below, and several hundred metres away and waved to its pilot. The glider passed behind him before he picked it up again to his L; they were now at a similar height and in a similar slow turn to the R. Although he judged that they were on a collision course, with a speed of just 12kt he was unable to make any effective manoeuvre away. He is aware that glider pilots see paragliders as effectively stationary and was content that the glider pilot would modify his flat slow turn to the R slightly to miss his paraglider easily; however the gliders turn continued and he could see that they were very clearly on a collision course as he headed S. There was no waggle of the wings or any indication at all that control was being applied by the pilot as the glider passed directly beneath his paraglider with no more than 5ft of vertical separation at a position NW of Rifle Range Hill. Had the glider struck his paraglider it would have been about 2/3rds along the outboard wing. He saw the wing of the glider in very close detail and was screaming at this point, the slightest wiggle to tighten the turn would have led to a collision and would have killed him; the Risk was assessed as 'high'. He noted the time and looked for any ID numbers to help him identify the glider.

Amassing about 1500hr over 17 years of flying hang gliders and paragliders including extensive cross country experience, he is a Club Coach and frequently a Meet Director. He has had other incidents over the years, but this one was upsetting as it was completely unnecessary; the conditions were totally benign and they had loads of height. This was a very close call and he has been suffering from delayed shock. Paragliders and gliders can fly well together and they can easily share the same sky.

The white glider was from the Park so he visited the launching site and spoke to the Club Chairman about the Airprox.

AIRPROX REPORT No 2011141

THE SCHLEICHER KA 6E GLIDER (KA6) PILOT reports he was airborne on a local flight from The Park Glider Launching Site (GLS); his glider is coloured white with red wing tips and rudder. He was released from the aerotow at 2000ft QFE about 2.3nm SSE of the Park and turned N, then W, before finding weak lift. At this point, about 8-10min before the Airprox, he saw a paraglider about 2nm to the W flying close to the cloud base at 2800ft ALT. He flew to the N but found no lift so turned towards Mere. Encountering lift, he made three thermal turns to the R at 48kt which produced minimal lift. Flying about 1000ft below cloud at 1535ft QFE – about 2232ft ALT - with an in-flight visibility of >5nm, he had not seen the paraglider for several minutes when he was shocked to see it fly over about 100ft above his glider with a 'high' Risk of collision. At this point he flew out of the area. The angle of approach had prevented him sighting the paraglider beforehand.

THE CFI OF THE KA6 PILOT'S GLIDING CLUB reports this was a privately owned and operated glider flown by a club member. The CFI spent several hours analysing both logger traces and has concluded that the glider and paraglider passed extremely close to each other - possibly just a few feet. He has informed all of the Club pilots of the difficulties of soaring near paragliders and the need to maintain adequate separation at all times.

UKAB Note (1): The UK AIP at ENR 5-5-1-6 notifies the Glider Launching Site at The Park, Kingston Deverill, Wiltshire, as active from Sunrise to Sunset and where winch launching takes place to 3000ft about the site elevation of 697ft amsl.

UKAB Note (2): This Airprox occurred outwith recorded radar coverage.

THE BHPA comments that data from the loggers analysed by the gliding club's CFI will have provided an accurate picture of what happened. Whilst glider and paraglider pilots are used to thermalling in what other pilots would consider very close proximity to other aircraft of the same speed range, the factor of four speed difference between the types does necessitate that more care be taken when sharing a thermal. The speed disparity leaves a paraglider pilot with very few practical collision avoidance options available to them. The proactive actions of the CFI to inform the Club's pilots of the lessons to be learnt from this unfortunate incident could well be of use throughout the BGA.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac.

It was evident to the Board that this was a close encounter between dissimilar ac types of disparate performance. Although these were the only ac flying in the vicinity, this is a very popular location for paragliding activities and the KA6 pilot as a local operator should have been well aware of that. The BGA Member suggested that the KA6 glider pilot might have been flying too fast as his reported speed of 48kt is not the ideal speed for thermalling this type of glider. Nevertheless, it was apparent that his search for what minimal lift existed in the vicinity might have been focussing his attention to the detriment of an all-round look-out scan. Having seen the paraglider beforehand, the KA6 pilot reports that he had lost sight of it during the thermalling turns. Nevertheless, Members recognised the orange paraglider was there to be seen and the glider pilot had a responsibility to afford this relatively slow and unmanoeuvrable ac appropriate separation. In the event, the KA6 pilot did not see the paraglider again until he flew underneath it and by that stage it was too late to increase the miss distance. Whilst the Board noted the paraglider pilot's comment that paragliders and conventional gliders can fly well together and easily share the same sky, the BGA Member opined that in such circumstances it behoves glider pilots to maintain a keen lookout and afford as wider berth as practicable to the slower and less manoeuvrable paragliders. This view was reinforced by the BHPA highlighting the relative inability of the paraglider pilot to take any effective avoiding action as he cannot get out of the way at these low speeds, leaving little scope to affect the outcome at close quarters. The BGA Member recognised that this was a learning point and undertook to follow this up within the association. The Members agreed unanimously that this Airprox had resulted from effectively, a nonsighting by the KA6 pilot and that an actual Risk of a collision had existed in the circumstances conscientiously reported here.

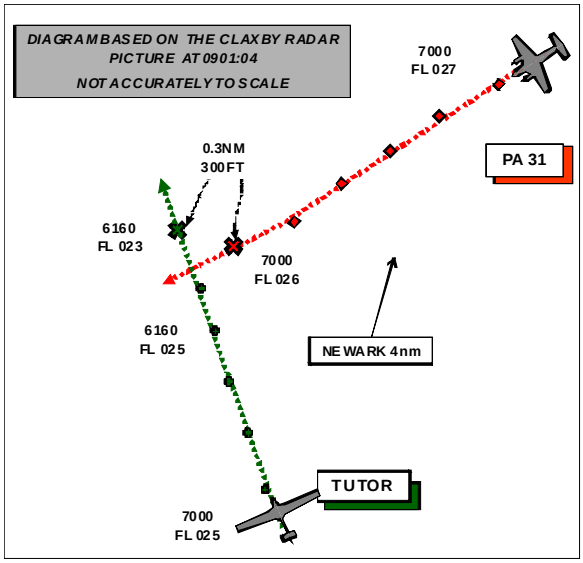
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Effectively a non-sighting by the KA6 pilot.

Degree of Risk: A.

AIRPROX REPORT NO 2011142

Date/Time:	18 Oct 2011 0901Z	
Position:	5301N 00049W	(4nm SSW Newark)
Airspace:	Lincs AIAA	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Tutor	PA31
Operator:	HQ Air (Trg)	Civ Pte
Alt/FL:	2000ft	2500ft
	RPS (996mb)	NK
Weather:	VMC NR	VMC CAVOK
Visibility:	30km	>10km
Reported Separation:		
	NR V/0 H	>500ft V/0.5nm H
Recorded Separation:		
	300ft V/ 0.3nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE TUTOR PILOT reports flying an instructional sortie in a white ac with external lights switched on, squawking with Modes C and S and with TAS fitted. They were heading 314° in good VMC about 4nm SSW of Newark and the student pilot had just obtained a BS from Doncaster Radar who gave them a squawk [6160 see diagram] but the controller had not identified them when they received a TAS alert and "Traffic Traffic" sounded. The display showed a contact 100ft above and to the right in the 2 o-clock position at a distance of about 1nm. In this instance the TAS alert was timely and the contact was seen slightly above and behind the right wing. He [the instructor] took control and took evasive action by descending their ac about 300ft. The other ac was seen to be a dark coloured (possibly blue) low-wing, low-tail twin-engine ac which was flying straight and level and appeared to take no evasive action indicating, he thought, that its pilot had not seen them. It appeared to be heading towards Nottingham/East Midlands and, although of a similar size to the RAF Cranwell based King Airs, it appeared to have a low set tail plane.

If they had not taken the avoiding action the ac would have passed about 100ft directly overhead. He assessed the risk as being medium and reported the incident immediately to Doncaster Radar.

He thought that the ac had initially been obscured by the Tutor canopy arch which delayed visual acquisition.

THE PA31 PILOT reports flying a private flight under VFR from Wickenby to East Midlands in a grey and white ac with strobes switched on. He was squawking as directed with Modes C and S while in receipt of a BS from Waddington APP. While in the cruise about 10nm W of Waddington, heading 280° at 150kt and 2500ft, they informed him of an ac 6nm away tracking from L to R below him at 2000ft. The visibility was good and he saw a low-wing single-engine white ac with RAF roundels; when it was about ½nm away in his 11 o'clock and well below it performed a rapid dive.

He did not consider the incident to be an Airprox so he carried on to his destination, transferring to their frequency, also on a BS. He did not hear the other ac on either frequency at any time and considered there to be no risk.

BM SAFETY MANAGEMENT reports this Airprox occurred between a Tutor operating VFR in VMC in receipt of a BS from Doncaster APP and a PA31 operating VFR in VMC. Although the PA31 pilot stated that he was in receipt of an ATS from Waddington [ZONE] at the time of the Airprox, subsequent investigation showed that this was not the case; he had been in receipt of a BS from Waddington ZONE but left the frequency at 0859:59 with the intention of free-calling East Midlands. Prior to leaving the freq however, ZONE provided the pilot with accurate TI on the Tutor stating, "*traffic south-west of you, four miles, tracking north, indicating three hundred feet below.*"

The CPA occurred at 0901:04, with 0.3nm lateral and 300ft vertical separation indicated on the radar replay. There are no RAF ATM related issues that require further investigation in relation to this Airprox.

ATSI reports that the Tutor was operating on a local training flight from of RAF Barkston Heath and had just obtained a BS from Doncaster Radar.

ATSI had access to recordings of RTF from Doncaster and area radar recordings together with written reports from both pilots.

The radar recordings show the Mode C indications of both ac as FLs.

The Barkston Heath METARs are provided for 0850 and 0950 UTC:

METAR EGYE 180850Z 26018KT 9999 FEW025 ///// Q1005 BLU=
METAR EGYE 180950Z 26028KT 9999 FEW030 ///// Q1005 BLU=

The Tutor pilot contacted Doncaster Radar at 0900:00 requesting a BS, they agreed a BS and issued a squawk of 6160.

At 0900:01, radar recordings show the Tutor (Mode S equipped) 9.3nm to the WNW of Barkston Heath, tracking NW. At that point the PA31 (also Mode S equipped) was 3.7nm to the NNE of the Tutor on a converging course. At 0900:47, the lateral distance between the ac had reduced to 1.3nm. The Mode C of the Tutor (squawking 6160) was indicating FL025 with the Mode C of the PA31 indicating FL026. At 0901:05, the Tutor passed in front of the PA31 with 0.3nm lateral distance between the two ac.

CAP774, UK Flight Information Services, Chapter 1, Page 1, Paragraph 1, states:

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

The Doncaster radar controller had agreed a BS with the Tutor pilot but had not identified it so would have been unable to provide surveillance derived TI.

UKAB Note (1): An analysis of the Claxby radar recording confirmed the information in the BM SM and ATSI reports.

HQ AIR (TRG) comments that the benefit of TAS in this case is clear in that it alerted the pilot to a previously unsighted conflict. The PA31 'was not seen until well after the Traffic Alert' but the eventual avoiding action was effective and possibly facilitated the even later sighting by the PA31 pilot. The intent of pilots should be to beat the TAS to the contact in all cases and they must be particularly diligent in moving their heads to mitigate the well publicised effect of the canopy arch.

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 both ac had been operating legitimately under VFR in Class G airspace avoiding other ac by means of the 'see and avoid' principle albeit both were, or had recently been, in receipt of a BS from their respective ATC units. The PA31 had recently left the Waddington frequency and had not yet transferred to East Midlands, but, although not required to do so, the Waddington controller had provided the pilot with accurate TI on the Tutor 4nm away before he left the frequency. The PA31 pilot did not mention in his report at what distance he saw the Tutor or if his sighting had been as a result of this information but Members assumed that it had and he had seen the Tutor shortly after the TI and in good time. Although the pilot estimated the vertical separation to be 500ft and sufficient, the radar recording shows that in the 30 sec leading up to the CPA it was substantially less

than he estimated and additional avoidance was required as the Tutor disappeared below the PA31's nose and port engine cowling.

The Tutor pilot was warned of the presence of the (squawking) PA31 by the ac TAS and did not see the ac until it was estimated to be 1nm away; he then initiated avoidance by descending as he was concerned by the PA31's proximity. This descent was evident on the radar recording on the return after the CPA indicating that it had been effective in increasing the separation.

Since both pilots had seen the opposing ac in reasonable time, Members agreed that this incident had been a conflict in Class G airspace and that the Tutor instructor had ensured that there was no risk of collision by taking control and descending.

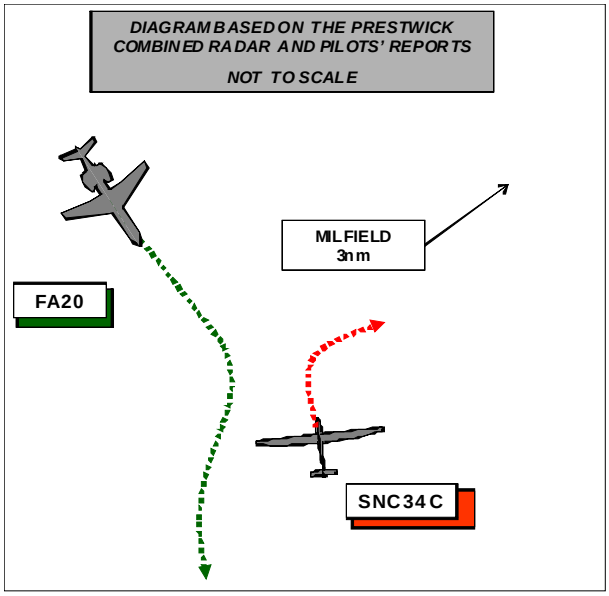
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict in Class G airspace.

Degree of Risk: C.

AIRPROX REPORT NO 2011143

Date/Time:	19 Oct 2011 1119Z	
Position:	5534N 00208W	(3nm SW Milfield)
Airspace:	Scot FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	FA20	SNC34C Glider
Operator:	Civ Comm	Civ Club
Alt/FL:	2500ft	2500ft
	QNH (1007mb)	QFE (1004mb)
Weather:	VMC CLBC	VMC
Visibility:	>10km	50km
Reported Separation:		
	0ft V/600ft H	<300ft V/300ft H
Recorded Separation:		
	NK	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE FA20 PILOT reports flying a dark blue ac as No 2 of a pair of ac, operating under VFR with all external lights switched on, on an exercise support sortie in receipt of a BS from a tactical unit squawking as directed with Modes C and S; TCAS 2 was fitted. He was to the W of Milfield Gliding Site, heading 152° at 310kt in a descent from 2800ft when, passing 2500ft (QNH), he saw a white glider about ¾nm away just left of 12 o'clock, in a right turn having just started to turn to the E from a reciprocal heading onto his heading (150°). He initiated a hard 2·5g climbing turn to the right to avoid it and estimated the glider passed about 200yd to his E; if he had not manoeuvred the distance would have been much less.

He assessed the risk as being high and reported the incident immediately on the frequency in use and backed it up with a written report on landing.

THE SNC34C ALLIANCE GLIDER PILOT reports flying a white high performance glider with no SSR fitted but listening out on a VHF gliding frequency. He had just rolled out of a left turn and was flying wings level heading 360° at 55kt when he noticed a black dot in the distance; by the time he realised it was a jet [dark blue FA20] he only had time to roll right (about 10sec). The jet was almost at the same height and on a reciprocal heading; its pilot also saw him at about the same time and rolled right.

He reported the incident to the club by radio and to ScACC duty Supervisor on landing, assessing the risk as being high.

He assessed the passing distance to be about 100ft vertically and about 200–300ft to his left.

THE GLIDING CLUB commented that they are concerned that the incident took place close to the gliding site in a period of very busy activity. The site is in Class G airspace but within the confines of Military LFA 12.

Cognisant of the constraints of gliding in an area where low flying military fast jet ac are operating the Club has, for a considerable number of years, maintained a close dialogue with the Royal Air Force Low Flying Ops (LF Ops).

When gliding operations are planned on weekdays the LF Ops are notified at least 14 days, but normally some weeks, in advance by telephone and e-mail; LF Ops then disseminate this information on behalf of the Club at an appropriate time to any military stations [and the DA20 operators]. They also operate a separate arrangement where, on an opportunity basis, a specific day's flying can be pre notified with a minimum of 24 hours notice.

Additionally, they were recommended some time ago by the CAA to amend their UK AIP entry to reflect that the site is active 7 days per week dawn/dusk. This recommendation was implemented which meant that ac should be aware of the possibility of gliding activity at the site at any time.

The Club believes that a significant contribution to Flight Safety has been made over a long period by these actions, which have generally worked well and reduced the number of incidents in the area.

The Gliding Club and its members have always been wholly sympathetic to the training and operational requirements of all military operators; however, the above system of communication only works if they pass on details of their operations and aircrew operating in the area read the information published for their benefit .

In this incident the above procedure was carried out by the club and LF Ops was notified of their activity.

UKAB Note (1): This was a routine gliding operation with no competition or associated NOTAM.

RAF BOULMER CONTROLLER reports while conducting a low-level task the FA20 had an 'airmiss' with a glider. The surveillance picture was full of primary clutter and it was impossible to distinguish any primary glider radar returns. There was no NOTAM or any other form of information to inform that there was glider activity in OTA Echo that morning. The FA20 was on a BS throughout the sortie. He had limited radar contact with the FA20, due to the constraints of Brislee Wood Radar. When the FA20 climbed and informed him that he had had an air miss with, he thought, two glider ac, this was the first time that he was aware of any gliding activity

BM SAFETY MANAGEMENT had nothing to add.

UKAB Note (2): Milfield is promulgated in the UKAIP at ENR 5-5-1-4 as a glider launch site (winch ground tow and tug aircraft/motor glider) up to 2000ft agl (site elev 150ft) active HJ.

UKAB Note (3): The radar recordings show only the FA20; the glider does not show at any time. At 1119:30 the FA20 is 3nm SW of Milfield tracking 150° having descended to an alt of 2700ft before climbing again.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, radar recordings, reports from the fighter controller involved and reports from the appropriate ATC authorities.

The Gliding Member briefed the Board that Milfield is a busy gliding site operating training and soaring flights often in mountain wave throughout the year. The glider involved was a 2-seater and not a particularly high performance machine and, due to the position and alt, was most likely on a routine local training flight.

An airline pilot Member questioned the regulations that the FA20 was operating under as it appeared to be flying in excess of 250kt below FL100. It was pointed out that the FA20 was flying a military support flight under military procedures and regulations (The Manual of Flying Orders for Contractors); as such it was exempt from many parts of the ANO. In this case the FA20 was supporting military intercept training for 2 Typhoon ac and under a BS from RAF Boulmer. However the limitations of this BS are outlined in the Controller's report. Notwithstanding this the ASACS Advisor informed the Board that he would expect controllers to be aware of operations at Milfield although unable to see any non-transponding gliders on their radar picture.

Notwithstanding these factors both ac were operating in the 'see and avoid', environment of Class G airspace. The glider pilot saw the dark shape of the FA20 approaching him some distance away but, due to the relatively high closing speed had limited time to initiate an effective avoidance manoeuvre. The FA20 pilot also saw the glider as early as Members considered reasonable.

That being the case Members agreed that this incident had been a conflict in Class G airspace and both pilots had taken effective avoidance; however due to the relatively small resulting separation, there was an erosion of normally accepted safety margins.

AIRPROX REPORT No 2011143

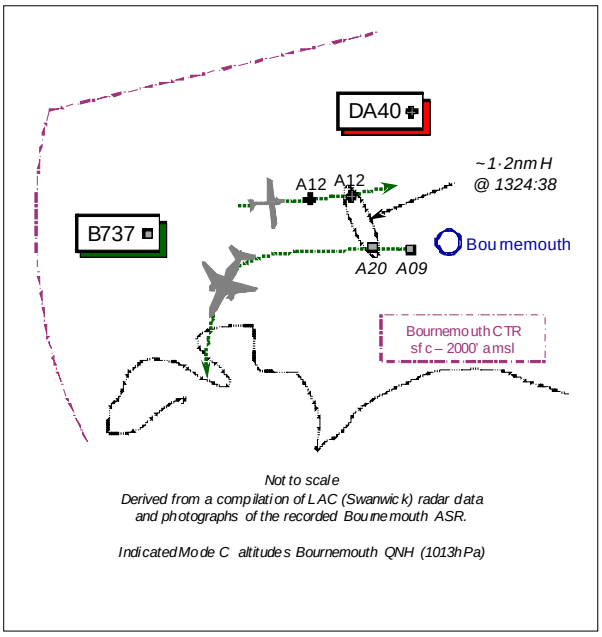
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict in Class G Airspace resolved by the pilots of both ac.

Degree of Risk: B.

AIRPROX REPORT NO 2011144

Date/Time:	18 Oct 2011 1324Z	
Position:	5047N 00155W (2nm W of Bournemouth Airport - elev 38ft)	
Airspace:	Bournemouth ATZ/ CTR	(Class: D)
	Reporting Ac	*Reported Ac*
Type:	B737-800	Diamond DA40
Operator:	CAT	Civ Club
Alt/FL:	1500ft↑	1200ft
	QNH (1013hPa)	QNH (1013hPa)
Weather:	VMC	VMC NR
Visibility:	10km	>10km
Reported Separation:	1700ft V/1.25nm H	NK
Recorded Separation:	See ATSI report	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE B737-800 PILOT reports that he was departing from Bournemouth Airport under IFR bound for Tenerife. TOWER cleared them for take-off from RW26 with a L turn after 'noise' for a departure to the S via THRED. After take-off, heading 270° at 170kt climbing through 1500ft QNH (1013hPa) an ac was first sighted at 2 o'clock - 2nm away and closing. No information had been passed to the crew about traffic heading their way during the initial part of the SID. It appears that the other ac – the DA40 - was in the process of arriving at the airport from the W at an altitude of about 1500ft. Minimum horizontal separation was about 1·25nm when they were climbing through 1700ft ALT and he assessed the Risk as 'medium'. Their departure required them to turn directly towards the direction this ac was coming from and climb through its level. It would have been impossible for the controller to predict with any certainty the separation that could be achieved as this would depend on their ROC and radius of turn at 0.6DME, coupled with their tracking accuracy on the 270° track.

The assigned squawk of A0306 was selected with Modes C and S on. As it turned out, TCAS only enunciated a TA during this event and they managed to spot the single-engine ac heading in the opposite direction passing their 3 o'clock position at 1.25nm exactly on TCAS. This was too close for comfort, especially as they had not been given TI as a potential conflict.

He added that the report had been filed to highlight an incident that could have easily had a worse outcome. The ac has a blue and white livery; the HISLs anti-collision lights, turn-off and fixed landing lights were all on.

THE DIAMOND DA40 PILOT reports he was returning to Bournemouth from the NW on completion of a local VFR training flight. A squawk of A7000 was selected with Mode C; elementary Mode S is fitted, TCAS is not.

Bournemouth ATC was informed and they were directed to join downwind RH for RW26. Proceeding as directed at 100kt, he joined the RH cct to RW26 heading 120° downwind at 1200ft QNH. As the B737 departed he was visual with it from 3nm NW of the Airport and estimated the minimum horizontal separation as about 2nm. No information was passed to him at the time and he was quite surprised that the other pilot had filed an Airprox. The first he heard of the Airprox was a couple of weeks later when his CFI told him about the incident. He assessed the Risk as 'none'.

THE BOURNEMOUTH AERODROME CONTROLLER (ADC) reports he was advised of the B737 pilot's written Airprox report against a light ac joining the cct from the NW VFR. At the time the Airprox occurred, he was not

aware of any problem, although the radar controller made a passing comment later in the day about something non-specific relating to the B737's departure.

Having viewed the radar replay and listened to an RT recording, it is apparent that the joining DA40 was notified to him as a W join that joined the cct from the NW, and reported on the TOWER frequency as joining from the NNW. The DA40 subsequently routed to a downwind via a point somewhat to the W of the start of the downwind leg, passing around 1.2nm N of the departing B737, about 700ft below it at the closest point. He was not observing the ATM closely at the time of the encounter and did not consider it necessary to pass TI. The DA40 pilot was aware of the departing B737 as radar had passed brief TI. In retrospect, TI on the joining DA40 should have been passed to the departing B737 crew in anticipation of the possibility that the ac might join the cct close to the climb-out.

UKAB Note (1): The Bournemouth Aerodrome Traffic Zone (ATZ) is notified in the UK AIP at AD 2-EGHH-1 – 5 2.17 as a circle radius 2½nm centred on RW08/26, extending from the surface to 2000ft above the aerodrome elevation of 38ft and active H24.

ATSI reports that the Airprox occurred about 2nm W of Bournemouth Airport, within the Class D Bournemouth CTR. The vertical dimensions of the CTR are from the surface to 2000ft amsl. Above this, with an upper level of 5500ft amsl, is the Class D airspace of the Solent CTA.

The B737, whose pilot filed the Airprox, was outbound on an IFR flight from Bournemouth Airport to Tenerife. The DA40 was inbound to the airport from the NW, following a local VFR flight.

Both flights were under the control of the Bournemouth ADC. The ADC and Ground Movement Control (GMC) functions were combined. The ADC described his workload at the time of the incident as 'medium to low' and considered that the combining of the two operating positions was not a causal factor to the Airprox.

ATSI had access to the Bournemouth Airport surveillance radar recording.

The 1250UTC METAR for Bournemouth Airport: 28013KT 9999 FEW045 13/04 Q1013:

The 1350UTC METAR: 27014KT 9999 FEW035 13/04 Q1013

The B737 was cleared to start and push for its flight to Tenerife at 1312. Five minutes later it was cleared to taxi to holding point 'G3', for departure from RW26.

While taxying, the pilot was issued with his departure clearance: *"cleared to Tenerife routeing THRED QUEBEC 4-1 ORTAC climb to altitude 4 thousand feet squawk 0-3-0-6"*. The clearance was read back correctly. Onward taxi clearance to 'G1' was issued at 1320.

Meanwhile, at 1317, the DA40 established communication with Bournemouth APP, requesting to, *"rejoin from the west"*. The DA40 pilot was cleared to, *"join direct downwind right-hand runway 2-6 QNH 1-0-1-3 not above 2 thousand feet VFR"*. After reading back the clearance the pilot was requested to report passing Newton Peveril. This village is 10nm WNW of the airport, on the western edge of the Solent CTA (2000-5500ft ALT). When the DA40 pilot reported passing Newton Peveril at 1321:08, he was cleared by APP to, *"join downwind there's two Falcons departing followed shortly by a 7-3-7"*. This was the subject B737. The pilot replied, *"all copied wilco"*.

Having obtained a release from Solent Radar, the Bournemouth Approach Radar Controller (APR) informed the ADC accordingly, at 1321, that the B737 could depart. At the same time, the ADC was advised by the APR about the DA40 positioning RH downwind.

At 1322:35 the DA40 was transferred to the TOWER frequency. The radar recordings show that it had just entered the Bournemouth CTR approximately 2nm S of its NW corner. At 1322:47 the DA40 pilot contacted TOWER reporting, *"inbound from the north north westish"* and was instructed to report downwind.

The B737 was cleared for take-off at 1322:58, *"a left turn out after noise clear for take-off the surface wind Two Six Zero One Five knots"*. This was acknowledged by the pilot.

As stated in the UK AIP, Page AD 2-EGHH-1-8, the applicable Noise Abatement Procedure for the B737 departing from RW26 was:

'Climb on runway QDM to 0.6 DME then track 270 degrees MAG. As soon as 3.1 DME and 2000 ft have been attained, execute a turn on track as directed by ATC'. (Runway direction 257 degrees M.)'

Approximately 1½ minutes later, at 1324:30, the B737 was transferred to the APP frequency. The Bournemouth ASR radar photograph shows that, at the time, the subject ac had not passed abeam each other. The B737, which was 2nm W of the airport, had turned R on its noise abatement procedure and was climbing through 1700ft. The DA40 was 1.5nm NW at 1100ft, tracking ESE. The radar photograph, timed at 1324:38, shows the two ac were passing abeam each other 1.2nm apart. The B737 was passing 2000ft and the DA40, which had made a L turn to track ENE, was at an altitude of 1200ft. The cct height at Bournemouth is 1200ft QFE (aerodrome elevation 38ft).

The B737 crew contacted Bournemouth APP at 1325:00, reporting passing 2400ft climbing to 4000ft. The ac was instructed to climb to FL70. After the pilot read back the clearance to FL70 he commented, *"just be advised that we did have a traffic warning with..an ac passing opposite direction on our righthand side by 1 point 2-5 miles"*. The message was acknowledged. The B737 pilot made no further comments and he was, subsequently, transferred to London CONTROL.

The DA40 made its downwind call at 1325 and was instructed to report on Final. The pilot continued in the cct to land and made no comment about the departing B737.

The Manual of Air Traffic Services (MATS) Part 1 (CAP493) Section 2, Chapter 1, Page 1, states the responsibilities of Aerodrome Control:

'Aerodrome Control is responsible for issuing information and instructions to ac under its control to achieve a safe, orderly and expeditious flow of air traffic and to assist pilots in preventing collisions between: a) ac flying in, and in the vicinity of, the ATZ; b) ac taking-off and landing.'

The Airprox occurred within Class D airspace. The MATS Part 1, Section 1 Chapter 2, Page 1, states the minimum services to be applied by ATC in different classes of airspace. For Class D:

(a) Separate IFR flights from other IFR flights;

(b) Pass traffic information to IFR flights on VFR flights and give traffic avoidance advice if requested;

(c) Pass traffic information to VFR flights on IFR flights and other VFR flights.

The MATS Part 1, Section 3, Chapter 1, Page 5, states:

'Approach Control shall retain all arriving VFR flights under its jurisdiction until appropriate traffic information on IFR flights and other VFR flights has been issued and co-ordination effected with Aerodrome Control. Approach Control must ensure that VFR flights are transferred in sufficient time for Aerodrome Control to pass additional information in respect of local traffic'.

On this occasion, the APR informed the DA40 pilot when he was about 10nm from the airport about the departing B737. He co-ordinated the DA40's arrival with the ADC and transferred it as it entered the CTR. The ADC did not issue, as is required, TI to the B737 about the DA40, either prior to, or after, its departure.

The ADC explained that as he did not believe that the subject ac would approach close to each other, he considered that it was not necessary to issue TI to the B737 crew. From his experience, ac joining RH downwind for RW26 were usually further N than the actual track of the DA40. Additionally, inbound light ac were restricted to not above 2000ft, descending to cct height of 1200ft, whereas outbound commercial jet traffic, climbing to 4000ft or higher, are quickly above this altitude.

The Bournemouth Visual Control Room (VCR) is equipped with an Aerodrome Traffic Monitor (ATM), which is situated virtually in front of the ADC. The MATS Part 1 allows controllers to use the information derived from an

ATM to: 'provide information to ac on the position of other ac in the cct or carrying out an instrument approach'. The ADC confirmed that he had not looked at the ATM to establish the position of the DA40. He could not readily explain why he had not carried this out. He commented that he would normally prefer to look out of the window rather than relying on a radar display. However, he agreed that a quick look at the ATM would have shown the DA40 closer to the RW26 climb out path than anticipated. Consequently, he would have issued appropriate TI. He had not sighted the DA40 until it had joined downwind, by which time it had passed the B737, which had already been transferred to the APR.

The Noise Abatement procedures applicable to the B737 meant that, after departure, it would turn R 13° after 0.6nm DME. This meant that it was turning towards the DA40 proceeding righthand downwind.

The B737 pilot later reported sighting the DA40 in his 2 o'clock, about 2nm and closing. The DA40 pilot reported he was visual with the ac departing Bournemouth.

The Bournemouth APR complied with his responsibilities by issuing TI to the DA40 about the departing B737 and by transferring the flight in sufficient time for the ADC to issue any information in respect of local traffic as necessary.

The Bournemouth ADC did not comply with MATS Part 1 procedures i.e. he did not issue, as is required, TI to the departing B737 crew about the DA40. Had the B737 pilot been informed about the downwind traffic prior to departure, he could have decided whether or not to delay his take off. Additionally, under the terms of an ADC's responsibilities, as stated in MATS Part 1, i.e. issuing information and instructions to ac under his control, he could have instructed the DA40 pilot to widen his cct away from the departure path.

Although not suggesting that an ADC should continually monitor an ATM rather than looking out of the window, in this instance a brief observation of the display would have shown the necessity for at least issuing TI to the B737 about the DA40.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

Whilst the DA40 pilot had been clear in his request to APP to *"rejoin from the west",* Members noted he was somewhat vague when he made his misleading initial call to TOWER reporting that he was, *"inbound from the north north westish".* The ATSI report reflects that the DA40 pilot had actually entered the Bournemouth CTR about 2nm S of its NW corner, virtually on a steady course to enter the downwind leg for RW26. However, the ADC did not see the DA40 until after it had passed the B737 despite the co-ordination effected by APP for the DA40 pilot's downwind join from the W. The ATM is provisioned to help controllers locate A/D traffic and integrate IFR and VFR flights but the ADC did not refer to the ATM, which would have shown him that the DA40 was joining more westerly than he might otherwise have anticipated thereby prompting TI. Plainly the ADC was required to provide TI to the B737 crew departing under IFR about the VFR DA40 flight but did not do so, which the Board agreed was a significant part of the Cause. Nevertheless, the DA40 pilot had been advised of the B737's departure by APP and spotted it when 3nm away from the Airport. With about 1½nm displacement N of the RW, there was no suggestion by the Board that the DA40 had joined too close downwind, even allowing for the B737's R turn for noise abatement. However, a pilot Member perceived that there was also an element of surprise here when the B737 crew unexpectedly saw the DA40 to starboard, which they had not been forewarned about. The B737 crew was plainly concerned about the DA40's presence and they should have been told about it beforehand. This would have allowed the PIC to decide whether to proceed or possibly delay his take–off to allow the DA40 to clear the vicinity. The Board agreed that this Airprox had resulted because, in the absence of TI from the ADC, the B737 crew was concerned to see the DA40 during their departure.

The separation evinced by the Bournemouth radar photographs, shows that the two ac passed about 1·2nm apart at the closest point. The B737 crew's first sighting of the DA40 was at a range of 2nm, with the latter's pilot sighting the B737 earlier as it took-off, clearly in his field of view. Thus the DA40 pilot was always able to take robust avoiding action if need be, which convinced the Board that no Risk of a collision had existed in these circumstances.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: In the absence of TI from the ADC, the B737 crew was concerned to see the DA40 during their departure.

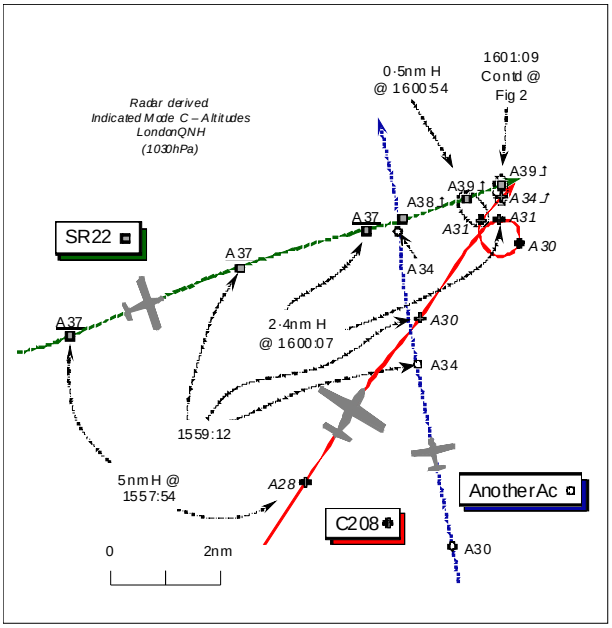
Degree of Risk: C.

AIRPROX REPORT No 2011145

AIRPROX REPORT NO 2011145

Date/Time: 13 Oct 2011 1601Z
Position: 5216N 00043W
(4nm SE of Northampton/Sywell)
Airspace: London FIR (Class: G)
Reporter: Cottesmore LARS

	1st Ac	*2nd Ac*
Type:	Cirrus SR22	C208
Operator:	Civ Pte	Civ Pte
Alt/FL:	3400ft	3500ft↑
	RPS (1025mb)	QNH
Weather:	VMC CLAC	VMC/IMC CLAC
Visibility:	6-8km	>10km
Reported Separation:		
	400ft V/200m H	500ft V/500ft H
Recorded Separation:		
	200ft Min V/0·1nm Min H see Fig 2	



CONTROLLER REPORTED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE COTTESMORE LARS CONTROLLER (RAD) reports that the SR22 pilot had called for a TS passing DTY en-route to Norwich at 3600ft CHATHAM RPS (1025mb). Passing abeam Northampton Sywell heading about 080°, she called two conflicting tracks to the SR22 pilot. The first [the C208] was at R 1 o'clock - 5nm crossing R to L indicating 700ft below the SR22, squawking A0033 but did not look like a parachute dropping profile; the 2nd [another ac] was also crossing R to L at right 2 o'clock 4nm indicating 200ft below she thought, and the SR22 pilot was visual with it. Shortly afterwards she updated TI on the first track at 12 o'clock - 3nm crossing R to L, indicating 600ft below. The SR22 pilot was still not visual and said he would climb a couple of hundred feet. The conflicting C208 then appeared to turn and position beneath the SR22. The traffic was called again to the SR22 pilot 400ft below on a similar heading. As it was 1600UTC, which is the end of the promulgated LARS for the day, she instructed another pilot under service to squawk A7000 and change to his en-route frequency. However, she then returned her attention to the SR22 and saw that it had turned SW'ly and climbed 1000ft – see Fig 2 - so she asked the pilot's intentions. The SR22 pilot reported he had taken avoiding action as the conflicting C208 had climbed to about 200ft below his aeroplane, but he was now descending, back to 3800ft and resuming his course to Norwich. The controller asked if he was filing an Airprox, to which he replied that he wasn't sure and would think about it later on the ground. When the SR22 was clear of the confliction she suggested the pilot could call on the telephone if he wanted any further information and then advised him to switch to his en-route frequency. The Risk was assessed as 'high (A)'; minimum separation was estimated at 200ft vertically, nil horizontally.

The next day the controller was able to contact the SR22 pilot to tell him that she would be submitting an Airprox report irrespective of the pilot's intentions.

THE CIRRUS SR22 PILOT reports he had departed from Gloucestershire/Staverton on a VFR flight via DTY to Norwich in fine weather with FEW at 2000ft and SCT at 4000ft. The Airprox occurred 070° DTY 15nm - E of Northampton [4nm SE of Northampton/Sywell A/D] whilst receiving a TS from Cottesmore LARS on 130·200MHz. His aeroplane is white with black trim; the wing HISLs were on. A squawk of A3721 was selected with Mode C; elementary Mode S and TCAS I are fitted.

Flying in VMC at about 3400ft RPS (1025mb), about 400-500ft above at least broken/near full cover cloud, on autopilot heading 070° at 155kt in reasonable daylight he called Cottesmore RADAR just NE of DTY and obtained a TS. He still felt the radar service would be useful although there was only about 10mins to go before he expected

Cottesmore LARS to close. A few minutes later RADAR warned him of nearby traffic 700ft below at 2 o'clock - from memory he believes that this was the first call of traffic. Just prior to this he had picked this traffic up on his basic TCAS I and he could see that the ac was climbing, now very near and looked to be on a collision course from below his aeroplane. Immediately he switched off the autopilot and as a precaution, increased his altitude by 200ft on track and switched on the landing and NAV lights. The unknown ac – the C208 - was almost vertically below him and from the TCAS I display was getting closer. He believes that vertical separation reduced to 300ft and the traffic was still climbing towards him so he applied full or near full power and turned 90° to the R making a climbing turn that was continued for about a further 800ft. Almost at the same time he received a more urgent warning from RADAR and he advised them of the manoeuvre. He continued to look for the traffic during this climbing turn but never saw the C208 at any stage. He levelled at about 4600ft ALT, he thought, continued the turn to regain his original course and spoke briefly to ATC.

The incident seemed more threatening at first because the ac – the C208 - appeared to follow his aeroplane for a short time, which may of course have been entirely coincidental. ATC confirmed that this traffic was no longer a threat and he continued on route to Norwich.

He spoke briefly with the Cottesmore RADAR controller the next morning who advised that she would be filing an Airprox report. Assessing the Risk himself as 'low', he does not think that there was any significant Risk of collision, but if the other ac had not had Mode C switched on and if he had not obtained a short but very useful TS the incident could have been much more serious.

He has an FAA Instrument rating.

THE C208 PILOT reports he was en-route on a positioning flight back to Peterborough/Sibson after a parachute dropping flight at Weston-on-the-Green. He had switched en-route from Brize and a squawk of A0033 was selected with Mode C on; Mode S and TCAS I are fitted. Passing E abeam Northampton Sywell heading 050° at 140kt he was in a cruise climb from about 2000ft to 3500/4500ft, above cloud, due to turbulent conditions below the cloud layer. At about 3500ft he was leaving IMC conditions within the cloud layer when TCAS I gave a warning of traffic in the 10:30 position; looking out visual contact was made with the SR22 [the range was not specified]. The SR22 did not appear to be on a converging course so the heading was maintained, he thought, but his ac's climb rate reduced. After about 30secs the SR22 carried out a R turn in an ESE'ly direction passing 500ft above his ac with horizontal separation of 500ft. Visual contact on the SR22 was then lost as he turned eastbound in an attempt to maintain visual contact with the ac. Visual contact was not re-established and the TCAS I indicated that the SR22 was now behind and moving away in an ESE'ly direction. Subsequently, he turned back onto his original heading for Peterborough/Sibson and TCAS gave no further warnings. He assessed the Risk as 'low'.

[UKAB Note 1: In Fig 1 the LAC radar recording shows the SR22 on a steady ENE'ly track indicating 3700ft QNH (1030mb) and converging with the C208, which is ahead at 2 o'clock on a NE'ly course climbing slowly through 2800ft QNH (1025mb) to 3000ft. As the ac close to a range of 2·4nm the C208 turns R into an orbit, rolling out on its original course 0·5nm off the SR22's starboard wing, as the latter, which had already climbed slightly indicates 3900ft, some 800ft above the C208. As the C208 steadies NE'ly at 1601:09, the ac's Mode C indicates a climb through 3400ft in the SR22's 4 o'clock at a range of 0·2nm. Moving to Fig 2, the C208 starts to overhaul the SR22 and climbs to 200ft beneath it; the SR22 then turns R into an orbit climbing at a higher rate through 4400ft with the C208 300ft below indicating 4100ft. At 1601:42, the C208 was at a range of 0.1nm from the SR22 still climbing and turning R, crossing 300ft above and slightly astern of the C208 in between sweeps at the CPA. The C208 commences a L turn but contact is then lost for several sweeps as the SR22 continues the R orbit, ascending to a maximum altitude of 4900ft at 1602:22, when the C208 is shown once more at 4000ft on a NNE'ly course.]

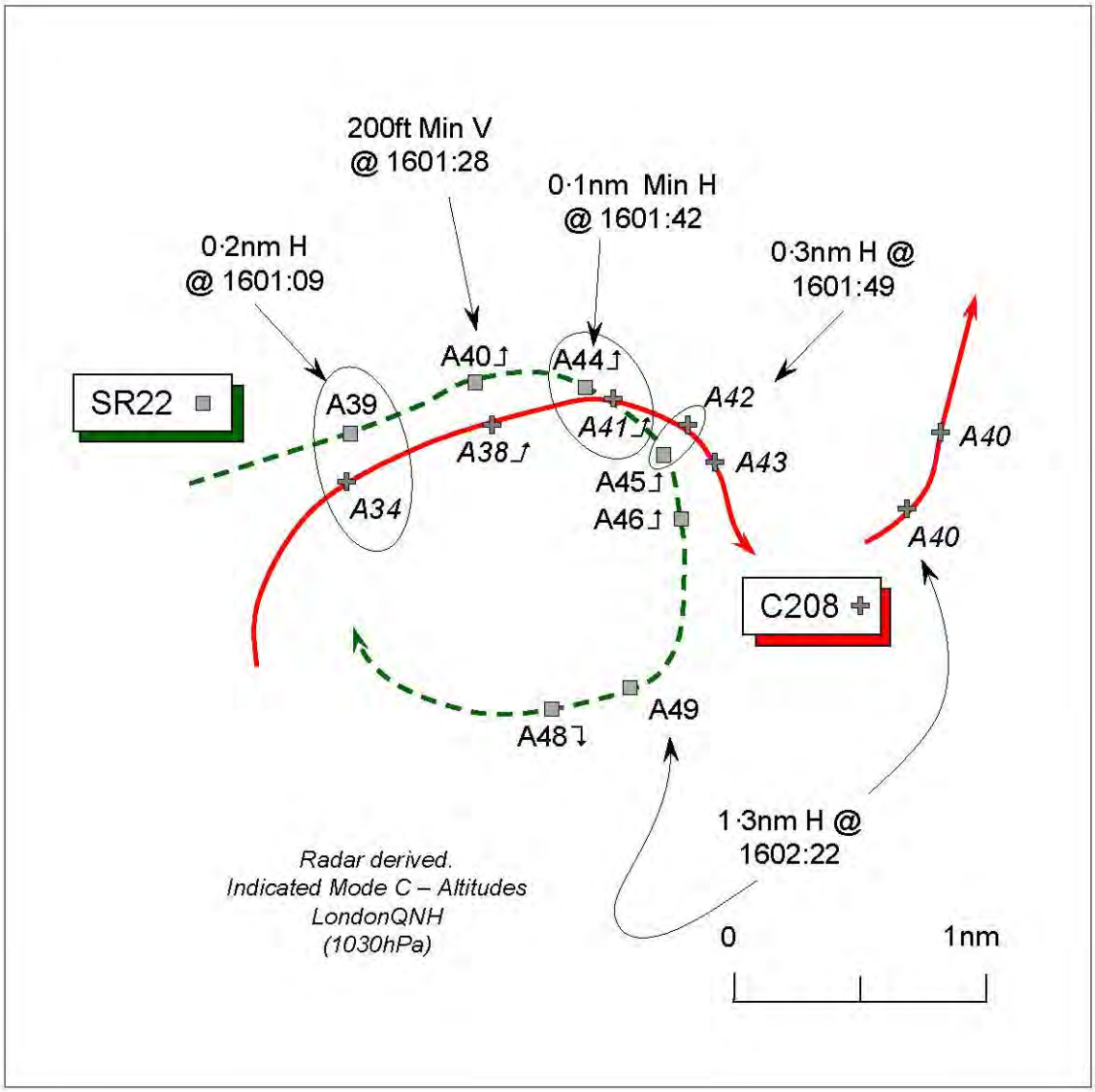


Fig 2

BM SAFETY MANAGEMENT reports that this Airprox occurred between a Cirrus SR22 operating VFR in receipt of a TS from Cottesmore RADAR (RAD) and the Cessna 208 in intermittent IMC; both ac were equipped with TCAS I.

RAD described their workload and task complexity at the time of the incident as 'low', with 2 ac on frequency.

At 1555:01, the SR22 pilot called RAD en-route from Gloucester to Norwich at 3600ft, requesting a TS. The SR22 was identified and placed under a reduced TS due to poor radar performance. At this point, the SR22 was 38nm SW of Cottesmore, tracking 075°, with the C208 7.7nm SE of the SR22, tracking 055°, indicating 2400ft. After turning SE'ly at 1556:53, the C208 turned L at 1557:09 onto a track of 045°. At 1557:59, RAD passed accurate TI to the SR22 pilot on the C208, "*traffic right 1 o'clock, 5 miles, crossing right left, indicating 7 hundred feet below*", which was acknowledged. At 1559:10, RAD passed TI to the SR22 pilot on un-related traffic, which the SR22 pilot stated he was visual with. RAD then updated the TI to the SR22 on the C208 at 1559:20, stating "*the first one now in your 12 o'clock* [radar replay shows 1 o'clock] *3 miles, crossing right left, indicating 6 hundred feet below.*" Having acknowledged this TI, the SR22 pilot then advised RAD that they were "*going to climb a couple of hundred feet*" reporting that this was a precaution against the C208.

At 1600:01, the C208 commenced a right-hand turn through a full 360° to resume a NE'ly track at about 1600:54. Based upon the C208 pilot's report, the C208 left IMC shortly afterwards at about 1601:02; 0.4nm lateral and 700ft vertical separation existed between the 2 ac. The C208 pilot reported he gained visual contact with the SR22 at this stage and did not believe that the ac were converging. Analysis of the radar replay shows that the 2 ac were converging, albeit slowly.

CAP 774 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.'

At 1601:17, RAD updated the TI on the C208 to the SR22 pilot stating, "*previously reported traffic is now beneath you* [radar replay shows ac 0.2nm south]*, four hundred feet below, similar heading*."

At 1601:28, as described in the pilot's report, the SR22 commenced a 'full or near full power' climb as separation between the 2 ac reduced to 0.2nm and 200ft vertically. About 4 sec later the C208 turned SE'ly. This accords with the point in the C208 pilot's report that he lost visual contact with the SR22, turning E to 'attempt to maintain visual contact' with the SR22.

The operation of the C208 in IMC without an ATS undermines the principles that underpin CAP 774. Specifically, that when faced with high traffic density, controllers providing a DS will prioritise the separation of known traffic over unknown traffic on the assumption that unknown traffic will be operating VFR and will be able to 'see and avoid.' However, whilst MAA RA 2307 mandates to military aircrew that flight in IMC is only permitted 'when in receipt of a radar or procedural service' except where it is not available or un-obtainable, there is no equivalent civil regulation.

Notwithstanding the restriction to 'see and avoid' induced by the weather, RAD's TI to the SR22 and the respective pilot's assimilation of the information displayed by their TCAS I equipment allowed them to develop their situational awareness and thus take action to resolve this confliction, albeit with reduced safety margins. That aside, whilst RAD provided generally accurate TI and the SR22 pilot did not request additional updates to that TI, BM SM contends that, given RAD's low workload and that the geometry of the event changed markedly between 1559:20 and 1601:17, good practice would suggest that an opportunity existed to provide a further TI update before 1601:17.

BM SM would like to commend RAD for reporting this Airprox, for their work in tracing the SR22 pilot in order to discuss the incident with them and for allaying his concerns over the reporting process.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The Board commended the controller involved for the thorough application of the TS to the SR22 pilot, which overran the regular hours of service for Cottesmore LARS. Furthermore, the Board noted the controller's conscientious approach in tracing and discussing the issues further with the SR22 pilot and for reporting this Airprox. It is important that pilots and controllers alike do not misunderstand the purpose of Airprox reporting and investigation, which is purely a safety investigation that does not apportion blame or form the basis of punitive action.

The BM SM advisor briefed the Board that no record could be found of any ATS provided to the C208 pilot by Brize Norton ATC before the Airprox occurred and that the C208 pilot was not in receipt of an ATS during the period of this encounter with the SR22. Given that the C208 pilot was climbing slowly and had encountered IMC it was surprising that he had not sought a DS, but the LARS provider in this vicinity was just closing. Notwithstanding that the C208 pilot is entitled to select a squawk of A0033 at his discretion when engaged in para-dropping, the drop at Weston-on-the-Green had been completed and he was positioning back to Peterborough/Sibson. The AIP at ENR 1-6-2 para 2.2.2.1 is quite specific insofar as: '..pilots of transponder equipped aircraft should select Mode A code 0033, together with Mode C pressure altitude reporting…five minutes before the drop commences until the

parachutists are estimated to be on the ground.' Here controller Members perceived an inappropriate use of this specific conspicuity code and believed that A7000 was more suitable.

It was evident from the recorded radar data that these two ac were separated horizontally and vertically at the outset, except that the slightly faster SR22 was catching-up the C208 on a converging flight path. The BM SM report shows that this had prompted two transmissions of TI from RAD to the SR22 pilot who was also aware of the C208 from his TCAS I. However, the geometry changed when the C208 turned into a R orbit, with the range decreasing rapidly and the C208 rolling out of the turn just 400yd off the SR22's starboard wing. The Board was aware that TCAS I does not provide consistently reliable and accurate indications in azimuth at close quarters and Members agreed that it was unfortunate that RAD had not updated the reduced range and horizontal situation before the final transmission of TI at 1601:17. From this point, the C208 would have appeared on TCAS to be almost vertically below the SR22 and it was apparent that the SR22 pilot subsequently took positive action to avoid the C208 and increased his rate of climb. This was just after the point of minimum vertical separation of 200ft at 1601:28. Board Members reasoned that it was at 1601:09, just after rolling-out of the R turn and climbing through 3400ft ALT whilst leaving IMC, that the C208 pilot received a warning from his TCAS I and saw the SR22 to port in his 10:30 position just moments before the point of minimum vertical separation. This Airprox illustrated clearly the benefit of even a basic traffic warning system that had enhanced the C208 pilot's SA considerably in IMC and Members noted the SR22 pilot's effective reaction to resolve the conflict. Whilst flying in VMC the SR22 pilot did not see the C208 visually, but nevertheless recognised the developing conflict from the TI provided and climbed at a higher rate than the C208 displayed on his TCAS I, thereby ensuring 300ft separation as he overflew the C208 and turned away to the S into an orbit himself. Unfortunately the C208 pilot lost sight of the SR22 at this point and resumed his easterly course as the SR22 drew astern; by then, however, the conflict was resolved. The Board concluded that this Airprox had resulted from a Conflict in Class G airspace, but in assessing the Risk a pilot Member opined that the C208, by flying in IMC beforehand without a radar service, had raised the Risk level. However, this was a solitary view; the Members agreed overwhelmingly that the SR22 pilot's avoiding action climb based on the initial TI and good SA from his TCAS I data, coupled with the C208 pilot's visual sighting as the SR22 passed above and his own TCAS I assisted SA was sufficient to remove any Risk of a collision.

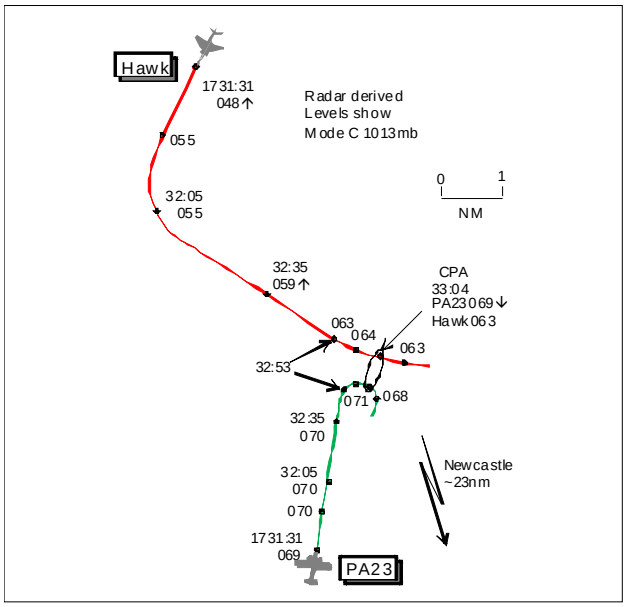
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict in Class G airspace.

Degree of Risk: C.

AIRPROX REPORT NO 2011146

Date/Time:	20 Oct 2011 1533Z	
Position:	5525N 00154W (24nm NW Newcastle)	
Airspace:	SFIR/OTA E	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	PA23	Hawk T Mk1
Operator:	Civ Pte	HQ Air (Ops)
Alt/FL:	FL70	<FL60-70 RPS
Weather:	IMC KLWD	VMC CLBC
Visibility:		NR
Reported Separation:	<800ft V/ <0·25nm H	Not seen
Recorded Separation:	600ft V/0·5nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PA23 PILOT reports en-route to an airfield near Peterhead, IFR and in receipt of a TS from Newcastle on 124·375MHz he thought [actually ScACC TAY Sector 124·5MHz], squawking an assigned code with Modes S and C; TCAS 1 was fitted. His route was through Class G airspace via ALASO, MADAD and DENOG and just short of the NW corner of the Newcastle CTR he had turned direct to MADAD, after informing ATC, to avoid clipping CAS and to cut the corner. There was a warm front approaching from the W and he was cruising at FL70 in cloud in IMC, which he entered just before Newcastle, and the A/P was engaged. Tracking 017° at 135kt about 24nm NW of NATEB just prior to the incident Newcastle sic [TAY] advised him of a contact in his 9 o'clock range 11nm and he replied that he was in IMC. His MFD was in mapping mode at range 15nm to ensure he avoided the Newcastle CTR and the range ring was set at 3·75nm. Shortly afterwards he noted a contact on the TAS, appearing on the MFD in his 0900-0930 position 2000ft below and climbing towards him. When it was apparent that neither its climb nor its relative position were changing he disengaged the A/P and began a steep 360° climbing turn to the R, hoping to turn inside what he thought was the projected track of the contact. Before and during the turn the TAS gave an audible warning which meant the traffic was <0·5nm away horizontally and within 800ft vertically. He recalled that the screen showed much less than 0·5nm but he could not recall the relative height difference or the subsequent positions of the other ac. Newcastle sic [TAY] stated the other ac had been working a Mil frequency and he confirmed that he wished to report the incident. He assessed the risk as high.

THE HAWK T MK1 PILOT reports being unaware of the Airprox until after being contacted by RAC Mil. At the time of the incident he was not under a radar service, operating in OTA E on a bounce sortie and was capping at FL60-70 below cloud in 10km visibility squawking 7001 with Mode C. He did not see the reporting ac.

THE SCACC TAY CONTROLLER reports acting as an OJTI to a trainee providing a TS (at the pilot's request) to a PA23 IFR en-route to Peterhead at FL70. They initially worked the flight SW of Newcastle, transferred it to Newcastle, and then worked it again when it was N of Newcastle. The Sector was busy (several Aberdeen inbounds) and they were in the process of asking for a Planner. When the PA23 was approximately 20nm NNW of NATEB fast-jet traffic squawking 7001 was spotted and called twice (at about 15nm and 10nm range) before it disappeared from radar. This traffic then popped-up again about 7nm NW of the PA23. At 1533 further TI was called at about 2nm as the traffic was indicating FL055 climbing. The PA23 pilot stated that he had TCAS and was taking his own avoidance and then appeared to carry out a very tight RH orbit. At this stage the conflicting traffic was indicating FL067, he thought. He estimated that the conflicting traffic passed <0·5nm and <500ft from the PA23; this would have been less had the PA23 not turned. The PA23 pilot stated that it was too close for comfort and that he was in IMC. TAY advised him that he would be filing an Airprox and asked the pilot for his TCAS

equipment fit. Interrogating the Mode S of the conflicting traffic gave a c/s but this was later found to be incorrect. No avoiding action was given and none was requested.

ATSI reports that the Airprox occurred at 1533:09 UTC, in Class G airspace, 24nm to the NW of Newcastle Airport.

The PA23 was operating an IFR flight from Blackpool to Longside Airfield, Peterhead, Aberdeenshire and was in receipt of a TS from ScACC (TAY Sector).

The Hawk was on a training exercise in the military training area OTA-E and was operating in a CAP up to a maximum FL060-070, displaying the Military low flying conspicuity squawk 7001. The pilot reported listening out on a low flying operational frequency and not being in receipt of a radar service.

CAA ATSI had access to area radar recordings, RT recordings and written reports from the 2 pilots, the TAY controller and the NATS unit investigation report.

METAR: EGNT 1520Z 24008KT 9999 FEW032 09/04 Q1022=

The PA23 had been in receipt of a TS from Newcastle Radar on a squawk of 3755 and routed to the W of Airway P18 and the Newcastle CTR. The PA23 pilot was advised that the Otterburn Danger Area was active up to 18000ft and the PA23 pilot reported that he would be tracking a couple of miles E of the Danger Area. At 1526 the PA23 flight was instructed to change to a Scottish squawk of 3623. The Newcastle controller then terminated the radar service and transferred the PA23 to Scottish Control on frequency 124·5MHz (TAY Sector).

At 1527:43, the PA23 flight contacted ScACC (TAY Sector) requesting a TS. TAY instructed the PA23 pilot to squawk ident and a TS was agreed.

At 1528:21, TAY advised, *"(PA23 c/s) there is traffic in your eleven o'clock range about fifteen miles it's fast moving from left to right indicating flight level four seven unverified."* The PA23 pilot replied, *"(PA23 c/s) looking out."* The radar recording shows the PA23 positioned, 16nm NW of Newcastle Airport, with the Hawk in the PA23's 11 o'clock at a range of 18·9nm indicating FL048 and squawking 7001.

At 1529:20, TAY updated the TI, *"(PA23 c/s) that traffic is still in your eleven o'clock range about ten miles now erm no height information crossing from left to right."* This was acknowledged, *"(PA23 c/s) copied."* The radar recording shows the PA23 at FL069 and the Hawk with NMC. At 1529:38, the Hawk faded from radar coverage.

At 1531:31, the radar recording shows the Hawk reappear in the PA23's 11 o'clock at a range of 8·5nm. The PA23 was indicating FL069 and the Hawk was indicating FL048.

At 1532:38, just after STCA activated a low-severity (white) alert, TAY updated the TI, *"Er (PA23 c/s) in your eleven o'clock range about one mile indicating flight level six zero unverified."* The PA23 pilot responded, *"Er yeah I've got him on my collision system and I'm just going to make a steep turn and try and get away from him."* The radar recording shows the 2 ac were converging at a range of 2·5nm, with the PA23 maintaining FL070 and the Hawk passing FL059 in the climb. Eight seconds later (1532:45), STCA changed to high severity (red).

At 1532:53, the radar recording shows the PA23 commencing a RH turn, with the Hawk, indicating FL063 at a range of 0·9nm. The PA23 continued in a tight RH turn as the Hawk passed NE abeam. The PA23 pilot reported, *"Yeah that was a bit too close for comfort.*"

At 1533:04, the CPA, the PA23 was indicating FL069 and the Hawk, indicating FL063, was shown passing 0·5nm NE of the PA23. As the PA23 continues in the R turn the separation begins to increase and the 2 ac diverge.

The PA23 pilot advised TAY that he intended to file an Airprox report. In the following discussion the PA23 pilot indicated that he carried a TAS. The pilot reported flying in thick IMC and that he couldn't see a thing, adding that the other ac was climbing and getting closer and closer.

The Hawk pilot's written report indicated that the Hawk pilot was not in receipt of a radar service. The Hawk pilot indicated that he was operating below cloud at 6000ft with a flight visibility of 10km. The report does not give details about any other ac in the vicinity and the pilot was not aware of the Airprox at the time of the event.

The Hawk pilot was not in receipt of a radar service. The PA23 was in receipt of a TS from ScACC (TAY Sector). CAP774, UK Flight Information Services, Chapter 3, Page 1, Paragraph 1 and 5, states:

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

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

TAY updated the PA23 on the position of the Hawk and the PA23 pilot received a warning on the ac's TAS. This resulted in the PA23 pilot taking avoiding action by completing a steep R turn to avoid the Hawk.

The PA23 pilot was flying in IMC and it is not clear why the PA23 pilot did not request a DS, which would have required the controller to try and achieve the deconfliction minima.

HQ AIR (OPS) comments that the Hawk pilot must have been flying VFR; the height at which he was CAPing seems to be inconsistent with the weather conditions reported by the PA23 pilot. The PA23 was IMC at FL70, in "thick cloud" whereas the radar derived flight level of the Hawk was FL64 and it has not been possible to determine the Hawk's actual separation from the cloudbase. It behoves all military pilots to abide rigidly to the limits of VFR flight and maintain 1000ft clear of cloud wherever possible, and to make best effort to obtain a radar service if they cannot maintain VMC. Nevertheless, if the PA23 pilot had obtained a DS then he would almost certainly not have got so close to the Hawk as earlier avoiding action could have been given and should have been taken.

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 wondered why the PA23 pilot had only asked for a TS when a DS would have been more appropriate for his flight in IMC. ScACC TAY is tasked with the provision of ATSOCAS N of Newcastle and a DS is available, subject to traffic and workload. The PA23 pilot did not report being in IMC and when passed TI had replied "looking out" and "copied". There was no compunction on TAY to offer a DS in the circumstances as the pilot had made the initial level of service request. TAY had seen the Hawk and passed accurate TI to the PA23 pilot, twice, before it faded from radar. After reappearing again, TAY again passed TI on the Hawk when separation had reduced to 2·5nm with the ac indicating FL60. The PA23 pilot saw the approaching Hawk on TAS and, about the time that TAY gave the last TI, he elected to execute a tight RH orbit to break the conflicting flightpaths. At this time he was unaware that the Hawk would be levelling-off below cloud which had resulted in vertical separation of 600ft as they passed at the CPA of 0·5nm. Members agreed with the HQ Air Ops comments that given the Wx conditions reported by the PA23 pilot, it appeared the Hawk was not remaining 1000ft below cloud in order to remain in VMC. It was also noted that the squawk selected by the Hawk pilot was not appropriate while he was flying a CAP at medium level. The 7001 squawk is for conspicuity descending into or operating in the low flying system or when a radar service is required on climbing out from low-level.

Although the PA23 had right of way under the RoA, with the ac flying in cloud and not visible to the Hawk pilot, the PA23 pilot was put in an unenviable position of having to take action on a conflicting climbing ac approaching at high speed. Given that neither ac was visible to the other pilot, the Board assessed this Airprox as a conflict in Class G airspace. Because the PA23 pilot had turned away before it became apparent that the Hawk was levelling off below him, the Board agreed that he had resolved the conflict. As the Hawk had levelled-off below cloud, and the PA23 had turned away, the Board assessed that safety had been assured during this encounter.

AIRPROX REPORT No 2011146

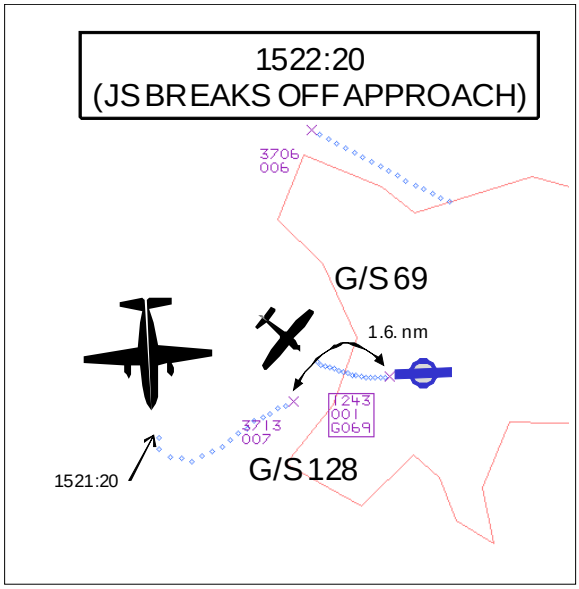
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Conflict in Class G airspace resolved by the PA23 pilot.

Degree of Risk: C.

AIRPROX REPORT NO 2011147

Date/Time:	21 Oct 2011 1525Z	
Position:	4910N 00216W (APR RW09 Jersey - elev 277ft)	
Airspace:	Jersey ATZ	(Class: D)
	Reporting Ac	*Reported Ac*
Type:	JS32	C172
Operator:	CAT	Civ Pte
Alt/FL:	750ft	NR
	QNH (1023mb)	QNH
Weather:	VMC CAVOK	VMC CAVOK
Visibility:	>10km	>10km
Reported Separation:		
	300ft V/0m H	NK V/NK H
Recorded Separation:		
	700V / 1.6nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE JS32 PILOT reports flying a passenger flight under IFR, inbound to Jersey squawking as directed with Modes C and S under the Control of Jersey APR then TWR; TCAS was fitted. While on L base for RW09 at 210kts and 2000ft they were informed that they were number 2 to a light ac; they were passed TI on the ac but nothing was seen. The crew were then instructed to take up a heading of 180° and maintain 2000ft and APR continued to pass TI. The pilot assumed that this was so he could transfer them to TWR and separation from the light ac would then be his responsibility. They were then requested to reduce speed so they reduced to 150kt. They continued on the heading of 180° until they had flown through the LOC and they were then cleared to descend at their discretion so they descended to 1000ft. When they were 1.5 miles through the C/L they were instructed to turn back onto finals and contact TWR. As they turned back (the short way round) they configured the ac and reduced the speed to 130kt. As they came onto final at 750ft, 3-4nm out they called TWR and saw the light ac that was still on L base and at 250ft above the RW. At that point TCAS triggered a "traffic traffic" (it would have been an RA in his view if it was not for the fact they were below 1100ft Rad Alt). At that point he decided that there was risk of a collision if things progressed any further so initiated a go-around and informed TWR. He tried to manoeuvre so that he did not fly directly above the ac but due to the RT loading from TWR he did not think he was very successful and he thought that they overflew other ac with less than 500ft separation. A MOR was raised about other [ATC] aspects of this event.

He assessed the risk as being Medium.

UKAB Note (1): The UK CAA MOR database shows that the other aspects of the incident referred to above are not recorded but there is a comment that they would be investigated locally.

THE C172 PILOT reports flying a blue and white ac on a private local VFR flight from Jersey. He was squawking with Mode C and was in receipt of an 'information service' [assumed to be BS] from Jersey TWR. He was on a visual recovery from the NW corner of the island and he had been cleared to land when an ac behind them [the JS32] contacted Jersey TWR and he believes the pilot called visual with number 1 in sight; ATC replied, "continue" and a female voice then replied, "cleared land" [presumed to be the JS32 first officer]. The response from ATC was, "negative, continue". Subsequently a male voice [presumed to be the JS32 captain] advised ATC, "this isn't going to work". He believes that the other ac was then offered an orbit by ATC but it was declined and it conducted a missed approach. The [C172] pilot saw the other ac well above and climbing on its missed approach and he does not believe there was ever any risk of collision.

The other ac was then cleared LH downwind to land and as far as the C172 pilot was concerned there was no incident.

AIRPROX REPORT No 2011147

THE JERSEY ATC UNIT report (slightly abbreviated below for brevity) stated a C172 was on left base VFR for RW09 working Jersey TWR and a JS32 was made number two behind it. The JS32 was routed on a southerly heading maintaining 2000ft and was given TI on C172. The JS32 did not report gaining visual contact with C172 and as such was routed through the centreline and eventually turned towards the field (the JS32 was approximately 0.5nm S of a 4nm final and the C172 was about 1.5nm final).

The JS32 was advised that he would shortly be number one and instructed to change to Jersey TWR. At no point did the JS32 pilot report visual with C172. Jersey TWR instructed the JS32 to continue approach, number two to the C172 on short final. At about 2.2nm final while indicating 1100ft the JS32 pilot informed TWR that they were too tight behind the C172 and TWR instructed the JS32 to go around. At the pilot's request the ac eventually went into a left hand circuit.

METARs:

EGJJ METAR 1450 METAR EGJJ 211450Z 16011KT 9999 FEW025 13/04 Q1023 NOSIG

EGJJ METAR 1520 METAR EGJJ 211520Z 15009KT 9999 FEW025 12/04 Q1023 NOSIG

RW 09 was in use.

Sequence of events.

1516:20 The JS32 checked in with Jersey APR and after reporting visual with the field, was instructed to route directed to final for RW09 maintaining altitude 2000 feet.

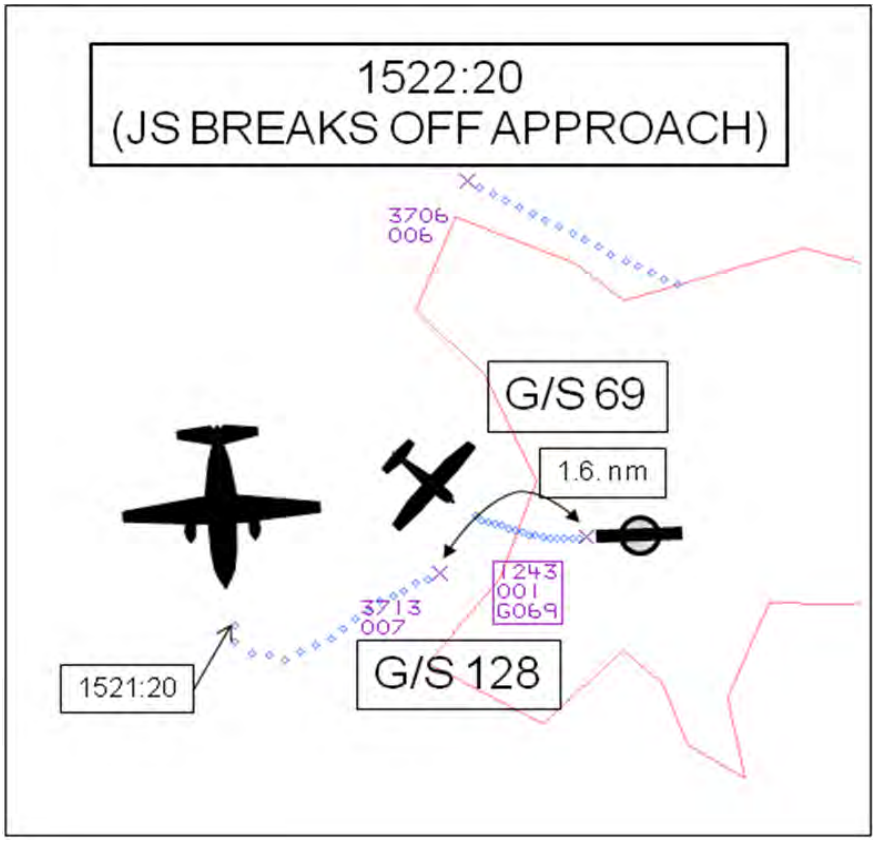
1518:54 The C172 commenced a turn at the North West corner of Jersey for left base. The JS32 (speed approximately 200kt) was approximately 4nm North West of C172 (speed approximately 90kt).

1519:10 APR instructed the JS32 to turn right heading 180 degrees and to come back on the speed. The position of C172 was also passed and acknowledged.

1520:05 Traffic information was passed to the JS32 on the position of C172: no response.

1520:30 Traffic information passed and JS32 crew questioned if they had the ac in sight: the JS32 crew responded, "we're still looking". An instruction to reduce to minimum approach speed was not read back. The JS32 was cleared to descend below 2000 feet.

1521:10 The JS32, heading 180 degrees, was instructed to turn in towards the field, position approximately 0.5nm south of a 4nm final: C172 on an approximate 1.5nm final.



1521:30 The JS32 was advised shortly number one and instructed to call the TWR. At no point did the JS32 report visual contact with C172.

1521:43 The JS32 contacted TWR and was instructed to continue approach, number two to a C172 on short final.

1522:02 The JS32 (approximate 2.2nm final indicating altitude 1100 feet) advised TWR they were too tight behind C172 (approximate 0.5nm final indicating altitude 600 feet) and at this point were instructed by the TWR controller to carry out a go around, at the pilot's request, into the left hand VFR circuit.

[UKAB Note (2): The RT transcript shows that the TWR controller transmitted at 1522:06:

"JS C/S roger make a left hand orbit or do you want to make a missed approach" and following a conversation with APR:

"JS C/S do you want to make a Left hand orbit or carry out a missed approach" and the pilot replied at 1522:30:

"Missed approach please JS C/S going in dropping into the downwind left hand circuit"]

During R/T and system playback the following was noted:

1515:20 During a controller handover the incoming APR controller was informed:

*"RW 09, 09, 26. With the TWR routing NorthWest corner for left base VFR (C172). Just got airborne not talking to us (*the JS32 JB-JJ*). Cleared in not above altitude 2000 feet towards Corbiere for a right base (*JS32 49N-JJ*). Not released (Trislander 1A- to JB), that's all you have".*

It should be noted that the outgoing APR controller issued C172 with a clearance of not above altitude 1000ft VFR, which was not altered before the ac was transferred to the TWR frequency. This clearance was also visible to the APR controller on the electronic strip situated in the 'With TWR' bay.

1516:45 The EFS strip for C172 was 'binned' by the APR controller from the 'With TWR' bay. At that time the C172 was left hand downwind approaching the North West corner of Jersey and the JS32 was approximately 10 miles North West of the airfield.

15:18:54 At this point the TWR controller rang the APR controller to ask if the JS32 was number one or if C172 could continue to final ahead. The APR controller believed the JS32 was number one but agreed to position the JS32 behind the C172

It is concluded from the investigation that this incident is attributed to the fact that the JS32 was positioned too close behind the C172 which ultimately led to the JS32 performing a go-around. The controller admitted that his perception was that C172 would hold at the North West corner of Jersey and this was exacerbated by the electronic flight strip not being present on the approach controller data display.

When it became apparent that C172 was making an approach the subsequent instructions from the approach controller were predicated on the JS32 gaining visual contact with C172 and ultimately allowing the pilot to self-position. This is common practice with inter island flights.

The controller made a judgement that when the JS32 was instructed to continue approach number two there would be enough distance to stabilise the ac and make a visual approach but the crew of the JS32 elected to discontinue the approach and go around.

There appears to be disparity between the approach controller and the crew of the JS32 in what would constitute a stable and safe approach. Communications between controller and pilot could have been better yet there is no evidence from the investigation to support that this contributed significantly to the event.

The JS32 was on an IFR flight plan operating IFR; the C172 was on a VFR flight plan operating VFR. Traffic information was passed to the JS32, even though it was not read back. The vertical or horizontal separation criteria under UKAIP ENR 1-4-5 do not require IFR flights to be separated from VFR flights. Should the C172 have been operating on Special VFR rules then separation would have been required. No separation was lost during this incident and traffic information had been passed to the JS32 on the VFR flight – C172.

Following the process of handing over the position to the oncoming approach controller, the Electronic Flight Strip showing C172 was 'Binned' from the data display. The only remaining reference to C172 being the Radar Display. It is possible that this strip had been removed from the data display too soon. The C172 was mentioned during the approach position handover, although the ac had already been transferred to the TWR frequency.

Importantly the strip does signify the type of approach and the flight rules; without this strip being displayed it is not easy to ascertain the information.

Note: Binned is an Electronic Strip Function of removing the strip from the data display. It can be retrieved if required.

Had the approach controller intervened at an earlier point and taken positive control of the situation the JS32 would have been positioned correctly behind C172 and the eventual go-around could have been avoided.

Further training was conducted by UCEs on the process/procedure of 'binning' strips.

UKAB Note (3): Following a request from the UKAB a full transcript was provided. This confirmed the details and UKAB Note (2) above.

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 an investigation report by Jersey ATC.

The Board noted the comprehensive investigation by Jersey ATC, summarised above, and agreed its findings with the following additional comment.

Several Members considered that this was a straightforward go-around occurrence following a reduction of separation rather than an Airprox as, in their view, there was never any risk to either ac and a go-around should be regarded as a normal operating procedure. The Director of the UKAB, however, agreed to investigate the incident as an Airprox since the JS32 pilot, having received a TCAS TA on final and presumably lost sight of the C172 as he carried out his missed approach procedure, wished it to be treated as such.

Although the requirement and procedures for controllers to sequence VFR and IFR traffic inbound in Class D airspace is open to interpretation where the VFR ac is apparently ahead of the IFR one, controller Members agreed that good 'controllership' is to sequence the ac allowing sufficient time for the following (IFR) ac to achieve a stabilised approach. Airline pilot Members agreed, but pointed out that the pilot also has a responsibility to assist this process by applying speed control, to achieve suitable separation. Some Members thought that a RH turn on to final, the long way round, or the orbit offered by the TWR controller, would have resolved the separation problem, but others thought that this would have come too late for the crew to establish a stabilised approach. One pilot Member counselled that achieving a stabilised visual approach over the water to an elevated RW just inland can be very demanding due to the lack of visual clues, so much so that his company prohibit them. Pilot Members agreed unanimously that crews should initiate a go-around in cases where a stabilised approach cannot be achieved, for whatever reason, and this action should not be seen as any criticism of the crew.

APR initially instructed the JS32 crew to route direct to "final for RW09", an imprecise point. The Board noted that the crew was not cleared for a visual approach. Shortly afterwards the APR controller, who had intended the JS32 to be No1 to land, agreed with TWR that the JS32 would be No2 to the C172. To achieve separation between the ac, APR instructed the JS32 crew to head 180° and reduce speed, but he did not inform the crew that they were No2. For their part, the crew acknowledged the heading instruction but not the speed reduction. APR then passed accurate TI on the C172 on their LH side before a second instruction to reduce speed, which was also not acknowledged by the JS32 crew. Members agreed that the controller should have advised the crew that they were No2, but considered that the crew should have realised from the heading instruction that they were being sequenced with other traffic. In the event, it was only after they had been instructed to turn in towards the airfield and were being instructed to contact TWR at 15:21:33 that APR advised them that they would shortly be No1. Members agreed that at that stage there was little that the JS32 crew could do to increase separation, which was too tight. The JS32 crew called on the TWR frequency at 1521:42 and were cleared to continue at 1521:54 as the C172 was still on short final and the JS32 was about 2nm out. Although several other signals were available, this was the first occasion that the JS32 crew were formally told by ATC that they were No2 to the C172 and it came too late for them to implement any meaningful speed control measures (a pilot Member stated that the last point for speed control is deemed to be 4nm). Another pilot Member opined however, that as a general rule good airmanship would have been not to 'turn in' before being visual with the ac ahead or being informed that it had landed.

Both pilot and controller Members agreed that the JS32 crew had not been given enough information to assist the controller in achieving satisfactory separation on finals and that the APR controller, having accepted the responsibility, had turned the JS32 back towards the field too early.

Members agreed unanimously that there had been no risk of collision; a majority, however, considered there had been enough deviations from normally accepted ATC and operating procedures for the incident to warrant a rating of C (an Airprox in which there was no risk of collision) rather than an E (a non-event).

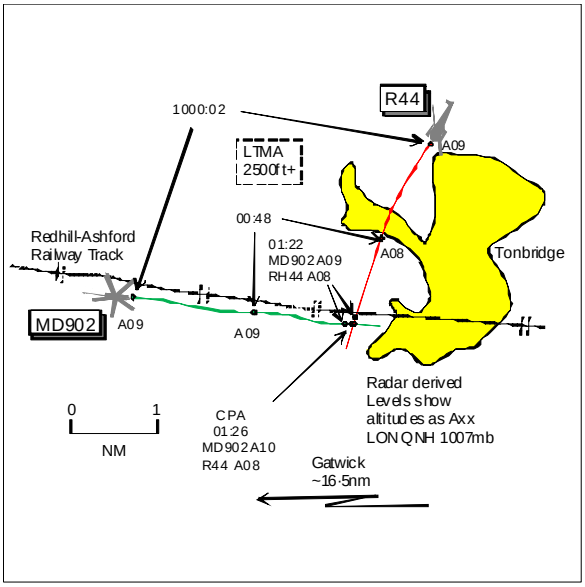
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A large disparity in groundspeeds caused the JS32 crew to fly a go-around.

Degree of Risk: C.

AIRPROX REPORT NO 2011148

Date/Time:	23 Oct 2011 1001Z (Sunday)	
Position:	5111N 00015E (1·5nm SW Tonbridge)	
Airspace:	LFIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	MD902	R44
Operator:	Civ Comm	Civ Pte
Alt/FL:	1000ft	800ft
	QNH (1009mb)	QNH
Weather:	VMC CLBC	VMC NR
Visibility:	>10km	>10km
Reported Separation:		
	100ft V/50m H	Not seen
Recorded Separation:		
	200ft V/returns merge	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE MD902 PILOT reports routeing from a field site near Edenbridge to a private site in near Marden, Kent, not in receipt of an ATS but squawking a discrete conspicuity code with Modes S and C. The visibility was >10km flying clear below cloud in VMC and the helicopter was coloured blue/white with nav lights, red strobes and white HISL all switched on. In level cruise at 1000ft QNH 1009mb heading 100° at 120kt returning to base after a medical call-out, his LH seat crewman alerted him to a helicopter, a dark blue or black R44, approaching from his 10-11 o'clock direction at close range (200m) on a S'ly and closing heading, slightly lower. He immediately cyclic-climbed the MD902 to allow the other helicopter to pass underneath, which it did by 100ft and 50m away at the CPA. Once clear he checked behind and could see the R44 continuing on its heading and height. Previously he had been talking to Gatwick Radar and had changed to Headcorn frequency some 2min earlier. No Airprox report was made on either frequency. He assessed the risk as medium.

THE R44 PILOT reports he was unaware of the Airprox until after being contacted by RAC Mil. His flight was from a private site near Wormingford, Essex, routeing to a private site in West Sussex, VFR and he was listening-out on the Farnborough E frequency squawking 7000 with Mode C. The Wx was VMC and he tracked to the E of Gatwick, flying into sun heading 185° at 115kt and at 800ft QNH. He did not see the reporting ac.

UKAB Note (1): The Gatwick 10cm radar clearly captures the incident. The MD902 is seen at 1000:02 squawking a discrete conspicuity code 3·75nm W of Tonbridge, tracking 100° indicating altitude 900ft LON QNH 1007mb. At the same time a 7000 squawk is seen, believed to be the R44, 1·6nm NNW of Tonbridge tracking 210° also maintaining altitude 900ft. Thereafter the ac continue to converge on a line of constant bearing and by 1000:48 lateral separation has reduced to 1·7nm with the R44 having turned L 15° and descended to altitude 800ft. At 1001:22 lateral separation has reduced to 0·1nm with vertical separation still 100ft. The CPA occurs on the next sweep at 1001:26; the radar returns merge, the R44 still showing 800ft whilst the MD902 is indicating 1000ft QNH, 200ft above.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

As the incident occurred in Class G airspace there was equal responsibility on both crews to maintain their own separation from other traffic through see and avoid. With the ac approaching each other on a line of constant bearing it would have been more difficult for both crews to detect each other owing to lack of relative movement within their field of view. Although the R44 pilot reported flying into sun, the MD902 was converging from his R and there was ample opportunity for him to detect its approach. The MD902 flight had right of way under the RoA

Regulations; however, these rules require pilots to see the other aircraft at the appropriate time. As it was the R44 pilot did not see the MD902 at all while the MD902 pilot only saw the R44 200m away, when it was brought to his attention by the LH seated crewmember, a late sighting.

Turning to risk, although the MD902 flight had right of way, the pilot took positive action to avoid a collision by initiating a climb before the R44 passed an estimated 100ft below and 50m ahead; the radar recording shows the ac merging at the CPA with the MD902 climbing 100ft as they cross with vertical Mode C separation showing 200ft. These factors combined with the MD902 passing unsighted to the R44 pilot led the Board to conclude that the ac had passed in close proximity with margins reduced below normal such that safety had not been assured.

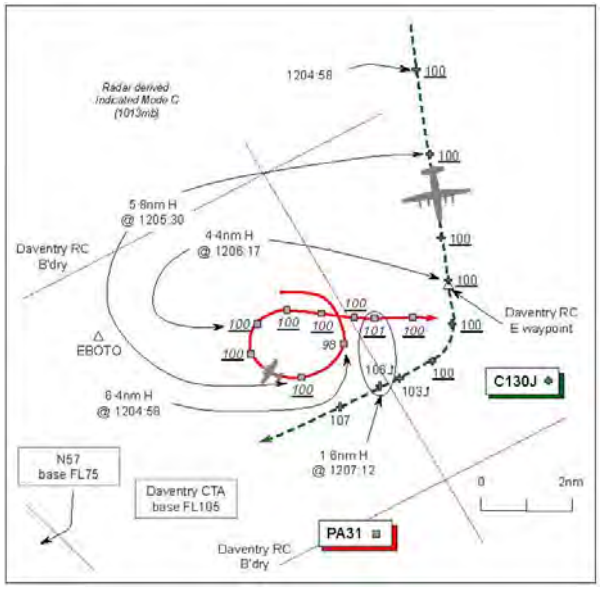
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A non-sighting by the R44 pilot and a late sighting by the MD902 pilot.

Degree of Risk: B.

AIRPROX REPORT NO 2011149

Date/Time:	21 Oct 2011 1207Z	
Position:	5221N 00031W (2nm SW of the Daventry RC E'ly waypoint)	
Airspace:	London FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	C130J	PA31
Operator:	HQ Air (Ops)	Civ Comm
Alt/FL:	FL100	FL100
Weather:	VMC CLAC	VMC CLBL
Visibility:	10km	>50km
Reported Separation:		
	200ft V/0.5-1nm H	Nil V/2nm H
Recorded Separation:		
	500ft V/1·6nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE LOCKHEED C130J PILOT reports that during this VFR training flight, following an approach to RW20 at Waddington, ATC handed them back to LATCC (Mil) for a transit through the Daventry Radar Corridor (DAV RC) to return to Brize Norton. The assigned squawk was selected with Modes C and S on; TCAS is fitted. They were 'cleared' to climb to FL100 with own navigation for the DAV RC under a TS. Whilst in the climb, London MILITARY passed TI about traffic 6nm away which was in the vicinity of the DAV RC. This ac was acquired visually at FL100 and appeared to be manoeuvring at the northern edge of the RC. As they approached the entry point to the RC at 210kt he positioned his C130 so that the conflicting ac [the PA31] would not cause a TCAS confliction vector. This was achieved and they transitioned the DAV RC eastern waypoint, although still under a TS before turning onto the heading of 247° to transit the DAV RC. The conflicting PA31 then turned S towards his C130 and triggered a TCAS CLIMB RA, which was complied with. The PA31 was observed to pass about ½ - 1nm behind his C130 immediately before they were placed under a RCS for the transit of Class A CAS. Both ac were in Class G airspace at the time of the Airprox which occurred at about 1207Z in a position about 52° 21"N 000° 32"W. London MILITARY was informed and passed the details of the conflicting PA31 after recovery to Brize Norton. The conflicting ac was not working London MIL's frequency.

The ac has a grey/green camouflage scheme but the 'strobes' and wingtip taxi lights were on.

THE PA31 PILOT reports he was conducting a local flight from Northampton/Sywell under VFR; he was not in receipt of any ATS. A squawk of A7000 was selected with Mode C; elementary Mode S is fitted but TCAS is not.

Whilst in the cruise at FL100 in VMC with an in-flight visibility of >50km, heading 090° at 170kt, he saw a large grey high-wing 4-engine military ac [the C130] about 3-4nm ahead of his ac. The C130 passed from L - R across his nose straight and level initially and then turned right to pass down his right hand side 2-3nm away. At the closest point, which was when the C130 passed down his starboard side, he estimates that it was at least 2nm away at the same level. There was no Risk of collision as he had seen the other ac; it was a considerable distance away at all times and was obviously going to pass well clear.

THE LJAO CENTRAL TACTICAL CONTROLLER (CEN TAC) reports that the C130 was about 2nm NE of the DAV RC under a TS proceeding SW'ly for the RC at FL100. Traffic information was passed to the crew on two conflicting ac, the first being 5nm South, tracking N, without any height information (no SSR). The second unknown ac was squawking A7000, 8nm SW, manoeuvring, indicating FL96 and climbing. The TI was acknowledged by the C130 crew and after a short delay reported visual with the conflicting ac – the PA31. The Area South Bank Supervisor then instructed him to ask the C130 crew if they could identify the type of the

conflicting ac, which the crew was unable to do. The conflicting PA31 continued to manoeuvre in the same general area and as the C130 turned onto a track of about 250° degrees, he queried whether the crew was still visual as the PA31 continued to present a definite hazard. The C130 pilot advised he was no longer visual with the PA31 that was to the W at a range of 2nm at the same level, so he provided TI. Subsequently, the C130 crew reported visual and that they were taking a TCAS CLIMB, which was acknowledged.

BM SAFETY MANAGEMENT reports that this Airprox occurred 7.8nm E of the Class A CAS boundary associated with the DAV RC, between a C130 in receipt of a TS from LJAO CEN TAC and a PA31. Both ac were operating VFR in VMC. The LJAO RT transcript timings were found to be 8min 3sec removed from the radar replay and, where referred to in this report, have been corrected to reflect the radar recording timings.

The C130 was manoeuvring towards the DAV RC and at 1203:40, CEN TAC passed TI on unrelated traffic. At 1204:57 CEN TAC passed TI on the PA31 stating, *"traffic south-west, 8 miles* [6.4nm on radar replay] *tracking south flight level 9-7 climbing I'll keep you updated"* which was acknowledged. At 1205:31 the C130 crew reported that they were, *"visual with traffic"* which prompted CEN TAC to ask whether they were visual with the reported unrelated traffic. The C130 reported, *"..negative 1 o'clock..1 hundred foot above and..passing 6 miles"* which was the PA31. At this point, the PA31 was 5.8nm SW of the C130, in a RH turn, passing through a heading of approximately 260°, at FL100. CEN TAC then passed updated TI on the unrelated traffic. At 1206:17, as the C130 crossed the DAV RC E'ly waypoint, the PA31 was turning R passing through a heading of about 030°; CEN TAC updated the TI to the C130 on the PA31 stating, *"traffic due west of you by..6 miles now* [4.4nm on radar recording]*, tracking north, similar altitude, what type of aircraft is it?"* The C130 replied that they were, *"unable to identify that as it's a bit far away."* At 1206:33 the C130 commenced a R turn onto the RC track to position along the southern portion of the DAV RC, whilst the PA31 steadied on an E'ly track, which was maintained for the remainder of the incident sequence. At 1206:45 CEN TAC asked the C130 crew whether they were, *"still visual with the traffic* [the PA31]?" The C130 crew replied that they had, *"lost visual at the moment, now looking"* prompting CEN TAC to update the TI, stating *"roger, it's northwest of you by 3 miles, tracking southeast."* The C130 crew immediately replied, *"okay, we're TCAS resolution climbing"* adding about 2sec later at 1207:08, that they were, *"visual with the traffic, it's going down our right hand side now."*

Based upon the PA31 pilot's report, the radar recording reflects he acquired the C130 visually at about 1206:42, when the range had reduced to 3nm and remained visual throughout the incident sequence. The CPA occurred at 1207:09, as the PA31 passed 1.6nm N of the C130 and 500ft below it following the C130 crew's response to the TCAS CLIMB RA.

[UKAB Note (1): Horizontal separation reduced to 2·7nm at the same level before the C130 is shown climbing in response to the demanded RA. The C130 ascended to a maximum of FL107 before a descent is evident to the assigned DAV RC level of FL100, after the range has increased to 2·5nm at 1207:28. When informed of the TCAS RA the CEN TAC ensured LTC MIDS Sector was fully aware, who had no traffic to affect the C130's climb into the DAV CTA.]

CEN TAC provided a high level of service allowing the C130 crew to develop their situational awareness to visually acquire the PA31. By both confirming which ac the C130 had reported visual with and by confirming that the C130 crew was still visual once the incident geometry had changed at 1206:33, CEN TAC displayed a high level of situational and professional awareness and should be commended as such.

On the basis of the geometry of the event, BM SM contends that this was a TCAS sighting report.

HQ AIR (OPS) comments this was a benign event where effective lookout from both parties meant that collision was never an issue. The TCAS RA was nevertheless complied with as there was no reason not to do so (iaw C130 SOPs).

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The Board agreed that the LJAO CEN TAC controller had provided a good service to the C130 crew, through the timely flow of TI. This, coupled with TCAS information, ensured the C130 crew was continually apprised of the position of the manoeuvring PA31. The C130 crew subsequently saw the PA31 from a range of over 5nm and was content that it did not pose a threat, endeavouring to manoeuvre so as to minimise the potential for a TCAS RA. However, despite affording the PA31 what they considered to be a sufficient margin, a TCAS RA was triggered and the C130 crew was duty bound to comply with the CLIMB RA until CLEAR OF CONFLICT was enunciated.

Without the benefit of a radar service to assist his lookout, the PA31 pilot saw the C130 from a range of 2-3nm, watched it cross ahead and subsequently pass 1·6nm to starboard on a diverging heading without concern. It was unfortunate that the PA31 pilot chose to manoeuvre at the eastern end of the RC, at the corridor level, just as the C130 crew was commencing their westbound transit; however, the PA31 pilot was operating here under VFR quite legitimately in Class G airspace. Despite the resultant TCAS RA, both the C130 crew and the PA31 pilot were visual with each other's ac and both had afforded what they considered to be a reasonable margin under VFR. Whilst it was evident that the C130 had just penetrated the lower limit of the DAVENTRY CTA during the RA manoeuvre, CEN TACs swift liaison call to LTC MIDS confirmed that this had not resulted in a problem. The Board concluded that whilst this occurrence met the criteria for an Airprox report, it was nonetheless a sighting of traffic operating in Class G airspace and Members agreed unanimously that normal safety parameters had not been breached.

The Board suggested that more publicity should be afforded to the various RCs, which are regularly used by military traffic and civil ac operating as OAT to transit CAS. They are not marked on civil charts and there is little reference to them in the UK AIP, but it would be helpful to pilots that regularly operate VFR outside CAS in the vicinity of RCs to draw attention to the increased potential for meeting fast-jets and other military ac on a regular basis at the established RC levels where the corridor abuts Class G airspace.

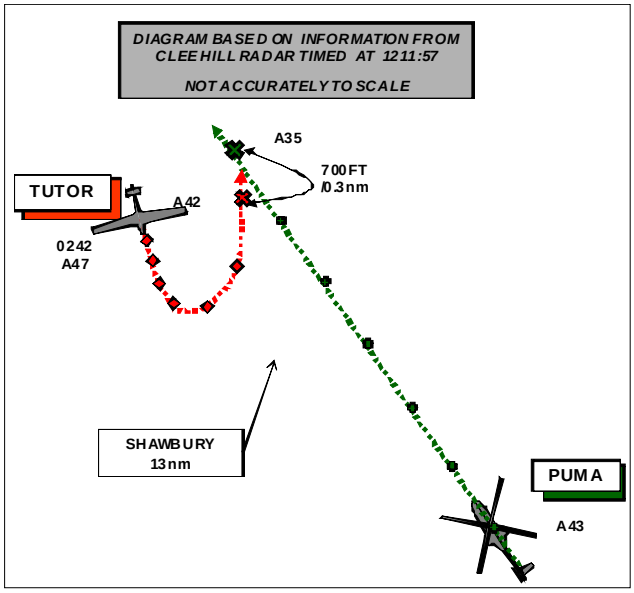
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Sighting report.

Degree of Risk: E.

AIRPROX REPORT NO 2011150

Date/Time:	24 Oct 2011 1212Z	
Position:	5235N 00233W (13nm SSE Shawbury)	
Airspace:	Shawbury AIAA	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Puma	Grob Tutor T Mk1
Operator:	HQ JHC	HQ Air (Trg)
Alt/FL:	4000ft	3000ft
	RPS (964mb)	RPS
Weather:	VMC CLBC	VMC CLOC
Visibility:	20km	>15nm
Reported Separation:		
	0ft V/150m H	200ft V/800m H
Recorded Separation:		
	700ft V/0.3nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PUMA PILOT reports that they were flying an IFR transit leg from Benson, through Brize Norton's O/H and inbound for an ILS to RW18 at Shawbury. They had nav lights and white strobes switched on and were squawking 0220 with Modes C and S but TCAS was not fitted. At about 35nm from Shawbury, while heading 330° at 130kt, they called Shawbury APP [RAD] establishing two-way comms and requesting a TS. At about 15nm from Shawbury they were alerted to a contact at 5nm in their 11 o'clock (300° from them, in the vicinity of The Wrekin), which was reported to be a Tutor conducting aerobatics training, but they could not see the ac. Just inside a range of 14nm from Shawbury, they were updated on this traffic as being on the same bearing but then at 3nm. Within 10sec of this call from ATC, the ac was spotted on a reciprocal heading, judged to be about 1nm away and it appeared that it would pass down their port side. It was not known if the other ac was visual with them so to aid deconfliction the HP commenced a descent at about 600fpm. As soon as the descent was commenced the other ac was seen to start a descending LH turn; it kept the same alt as the Puma and barely moved from its position in the windscreen as it turned towards them. Still unsure as to whether the other ac was visual, the HP 'lowered the lever' and achieved greater than 2500fpm ROD in order to remove the conflict. The other ac passed about 150m behind them at the same level. The speed and rate of descent were maintained and after about 1min the crew turned the Puma to the L to ensure that the other ac was clear as it was unsighted in their 6 o'clock. The ac was recovered to 2500ft on the RPS, heading 360° towards Shawbury, and they completed the ILS without further incident.

He assessed the risk as being high.

THE GROB TUTOR PILOT reports flying an air experience GH sortie with a cadet in a white ac with navlights and strobes switched on and squawking with Mode C. While heading 060° at 120kt between Bridgenorth and Telford in Class G airspace in good VMC and in receipt of a TS operating between 3000ft and 6000ft from Shawbury Zone, they were notified of a helicopter approaching their vicinity from the S; the type was initially described as a Lynx but subsequently corrected to a Puma. They turned towards the helicopter so he could see it and gain an understanding of its relative track. He saw the Puma at a distance of about 2nm and about 500ft below them.

While the helicopter was maintaining a straight and level NW'ly track, he descended towards it on a NE'ly track, had a look at it and then made a climbing LH turn away from it, remaining well clear of it at all times and ensuring there was never any risk of collision.

With hindsight his best course of action would have been to turn away from the other ac as soon as he identified it. However, having spent nearly 2000hrs flying the Puma during his time in the RAF, on this occasion he

manoeuvred to have a look at the helicopter from a safe distance before turning away and continuing with his sortie. He allowed the Puma pilot freedom to manoeuvre at all times and guarded the safety of both ac in the open FIR.

THE RAF SHAWBURY RADAR CONTROLLER (RAD) reports that at the time of the incident he had three ac on frequency, the Puma and two Squirrels in 'boxes A and C'. His traffic loading was low and RW18 was in use and the colour state was Blue, F/S.

The Puma was handed over to Shawbury from Brize for a LARS transit but was actually inbound (for ILS and depart VFR to Stafford) so he took the handover and gave STUD 9 as the contact frequency. The Puma was at 4000ft on the QFE 983mbs. He called traffic to the Puma at about 5nm in its 12 o'clock indicating slightly above and he informed the pilot that it was a Tutor believed to be carrying out aerobatics; the Tutor was in receipt of a TS from Zone. He gave the Puma a descent to 2500ft but the pilot did not take it initially. He called the Tutor again at about 2nm slightly above then called two further tracks which the pilot did not initially acknowledge; the pilot then came back asking for the information again as he was dealing with the Tutor.

After acknowledging the other two tracks the Puma declared an Airprox against the Tutor.

In the controller's opinion there was less than 0.5nm and about 300ft separation. He asked the Puma captain to give ATC a call once on the ground.

The Supervisor relieved him from the console so that he could write up his version of events and the RT tapes were impounded.

THE RAF SHAWBURY ZONE CONTROLLER reports that he had three ac in receipt of a TS on his frequency, which included the Tutor, an additional two ac in receipt of a BS and he was operating Shawbury low level frequencies.

The Tutor was flying GH between 3000ft and 6000ft Shawbury QNH 991mb to the W of Cosford while the Puma was transiting the area that the Tutor was operating in from S to N. As the Puma got closer he called it to the Tutor, initially as a Lynx with the indicated level but after checking with the RAD he changed the TI to reflect that the ac was a Puma and the Tutor pilot acknowledged the call.

The Supervisor then relieved him so that he could write up his version of the incident.

BM SAFETY MANAGEMENT reports that APP has reported that their traffic loading was low with 3 ac on freq in receipt of a TS, in addition to the incident Puma. Zone reported that they had 5 ac on frequency including the reporting Tutor and were operating the Shawbury low-level frequencies. Although neither controller reported the task complexity, both are experienced and it is likely to have been low.

The Tutor called Zone at 1158:25 and was provided a TS to operate, "*in the block three thousand feet to six thousand feet, south of Telford*" on the Shawbury QNH of 991mb. The Puma called APP at 1206:18, maintaining an NW'ly track; initial liaison was completed and the ac was instructed to, "*set Shawbury Q-F-E nine eight three milibars fly at four thousand feet*."

At 1209:55, Rad passed TI to the Puma on the Tutor as, "*traffic left eleven o'clock, five miles, manoeuvring, Tutor, indicating slightly above, believed to be doing aerobatics*" which was acknowledged. At that point, the Puma was indicating 4300ft and the Tutor was 6.4 nm NW of it, indicating 4800ft.

At 1210:13, Zone passed accurate TI to the Tutor on the Puma as, "*traffic south-east, five miles, tracking north-west, indicating slightly below, believed to be a Lynx*" which was acknowledged; Zone then corrected the ac type at 1210:26, which was again acknowledged by the pilot. No further updates to the TI were passed by Zone after that point.

CAP 774 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.'

At 1210:29 RAD instructed the Puma to descend to 2500ft QFE which the pilot readback. Subsequent to filing his report, the controller stated that the purpose of this descent was to position the Puma beneath the Tutor's manoeuvring block. At 1211:22, RAD updated the TI on the Tutor stating, "*previously called traffic, left eleven o'clock, three miles* (radar replay shows 1.9nm) *tracking south, indicating two hundred feet above*." The Puma pilot replied that they were visual with the ac and at that point 1.5nm lateral and 200ft indicated vertical separation existed. RAD then asked whether the Puma had commenced its descent; although the pilot replied, "*affirm*" this was not the case and the ac did not commence its descent until 1211:52.

The only break in the transcript of Zone's RT during the entire incident sequence occurred from 1211:32 to 1211:52; however, this break was immediately following the initial call by unrelated traffic where Zone would have been involved logging the details on a flight strip and looking to observe the ac's SSR code in order to identify it. This task will have been hampered by the fact that the pilot did not include a position report in his initial call to Zone.

At 1211:36 RAD passed TI to the Puma on unrelated traffic and was asked to, "*say again"* by the pilot; the TI was re-stated but not acknowledged. At that point, the Tutor was 1.1nm W of the Puma, tracking SE'ly and indicating 200ft above. At 1211:45, the Tutor commenced a left turn and, at 1211:52 the Puma commenced a descent. At 1211:54, RAD passed further TI on unrelated traffic to which the Puma replied, "*standby* [Puma C/S] *just bear with us due to traffic*." At that point the Tutor was 0.4nm S of the Puma, continuing its left turn through a heading of about 030°, indicating 4400ft, 700ft above the Puma. The Tutor maintained the left turn, rolling out momentarily in the Puma's 6 o'clock, before re-commencing a left turn to the S at 1212:09. The CPA occurred at 1211:57 as the Tutor positioned 0.3 nm in the Puma's 6 o'clock, 700ft above; the Puma indicated 3500ft at this point.

From an ATM perspective, RAD provided timely TI, which enabled the Puma crew to visually acquire the Tutor; also Zone's accurate TI allowed the Tutor pilot to visually acquire the Puma. Moreover, given Zone's workload and the RT loading, BM SM contends that Zone would have been unable to update the TI prior to the CPA.

HQ JHC comments that although the main cause of the incident was that the Tutor chose to fly close enough to the Puma Helicopter to cause the Puma crew concern, the high workload experienced by the Puma crew in observing the Tutor and assessing what the aircraft was going to do caused the handling pilot to delay in initiating the descent which contributed to the cause of this incident. This report will be distributed to remind JHC pilots of the requirement to comply in a timely manner with ATC instructions once read back.

HQ AIR (TRG) comments that the Tutor pilot's flight-path caused concern to the Puma crew. As he notes in his report, his decision deliberately to reduce his separation from uncoordinated traffic was unwise, but did not contravene any Regulation or Group Orders. The Puma pilot's concern would have been alleviated had the Tutor pilot informed ATC that he was visual and had this information then been passed to the Puma. HQ 22 Gp have been asked to review the need for orders regarding this kind of scenario and will publicise the potential distracting effects that apparently benign actions like this may cause, even for other military crews. In the event, there was no risk of 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 controllers involved and reports from the appropriate ATC and operating authorities.

It was noted that the incident took place in Class G airspace where the respective pilots had a responsibility to see and avoid each other. Both pilots wisely opted for TS to assist with their lookout responsibility and timely and accurate TI from the respective Shawbury controllers enabled both to see the opposing ac.

The JHC Member observed that the Puma crew's uncertainty over the intentions of the closing Tutor caused them to maintain their flight path by disregarding their descent for a short period and this had disrupted the routine of their instrument approach. Pilot Members agreed that, although not contravening any regulations, deliberately closing with another ac even while keeping a safe distance and having it continuously in sight, can cause its crew concern. That was the case here, despite the radar recording confirming that the separation was adequate throughout.

However, since the Tutor pilot had the Puma is sight throughout the sequence, there was never any risk that the ac would have collided.

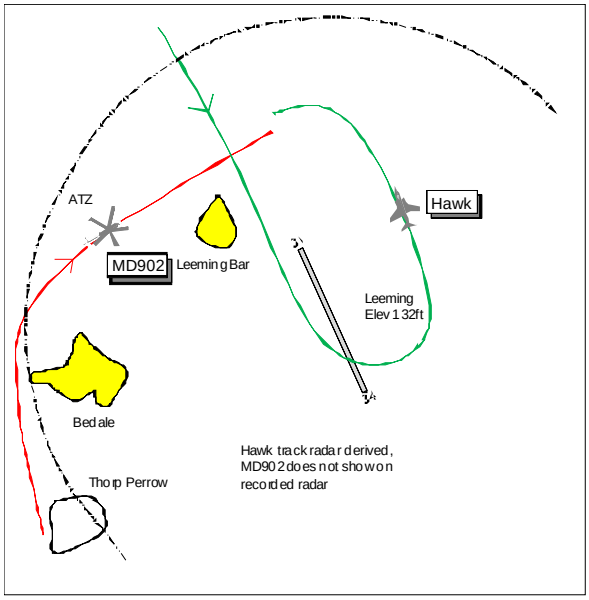
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Tutor pilot flew close enough to the Puma to cause its crew concern.

Degree of Risk: C.

AIRPROX REPORT NO 2011151

Date/Time:	27 Oct 2011 1459Z	
Position:	5419N 00133W (1·5nm NNW Leeming - elev 132ft)	
Airspace:	ATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Hawk T Mk1A	MD902
Operator:	HQ Air (Ops)	Civ Comm
Alt/FL:	600ft↓ QFE (1003mb)	500ft agl
Weather:	VMC CLBC	VMC CLBC
Visibility:	25km	>10km
Reported Separation:	150ft V/50m H	300ft V
Recorded Separation:	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE HAWK T MK1A PILOT reports on a visual recovery to Leeming and in communication with Leeming Tower, squawking 0424 with Mode C. The visibility was 25km flying clear below cloud in VMC and the ac was coloured black with nose landing light and HISLs switched on. He called "initial" for RW16 with Tower and was told the cct was clear but there was a Helimed at Bedale (3km in his 2 o'clock) not above 500ft N'bound. He became visual with the Helimed in a hover and commencing departure, assessing it as no factor as a N'ly departure would deconflict from his intended cct RW16. He broke into the cct LH, turning away from the Helimed and he lost sight of the helicopter. He flew a standard pattern tipping in at the normal point. His attention was divided between the threshold and the cockpit parameters. At approximately halfway round final heading 240° at 140kt descending through 600ft QFE 1003mb he saw the helicopter in his 1130 position range 400m flying in the opposite direction and just below, assessing it was on his intended final approach path. He had time to roll off the bank to break the collision and pull gently, owing to the stall risk, and watched the helicopter pass 50m to his L and 150ft below. He reported the Airprox on the RT to Tower. At no time did Tower inform him of the Helimed's change of track. He assessed the risk as medium.

THE MD902 PILOT reports flying a HEMS mission and deployed to Thorpe Perrow near Bedale. He was in communication with Leeming Approach on 127·75Mhz when landing, squawking 0020 with Mode C; TCAS was fitted. The visibility was >10km clear below cloud in VMC and the helicopter was coloured yellow with HISLs, nav and 3 landing lights all switched on. On lifting he made an opening call to Leeming Approach with his intentions to fly to a hospital in Middlesbrough. He was asked by ATC to take up a NW'ly track initially to impose some separation as there was landing traffic on long final to RW16. He had the traffic, a Hawk, both visually in sight and on TCAS. He then requested to take up a N'ly track to shorten the transit to hospital and it was agreed. He passed up the W side of Bedale at 120kt and was then cleared direct to Middlesbrough so he stated that he would maintain 750ft on 1007mb and/or 500ft agl. His track took him N of Leeming Bar and Leeming, roughly on a heading 045°. The Hawk was seen to overshoot RW16 and then turn; initially he was unsure, owing to its aspect, whether it was away or towards him. He then realised it was E, away from Leeming's active RW and the Hawk climbed gently before it turned onto a N'ly track (R to L in front of his helicopter) and continued to climb before levelling slightly above his level. As he was still on track he told his crew that he would turn R to pass behind the Hawk and he let ATC know that he could see the Hawk. He was unsure if he informed ATC of his intention to pass behind but by convention he did so. At this point the Hawk, which was slightly ahead of him, dropped his landing gear and turned SW'ly towards his ac while slightly above; a TCAS TA was generated. He elected to maintain course and descend below the oncoming Hawk which passed about 300ft above where upon he turned his helicopter back on track towards Middlesbrough, approximately 045°. He made another call to ATC apologising for the nearness and tried to explain his reasoning but he initially received no reply. His next call was to clear en-route to Middlesbrough

through Durham Tees Valley airspace. He assessed the risk as none. Later on their return to base while passing through Leeming airspace he was asked by ATC to telephone after landing. He did so and spoke to SATCO who was very good about the whole thing and he gave his name and address for any follow up action. At no point did he think Leeming did not give a good service. With hindsight he thought that he should have been on their Tower frequency rather than Approach, which would have helped the situation. He did not realise, until the Hawk turned towards him, that it was making a second approach visually. Leeming ATC's initial non-reply afterwards was probably owing to an Airprox report by the other pilot, which he understood immediately and waited. ATC have been before, during and since, always very helpful.

THE LEEMING TOWER CONTROLLER reports the Hawk was the only ac on frequency and was conducting a radar-to-visual approach and in the process of joining the visual cct. The Met conditions were blue although visibility was degraded by mist. Zone passed TI on a rotary Helimed departing Bedale not above 500ft routeing N'bound and stated that the helicopter pilot was aware of the Hawk. TI on the rotary was passed to the Hawk pilot although it initially appeared that the Helimed would not be a factor as the Hawk was fully established in the visual cct. At this stage he was not visual with the Helimed. The Hawk flight was cleared for a touch and go and then its pilot reported an Airprox with a rotary ac whilst on final approach. At this point he saw the Helimed crossing W to E through the extended C/L at low level but relatively close to the Hawk. The Hawk pilot reported that the rotary had crossed beneath his track. Zone was informed of the Airprox and Zone reported that the Helimed pilot had apologised but had been visual with the Hawk throughout. From the initial TI it was expected that the Helimed would maintain a N'ly track and was not intending to cross the approach lane.

UKAB Note (1): Leeming METAR shows EGXE 271450Z 25003KT 9999 –RA FEW009 OVC050 11/10 Q1007 BLU TEMPO SCT009 GRN=

THE LEEMING ZONE CONTROLLER reports that at 1456 the Helimed MD902 pilot called him to advise that he was lifting from Thorpe Perrow, near Bedale (2nm W of Leeming), en-route to James Cook Hospital, Middlesbrough. The flight was placed under a BS and was requested to maintain a NW'ly track not above 500ft on the RPS 1003mb, he thought, as the Hawk was conducting a radar to visual approach at Leeming and was O/H Catterick (5nm N of Leeming). TI on the Helimed was passed to the ADC. The Helimed pilot reported that he had the inbound Hawk on TCAS and he was requested to route behind it. The Helimed was then pre-noted to Durham Tees Valley. The Helimed pilot then reported visual with the Hawk at which point he was given permission to resume own navigation not above 500ft. Shortly afterwards the Helimed pilot confirmed that he was still visual with the Hawk, which was now on a N'ly track, and that he would pass behind it. A short time later, the Helimed pilot reported he was descending with the Hawk in sight and almost immediately ADC reported that the Hawk had called an Airprox against rotary traffic that had passed beneath him on final. The Helimed pilot apologised and stated he had turned onto a S'ly track to go behind the Hawk but it had turned into the cct to land.

BM SAFETY MANAGEMENT reports that this Airprox occurred within the ATZ at RAF Leeming between a Hawk on final to RW16 and a MD902 HEMS flight, transiting NE to James Cook University Hospital (JCUH) Middlesbrough, in receipt of a BS from Leeming Zone.

The radar replay does not display the MD902 during the incident sequence and the Hawk's radar return is lost during the final turn, prior to the Airprox.

The ADC was a relatively inexperienced first tourist controller; the Zone controller was highly experienced at Leeming. Both controllers described their workload and task complexity at the time of the occurrence as low and both have been described as highly capable by SATCO Leeming. Due to the low traffic levels and iaw local orders, no Supervisor was in place at the time of the occurrence, with the ATCO IC controlling on APP who has also described their workload as low.

At 1456:22 the Hawk pilot called Leeming TWR to join through initials and was cleared to join and the airfield details passed; the cct was clear. Almost simultaneously, the MD902 flight called Zone, *"(MD902 c/s) just lifting from Thorp Perrow, request MATZ penetration, er, for James Cook please, VFR, five hundred feet A-G-L, if that's alright?"* In reply, Zone asked, *"…could you maintain a north-westerly heading as you lift, I've just got traffic inbound* [the joining Hawk]*, overhead Catterick this time."* The MD902 pilot replied, *"copied, er, if you are happy, north-west side of Bedale this time?"* Zone stated, *"…roger, Basic Service, er, not above five hundred feet, I'll keep you advised on that traffic."* The MD902 pilot replied, *"…copied, er, if you are happy, I'll just maintain a northerly track for the moment?"* Zone replied, "*yeah that's fine*", which was acknowledged by the MD902 pilot.

Bedale is 2·2nm W of Leeming; Thorp Perrow is 3·6nm SW Leeming and 1·8nm SSW of Bedale. James Cook University Hospital is in south-central Middlesbrough, approximately 21nm NE of Leeming.

Immediately after the series of transmissions between the MD902 and Zone, Zone called TWR on landline at 1457:06 to advise them, *"Zone MD902 c/s lifting, HELIMED lifting from Bedale, not above five hundred feet, knows about the traffic inbound, he is routeing north*." At the tail of this statement at 1457:13, the Hawk pilot called initials and TWR instructed Zone to, *"standby"* while they responded to the Hawk. As this occurred, the MD902 pilot advised Zone that they could see the Hawk on TCAS. TWR then responded to Zone stating, *"okay, no worries, I'll call it if needs be, cheers Tower"* ending the landline call.

Immediately after finishing the landline call at 1457:20, Zone responded to the MD902 pilot's transmission about seeing the Hawk on TCAS stating, *"(MD902 c/s) once you're happy, continue behind that traffic* [the Hawk]" which was acknowledged by the MD902 pilot. The MD902 pilot reported that in addition to acquiring the Hawk on TCAS, they were visual with the Hawk from a range of 5-6nm; however, they believed, incorrectly, that the Hawk was 'landing traffic on long finals to RW16', rather than a join through initials. This supposition was not based on any information provided to the MD902 pilot by Zone.

At 1457:30, with the Hawk 2·6nm NW Leeming, TWR advised the Hawk pilot of the MD902 stating, *"(Hawk c/s) one Helimed lifting from Bedale, not above five hundred feet, routeing northbound";* this was acknowledged by the Hawk with c/s.

At 1457:52, the MD902 pilot advised Zone, *"(MD902 c/s) visual with traffic, passing behind, thanks."* Based upon Zone's recollection subsequent to completing their DASOR, they believe that at this point the MD902 was W of Leeming, tracking N'ly, which accords with the MD902 pilot's report that they were passing "up the west side of Bedale." Zone replied, *"(MD902 c/s) roger, own navigation, maintain not above five hundred*" which was acknowledged by the MD902 pilot. This communication occurred after the Hawk had flown through initials at 1457:13 and prior to reporting on the break at 1458:03. Based upon the MD902 pilot's report, they interpreted this instruction as clearance to fly direct to JCUH. Subsequent to completing their report, Zone has stated that they believed that, having been given own navigation, the MD902 would remain outside the ATZ and thus outside the lateral dimensions of the visual cct. Moreover, they suggested that their mental picture was based upon the N'ly track that the MD902 had been following and that the ac would route to Catterick, approximately 5·7nm NW of Leeming, prior to turning NE'ly for JCUH. Zone also stated that it is routine practice to transfer ac routing low-level through the ATZ to TWR's freq, if TWR considers it necessary. The fact that it did not happen in this instance is further evidence to support Zone's mental picture of the MD902's planned route as remaining outside the ATZ.

At 1458:30, the MD902 pilot re-iterated, *"(MD902 c/s) still visual with the north bound traffic"* adding 10sec later *"I'll pass behind him*." Zone acknowledged both these transmissions. Based upon the MD902 pilot's statement, the Hawk was established downwind in the visual cct. At 1458:55 the Hawk called final and was cleared to touch and go. At 1458:58, the MD902 pilot added, *"(MD902 c/s) descending with him* [the Hawk] *visual*" which was again acknowledged by Zone.

The CPA occurred at approximately 1459:01 as the Hawk pilot asked TWR, *"(Hawk c/s) do you realise the helicopter [distorted word] right underneath me on finals?"* The Hawk pilot reports first sighting the MD902 with approximately 400m lateral separation, with separation at the CPA of 50m lateral and 150ft vertical. The MD902 pilot was visual with the Hawk throughout the incident sequence and assessed the minimum separation as 300-400ft vertical.

TWR reported that it was at this point that they 'established visual contact with (MD902 c/s) crossing W to E through the extended C/L at low level.' The Unit has reported that there are a significant number of buildings and trees to the N and NW of the airfield that precludes observation of low flying traffic and would have restricted TWR's view during this occurrence.

Subsequent to completing their DASOR, the ATCO IC has reported that although they were aware of the MD902, they were not actively monitoring Zone's freq and were thus unable to maintain oversight of the situation.

RAF ATM Orders 100.130.6 state that '…outside established supervisor hours, the SATCO is to roster an officer or WO as ATCO IC the Watch…The ATCO IC is to exercise the responsibilities, and carry out the duties, of a Watch Supervisor detailed in para 100.130.5.' RAF ATM Orders do not define established supervisor hours;

however, the period that they encompass is typically deemed to be during Stn-based flying, with times defined within local orders. That said, local orders often stipulate a greater degree of flexibility than this, permitting the use of an ATCO IC during periods of reduced stn-based flying, as is the case at Leeming. At the time of the Airprox, the Hawk was the only Stn-based ac operating. 100.130.5a states that Terminal Supervisors, and by inference ATCO ICs, are to 'develop situational awareness to ensure that all watch-keeping staff maintain safe, orderly and expeditious ATC consistent with current regulations and instructions.' Moreover, 100.130.2 states that 'individuals rostered to supervise are not to assume controlling duties during the period of their watch.' However, this policy does not state whether 100.130.2 is applicable to ATCO ICs and, routinely, this decision is left to be made at a local level, generally on a day-to-day basis.

Whilst the MD902 pilot's decision to route behind the Hawk suggests either that he had not assimilated the fact that the Hawk had joined the cct, or that he assumed that the Hawk would be deconflicted from them by ATC, BM SM contends that the cause of the Airprox was grounded in ATM human error.

Based upon the information provided to TWR by Zone at 1457:06, that the MD902 would be routing N from Bedale, TWR had no reason to suspect that the MD902 would conflict with the visual cct; as illustrated at Figure 1.

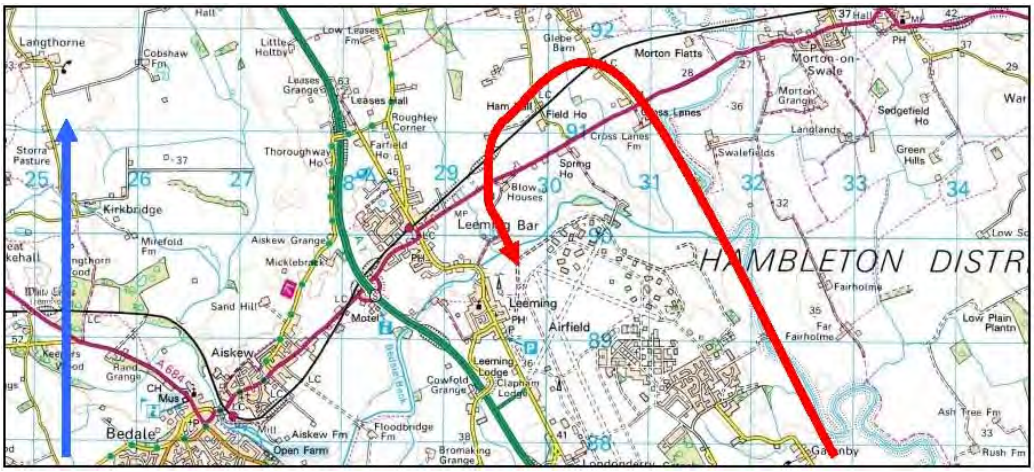


Fig: 1

Moreover, the obstructions to the N and NW of the airfield would have precluded TWR from visually acquiring the MD902 until a late stage. Finally, whilst given their low workload it is reasonable to suggest that TWR could have scanned their Hi-Brite VRD, it is just as reasonable to argue that with nothing to prompt TWR to do this, their visual focus would have remained on the Hawk.

From Zone's perspective, understandably, they wished to afford priority to the MD902; however, their mental picture of the MD902's intentions was based upon an assumed routing to the N of Leeming, outside the ATZ. Consequently, they were unable to perceive the risk inherent in authorising the MD902 flight to adopt its own navigation. Moreover, it is clear from the subsequent transmissions from the MD902 pilot and Zone's responses between 1458:30 and 1458:58, that Zone had not used this information to update their mental picture and thus their situational awareness, to perceive the developing confliction.

The remaining ATM related safety barrier in this occurrence would routinely be expected to have been provided by a Supervisor. However, due to the low traffic levels and in accordance with local procedure, a Supervisor was not operating. Moreover, APP as the ATCO IC was not actively monitoring Zone.

Having developed an incorrect mental picture of the MD902's routing, Zone authorised the MD902 to adopt own navigation. The MD902's routeing then placed it into confliction with the Hawk.

Recommendation:

BM SM requests RAF ATM Force Cmd to:

a. Review RAF ATM Force Orders 100.130 to determine whether paras 100.130.2 and 100.130.3 are applicable to ATCO ICs.

b. Direct RAF ATM Terminal units to review local orders permitting the use of an ATCO IC, in lieu of a dedicated Sup, in a rostered control position, during core opening hours.

HQ AIR (OPS) comments that the Helimed MD902 pilot clearly did not realise that the Hawk was joining the Leeming visual cct- he stated that he thought the Hawk was on long finals for a straight in to RW16, probably because he saw the Hawk's landing light. However, the Hawk's landing light is not on the undercarriage- it is on the nose and SOP is to have it on whether the gear is up or down (for conspicuity). Further weight is that he stated that the Hawk seemed to overshoot RW16 and turn back to the N (actually a join through the deadside and a break-turn downwind). It seems that the MD902 was a CAT A status CASEVAC flight and Leeming ATC should have afforded the HELIMED the appropriate priority by asking the Hawk to remain at cct height and allow the helicopter to transit the ATZ underneath him. Not communicating the Helimed's status meant that the Hawk pilot was unaware of the helicopter's priority, routing or intentions. As a result its proximity caused alarm to the Hawk pilot causing him to alter his flight path to increase separation at a time where he had limited manoeuvrability.

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 that there were a number of assumptions made which had led to actions being taken on the basis of insufficient information. The MD902 pilot had called Zone lifting from Thorpe Perrow and requested MATZ penetration towards a hospital in Middlesbrough at 500ft agl. Zone asked if he could route NW'ly owing the inbound Hawk over Catterick and, after updating his position to the NW of Bedale, the MD902 pilot asked if a N'ly track was alright and that was approved. Zone had coordinated the MD902 N'bound with TWR who agreed to pass TI if he needed to. Meanwhile the MD902 pilot had reported seeing the Hawk on his TCAS display and Zone stated that he could route behind the Hawk. However, the MD902 pilot, who may not have been familiar with fast-jet operations and without information from ATC as to the Hawk's intentions, had assumed the Hawk was carrying out a straight-in approach to land RW16. The Hawk pilot was conducting a run-and-break join into the visual cct. Tower told him about the MD902 routeing N'bound and the pilot saw it lifting as he ran in. The MD902 reported visual with the Hawk and passing behind it before Zone then released the MD902 pilot on his own navigation maintaining not above 500ft. Zone assumed the helicopter would route outside of the ATZ but, without ascertaining or stating a route, he had no idea where the MD902 helicopter would pass in relation to the Leeming ATZ. Members believed that Zone should have anticipated that the CAT A flight would take a straight-line track from his current position towards the hospital. The MD902 pilot, mindful of his CAT A flight status and priority, assumed that 'own navigation' was clearance to route direct to his destination and an implied clearance to transit through the ATZ. No mention was made by either party of a formal clearance to cross the ATZ which, Members agreed, in normal circumstances should always be clarified since a clearance through a MATZ does not give tacit approval through an ATZ. However, in these circumstances Members believed that the MD902 pilot's actions were entirely justified by his CAT A status. The MD902 pilot then told Zone that he could still see the Hawk routeing N'bound – downwind –and that he would pass behind it. Members thought Zone could have updated his SA from these transmissions and with reference to his radar, which should have revealed the MD902's position and routeing towards the final approach track at a range from touchdown where the Hawk would be turning onto final. Shortly after this the MD902 pilot reported descending with the Hawk 'visual'. Although TWR had only been told that the MD902 was routing N from Bedale and his view to the N and NW was restricted, the MD902's track would have been apparent on the Hi-Brite display and TWR could have challenged this with Zone or updated the TI to the Hawk pilot. As it was, the Hawk pilot had lost sight of the MD902 as he ran in and broke into the cct and it was only when he reported the MD902 passing underneath that TWR became aware of the helicopter's position. Members believed that all of the actions taken by ATC and assumptions made were indicative of a low state of arousal within Leeming ATC. Members agreed that Leeming ATC should have afforded the MD902 the most expeditious routeing possible and held the Hawk not below 1000ft until the helicopter was clear. In the event it was Zone releasing the MD902 flight on its own navigation resulted in a conflict with the Hawk, causing the Airprox.

Turning to risk, after seeing the MD902 whilst joining from initials, the Hawk pilot was oblivious to the MD902's track through the ATZ and saw it only as he was turning final in his 1130 position 400m away just below. Although this had been late, he was able to stop the turn and arrest his descent, watching the helicopter pass 150ft below and just 50m to his L. Meanwhile, the MD902 pilot saw the Hawk throughout, monitored its downwind track and was endeavouring to pass behind it when it turned towards him as he was crossing the final approach. He elected to descend, passing an estimated 300ft below the Hawk. Some Members thought that the incident was risk-bearing since the Hawk pilot had limited manoeuvrability during a critical stage of flight close to the ground with the MD902 passing below. Other Members believed that the MD902 pilot had the situation under control and had acted appropriately when faced with the Hawk turning towards him by maintaining visual contact with it and descending; the combination of both pilots' actions had removed the risk of collision. These two different viewpoints could not be resolved which led to the Chairman directing a vote. Although numerically close, the Board concluded by a small majority, that any risk of collision had been removed.

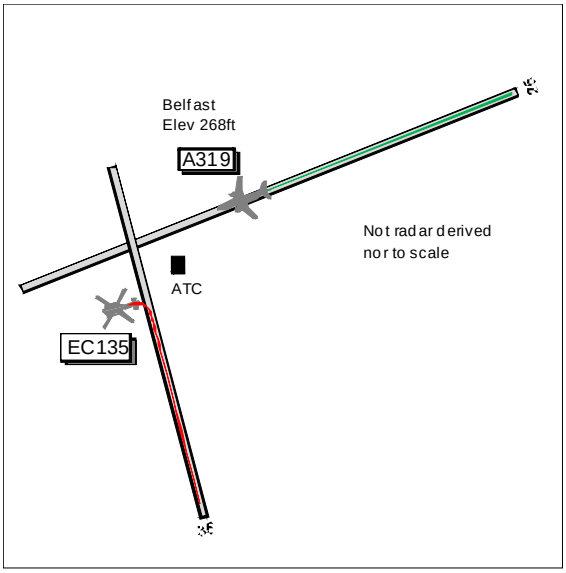
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Zone released the MD902 own navigation resulting in a conflict with the Hawk on final.

Degree of Risk: C.

AIRPROX REPORT NO 2011152

Date/Time:	27 Oct 2011 1831Z (Night)	
Position:	5439N 00614W (0·5nm SW Belfast/Aldergrove - elev 268ft)	
Airspace:	ATZ	(Class: D)
	Reporting Ac	*Reported Ac*
Type:	A319	EC135
Operator:	CAT	Civ Trg
Alt/FL:	300ft↑	300ft
	QNH (1009mb)	QNH
Weather:	VMC CLBC	VMC NR
Visibility:	10km	>10km
Reported Separation:		
	200ftV/NR H	NR
Recorded Separation:		
	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE A319 PILOT reports departing Belfast under IFR and in receipt of an Aerodrome Control Service (ACS) from Belfast Tower on 118·3MHz, squawking 7025 with Modes S and C. The visibility was 10km in VMC and the ac's anti-collision, nav and strobe lights were all switched on. They were cleared to line-up RW25, take-off clearance received and after departure a L turn to PEPOD. During the early stages of the take-off roll ATC advised them to climb straight ahead after departure, which they acknowledged. At a late stage of the take-off roll they saw traffic moving from S to N O/H the aerodrome approaching the RW. Concerned once airborne climbing through 300ft QNH at 180kt and to maintain separation, they made a 30° R turn. They asked ATC for information on the traffic who acknowledged that the traffic was turning S. At one point vertical separation of 200ft was seen on TCAS; however, the lateral separation was difficult to gauge as it was dark. He assessed the risk as high.

THE EC135 PILOT reports flying a dual proficiency check flight from Belfast and in receipt of a RCS from Belfast Tower on 118·3MHz, squawking an assigned code with Mode C; TCAS was fitted. The visibility was >10km in VMC and the helicopter's nav and tail HISL were switched on. The TRE was seated on the LHS and had elected to fly a demonstration cct during the night phase of the sortie being conducted in the Southern sector (S of Tower and RW25 and W of RW35 within the aerodrome boundary). They were cleared for take-off from the RW35 numbers for a LH cct not above 1000ft QNH SVFR and were also informed of IFR traffic shortly departing RW25. They conducted a CAT A clear area departure heading 350°, climbing at 40kt and increasing to 65kt and executed an early L turn at 300ft QNH onto 170° to remain S of the Control Tower in compliance with the local procedure. During the L turn ATC requested that they turn S immediately and not to fly any closer to RW25. As the TRE, the HP, had already passed through heading 270°, ATC was advised of this and the LH turn was continued onto a S'ly heading, reporting the A319 in sight. The A319 was not seen by him in the RH seat as they were in a L turn before the A319 became airborne; however, it was seen later over his shoulder about 2-3nm away when they were steady on 170° as the A319 flight was asked to report its passing level, which was 2000ft. He didn't recall receiving any TCAS TA indication and he assessed the risk as none. On completion of the sortie, ATC asked the crew to contact them by land-line and they were informed of the departing A319 crew's concern of their proximity and that ATC would be conducting a review. As he was P1 (u/s) and a local pilot, he participated in the review; however, on returning to his operational flying duties he was requested to complete an Airprox report form for the incident.

THE BELFAST ADC reports the EC135 was routeing from Crumlin back to its dispersal via RW35. The A319 flight was cleared for take-off from RW25 with a L turn to PEPOD after departure. The EC135 pilot then requested to "fly another cct" which was approved, expecting the helicopter to route S'bound back to its previous operating area. He amended the A319's departure instruction to fly on the RW track after departure as he did not want it turning towards the helicopter; at this time the A319 was already on RW25. During the A319's departure he saw the EC135 flying in a N'ly direction towards RW25 so he instructed the flight to turn L immediately to remain S of the

departing A319. The A319 crew then queried the position of the helicopter and started to turn away from it to the NW, the Capt later confirming that he turned 30° to the R after seeing the helicopter. Once the A319 was above 2000ft he cleared the flight towards PEPOD. The EC135 finished its cct and landed normally.

ATSI reports that the Airprox occurred at 1831:15 (night), at Belfast Aldergrove, within the ATZ, Class D CAS, which consists of a circle 2·5nm radius, centred on the mid-point of RW07/25 and extending from the surface to 2000ft above aerodrome elevation (268ft).

The A319 was departing IFR from RW25 on a flight from Belfast Aldergrove to London Stansted. The EC135 helicopter was operating SVFR with a locally based pilot training under the supervision of an instructor who was not locally based. The instructor had requested an additional visual cct on RW35. The Aldergrove Manual of Air Traffic Services, Part 2, Section 2-28, Paragraph 3.4, Parking area for the EC135 helicopter operations, states:

'The helicopter will park adjacent to the PSNI hangar where two pans are available. The helicopter will lift directly to/from these pans and does not require the use of runways or taxiways.'

Earlier in daylight hours, the EC135 whilst training, had been lifting from the threshold of RW35 on RW track, remaining S of the control tower line and RW25, in compliance with local procedures. The controller had been providing an ACS (Tower) for 40min prior to the incident. Workload was assessed as medium and official night was 1714 UTC (AIP SS/SR table). CAA ATSI had access to RT and area radar recordings, together with written reports from both of the pilots, the controller and ATSU investigation. The area radar recordings did not show the ac returns below an altitude of 900ft.

METAR EGAA 271850Z 25005KT 9999 SCT030 BKN040 09/07 Q1009=

The A319 flight had received an airways clearance at 1802:33, *"…cleared to Stansted via Lima one zero climb to altitude five thousand feet squawk is seven zero two five,"* which was acknowledged correctly by the A319 pilot.

The EC135 helicopter was on a training exercise and transferred from Radar to Tower at 1811:55, fully established on the ILS at 4nm. The EC135 pilot requested a go around followed by a L turn to operate over Crumlin (S of the airport) at 1000ft. The controller approved a L turn SVFR towards Crumlin.

At 1826:37, the EC135 pilot reported, *"…the southern sector I'd like to join er straight in for a 35 direction"*. The ADC cleared the flight to route to the RW35 threshold, which was correctly read back. At 1828:18, the EC135 pilot reported on final for RW35 intending to position to dispersal. The Tower controller responded, "(*EC135 c/s) route to your dispersal land at your discretion surface wind is two five zero degrees eight knots."* This was acknowledged by the EC135 pilot.

At 1828:46, the A319 flight was cleared to line up and wait RW25 and at 1829:43, the A319 was given take off clearance, *"(A319 c/s) after departure turn left on track PEPOD Runway two five cleared for take-off surface wind is two five zero degrees eight knots."* The A319 pilot acknowledged, *"???? After departure er left turn to PEPOD and cleared for take-off Runway 25 (A319 c/s)."*

At 1830:04, the EC135 instructor decided to demonstrate one more approach and transmitted, *"(EC135 c/s) er just request er one last er lefthand circuit back on Runway three five please."* The controller responded, *"(EC135 c/s) that is approved not above altitude one thousand feet please I have IFR departure will be turning left shortly."* The EC135 pilot acknowledged, *"Roger not above er altitude one thousand feet one zero one zero (EC135 c/s)."* The controller's written report and subsequent telephone conversation indicated that the controller had an expectation that the helicopter would reposition from dispersal routeing directly S of the airfield towards Crumlin for another approach to RW35.

In order to provide separation from the helicopter's southerly departure, the controller then instructed the A319 flight, *"…after departure maintain runway track initially please."* The A319 was in the early stages of the take-off roll and the A319 pilot replied, *"(A319 c/s) roger we're rolling."*

As the A319 departed, the controller observed that the helicopter was departing N and at 1831:12 the controller instructed, *"(EC135 c/s) turn left immediately do not route towards the active runway."* The EC135 pilot responded, *"Yeah we are we're er turning through two seventy now ???? in sight."* The A319 pilot transmitted, *"(A319 c/s) we*

have er traffic on the left advise." The controller replied, *"It's a Police helicopter I have both of you visual"* and, *"turning south now it's clear of you."* The unit radar recording shows that the CPA between the ac was 0·2nm (370m). The EC135 pilot's written report and subsequent telephone conversation indicated that the pilot was departing from the RW35 threshold, initially N making a L turn onto a heading of 170° but remaining S of the Tower line, in a similar manner to that approved earlier in the day.

The A319 pilot had been given take off clearance without TI regarding the EC135 helicopter. The A319 pilot's written report indicates that during the late stage of take off, traffic was observed overflying the airfield from S to N, approaching the active RW. When airborne the A319 pilot initiated a R turn of 30° to maintain separation.

At 1831:50, in response to a request from the controller, the EC135 pilot reported at an altitude of 900ft and the A319 pilot reported passing an altitude of 2000ft for 5000ft. The A319 flight was then cleared L turn on track PEPOD and transferred to radar.

The ATSU investigation report and RT recordings suggest that the controller was engaged in a conversation with the ATSA just prior to the incident, which may have been an aggravating factor in the controller misperceiving the helicopter pilot's intentions.

As a result of the incident and in consultation with CAA SRG appropriate unit action has been taken with additional training for the controller and with lessons learned material disseminated within the unit.

The A319 was already commencing the take-off roll when the EC135 helicopter pilot requested a cct on RW35. A number of factors may have caused the controller's misperception and lack of situational awareness regarding the helicopter pilot's intentions:

The controller had been in position for 40min and may not have been fully familiar with the earlier training requirements of the EC135 helicopter.

In operational circumstances the EC135 would normally lift directly from dispersal and the controller's haste in approving the cct may have reflected a pre-disposed assumption that the helicopter would depart from dispersal.

The controller's conversation with the ATSA just prior to the incident, may have been an aggravating factor in the controller misperceiving the helicopter pilot's intentions.

The Airprox occurred at night whilst the EC135 was operating SVFR. The controller was responsible for providing the separation between SVFR and IFR traffic within the vicinity of the cct. The A319 flight had been given take-off clearance before the EC135 pilot requested the additional cct. The controller approved the cct, "…*that is approved not above altitude one thousand feet please I have IFR departure will be turning left shortly."* The phraseology used was ambiguous, implying the take-off clearance but without specific instructions or TI that would have provided separation from the departing A319.

The controller mistakenly assumed that the EC135 would route from the RW35 threshold directly to the S. However the EC135 pilot's expectation was to depart into a visual cct from RW35 threshold in a similar manner to that previously approved (remaining S of the Tower line and RW25). This resulted in the A319 and EC135 departing from crossing RWs at the same time.

In the absence of any TI, the A319 pilot departed, unaware that the EC135 helicopter was approaching, at night, from the S. The A319 crew perceived that there was a conflict and the pilot took action to ensure that separation was maintained, by turning R 30° immediately after departure.

The EC135 helicopter was a training Flight (CAT Z) and the A319 should have been afforded a higher priority. Holding the EC135 until the A319 was airborne would have resolved any separation problems. The controller's haste in approving the cct was done without the use of appropriate phraseology or clearances to provide the required separation or aid the situational awareness of the pilots. MATS Part 2, Appendix E, Page 2, Paragraph 1.1, states:

'…..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.'**

When the A319 was departing IFR at night from RW25, the controller approved the departure of the EC135 SVFR from RW35, without ensuring that an appropriate form of separation existed between the 2 ac.

The following were considered to be contributory factors:

An appropriate departure clearance was not provided to the EC135 helicopter and the phraseology used by the controller was ambiguous, implying a take-off clearance without specific instructions.

The controller did not have full situational awareness of the helicopter pilot's intentions and misperceived that the helicopter would route S from the RW35 threshold.

The EC135 pilot assumed that he was cleared to make an additional cct to RW35 in a similar manner to that previously approved during the day.

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 sympathised with the A319 crew's predicament. It was during their take-off roll that ATC passed an amendment to their departure, not best practice, to climb straight ahead, which they acknowledged before they saw traffic approaching the RW from their L, apparently on a conflicting flightpath. It would have been difficult to judge the helicopter's separation from its lights in the circumstances and, concerned as to its intentions, the A319 crew turned R 30° after departure. On requesting information on the traffic from ATC, the ADC told them that he had both of them in sight and that it was turning S. The reason the EC135 had been in that position was because the ADC had assumed that the helicopter would lift from its dispersal and depart to the S. The EC135 pilot had requested "a LH cct back onto 35", after the A319 flight had been issued take-off clearance, and the ADC had hastily approved it without issuing specific instructions to take-off, route, TI or any clearance limit to its flight other than 'not above 1000ft'. The EC135 crew had been operating earlier, during daylight hours, to the S of RW25 from the RW35 threshold in accordance with normal day procedures, and although the ADC was expecting a S'ly departure from dispersal, the pilot's request for a LH cct back onto 35 should have been a clue that this expectation was incorrect. The EC135 crew did not query the ATC instruction issued, accepting it as an implied take-off clearance without specific instructions. The ADC had a responsibility to separate the 2 flights at night and it was only when he saw the EC135 transitioning to the N and heading towards RW25 that he instructed the pilot to turn L immediately and not route towards RW25. By then the EC135 was already turning through a W'ly heading and its pilot reported the A319 in sight. Members agreed that, technically, the ADC was providing reduced separation in the vicinity of the aerodrome as he had both ac in sight, but this was as the situation was unfolding, not by following a predetermined plan. With hindsight, the EC135 should have been restricted, ideally by delaying its take-off until after the A319 had departed. As it was, the A319 crew was unaware of the EC135's departure, because of the lack of TI from the ADC, which had led to their concern and which caused the Airprox.

As the EC135 pilot called for departure after the A319 flight had been given take-off clearance, the timings were not ideal for the ADC to pass TI to the A319 crew during a critical stage of flight even if he had been aware that the helicopter was going to take off towards the Airbus. As it was, by the time the ADC saw the EC135, it was already turning away and he updated the A319 crew's SA late, when they queried it. Nevertheless, although the A319 crew was unaware of the helicopter crew's intentions and turned R 30°, the EC135 pilot was always intending to turn S before reaching a line parallel to RW25 through the Tower and the unit radar recording shows the separation as 0·2nm at the CPA. These elements were enough to allow the Board to conclude that any risk of collision had been quickly and effectively removed.

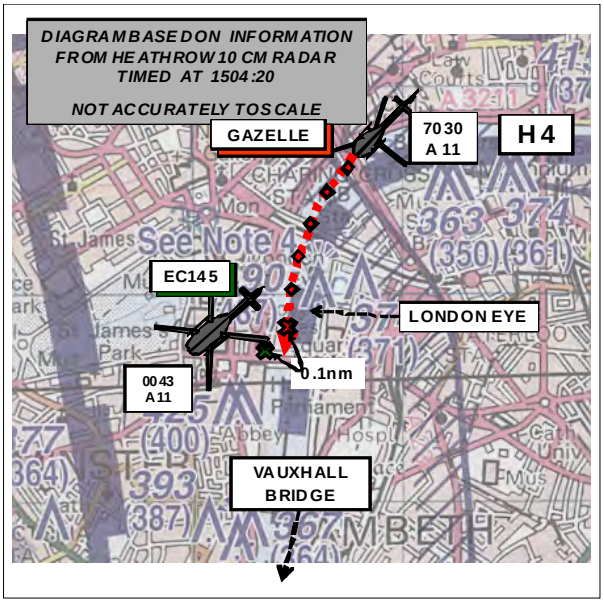
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: In the absence of TI, the A319 crew was concerned by the proximity of the EC135.

Degree of Risk: C.

AIRPROX REPORT NO 2011153

Date/Time:	29 Oct 2011 1504Z (Saturday)	
Position:	5130N 00006W	(Central London)
Airspace:	Lon City CTR	(Class: D)
	Reporting Ac	*Reported Ac*
Type:	EC145	Gazelle
Operator:	Civ Com	Civ Pte
Alt/FL:	1200ft	1200ft
	QNH (1018mb)	QNH
Weather:	VMC CLBC	NK CAVOK
Visibility:	>10km	>10km
Reported Separation:		
	0ft V/100m H	NR
Recorded Separation:		
	0 V/0.1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE EC145 PILOT reports flying a CAT B Police task in a TCAS equipped helicopter with 2 observers, in the hover (into wind heading 210°) at 1200ft over Central London. Heathrow Special VFR passed him TI on 2 helicopters heading along the river Westbound to the London Eye. He acknowledged the call and repeated that he was on the N side of the river. He was initially visual with the 2 helicopters through his rear window but became unsighted as they moved into his 6 o'clock position. Shortly afterwards he received a TA on the TCAS at which stage he yawed his ac right and saw the Gazelle at the same altitude about 1nm away and heading straight towards him. He initiated avoiding action by transitioning into forward flight on a W'ly heading as the Gazelle began a left hand turn to orbit the London Eye. He estimates that the Gazelle came within 100 – 150m of his position at the same alt.

THE GAZELLE PILOT reports flying a VFR private pleasure flight down the Thames from Stapleford in a red helicopter fitted with SSR and Mode C but no TCAS, with all lights switched on. He requested permission from London City to fly down the river to the London Eye and return. When over the Lea Valley at 1200ft (QNH), London City gave him a squawk, permission to fly the route under Radar Control and instructed him to report over Isle of Dogs [the entry to HR4] and to fly not above 2000ft. He reported over the Isle of Dogs, was advised that an EC120 was behind him and flying a similar route and he advised that he was visual with it.

As he was flying down the Thames, he was advised that there was a helicopter over Westminster at 1200ft. He then replied that he was visual with that helicopter, which was in the hover facing W/SW. London City asked if he was carrying on to the W upriver and he replied that he was just going to the London Eye and returning. When he was approaching the London Eye, he advised that he was turning and returning down the river and he decided to turn left so that he kept his distance from the police helicopter. When he was in the turn, London City instructed him to move to the N side of the river until the following EC120 had passed; after it had passed they instructed him to move to centre of river, which he complied with.

As he was flying E and coming towards the O2, he asked if he could carry on down-river towards Queen Elizabeth Bridge and was given permission to do so.

When he left the London City CTR and was no longer under RC he requested a frequency change to Stapleford.

He had the police helicopter in sight continuously until he turned left over the London Eye; on turning left he lost sight of the helicopter in the hover and continued E along the river to leave the CTR.

At no stage was he concerned about the proximity of the police helicopter.

He thought that the police helicopter was in the hover, pointing W/SW at the time of the incident and might have been surprised to see him as he turned from the hover. At no stage of the flight did he hear a transmission between Thames Radar and the police helicopter.

THE THAMES/SVFR CONTROLLER reported that the sectors were bandboxed; an EC145 was on station near Westminster and two helicopters were W'bound VFR on Helicopter Route H4, a Gazelle and an EC120. He instructed the Gazelle pilot to remain N [side] of the River Thames and to instruct the EC120 to remain S [side] of the river in order to achieve extra separation since the EC120 was closing with the Gazelle. TI was passed to all three helicopters and the pilot of Gazelle reported that he had the police helicopter in sight and vice versa. The Gazelle pilot had requested to turn back at the London Eye and the Controller reiterated that the ac was to remain on the N [side] of the river against the EC120 which was then heading in the opposite direction but on the S side.

The police helicopter then requested to return to Lippitts Hill, the controller approved this subject to the pilot being visual with Gazelle. Before he left the frequency the EC145 pilot requested the C/S of Gazelle.

He suspected that there might be an issue, so he telephoned the Metropolitan Police ASU and discussed the situation with the pilot. The pilot asked about the clearance and altitude that the Gazelle had been given, which was via H4 to the London Eye on the N side of the river at standard operating altitudes. The EC145 pilot was content with the clearance given but was extremely concerned about the airmanship of the Gazelle pilot. He stated that he had been facing into wind in a SW direction and when he turned to route back to base the Gazelle was filling his windscreen between 200 and 300m away at the same level. He questioned the airmanship of the other pilot in flying unnecessarily close to his ac and stated that he would be filing an Airprox in the interests of safety.

UKAB Note (2): An analysis of the recording of the Heathrow 10cm radar showed the incident clearly as described by ATSI and as depicted in the diagram above. The radar overlay depicting the River Thames is however, not accurate in the area of the incident and has not been depicted. The overlay of radar data onto the Helicopter Routes Chart has been done manually and cannot be regarded as fully accurate.

ATSI reports that an Airprox occurred at 1504:21 in the London City CTR (Class D airspace), at altitude 1200ft, between an EC145 helicopter and an SA341 Gazelle helicopter.

The EC145 was operating VFR on a CAT B flight to and from Lippitts Hill Helicopter Site and was in receipt of a radar control service from Heathrow SVFR/Thames Radar on frequency 125.625 MHz.

The Gazelle was operating on a VFR flight to and from Stapleford and was also in receipt of a radar control service from Heathrow SVFR/Thames Radar on 125.625 MHz.

An EC120B was also operating on the H4 helicopter route but was not directly involved in the Airprox.

The Heathrow SVFR and Thames Radar (combined) controller was providing an Approach Radar Control service in Class D airspace. CAP493, The Manual of Air Traffic Services Part 1, Section 3, Chapter 4, Page 1, Paragraph 3.1, states that:

'Separation standards are not prescribed for application by ATC between VFR flights or between VFR and IFR flights in Class D airspace. However, ATC has a responsibility to prevent collisions between known flights and to maintain a safe, orderly and expeditious flow of traffic. This objective is met by passing sufficient traffic information and instructions to assist pilots to 'see and avoid' each other as specified at ...'

CAA ATSI had access to recordings of RTF from Swanwick, area radar recordings and reports from both pilots and the radar controller.

The London City METARs are provided for 1450 and 1520 UTC:

METAR EGLC 291450Z AUTO 21010KT 180V240 9999 SCT026/// SCT035/// 16/10 Q1018=
METAR EGLC 291520Z AUTO 21011KT 180V240 9999 FEW024/// SCT030 16/10 Q1018=

AIRPROX REPORT No 2011153

At 1348:40 the EC145 pilot contacted Heathrow SVFR/Thames Radar requesting a VFR clearance into the London City CTR and he was given a VFR clearance to enter the zone not above alt 2000ft.

At 1451:00, the Gazelle contacted Heathrow SVFR/Thames Radar over the Lee Valley requesting to route over Canary Wharf and "*down the river to the eye and back*"; the pilot was given a squawk of 7030 and a clearance to enter the London City CTR, VFR not above alt 2000ft.

At 1453:00, the EC120 pilot contacted Heathrow SVFR/Thames Radar requesting to route from the Lee Valley along helicopter route H4 to Battersea; the pilot was given a clearance to enter the zone not above alt 2000ft and to follow H4 at standard operating altitudes (Max 2000ft as published in the UK AIP AD 2-EGLL-1-22, 29th July 2010). The EC120 pilot was given TI on the Gazelle and he reported visual with it.

At 1502:00, the Gazelle was given a further clearance to follow H4 on standard operating altitudes and was passed TI on the EC145, which was in the hover on the N bank of the Thames. The Gazelle reported visual with the EC145 and was instructed to remain on the N side of the Thames when he turned, against the EC120 that would then be opposite direction. The EC120 was then instructed to remain on the S side of the Thames against the Gazelle and was also given TI on the EC145. At 1502:40, the EC145 was given TI on both the other helicopters and the pilot acknowledged the information and reported remaining on the N side.

At 1504:00, the Gazelle reported turning at the London Eye and returning on the S side of the river; the controller corrected the pilot and reiterated the instruction to remain on the N side of the river and this was readback by the pilot.

The radar recordings show the Gazelle to be 0.2nm N of the EC145 at 1504:12 as the former was in the left turn tracking S.

The radar recordings show the EC145 stationary with the Gazelle passing 0.1nm (- the CPA) to the E of it at 1504:21, both ac indicating an alt of 1100ft; the EC145 then started to move W as the Gazelle turned to the E.

UKAB Note (1): The transcript of the Thames Radar frequency shows that the Police Helicopter called, *"complete"* at 1504:30. The controller responded with, *"C/S roger do you have that Gazelle off your right hand side in sight"* and the Police pilot replied, *"affirm"* and the controller responded, *"C/S with that traffic in sight you can route straight back to Lippits Hill on a direct track not above altitude two thousand feet VFR"*. The radar recording shows the CPA as being at 1504:21.

Both ac were operating VFR in Class D airspace under a RCS. The radar controller passed TI to all three helicopter pilots. The Gazelle reported visual with the EC145 before turning at the London Eye.

Radar recordings show that the Gazelle remained over the Thames, turning left at the London Eye, passing 0.1nm from the EC145 which was in the hover on the N bank of the river facing SW, away from the Gazelle. The EC145 pilot yawed the helicopter to the right in response to a TCAS TA and became concerned by the proximity of the Gazelle.

The helicopters had been provided with appropriate and timely TI by the controller while operating VFR in Class D 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 recordings, reports from the air traffic controllers involved and a report from the appropriate ATC authority.

A pilot Member experienced in this type of police operation informed the Board that pilots can feel very vulnerable operating in the hover, pointing into wind and away from traffic on the helicopter route behind them. Despite having 'land/river' separation, this can be quite small and at weekends when there is often heavy police tasking as well as sightseeing ac the area can be congested.

[Post Meeting Note: There were 2 demonstrations in Central London on the day of the incident.]

A controller Member experienced on the SVFR position pointed out that police pilots can request increased separation if the situation warrants it, but in his experience this is rarely done. He also agreed that on Saturday afternoons there are many such 'sightseeing' flights, all being flown legitimately but occasionally by pilots not fully familiar with H4. The Maximum alt for this section of H4 (outside the Heathrow CTR and VFR in Class D airspace) is 2000ft and the highest local obstacle is the London Eye (490ft) so traffic must operate at least 500ft above it. Most ac (as in this case) operate about 1000ft but there is no reason not to fly higher but still below 2000ft. Since the Gazelle pilot was aware of the police helicopter, in the Members' view good airmanship would have been to give it more vertical separation; this would not have in any way spoilt their view of the Eye.

Members noted however, that although the police pilot lost sight of the Gazelle for a short period, the latter pilot had the police helicopter in sight throughout; that being the case Members agreed unanimously that, although there might have been a lapse of airmanship, there was no risk of collision.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Gazelle pilot flew close enough to the EC145 to cause its pilot concern.

Degree of Risk: C.

AIRPROX REPORT No 2011154

AIRPROX REPORT NO 2011154

Date/Time:	26 Oct 2011 1130Z	
Position:	5059N 00253W (2¼nm NE of Merryfield A/D - elev 146ft)	
Airspace:	Merryfield ATZ/CMATZ (Class: G)	
	Reporting Ac	*Reported Ac*
Type:	Lynx HAS 3	PA28R
Operator:	HQ Navy	Civ Trg
Alt/FL:	2000ft	2000ft
	QFE (998mb)	RPS (999mb)
Weather:	VMC CLOC	VMC CLOC
Visibility:	30km	10km
Reported Separation:		
	Nil V/50-100m H	NR
Recorded Separation:		
	0·1nm H	

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE LYNX HAS3 HELICOPTER PILOT, a QHI and the PIC, reports he was operating at Merryfield on a training sortie whilst in communication with Merryfield TOWER on 378·525MHz under a PS he thought - but actually a BS. A squawk of A0203 was selected; Modes C and S are not fitted, nor is TCAS. The helicopter is coloured grey and the red anti-collision beacon was on.

Whilst conducting a practice instrument departure from Merryfield's RW21LHC and within the bounds of the cct pattern, heading 030° at 120kt the helicopter was levelled at 2000ft Merryfield QFE (998mb) in VMC. The PF – who was using an IF hood - conducted his instrument cross-check with the safety pilot [the QHI] monitoring and who was also maintaining the look-out. A MATZ crosser which could have been a confliction had been broadcast on the Merryfield TOWER frequency and although he was actively searching for it he had not spotted it; no indication of the range from Merryfield had been given in TOWER's broadcast, he thought. After he looked in to confirm the correct SSR setting, he looked back up to check the ac was clear to turn L and head N when he saw a white low-wing aeroplane with blue markings at the same height, travelling in the opposite direction wings level just L of the nose about 2-300m away. Taking control of his helicopter and to avoid the other ac – the PA28 – he banked sharply to the R into a level turn as the aeroplane passed about 50-100m to port with a 'high' Risk of collision. Once clear, he turned through 180° to check on the PA28 and saw that it was still maintaining track at the same height. He therefore assumed that the PA28 pilot had not seen his helicopter. He called Merryfield TOWER advising that there had been a 'close shave' with the PA28 crossing the MATZ. On reflection, he assessed that an Airprox had occurred and reported the incident as such on the Yeovilton GROUND frequency about 10min later as they were taxying into dispersal.

THE PIPER PA28R PILOT reports that he had departed from Bournemouth on a VFR training flight and was in receipt of a BS from Yeovilton LARS on 127·350MHz in VMC. The assigned squawk [A0242] was selected with Mode C; neither TCAS nor Mode S is fitted. Overhead Merryfield heading 200° at 120kt in a level cruise at 2000ft RPS, he has a vague recollection with one Lynx low to his L and one Sea King low operating in the Merryfield cct. He does not recall any Risk and therefore no avoiding action was necessary.

His aeroplane is coloured white, red and blue; the strobes were on.

THE MERRYFIELD AERODROME CONTROLLER (ADC) reports that during a busy period at Merryfield with 6 helicopters in the cct in total, 2 helicopters were given visual departure instructions. Immediately afterwards, the subject Lynx pilot called to say he was 'exercise complete' and requested an IFR release to return to Yeovilton via

a PAR. In accordance with SOPs, he obtained a release from Yeovilton APP [at 1127:20] and read back the instruction 'released standard VFR squawk 0203'. This was then passed to the Lynx crew, who duly read it back, asking additionally, 'will that be for RW09 or RW22'. Advising the crew to standby whilst he contacted YEOVIL APPROACH (APP), the LARS controller answered the line and immediately asked for a MATZ Crossing, N – S 1nm E of Merryfield A/D at 2000ft. He approved the MATZ Crossing and asked the controller to confirm which RW was being used for the Lynx's PAR. The reply from LARS was a bit woolly, with the controller unable to confirm, but he thought it would be RW22. As other transmissions were being made on his Merryfield TOWER frequency his attention was divided but RW22 made sense in view of the recovery state and prevailing wind so he passed 'expect RW22' to the Lynx crew, who acknowledged. Once he had confirmed the positions of his remaining cct traffic, he broadcast 'all stations, MATZ crosser North to South, passing 1 mile East at 2000 feet'. About 2min later, the Lynx crew called on the RT, '[Lynx C/S] is MATZ boundary to the North, channel 3, be advised, we've just had a fairly close shave with the MATZ crosser'. He asked the Lynx pilot to advise the APPROACH controller if he wished to pursue the issue, but he was not visual with the MATZ crossing ac at any point.

THE YEOVILTON LARS CONTROLLER (LARS) reports that the PA28R was operating to the N of Yeovilton on a VFR NAVEX under a BS at 2000ft Portland RPS (999mb), squawking A0242. At a position about 14nm N of Merryfield the pilot asked for a MATZ penetration of Merryfield. Initially, the PA28R pilot was told to expect approval in 10nm in order to make the MATZ crossing information more relevant and accurate for the Merryfield ADC. When the PA28 was 4nm NE of Merryfield a MATZ crossing was requested, N to S to pass 1nm E of Merryfield at 2000ft (999mb) and approved by Merryfield TOWER; this MATZ crossing approval was relayed to the PA28R pilot. With the PA28R at a range of between 1-2nm NE – maintaining about 1nm lateral clearance to the E of Merryfield an ac squawking A0203 – the Lynx - was observed about ½nm S of the PA28R's position, tracking NE. As it was known from the pre-note and APP controller's fps to be climbing to 2000ft, under a 'duty of care' he called this traffic to the PA28R pilot who reported visual with the traffic [at 1130:49 from the RT transcript]. Once the PA28R was clear of the MATZ Merryfield TOWER was informed. The PA28R pilot reported changing en-route when the aeroplane was about 5nm S of Merryfield A/D.

THE YEOVILTON APPROACH CONTROLLER (APP) reports he had no traffic under service, but was expecting an ac from TALKDOWN shortly to overshoot for a further approach, when he answered a call from the Merryfield ADC for a release on the Lynx. After checking the radar for conflictions he issued a standard VFR release from Merryfield - to depart on a heading of N climbing to 2000ft Merryfield QFE iaw Yeovilton Air Orders (YAvOs) Art 0304.5 - and to squawk A0203. There was an ac squawking A0242 [the PA28R] to the NE of Merryfield heading S at about 2300ft, but no confliction for the procedure. The Lynx pilot finally called him to the NNE of Merryfield at 2000ft heading 030°, complaining of close proximity with another ac, but the pilot did not report an Airprox to the Merryfield controller or APP at the time.

THE YEOVILTON RADAR SUPERVISOR (SUP) reports he was informed of this incident by the OIC Merryfield on the direct landline. He was advised that the Lynx pilot, on climb out for a radar pick up for GCA at Yeovilton had reported a 'close shave' with the civilian Merryfield MATZ crossing traffic that was passing 1nm E of Merryfield N – S at 2000ft. The PA28R MATZ crosser was shown on his radar display flying this profile. When the Lynx pilot initially called APP the helicopter was clear of the Merryfield MATZ. When he discussed the incident with the Lynx pilot about 15min after the incident he enquired whether the pilot was VFR on his climb out and questioned his departure on a NE track as opposed to the standard VFR release profile to the N, which the pilot replied would have infringed the cct pattern at Merryfield. He then clarified that the Lynx pilot was declaring an Airprox as this had been mentioned whilst he was taxying to dispersal.

UKAB Note (1): The UK AIP at ENR 2-2-2-3, promulgates the Merryfield ATZ as a circle radius 2½nm centred on RW09/27 extending to 2000ft above the A/D elevation of 146ft.

UKAB Note (2): The UK AIP at ENR 2-2-3-2, promulgates the non-standard Merryfield MATZ as a circle radius 3nm centred on RW09/27 extending to 3000ft above the A/D elevation of 146ft.

UKAB Note (3): The LAC System recording shows the Lynx departing from the vicinity of Merryfield on a NNE'ly track – NMC fitted – as the PA28R is shown approaching from the NNE level at 2500ft (1013mb) – about 2050ft Merryfield QFE (998mb). The two ac converge on a point 2¼nm NE of Merryfield at 1130:52, before passing port-to-port with 0·1nm horizontal separation evident.

AIRPROX REPORT No 2011154

YEOVILTON reports that in accordance with YAvOs 0304.5, aircraft departing Merryfield for radar pick up for PAR are to depart VFR. The flight is subject to a radar release from APP or SUP, which is then relayed to the pilot prior to him being given clearance to depart the Merryfield cct. Aircraft released 'standard VFR' are to carry out a normal VFR cct departure and, when clear of the Merryfield cct, fly heading 360°, climb to 2000ft Merryfield QFE and call APP on Channel 3. Pilots must maintain VMC until the ac has been identified and placed under an ATS by APP. Additionally, YAvOs specifically states at article 0304.4 that if a departure from Merryfield is required on a track between 030° and 150°, a clearance must be obtained from the SUP. The Lynx was released 'standard VFR', so APP was expecting the Lynx to depart Merryfield heading 360°. Radar releases to departing traffic are given to ensure the protection of IFR traffic flying outside of the Merryfield cct; this is especially prevalent when Yeovilton is operating on RW09RH. The Lynx called APP level at 2000ft heading 030°, which directly contravenes YAvOs.

UKAB Note (4): DSATCO YEOVILTON advises that following the Station's review of this Airprox the existing procedure was clarified in order to remove any potential for ambiguity. The applicable order within YAvOs relating to departures from Merryfield requiring a radar pickup for GCA was slightly reworded. However, in this case the Lynx pilot did not follow that procedure.

HQ NAVY COMMAND comments that the practice instrument departure procedure from Merryfield (a VFR only A/D) has been in YAvOs for many years and is used routinely. It is defined as being a VFR procedure and allows the helicopters to depart to the N for a radar pick-up by APP before being turned into the radar pattern for whichever runway is in use at Yeovilton. There are laid down procedures for the use of dual runways at Yeovilton when in certain configurations with practice IFR recoveries able to be conducted to RW22 when RW09 or RW27 are the duty RW. The pilot of an ac leaving Merryfield should be aware of what the duty runway is as this affects the VFR route configuration. However, the route configuration is not relevant when conducting a standard VFR departure for radar pickup, which is always to depart on a heading of 360°. The Merryfield ADC obtained the correct departure instructions and broadcast all of the relevant information, including the position and altitude of the MATZ crosser, this does not seem to have been assimilated by the Lynx pilot, who should not have departed on a heading of 030° and should have maintained VFR until identified by APP and placed under an ATS. The Lynx pilot contravened local orders for this departure profile causing him to fly his ac close enough to the MATZ crosser to cause himself concern; had he not done so the Airprox was unlikely to have occurred.

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 evident to the Board that the PA28 pilot had requested a crossing of Merryfield MATZ in good time, which had subsequently been relayed by LARS and approved by the Merryfield ADC, who broadcast to A/D traffic, including the subject Lynx crew, that the PA28R would pass 1nm E of Merryfield at 2000ft. The Navy Command Member emphasised that the Lynx crew was in receipt of a BS as they departed Merryfield under VFR, not the PS that the reporting pilot had supposed. As this departure is a VFR procedure there was no intention to separate the two ac and it remained the Lynx pilot's responsibility, whilst departing from the vicinity of Merryfield A/D, to 'see and avoid' the PA28R. The Lynx pilot reports that he had heard the broadcast on the Merryfield TOWER frequency about the MATZ crosser and he was actively searching for it; however, he did not spot it until after he looked back out of the cockpit to clear the L turn onto N when he saw the PA28R 2-300m away just L of the nose at the same height. A pilot Member was critical of the QHI for cross-checking here when he was required to maintain the lookout; with the PF 'under the hood' and other traffic known to be passing to the E of the A/D, scanning out of the cockpit should have been his first priority. The Navy Command Member agreed with the Unit view that the Lynx crew should not have departed on a heading of 030° without approval, but should have been heading N whilst maintaining VFR until identified by APP and placed under an ATS. If they had done so the conflict would not have arisen because the Lynx would have been further to the W. The radar recording shows the PA28R maintaining a level cruise at about 2050ft QFE (998mb) on a course to pass more than 1nm E of Merryfield as it converged with the Lynx that was tracking about 030° and broadly head-on climbing to 2000ft QFE. At this virtually head-on aspect, with little crossing motion to draw attention to it, the white coloured PA28R would not have been easy to spot but the Lynx crew had been pre-warned about it and the PA28R was there to be seen by the safety pilot as the helicopter climbed up to the PA28R's notified height. However, the Lynx safety pilot did not see the PA28R until a very late stage, which resulted in him taking control from the PF that was 'under the hood' and effecting robust avoiding action at a point about 2nm NE of Merryfield. The avoiding action R turn by the Lynx is just

detectable on the recording, as is an earlier slight R turn of no more than 10° by the PA28R at a range of about 0·9nm, before the two ac pass port-to-port about 0·1nm apart and broadly in accord with the separation reported by the Lynx pilot. The PA28R pilot, who also had a mutual responsibility to avoid the Lynx in this broadly head-on situation, stated in his written account that he recalled 'one Lynx low to his L' but no avoiding action was necessary. Evidently LARS had passed a warning to the PA28R pilot about the Lynx approaching from the S and the RT transcript reflects that the PA28R pilot reported visual with the helicopter, but it was not clear if it was the controller's warning that prompted the sighting or whether he had seen it beforehand at greater range and turned. Nevertheless, it was apparent that the Lynx crew did not follow promulgated Merryfield departure procedures and flew into conflict with the PA28R crossing the MATZ, which the Board agreed was the Cause of the Airprox. The Board also concluded, unanimously, that at these distances with the Lynx safety pilot unsighted until a late stage, the safety of the ac involved had been compromised.

PART C: ASSESSMENT OF CAUSE AND RISK

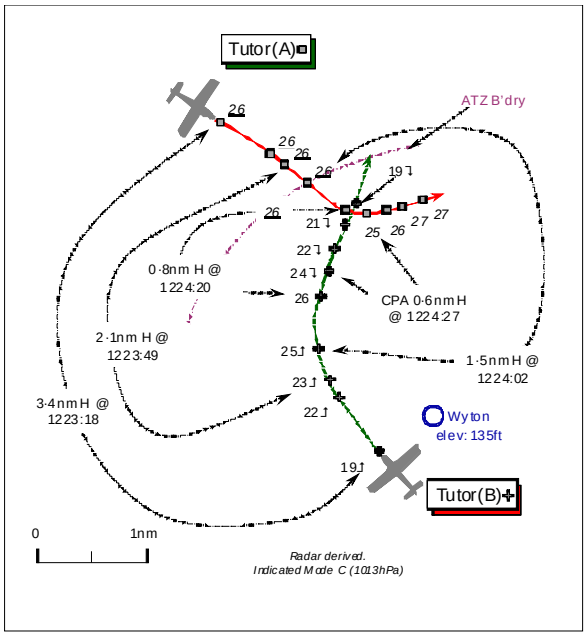
Cause: The Lynx crew did not follow promulgated Merryfield departure procedures and flew into conflict with the PA28R crossing the MATZ.

Degree of Risk: B

AIRPROX REPORT No 2011155

AIRPROX REPORT NO 2011155

Date/Time:	31 Oct 2011 1224Z	
Position:	5219N 00008W (2nm NNW of Wyton - elev 135ft)	
Airspace:	London FIR/ATZ	(Class: G)
	Reporting Ac	*Reporting Ac*
Type:	Grob Tutor TMk1	Grob Tutor TMk1
Operator:	HQ Air (Trg)	HQ Air (Trg)
Alt/FL:	2500ft	↑2000ft
	QFE (1008mb)	QFE (1008mb)
Weather:	IMC In Cloud	VMC CLBC
Visibility:	Nil	10km
Reported Separation:		
	NK	800ft V/0·55nm H
Recorded Separation:		
	Nil V @ 0·8nm H	
	0·6nm Min H @ 100ft V	



BOTH PILOTS FILED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PILOT OF GROB TUTOR T MK1 (A) reports he was completing a local training sortie and initially contacted Cottesmore RADAR [ZONE] on 130·20MHz to commence the recovery to Wyton. As they were above 8/8 cloud it was decided that a QGH recovery [a controlled descent through cloud using VDF] should be flown into the A/D to get VMC below. Initial descent to 4000ft was executed with Cottesmore ZONE under a TS. Upon switching to Wyton APP on 134·050Mhz, a descent was initiated to 2500ft Wyton QFE (1009mb) under a PS. During the VDF homing to the A/D O/H from the NW, heading 140° at 100kt whilst still IMC in cloud, his Traffic Alerting System (TAS) enunciated a traffic warning for a contact displayed at 1o'clock less than 1nm away and 100ft below his aeroplane. To avoid it a L turn was executed, away from the contact, onto a heading of 090° and once clear of the contact the remainder of the APP was flown without incident. He assessed the Risk as 'medium' but did not estimate the separation.

His aeroplane is coloured white; the HISLs, nav lights and landing light were all on. The procedure squawk of A4601 was selected with Mode C; elementary Mode S is fitted.

THE PILOT OF GROB TUTOR T MK1 (B) reports that his student had not flown for some time and so he planned to complete some upper-air GH as refresher training, before returning to the visual cct at Wyton. The RW in use was RW15, due to a moderate S'ly wind, with BKN cloud at around 2000ft agl although gaps were beginning to appear. He had booked a SID-1B with Wyton ATC, received a clearance and got airborne from RW15. Passing 1000ft Wyton QFE (1009mb) in the climb, he turned R onto a heading of 300° enabling him to maintain the required SID track of 310°. As he was turning, ATC informed him that QGH traffic – Tutor(A) - was homing from the NW. After acknowledging the call from Wyton he switched frequency and free-called Cottesmore RADAR [ZONE] on 130·200Mhz for a TS, passing his position, the squawk assigned and type of SID he was flying.

Cottesmore were having difficulty identifying him, as they had on a previous sortie that day, so he levelled the ac at what he thought was 2000ft Wyton QFE. He was very aware of the inbound QGH traffic but felt uneasy as his TAS was displaying no other ac within the parameters he had set - 5nm and +/- 2,700ft - and he felt as though the incoming ac should have been visible on the TAS display by then, which it was not. With this in mind, he informed Cottesmore he was turning R onto a heading of 360° in an attempt to increase separation on the other ac. Flying at 80kt, predominantly in IMC, although in and out of some large gaps and in between layers, TAS remained clear of other traffic until a TA sounded. As this occurred he was VMC in clear air and he elected to initiate a rapid decent

to 1500ft, away from the conflicting ac. Whilst at all times remaining out of cloud and in sight of the ground, he never saw the other ac. The conflicting ac was within 15-30 sec closure and he estimated the minimum separation was 0·55nm and about 800ft vertically, with a 'high' Risk of collision. Maintaining 1500ft until he was sure he was completely clear of the traffic, TAS was now indicating the other ac was in his 4 o'clock. At that point Cottesmore ZONE had positively identified his ac so he climbed in VMC and completed the sortie.

His aeroplane is coloured white; the HISLs, nav lights and the landing light on the lower part of the engine cowling were all on. Elementary Mode S is fitted.

THE WYTON APPROACH CONTROLLER (APP) reports Tutor(A) was on a QGH homing at 2500ft. As Tutor(A) was getting close to the O/H, the pilot advised that he had a TAS warning of traffic 100ft below within 1nm and was taking avoiding action. The other ac was not on frequency but believed to be Tutor(B).

THE COTTESMORE ZONE CONTROLLER UNDER TRAINING [SATCO] reports that all equipment was serviceable but the primary radar filters were in use. The weather was fine but a cloud layer had resulted in a number of ac conducting cloud-breaks and IFR procedures throughout the morning. Traffic had been brisk and of medium intensity for much of the preceding period, but at the time of the Airprox he considered the traffic intensity was low.

At 1221, just before the Airprox, he had released Tutor(A) to Wyton ATC for a QGH procedure N of the A/D, cleared to 2500ft Wyton QFE iaw SOPs. Another Tutor switched en-route and at 1222, the pilot of Tutor(B), which had been prenoted out of Wyton for an IFR departure, called. There was no radar contact in Tutor(B)'s reported position on either primary or secondary radar so whilst looking for the contact the time was utilised obtaining the pilot's intentions. He expected Tutor(B) to maintain a NW'ly track climbing to 2000ft QFE in accordance with the SID-1B, but then the pilot reported turning onto N. Tutor(A) could be seen established on the QGH procedure, still indicating 2500ft Mode C. In the absence of a radar contact on Tutor(B), but cognisant that the pilot required a TS, he called Tutor(A) to him in relation to Wyton A/D. About halfway through the transmission the squawk appeared with Tutor(B)'s Mode C only 200ft below Tutor(A). The Controller then identified Tutor(B) and updated the TI.

BM SAFETY MANAGEMENT reports that Tutor(A) had been in receipt of a TS from Cottesmore ZONE until 1221:22, whilst descending to 2500ft Wyton QFE (1008mb) for the QGH procedure. The pilot of Tutor(A) switched to APP, 6.3nm NW of Wyton, passing through 4100ft QFE.

At 1222:44, the pilot of Tutor(B) contacted Cottesmore ZONE, in a right turn onto NW 1nm S of Wyton, indicating 1400ft Mode C, following SID-1B. The ac was 31nm SE of Cottesmore [therefore outwith theoretical radar coverage of the Cottesmore SRE]. Flights departing on this profile should 'Climb on RW track to 1000ft QFE, then turn right onto track 310°, climbing to 2000ft QFE. At 2000ft QFE pilots should free-call Cottesmore LARS 130.2.' At this point, Tutor(A) was 4.3nm NW Wyton descending through 2900ft. The pilot of Tutor(B) reported that prior to leaving Wyton's frequency, they were advised of Tutor(A) conducting the QGH from the NW.

At 1223:20, ZONE asked the pilot of Tutor(B) his intentions and was informed that they were, *"requesting a traffic service to get victor mike on top currently passing 1 thousand 9 hundred feet on 1-0-0-8."* ZONE replied that they were still looking for Tutor(B) on radar, later reporting that there was no primary or secondary contact in the ac's reported position. The ATCO IC added that this 'had been the case with every Tutor climbing out of Wyton that day.' This is likely to have been due to a combination of the selection of the processing filters on the primary radar and the height of the ac on initial contact versus their range from the radar source, both primary and secondary.

At 1223:48, Tutor(B)'s pilot advised ZONE that he was, *"coming right heading north*." The pilot later reported that this turn was to increase separation against Tutor(A) as he felt uneasy that the ac was in the vicinity and yet not displayed on their TAS. At this point, Tutor(A) was 2.3nm NNW of Tutor(B) indicating 2600ft; Tutor(B) was indicating 2200ft. Unfortunately, the turn onto N by Tutor(B) introduced a conflict between the 2 ac.

At 1224:02, ZONE informed the crew of Tutor(B) that he still could not detect the ac on radar and that there was, *"traffic to the...bearing from Wyton 3-4-0 3 miles south-east bound on the Q-G-H, similar height."* The Tutor(B)'s pilot replied that he was, *"correcting"* and, on the radar recording seems to have turned R onto a NNE'ly track, further into confliction. At this point Tutor(A) was 1.5nm N of Tutor(B), maintaining 2600ft (1013mb), with Tutor(B) climbing through 2400ft (1013mb). This suggests that Tutor(A) was maintaining 2450ft Wyton QFE (1008mb) and

that Tutor(B) had climbed to about 2250ft Wyton QFE. ZONE reported that halfway through his transmission at 1224:02, Tutor(B)'s SSR was displayed, hence ZONE's use of the phrase *"..similar height."* Immediately following the pilot of Tutor(B)'s reply that he was *"correcting",* ZONE transmitted at 1224:17, "[Tutor(B) C/S] *identified, that traffic in your 12 o'clock, range of half a mile* [radar replay shows 1nm], *southeast bound, similar height."* [At 1224:20, the radar recording shows Tutor(B)'s SSR Mode C indicated 2600ft - 2450ft Wyton QFE (1008mb) – some 450ft above the procedure height.]

At 1224:25, the pilot of Tutor(A) commenced a turn onto E, correlating with his report, following a TAS Traffic Warning whilst IMC; simultaneously, Tutor(B) commenced a descent having reported at 1224:23 that they were, *"level at 2 thousand feet."* The CPA occurred at 1224:27 as Tutor(A) passed 0.6 nm NNE and 100ft above Tutor(B).

From an ATM perspective, ZONE acted correctly by providing the crew of Tutor(B) with as much information as was available, updating that information as soon as Tutor(B) appeared on their surveillance display. It appears that the crew of Tutor(B) un-intentionally climbed through 2000ft Wyton QFE. This Airprox represents a conflict in Class G airspace, as a result of a level-bust by the crew of Tutor(B), which was resolved by both pilots acting in accordance with their TAS information. However, it also represents a salutary reminder of the limitations of that information, the risk inherent in flight in IMC in the absence of a surveillance based ATS and the implications of cockpit distraction.

ATSI reports that the Airprox occurred in Class G airspace, 2nm NNW of Wyton and just above the Wyton ATZ, which comprises a circle radius 2½nm centred on RW09/27, extending from the surface to 2000ft above the aerodrome elevation of 135ft.

Tutor(A) was operating IFR on a training exercise returning to Wyton for a QGH recovery in IMC and in receipt of a PS from Wyton APP. Tutor(B) had departed Wyton on an IFR SID-1B, for a training exercise and was in receipt of an ATS from Cottesmore ZONE.

Wyton Aerodrome and Approach control were operating without the aid of surveillance equipment. The controllers are located in adjacent positions and the ADC was providing training as an OJTI. RW15 was reported as the runway in use. ATSI considered the workload to be medium.

The Wyton 1150UTC METAR was: 18012KT 9999 BKN014 16/13 Q1013 GRN= (QFE 1008)

At 1218:50, Cottesmore pre-noted Wyton APP with details on Tutor(A), 12nm NW of Wyton, inbound for a QGH approach. Wyton APP gave an acceptance level of 2500ft, Wyton QFE (1008mb).

Tutor(B) departed from Wyton at 1221 following the pre-booked SID-1B departure:

'RW15: Climb on RW track to 1,000 QFE, then turn right onto track 310, maintaining VMC climbing to a maximum of 2,000 QFE. By 2,000 QFE pilots should freecall Cottesmore LARS 130.2. Pilots are not to climb above 2000ft until cleared.'

The Wyton Manual of Air Traffic Services (MATS) Part 2, Section 2, Paragraph 1.6, states:

'IFR departures and arrivals

Provided that standard vertical separation is maintained between departing aircraft and aircraft homing to Wyton, IFR departures may be released prior to QGH traffic reaching the Wyton overhead

Vertical separation is to be maintained until:

Departing ac under the control of a neighbouring radar unit.

Ac departing IFR will then be separated in accordance with the requirements specified in CAP774. Departing ac are not permitted to climb above a height of 2000' until instructed by radar. Radar units will provide lateral separation from QGH ac (with a squawk of 4601) in accordance with MATM and CAP774.'

Tutor(A) contacted Wyton APP at 1221:30, passing 4700ft heading 140°. APP instructed the pilot of Tutor(A) to squawk A4601 and agreed a PS; this was acknowledged correctly and APP instructed him to descend to a height of 2500ft QFE (1008mb). The controller advised the weather code of 'F', with the QFE 1008mb and the CHATHAM RPS also 1008mb.

At 1221:57, radar recordings show Tutor(B), just S of Wyton, displaying a Cottesmore squawk A3732, indicating 800ft Mode C (1013mb); Tutor(A) is 5.3nm NW of Wyton squawking A4601, indicating 3600ft Mode C (3450ft QFE). The Wyton TOWER controller advised the pilot of Tutor(B) about the inbound QGH traffic [Tutor(A)] homing to the overhead from the NW and the pilot of Tutor(B) reported changing frequency to Cottesmore ZONE.

The pilot of Tutor(A) reported levelling at 2500ft QFE at 1223:45, APP confirmed the QGH approach for RW08 (minima 550ft), to break off at 3nm and then join for RW15. This was correctly acknowledged by the pilot of Tutor(A). The APP controller then commenced the QGH procedure by instructing the pilot to turn onto a heading of 145°, followed by subsequent transmission (bearing) checks and confirmation of the heading of 145°.

At 1224:08 the controller asked Tutor(A)'s pilot to make a long transmission. The pilot responded, "[Tutor(A) C/S] *is coming left 0-9-0 with a TAS contact on the nose."* The controller responded, "[Tutor(A) C/S] *roger con-maintain VFR now"* and the pilot replied, *"...unable I'm already India Mike at 2 thousand 5 hundred feet steady...0-9-0."* APP asked the pilot to report, *"..when happy to continue under control."*

[At 1224:20, radar recordings show Tutor(A) 2.2nm NNW of Wyton, tracking SE, indicating 2600ft Mode C (2450ft QFE). Tutor(B) is shown 1.5nm NW of Wyton, squawking A3732, also indicating 2600ft Mode C (2450ft QFE) and turning R towards Tutor(A). The distance between the two ac was 0·8nm. The CPA is shown at 1224:27, with Tutor(A) tracking E at 2500ft (2350ft QFE), with Tutor(B), 0.6nm to the SW commencing a L turn and indicating 2400ft (2250ft QFE). At 1224:39, Tutor(A) is indicating 2700ft (2550ft QFE) with Tutor(B) at 2100ft (1950ft QFE).] Tutor(B) is shown passing 0.6nm behind, as the pilot of Tutor(A) reported, *"..I've got a ca-TAS contact just going behind now"*; shortly afterwards the pilot of Tutor(A) reported, *"happy to continue".* The QGH was completed and at 1228:31, the pilot of Tutor(A) reported good VMC and breaking off the procedure to position for initials for RW15. APP agreed a BS and instructed a change of squawk to A7000; the pilot of Tutor(A) then changed to TOWER.

The Unit indicated that the APP controller had an expectation that Tutor(B), on departure, would follow the IFR SID-1B, climbing to maintain 2000ft QFE and would only climb further when instructed by Cottesmore ZONE. The QGH traffic, Tutor(A), was required to maintain 2500ft QFE until reaching the O/H and this provided the 500ft separation required in accordance with local procedures. In discussion, the ATSU indicated that TI passed by APP may have aided the SA of the pilot of Tutor(A), but may not have been considered essential by the controller, as no confliction existed.

Radar recordings show that Tutor(B) climbed to 2600ft Mode C - a height of 2450ft QFE. Both pilots responded to their TAS warnings, but neither pilot acquired the other visually. Tutor(B) then descended to a height of 1950ft.

The pre-booked IFR SID-1B, required the pilot of Tutor(B) to maintain VMC and not climb above 2000ft QFE until cleared. Aircraft departing IFR are not permitted to climb above 2000ft QFE until instructed by ZONE. The pilot of Tutor(B) was aware of the inbound QGH traffic, but it was not clear why the pilot climbed to a height of 2450ft and turned towards Tutor(A) whilst in receipt of an ATS from Cottesmore ZONE.

The QGH procedure required the pilot of Tutor(A) to maintain 2500ft QFE to the O/H. Traffic information may have aided the SA of the pilot of Tutor(A) regarding the IFR departure of Tutor(B). However, APP considered that no confiction existed as Tutor(B) was in receipt of a service from Cottesmore ZONE and would not climb above a height of 2000ft QFE until clear of the QGH traffic. Tutor(A) was in receipt of a PS. CAP774, UK Flight Information Services, Chapter 5, Page 1, Paragraphs 1 and 5, state:

'A Procedural Service is an ATS where, in addition to the provisions of a Basic Service, the controller provides restrictions, instructions, and APP clearances, which if complied with, shall achieve deconfliction minima against other aircraft participating in the Procedural Service. Neither traffic information nor deconfliction advice can be passed with respect to unknown traffic.'

'The controller shall provide traffic information, if it is considered that a confliction may exist, on aircraft being provided with a Basic Service and those where traffic information has been passed by another ATS unit; however,

there is no requirement for deconfliction advice to be passed, and the pilot is wholly responsible for collision avoidance. The controller may, subject to workload, also provide traffic information on other aircraft participating in the Procedural Service, in order to improve the pilot's situational awareness.'

'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.'

Tutor(B) turned off the 310° track and climbed above the 2000ft height requirement of the SID-1B departure route. This resulted in the two ac flying into conflict and caused the pilot of Tutor(A) to be concerned about the close proximity of Tutor(B).

UKAB Note (1): Subsequent to this Airprox, the Wyton Flying Order Book at Section B, Part 2, Order No 9 (3) was amended to reflect that:

'VMC must be maintained throughout all QGH recoveries....'

HQ AIR (TRG) comments that the crews of both Tutors were aware of the presence of the other and took actions to remove any risk of collision. The climb above a cleared height created the conflict by eroding a robust procedural deconfliction system. The fact that Tutor(A) was in IMC added to the concern because it made a visual sighting impossible; however, this is always a possibility with any IMC departure or arrival and the procedures are able to cater for this possibility.

This incident highlights the importance of maintaining cleared heights and the potential for misjudging an avoidance turn when it is based on limited situational awareness information. The performance of TAS was mixed but broadly in line with current expectation. It provided sound information for Tutor(A) to act upon to minimise separation loss, and potentially provided Tutor(B) with the information that triggered his rapid descent, which also helped minimise separation loss. As such, TAS was effective.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The pilot of Tutor (A) reported that he had encountered IMC when the Airprox occurred; therefore, having switched from Cottesmore ZONE, Members recognised that he was relying on his ac's TAS and the PS from Wyton APP to help him discharge his responsibilities to avoid other traffic in Class G airspace. Plainly APP could only provide separation against other known traffic participating in the PS but had not warned the pilot of Tutor(A) about Tutor(B) departing on the SID-1B beforehand. However, Members understood why the APP controller would have expected that 500ft separation would be maintained between Tutor(A) maintaining 2500ft QFE for the homing and Tutor (B), if the latter did not climb above the prescribed height for the procedure of 2000ft QFE before the flight was established under a radar service with ZONE. Without an SRE Wyton APP was 'blind' to any other traffic in the vicinity and the controller would have been unaware that Tutor(B) had exceeded the prescribed height for the procedure before he had been identified by ZONE, so APP was powerless to intercede. As it was, Tutor(A)'s TAS detected Tutor(B) and provided a warning of Tutor(B) closing from the S, thereby enabling the pilot of Tutor(A) to take positive action to resolve the conflict by turning away to the L, which helped ensure that the ac got not closer than 0·6nm horizontally.

The ADC showed sound awareness when he issued a warning to the pilot of Tutor(B) about the QGH traffic homing to the overhead, which may have prompted the swift change of frequency to Cottesmore ZONE. However, with Tutor(B) climbing slowly out of the ATZ towards the point of conflict over 31nm from Cottesmore, the ac was only just entering radar coverage as the Airprox developed. With the primary radar filters deployed it was not surprising to controller Members that the Cottesmore SRE did not detect Tutor(B) until later. Moreover, with Cottesmore's SSR data sourced from Cranwell, it was understandable that Tutor(B)'s Mode C was not seen by ZONE until it was only 200ft below Tutor(A). The Board concured that ZONE had done all that might reasonably be expected under the circumstances; although the pilot of Tutor(B) had reported climbing to get VMC on top, he had not explicitly stated he was climbing above the prescribed SID height. Whilst the pilot of Tutor(B) elected to turn R onto N – off the SID – in an attempt to resolve the confliction, it was plain to pilot Members that his mental

air picture was incorrect as the R turn meant he was still converging on Tutor(A) until he initiated his avoiding action descent. Members noted that Unit orders require the SID to be flown in VMC and opined that turning off the SID was unwise without better SA on the conflicting Tutor(A), which was not displayed on Tutor(B)'s TAS until a late stage. Although the pilot of Tutor(B) had expressed concern over the performance of his TAS, the Air Cmd Member stressed it was broadly in line with expectations and did eventually enable the pilot of Tutor(B) to fly clear beneath and astern of Tutor(A). The Members agreed unanimously that the Cause of the Airprox was that the pilot of Tutor(B) had climbed above the height prescribed for SID-1B. However, it was evident to the Board that the robust avoiding action executed by both pilots had removed any Risk of a collision in the circumstances conscientiously reported here.

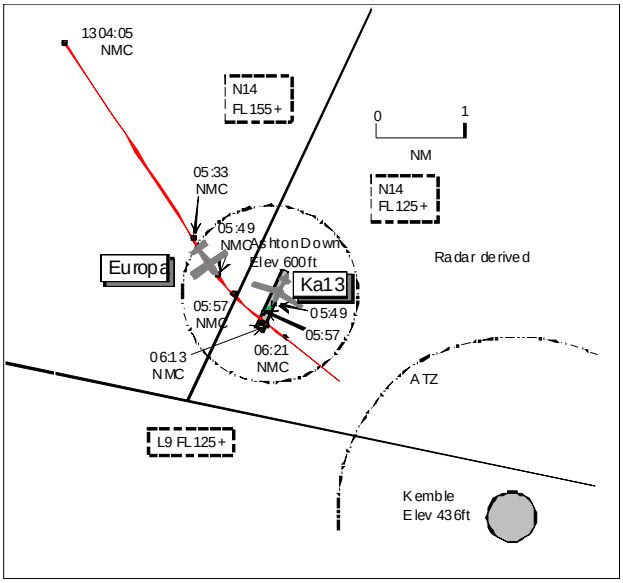
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The pilot of Tutor B climbed above the height prescribed for SID-1B.

Degree of Risk: C.

AIRPROX REPORT NO 2011156

Date/Time:	30 Oct 2011 1306Z (Sunday)	
Position:	5142N 00208W (O/H Aston Down G/S - elev 600ft)	
Airspace:	LFIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Ka13	Europa
Operator:	Civ Club	Civ Pte
Alt/FL:	1200ft↑ QFE	2000ft QNH
Weather:	VMC CLOC	VMC CLOC
Visibility:	>10km	>20nm
Reported Separation:	200ft V	250ft V
Recorded Separation:	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE KA13 PILOT reports flying in the rear seat of the glider on a winch launch flown by a trainee instructor at Aston Down; no radio was fitted. The visibility was >10km in VMC and the glider was coloured red/white with no lighting fitted. Heading 210° at 60kt and 1200ft agl as they reached the top of launch at the S end of RW21 pitched upwards at about 30°, he saw an ac 250-300m away approaching from their R and about 200ft below. The cable was released and as the nose of the glider was lowered he pointed out the ac to his pupil. The other ac, a Europa continued towards them and under-flew them by 200ft on a SE'ly track towards Kemble. The incident was observed from the launch point by personnel at the N end of the airfield and by the winch driver who saw that the Europa was O/H and a little N of the winch, well within the airfield perimeter. An instructor at the launch point telephoned Kemble who informed them of the ac's details. There was no risk of collision with his ac, as he was well above the Europa, but it had flown through an area where seconds earlier there had been a steel cable. If it had hit the cable the consequences would almost certainly have been catastrophic. The Gliding Club has permission to cable launch to 3600ft amsl and this is marked on the CAA chart.

THE EUROPA PILOT reports inbound to Kemble from Shobdon VFR and in receipt of a BS from Gloster Approach on 128·95Mhz squawking 7000 with Modes S and C. The visibility was >20nm in VMC and the ac was coloured white: no lighting was reported. Heading 130° at 2000ft QNH and 100kt O/H Aston Down he saw a glider 200yd ahead in a shallow turn to the R and he flew underneath it by 250ft with no need to take avoiding action as there was adequate vertical separation. He acknowledged that he should have diverted around Aston Down, but he was off-track and failed to do so and he assessed the risk as low.

ATSI reports that there was no RT media available from Kemble. The unit was contacted and there was a note of the incident in their log and the FISO had no recollection of any event. As the CA1094 from the Europa pilot was received 3 months after the incident, the Gloucestershire RT recording media had been put back into service so no ATSI investigation was possible.

UKAB Note (1): The UK AIP at ENR 5-5-1-3 promulgates Aston Down as a Glider Launching Site centred on 514228N 0020750W where aero-tows take place and winch/ground tows may be encountered up to 3000ft agl between sunrise and sunset; site elevation 600ft amsl.

UKAB Note (2): The Clee Hill radar recording does not capture the CPA. At 1304:05 a 7000 squawk is seen, believed to be the Europa, 3·7nm NW of Aston Down tracking 145° and showing NMC. The Europa continues on a steady track and by 1305:33 is 1·1nm NW of Aston Down. Sixteen seconds later at 1305:49, when the Europa is 0·6nm WNW of the glider site, a primary return pops-up, believed to be the Ka13 glider, in its 11 o'clock range 0·7nm. The next sweep 8sec later at 1305:57 shows the separation reducing 0·4nm with the Ka13 tracking 220°.

The KA13 then fades from radar as the Europa is seen to pass close to the upwind end of the Aston Down RW21 turning L to track 130° towards Kemble. On the next sweep at 1306:21 a pop-up primary return re-appears in the Europa's 6 o'clock range 0·3nm as the Europa clears to the SE.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

This Airprox highlights clearly the dangers associated with flying O/H a glider site when winch launches are taking place. The airspace hazard is clearly marked on the 1:250,000 and 1:500,000 topographical charts and due regard should be taken by pilots of ac transiting through the area of active glider sites by giving them a wide berth. On this occasion, the Europa pilot was off-track and flew through the Aston Down O/H whilst a glider was on the winch wire approaching the top of the launch. Fortunately the Ka13 pilot saw the approaching Europa to his R and was able to release the cable before the Europa underflew his glider, both pilots reporting similar separation distances. However the concern to Members was the close call that the Europa pilot had of impacting the winch cable, which would have been catastrophic. Members considered whether the launch party had discharged their responsibilities by clearing the airspace into which they were launching. An experienced Member opined that at the Europa's speed it was borderline whether it could have been detected by the ground party ahead of commencing the launch. Also there are hangars to the N of Aston Down which would have delayed visual acquisition of an approaching ac until a later stage than ideal. By flying over Aston Down the Europa pilot had placed his ac into conflict with the winch wire and the Ka13 which had caused the Airprox. Fortunately the Ka13 pilot saw the Europa in enough time to release the cable before the ac crossed however the Board were clear that safety had been compromised during this encounter.

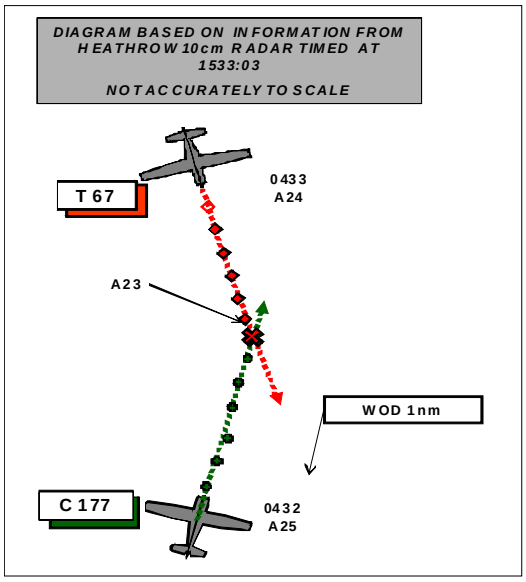
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Europa pilot flew O/H a promulgated and active glider site below the maximum height of the winch cable while gliding was taking place.

Degree of Risk: B.

AIRPROX REPORT NO 2011157

Date/Time:	1 Nov 2011 1533Z	
Position:	5130N 00051W	(1nm N WOD)
Airspace:	London FIR	(Class: G)
	Reporting Ac	*Reporting Ac*
Type:	C177 RG	T67M
Operator:	Civ Pte	Civ Pte
Alt/FL:	2500ft	2500ft
	QNH (1010mb)	QNH
Weather:	VMC	VMC
Visibility:	10km	10km
Reported Separation:		
	100ft V/50m H	10ft V/120m H
Recorded Separation:		
	200ft V/0 H	



BOTH PILOTS FILED.

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE C177 RG PILOT reports flying a private flight under VFR from Cherbourg to Denham in a blue and white ac, squawking as directed with Modes C and S. At the time of the incident they were in a level cruise, heading 015° at 130kt and his co-pilot was talking on the radio with Farnborough Radar who were providing a BS; Farnborough asked them to confirm their alt then asked them to descend to remain below the London TMA. As pilot in command, he was maintaining level flight and had not commenced a descent when the incident occurred. He recalls looking to the E towards White Waltham and Heathrow and then glancing down at the GPS to confirm his position and that he was on track. On looking straight ahead again, he saw another ac very late, in front and slightly to the R and below him (a yellow low-wing single-engine type). By the time he had seen the other ac it was too late to take any avoiding action and it was only by chance that a collision was avoided and he assessed the risk as being high.

THE T67M PILOT reports that he was informed of the incident late and he could not recall the detail. He was flying a private VFR flight from Leicester to Redhill in a yellow and black ac with no TCAS fitted and was in the area of the WOD NDB at the time, cruising at 110kt at 2500ft [see below]; he was in receipt of a BS from Farnborough W LARS. He saw a high-wing white single-engine ac 400yd away in his right (1 o'clock) at about the same alt but it was too late to take any avoiding action. He reported the incident on the RT and assessed the risk as being medium-high.

UKAB Note (1): The C177 pilot had previously completed and posted an Airprox form but it was sent to the old UKAB address. His second report was received 3 weeks after the event but, since the T67 pilot reported the incident on the RT, the RT and radar recordings and an accurate Controller's report were available.

THE FARBOROUGH LARS WEST CONTROLLER reports at about 1530 she was working on the LARS W sector when during her scan she noticed a C177 from Cherbourg to Denham was just S of WOD NDB at 2500ft. She checked the level written on her strip which also said 2500ft, so she asked the C177 pilot to confirm his level. The pilot confirmed that he was at 2500ft so she told him to descend to 2400ft to remain clear of CAS. Just as she finished telling him this she noticed that there was a 0433 (Farnborough) squawk just N of WOD indicating 2400ft. She was just about to warn the C177 about this traffic but thought that by the time she had told each of them about each other it would be too late. The C177 pilot then asked her to repeat her last transmission as he had just flown very close to another ac. The controller repeated her last transmission and the pilot did not say anymore on the matter. A couple of min later, the 0433 squawk that was a T67 from Leicester to Redhill asked for a TS, which she duly upgraded him to. At 1538 the T67 pilot asked if she had a C182 on frequency going opposite direction

to him and the controller confirmed that she had worked a C177 on that detail. He then said he had a near-miss with that ac and would like to file an Airprox. Both ac were on a BS at the time of the Airprox.

ATSI reports that the Airprox occurred at 1533:04, in Class G airspace, 0.6nm NNE WOD NDB, at a distance of 15nm on the Heathrow 09R centreline and below the London TMA-1, Class A CAS, which has a base alt of 2500ft. The area around WOD is a known area of high intensity traffic below the base of CAS, with traffic routeing N and S overhead WOD.

The C177 was operating VFR on a flight from Cherbourg to Denham and the T67 was also operating VFR on a flight from Leicester to Redhill. Both ac were in receipt of a BS from Farnborough LARS-W; traffic levels were assessed as medium to high.

CAA ATSI had access to RTF and area radar recordings, together with written reports from the controller, both pilots and the ATSU unit investigation report.

The Heathrow weather was:

METAR EGLL 011520Z 23007KT 190V260 9999 FEW027 15/08 Q1010 NOSIG=

At 1518:20, the C177 pilot contacted LARS W, flying from Cherbourg to Denham via WOD and Wycombe, reporting just S of Petersfield at an alt of 2500ft on QNH 1010; a BS was agreed and the pilot was instructed to squawk 0432.

At 1526:21, the T67 pilot contacted LARS W on handover from LARS N squawking 5031; the pilot was instructed to squawk 0433 and a BS was agreed.

The LARS W controller's attention was drawn to the C177 just S of WOD at 2500ft, the base level of London TMA-1. At 1532:49, the controller asked the C177 to confirm his level and the pilot responded, *"Currently at 2500ft on QNH 1010".* Radar recordings show the C177 overhead WOD tracking N and indicating an alt of 2500ft with the T67, 1nm N of WOD tracking S indicating an alt of 2400ft. The controller replied, *"(C177 C/S) roger, can you descend to two four zero zero feet that will keep you clear below controlled airspace".*

The controller then noticed the 0433 squawk [the T67] indicating an alt of 2400ft and considered it was too late to pass a warning to the C177. At 1533:00, radar recordings show the distance between the two ac was 0.1nm on reciprocal tracks. The C177 was indicating an alt of 2500ft and the T67 2400ft. The C177 pilot then responded to the controller, *"Can you repeat that please, just had an ac pass by one hundred feet repeat please (C177 C/S)".* At 1533:05, radar recordings show the two ac had passed abeam; the C177 was maintaining an alt of 2500ft and the T67 at an alt of 2300ft descending.

At 1533:15, the controller again asked the C177 pilot to descend to an alt of 2400ft to keep outside CAS and this was acknowledged correctly. At 1533:32, the T67 pilot requested a TS and the C177 was shown indicating an alt of 2300ft.

At 1537:29, the C177 reported leaving the frequency for Denham and shortly afterwards at 1538:02, the T67 pilot asked if LARS W had spoken to a C182 routeing in the opposite direction; this was confirmed as the C177 and the T67 pilot advised that an Airprox would be filed.

The LARS W controller's attention was drawn to the C177 approaching WOD at 2500ft, the base level of the London TMA-1 Class A CAS. The controller had not observed the T67 and asked the C177 to descend to 2400ft to remain below CAS. The C177 pilot did not initially hear this transmission and maintained 2500ft as the T67 passed in close proximity 200ft below. The controller then recognised that the T67 was in conflict, but judged that it was too late to pass a warning as the two ac were already passing abeam. There was no requirement for the controller to monitor the flights as both ac were in receipt of a BS. CAP 774, UK Flight Information Services, Chapter 2, Page 1, Paragraph 1, states:

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

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

Basic Service relies on the pilot avoiding other traffic, unaided by controllers/FISOs. It is essential that a pilot receiving this service remains alert to the fact that, unlike a Traffic Service and a Deconfliction Service, the provider of a Basic Service is not required to monitor the flight'.

The two ac flying on reciprocal tracks in the vicinity of WOD and operating below the base of the London TMA-1, came into close proximity. Both ac were flying VFR and in receipt of a BS from Farnborough LARS-W. The controller did not observe the conflict in sufficient time to pass a warning and under a BS there was no requirement for the controller to monitor the ac.

UKAB Note (2): An analysis of the Heathrow 10cm radar showed the incident clearly as depicted above. The C177, squawking 0432 approaches the CPA tracking 015° at an alt 2500ft. Meanwhile the T67, squawking 0433 tracks 165° at an alt of 2400ft before descending to 2300ft on the sweep before the CPA. The contacts merge 1nm N of WOD at 1533:03 the C177 indicating an alt of 2500ft and the T67 2300ft.

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 NATS and the appropriate ATC and authorities.

UKAB Note (3): The following additional information was provided by NATS following a conversation between their investigator and the T67 pilot.

'The pilot of (T67 Reg) stated he had to push forward on the controller column to avoid (C177 Reg); the pilot stated this was the only option available. The pilot of (T67 Reg) stated he couldn't turn right as this would take the plane into the path of C177 Reg) and couldn't turn left as this may of caused a mid air wing tip collision'.

Although this was passed to the UKAB by NATS, it was inadvertently not included in the Part A distributed to Members before the Meeting. However, it was taken into account by the Members in theier assessment of the Airprox at the meeting.

Members observed that the incident took place in Class G, 'see and avoid' airspace at a known choke point where 'head on' encounters between N'bound and S'bound traffic are commonplace. In addition to the horizontal choking, the base of the LTMA is 2500ft and this is also a significant vertical constraint to VFR transits.

Members noted that both ac were operating under a BS from Farnborough LARS and that after the event the T67 pilot asked for an upgrade to a TS and this was granted. Members therefore agreed that at the time Farnborough had the capacity to provide such a service and had the respective pilots been operating under a TS they would most likely have had a warning of each other and the impending conflict in time to take avoiding action.

Controller Members observed that the LARS controller was not under any remit to provide TI and pilots should not expect any warning of collision when operating under a BS. A controller Member opined, however, that the LARS controller should have seen the potential conflict in time to provide warnings to the pilots and that this was a more important task than ensuring that the C177 did not encroach into the base of the TMA; further the descent instructed from 2500ft to 2400ft would have of exacerbated the risk of collision had the C177 pilot obeyed the instruction immediately it was passed. Another controller Member reminded the Board of the large geographic area covered by LARS W and speculated that the returns from both ac could have been overlaid by returns from traffic in the CAS above them; given these factors LARS-W could not have been expected to see the impending confliction.

Notwithstanding the above, the respective pilots had a responsibility to see and avoid each other. The C177 pilot did not see the T67 until it was too late to take any avoiding action; although (from his initial report) the T67 pilot saw the C177 slightly earlier 400yd away (3.5 sec at a closing speed of 240kt) but (based on the information passed to NATS) just in time to initiate a bunt to avoid it. Fortunately there was also a little horizontal and vertical

separation extant but the separation was small enough and the bunt late enough to persuade Members that there was an actual risk of collision.

Both pilots commented to ATC that they had been in a close encounter; Members commended the T67 pilot for stating explicitly on the RT that he would file an Airprox thus ensuring that controller reports and data were available when they might otherwise not have been.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Effectively a non-sighting by the C177 pilot and a late sighting by the T67 pilot.

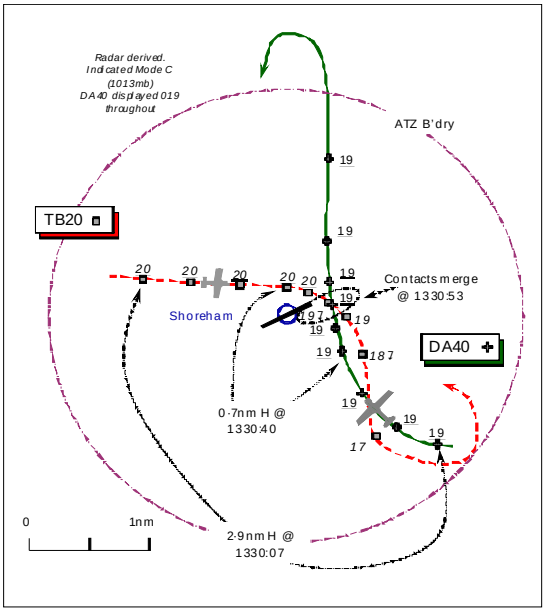
Degree of Risk: A.

AIRPROX REPORT No 2011158

AIRPROX REPORT NO 2011158

Date/Time: 19 Nov 2011 1330Z (Saturday)
Position: 5050N 00017W
(0·4nm E of Shoreham Airport - elev 7ft)

	Reporting Ac	*Reported Ac*
Airspace:	Shoreham ATZ	(Class: G)
Type:	Diamond DA40	TB20
Operator:	Civ Pte	Civ Pte
Alt/FL:	2000ft	1800ft↓
	QFE (1015hPa)	QFE (1015hPa)
Weather:	VMC CAVOK	VMC CAVOK
Visibility:	>10km	>10km
Reported Separation:		
	Nil V/20ft H	'Very close'
Recorded Separation:		
	Contacts merged	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE DIAMOND DA40 PILOT reports he was returning to Shoreham A/D under VFR following a local flight and was in receipt of an Approach Control Service from Shoreham APP/TWR on 123·150MHz. A squawk of A7000 was selected with Mode C on and elementary Mode S is fitted. The ac has a blue and white colour-scheme; the ac's lighting state was not reported.

Shoreham APP 'cleared' him for an overhead join to RW07 so he proceeded along the coast and turned onto a heading of 340° to position himself above the RW25 'numbers' at 120kt. Approaching the A/D overhead at 2000ft (1016hPa) a low-wing single engine aeroplane - the TB20 - was first sighted in the left third of his windshield; he estimated that the TB20 was about 50-70ft away at this point, at the same height, flying straight and level directly towards him. To avoid the TB20 he initiated a steep turn to the R. The TB20 pilot made no attempt to alter his heading and passed 20ft away to port at the same height with a 'high' Risk of collision.

Having then flown around and over the RW07 'numbers', the TB20 was sighted again off his left wingtip. He can only assume that TB20 was performing a right hand cct overhead join against the flow of the normal traffic [variable ccts are notified at 1100ft]. The incident was reported to ATC on the RT and he subsequently landed his aeroplane.

THE TRINIDAD TB20 PILOT reports he was inbound to Shoreham from Denham under VFR and had telephoned Shoreham before leaving Denham to obtain the weather as well as to book his arrival. After he was informed that Shoreham were using the grass RW07, he asked if it would be possible to land on the hard surface RW02 if the wind permitted, to which the answer was 'yes'.

Inbound to Shoreham, just to the E of Goodwood, he changed radio frequency to Shoreham APP/TWR on 123·150MHz and realised that they were very busy so by the time they spoke to ATC they were 7nm away. The controller, who clearly still remembered their request to land on the hard runway, suggested they should position themselves on a RH base leg for RW20. However, realising how busy it was he declined the offer and instead replied that he would join the normal flow of traffic and land on RW07 as well. He reported his position as 7nm W of the aerodrome at 2000ft QNH (1016hPa). The controller instructed them to report overhead at 2000ft. When overhead the A/D at 2000ft, they reported their position and were instructed to descend on the dead-side. He turned R from a heading of 095° onto 160° toward the dead-side and commenced a descent at 120kt. Passing about 1800ft QNH in a descending R turn he saw another aeroplane pass very close to port in what appeared to be a banked turn to the R - it all happened so quickly that neither he nor his passenger was able to identify the ac type. Within a very short time they felt the 'bump effect' of the slipstream generated by the other aeroplane as they continued descending to position themselves onto the crosswind leg. At this stage the pilot of the other aeroplane

reported an Airprox with a green Cessna. They responded by confirming that it was their TB20 and also confirmed they had come very close to each other. Nothing else was said on the RT and they continued in the cct to land on the grass RW07. He did not specify the minimum separation but assessed the Risk as 'high'.

His aeroplane has a green over white colour-scheme and the 'strobes' were on. A squawk of A7000 was selected with Mode C on and elementary Mode S is fitted; the ac's identity was not apparent on the radar recording.

THE SHOREHAM COMBINED AERODROME & APPROACH CONTROLLER (ADC) reports that the TB20 pilot had 'booked-in' by phone and requested to use the hard surface RW02. When the TB20 pilot called he was instructed to route to Steyning [3nm NNW of the A/D] for a R base RW20; after reporting at Steyning the TB20 pilot was instructed to hold. Following a delay, the TB20 pilot advised that he could accept RW07, therefore, he was instructed to report overhead at 2000ft. When he did so, the TB20 was instructed to descend deadside. The DA40 then reported overhead and an Airmiss (sic) with a green Cessna at 1331 UTC. No Cessna was known to be routeing through the A/D overhead and initially, he believed it to be a 'rogue' ac. The DA40 pilot said the other ac missed him by 50ft laterally, whereupon, the TB20 pilot called advising that his ac was the reported ac and, '…turning R descending deadside'. All turns are supposed to be LH.

ATSI reports that the Airprox occurred at 1330:53 UTC, 0.3nm ENE of the Shoreham Aerodrome Reference Point (ARP), within Class G airspace and inside the Shoreham ATZ, which consists of a circle, radius 2nm, centred on RW02/20, extending to 2000ft above the aerodrome elevation of 7ft.

The Trinidad TB20 (TB20) was on a VFR flight inbound to Shoreham from Denham. The TB20 pilot had previously telephoned Shoreham ATC to request the use of a hard runway into wind.

The Shoreham controller was operating a combined Aerodrome and Approach control position, without the aid of surveillance equipment. The ATIS frequency was promulgated out of service.

The controller considered workload levels as medium. The Shoreham controller had been operational for 1hr 31mins prior to the incident and had been on duty since 0900 UTC. The ATC watch pattern for this Saturday provided one early shift controller, starting at 0900 UTC and one late shift controller commencing duty at 1100 UTC, with an air traffic assistant in support. The two controllers shared the operational shifts rotating to provide relief breaks for each other and for the air traffic control assistant.

RW07 was in use with a LH traffic pattern. ATSI considered the workload and RT levels just prior to the Airprox as 'high'.

The UK AIP page AD 2-EGKA-1-7 (29 Jul 10), paragraph 6, states:

c) Circuit heights are 1100ft aal for all runways.

d) Variable circuits at discretion of ATC.

e) Unless otherwise instructed aircraft joining the circuit will overfly the aerodrome maintaining 2000ft aal, until instructed to descend to circuit height on the inactive (dead) side of the runway in use and join the circuit by crossing the upwind end. Pilots should note that there would frequently be helicopters operating both 'liveside' and 'deadside' in the ATZ up to 600ft.

ATSI had access to radar recordings, provided by NATS Swanwick, together with written reports from the pilots, controller and controller interview. In order to reflect the high workoad, the narrative includes a description of each ac position and RT calls.

The Shoreham 1320Z METAR: 120012KT 9000 NSC 13/11 Q1016=

At 1319:50, ATSI assessed traffic levels as medium, with a Chipmunk in the cct followed by a PA28 (1) downwind and PA28 (2). A PA28 (3) was inbound from the E to join overhead. A Stampe pilot called inbound abeam Worthing pier and the controller instructed the Stampe pilot to join overhead at 2000ft, QFE (1015hPa), RW07. The Stampe pilot was given traffic information on PA28 (3) inbound from the E joining overhead.

Traffic levels began to increase. A departure was cleared for take off and a second departure was lined up on RW07. The pilot of a previous outbound ac reported changing frequency to Goodwood.

The pilot of PA28 (3) reported overhead at 2000ft and the controller instructed the him to descend to 1600ft and report downwind, with TI on the departure climbing towards the coast at not above cct height (1100ft). The second departure was given take off clearance and was also passed TI on PA28 (3) descending on the deadside to 1600ft.

A C172 pilot contacted Shoreham Approach reporting at Bognor Regis, requesting a downwind join for RW07. The controller instructed the C172 to report at Worthing pier for a straight-in approach to RW07, not below 1600ft QFE (1015mb).

The Chipmunk and PA28 (1) were on base leg and PA28 (2), now turning downwind, was instructed to report final No 3. PA28 (2) reported contact with the two ahead.

At 1322:52, the pilot of PA28 (4), positioned 3nm NE of the A/D, called for joining instructions. The PA28 (4) pilot was instructed to report overhead for RW07 and was passed TI regarding a Stampe biplane routeing to the overhead. An outbound called changing to Farnborough.

At 1323:32, the Chipmunk was cleared for a touch and go. The pilots of two ac on the apron called for information and taxi, one of which was a PA28 (5), with a student pilot. Student pilot PA28 (5) was cleared to taxi to the holding point 'Alpha 1' via the 'Alpha Taxiway' for RW07 with QNH (1016hPa). The Stampe pilot called overhead and was cleared to descend on the deadside. The pilot of PA28 (1) was cleared to continue approach and shortly afterwards was given landing clearance. The pilot of PA28 (2) on final was instructed to continue and shortly afterwards cleared to land. A previous departure along the coast was advised no further restriction and cleared to climb with traffic information on the C172 inbound and then transferred to Goodwood.

At 1325:10, the DA40 pilot called Shoreham Approach, "[DA40 C/S] *approaching Brighton Marina 2 thousand 3 hundred feet..request rejoining instructions please."* The controller replied, "[DA40 C/S] *report point of departure person on board."* The pilot responded, *"..departed Shoreham 3 P O B."* The controller transmitted, "[DA40 C/S] *roger overhead join 2 thousand feet 0-7 Q-F-E 1-0-1-5 Cherokee* [PA28 (4)] *to the northeast of Shoreham inbound to the overhead."* The DA40 pilot acknowledged, *"Overhead join Q-F-E 1-0-1-5 ..looking for traffic* [DA40 C/S]".

At 1325:56, the student pilot of PA28 (5) was instructed, "[PA28 (5) C/S]" *taxi ahead cross* [RW] *0-2 to the holding point 0-7".* The student pilot's readback was not complete; "[PA28 (5) C/S]"..*cross..Runway to 0-7* [PA28 (5) C/S]". The incomplete readback omitted the words *"holding point",* which was not corrected by the controller.

At 1326:10, another DA40 pilot – DA40 (B) - called inbound from Brighton at 2200ft and was instructed to join downwind lefthand for RW07. No TI was provided. The pilot of PA28 (2), was instructed to vacate the runway after landing and the Chipmunk pilot, now downwind, was cleared to final No 2 following PA28 (3) on base-leg. An ac on the Apron was cleared to taxi.

At 1327:23, the TB20 pilot established two-way contact with Shoreham Approach and reported, *"..6 miles to the west at 2 thousand feet..joining instructions please."* The controller responded, "[TB20 C/S]*..route towards Steyning which is to the north of the airfield and expect a right base join..right base join Runway 2-0 Q F E 1-0-1-5 but report at Steyning."* The TB20 pilot replied, *"..yeah we can take 0-7 actually to fit in with the rest."* The controller cleared the pilot of PA28 (3) to land and then responded to the TB20 pilot, "[TB20 C/S]*..roger in that case..report overhead 2 thousand feet 0-7 Q-F-E 1-0-1-5*". This was acknowledged by the TB20 pilot, *"..on the Q-F-E 1-0-1-5 report overhead at 2 thousand feet* [TB20 C/S]*".* No TI was passed regarding cct activity or the DA40 joining overhead from the E, neither was the TB20 updated regarding the second DA40 – DA40 (B) - inbound from the E. An ac on the Apron was then cleared to taxi.

The controller was unable to explain why he had not passed TI to the DA40 or TB20 pilots about each others ac. The controller considered his workload at that point to be medium and remembered passing TI to the DA40 pilot regarding PA28 (4), which was approaching the overhead from the N. The controller indicated that the TB20 pilot had telephoned ATC earlier in the day, requesting a hard runway on arrival. When the TB20 pilot called, the controller initially routed the ac to hold at Steyning and considered at that point, that there was no pertinent TI to pass. However the TB20 pilot confirmed that he would accept RW07 to, "*fit in with the rest".* The controller indicated that he had then given the pilot of PA28 (3) a landing clearance before instructing the TB20 pilot to join

overhead. The controller forgot to pass pertinent TI to both the TB20 and DA40 pilots regarding each other, which he recognised was a lapse.

The UK AIP at AD-2-EGKA-1-7 states, 'Variable circuits at discretion of ATC'. The controller was asked if the TB20 pilot should have been advised, on first contact, that the cct pattern was LH, or whether he had expected that pilots should expect a LH cct unless instructed otherwise. The controller indicated that pilots are often advised of the cct direction but thought that the TB20 had been advised that RW07 LH cct was in use during the earlier telephone conversation.

At 1328:26, a transmission from an ac at the holding point drew the controller's attention to PA28 (5), which had lined up on RW07 and the controller instructed PA28 (3), on final approach, to go around and then asked the student pilot of PA28 (5), *"..why are you on the Runway?"* The student pilot of PA28 (5) responded, "..*I heard..your instructions to line up..or I mistake."* It was noted that the controller used non-standard phraseology, advising the student pilot of the mistake. The controller initially instructed the pilot to vacate but then amended the instruction and gave clearance to take off. [The controller reported this as a Runway Incursion (MOR201114434), which has been investigated by the CAA.]

The pilot of PA28 (4) reported overhead and was cleared to descend on the deadside. The pilot of DA40 (B) reported at the tunnels [2nm NE of the A/D] and was instructed to report downwind. The Chipmunk pilot reported L base visual with the Stampe which was turning final and cleared to land. An ac was instructed to cross RW02 to holding point ALPHA 1 for RW07. A C152 pilot then called inbound from the NE requesting RW13. The C152 pilot was instructed to route to Steyning and to expect L base RW13. The C172 pilot reported at Worthing Pier and was instructed to maintain 1600ft for a straight-in approach.

At 1330:32, the TB20 pilot reported, *"overhead now sir."* The controller instructed the pilot, "[TB20 C/S] *descend deadside and report downwind 07 lefthand at circuit height 11 hundred feet."* The pilot acknowledged, *"er ..descend deadside and say..circuit height again please"* and the controller replied, *"1 thousand 1 hundred feet,"* which the pilot acknowledged.

[At 1330:40, radar recordings show the TB20, just N of the A/D tracking E and indicating 2000ft (1013hPa), with the DA40 approaching from the SE, tracking NW, indicating 1900ft (1013hPa), in the TB20's 2 o'clock position at a range of 0.7nm.]

At 1330:48 the DA40 pilot reported*, "..overhead w-er 2 thousand feet."* The Stampe had landed and its pilot was instructed to vacate R. The controller then replied to the DA40 pilot, "[DA40 C/S] *hold overhead I'll call you for descent in about another 2 minutes."*

[At 1330:53, radar recordings show the two ac 0.3nm NE of the A/D with both ac indicating 1900ft (1013hPa) - about 1990ft Shoreham QNH (1016hPa). The contacts of the two ac merge in azimuth. The DA40 was steadying on a N'ly heading as the TB20 was crossing from L - R in a R turn through SE.]

At 1331:02, the DA40 pilot reported, "[DA40 C/S] *near miss*."

There were two broken transmissions and then the Chipmunk was cleared to land. The pilot of PA28 (3) which had gone around because of the runway incursion reported downwind and was cleared to final No 3 following PA28 (4) and the C172 making a straight-in approach. The C172 pilot was instructed to continue No 2.

There were then two other crossed transmissions, *".....hundred feet.*" and *".....near miss in the overhead*."

At 1331:35, the DA40 pilot reported *"????? ???? ???? near miss in the overhead.*"

The controller responded to the broken transmission, "[DA40 (B)] *if that's you d- er passing the tunnels report downwind at 16 hundred feet.*" The pilot of DA40 (B) reported downwind and was instructed to be No 4 following PA28 (3) ahead.

The pilot of PA28 (3) then called downwind and became No 4 following DA40 (B). The C172 reported at 1 mile and was instructed to continue. The pilot of another ac called and the controller then gave the C172 pilot landing clearance.

AIRPROX REPORT No 2011158

At 1332:34, there was an exchange of RT communication between the DA40 pilot and the controller:

DA40 ???? ???? ???? ???? descend deadside.

ATC [DA40 C/S] *now descend deadside and report downwind.*

DA40 Report downwind er we'd like to report a near miss in the overhead a green cessna.

ATC With a green cessna.

DA40 Yeah crossing I I was crossing overhead and he was coming directly towards me.

ATC I don't know of any green Cessna on my frequency or a Cessna going through the overhead that's unknown to me T- what level was he.

DA40 Er he was two thousand feet er on the sa-er on the opposing heading to me erm probably missed by about 50 feet if that.

ATC Is that vertically or laterally.

DA40 Lateral.

ATC Roger.

DA40 I have the green Cessna on my lefthand side now erm.

At 1333:31, the TB20 pilot responded, *"..that was* [TB20 C/S]*..yeah we..we're turning right to descend on the deadside and..we got very close."*

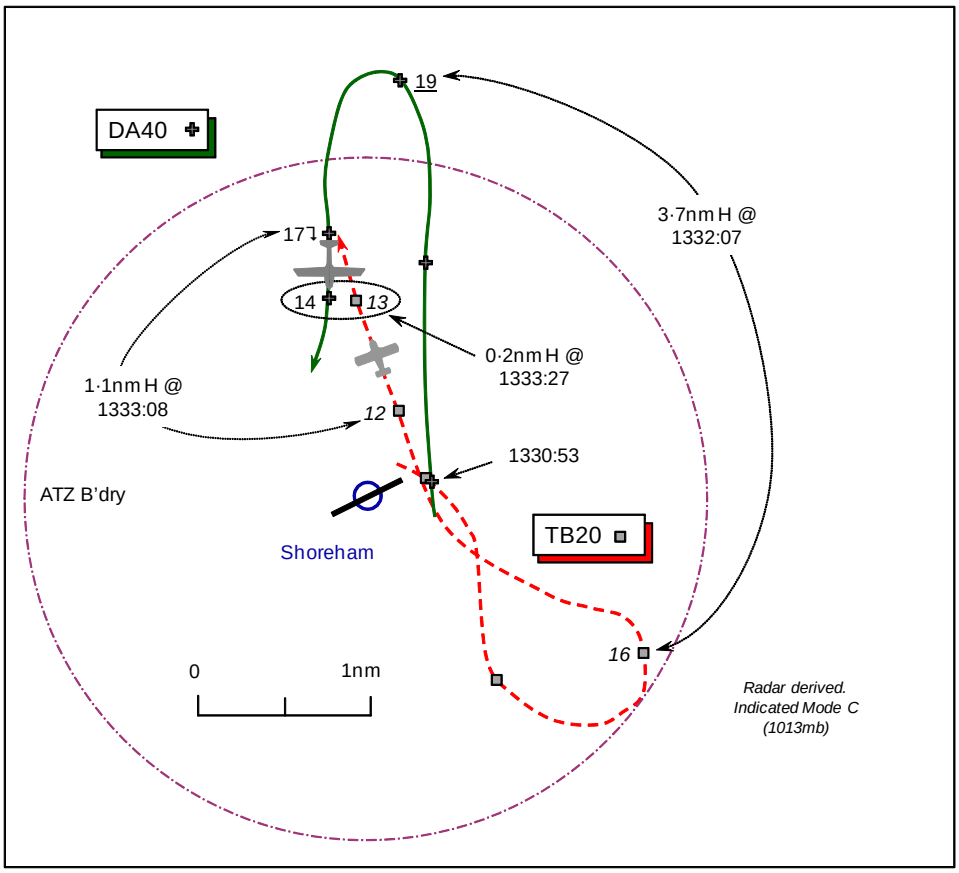


Fig 2

[UKAB Note (2): After the Airprox had occured at 1330:53, both ac opened from the A/D overhead as illustrated at Fig 2. The two ac then turn toward the A/D and converge on broadly reciprocal headings to a range of 1.1nm at 1333:08; the TB20 indicating level at 1200ft Mode C as the DA40 descends through 1700ft Mode C. The two ac pass for the second time - port-to-port - about 1·1nm N of the A/D, the TB20 indicating 1300ft, 100ft below the DA40 that is shown descending through 1400ft Mode C.]

The controller then transmitted to an outbound ac on the Apron. The pilot of PA28 (3) called final and was instructed to continue. Another station was asked to say again. The C152 pilot reported at Steyning and was instructed to hold for a while.

At 1334:25, there was a broken transmission followed by the TB20 reporting downwind. The controller instructed the TB20 pilot, *"number 4 following a Cherokee out on base leg report final"*. The pilot replied, *"er number 2 and report final* [TB20 C/S]*".* The controller responded, *"Number 4."* PA28(3) then called final and was given a land after following the C172.

The controller indicated that it was not possible to obtain a relief immediately after the incident and he continued working operationally until the normal changeover.

Shoreham MATS Pt 2, Section 10, Chapter 1, Page 1, states:

'3. Combined (Bandboxed) Operations

3.1 Although it is desirable to operate two sectors (ADC and APP) it is not always possible due to availability of staff. It is possible to operate combined during the first and last two hours of the operational day when traffic levels are usually lowest.

3.2 The combined operation uses the callsign 'Shoreham Approach' or, if the ATCO is not APP rated, 'Shoreham Tower' on frequency 123.15 MHz unless otherwise NOTAMed.

3.3 The frequencies 123.15 and 125.4 are only usually cross-coupled when the operation is being changed from two sector to combined until all aircraft are using 123.15.'

After a previous Airprox on 24 September 2011 [Airprox 2011126], the ATSU considered that workload was a factor and issued a MATS Pt2, Supplementary Instruction 01/2011, which stated:

'This SI is to be read in conjunction with Shoreham MATS 2 and serves to remind all ATS staff of the need to regulate traffic as necessary in order to avoid a traffic overload situation. This may mean for example:

Saying no to circuits or landing circuit traffic.

No to IFR training traffic.

Holding traffic outside the ATZ, asking them to call in 10 minutes, etc.

Limiting the use of runways to ONE only and advising aircraft requesting other runways of the delay or unavailability of the runway at that time as per MATS 1.

Limiting helicopter training if this impacts in a negative way

Reducing the traffic as you need to subject to your experience levels, the weather, events etc.

The traffic situation at Shoreham is highly dynamic and the complexity depends on numerous factors such as weather, the number of students involved, the mix of slow and fast traffic, etc. As such it is not appropriate to lay down a fixed number of aircraft to be worked at any one time. ATCOs and ATSAs should use their judgement, taking into consideration both present and future situations as far as practicable.'

The controller indicated that traffic levels started as light, increasing to medium but did not consider that it was necessary to introduce traffic management measures. However, the controller admitted that RT recordings

showed that traffic levels prior to the Airprox gradually increased and resulted in a 'high' workload. The controller was operating a combined Aerodrome and Approach position and was unable to split the position because no staff were available.

The controller was unable to explain why he had not passed TI to either ac. When questioned about the content and method of passing TI, the controller indicated that he always passed pertinent traffic and local pilots had often complained when given too much TI. The controller was asked if he had considered the heavy RT loading to be a factor for the absence of TI. The controller indicated that it may have been, but thought at the time that the TB20 had routed towards Steyning and was approaching from the N. The controller recognised that whichever direction the TB20 was approaching from, TI should have been passed. The controller was asked about the use of non-standard RT phraseology and confirmed that standard RT phraseology should always be used.

The controller had cleared both the TB20 and DA40 to join overhead, but did not pass TI to either pilot about each other, or regarding the cct pattern. The Manual of Air Traffic Services (MATS) Part 1, Section 2, Chapter 1, paragraph 2.1, states:

'Aerodrome Control is responsible for issuing information and instructions to aircraft under its control to achieve a safe, orderly and expeditious flow of air traffic and to assist pilots in preventing collisions between:

a) aircraft flying in, and in the vicinity of, the ATZ;

b) aircraft taking-off and landing.'

MATS Pt 1 Section 3, Section 1, paragraphs 8.1 and 8.3, require that:

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

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

Additionally MATS Part 1, Section 2, Chapter 1, paragraph 2.1, states:

'Clearance to enter a traffic circuit is issued when an aircraft is still some distance from the aerodrome to enable the pilot to conform with the traffic circuit, pending clearance to land. Information concerning landing direction or runway in use and any other necessary instructions are given at the same time so that the pilot may intelligently position himself in the traffic pattern.'

The DA40 pilot's written report indicated that the DA40 was heading 340° to position above the RW25 numbers to join overhead for the LH traffic pattern. The TB20 approached the airfield from the W and passed N of the airfield, then turned R towards the deadside against the flow of traffic. It is not clear why the TB20 did not arrange to cross to the SW of the A/D into a LH circular flow. The controller believed that the TB20 pilot had been briefed on the telephone earlier that RW07 with a LH cct was in use at Shoreham.

The controller was an experienced Shoreham controller and believed he was accustomed to handling such levels of traffic. The controller believed that traffic levels were medium. The high workload was a significant factor as indicated by: the number of movements; the high level of RT; crossed or broken transmissions; the controller's use of 'break' in continuous transmissions; and the minimal level of TI. The controller was operating a combined position and the ATIS was out of service. An excessive workload can result in a situation when an overworked controller may: have difficulty in maintaining situational awareness; overlook a developing unsafe situation; make errors of judgement; become confused or be unable to cope with a sudden increase in workload. Although the controller considered traffic levels were medium, ATSI considered that the workload had reached an excessive level to the point where the safety of ac under his control was, or could have been, compromised. The traffic levels at Shoreham are affected by weather, seasonal factors, weekends, training and instrument training requirements, runway in use and helicopter operations. Forward planning is essential in identifying busy periods and determining the optimum traffic management measures, rather than reacting to circumstances, when it may be too late.

Notwithstanding the fact that the controller did not pass TI, both pilots were aware that the cct was busy. It is not clear why the pilots involved did not see each other's ac. CAA Safety Sense Leaflet 13a (June 2005), which is based on the ICAO Circular 213-AN 130, states:

'See-and-avoid' is recognised as the main method that a pilot uses to minimise the risk of collision when flying in visual meteorological conditions. 'See-and-avoid' is directly linked with a pilot's skill at looking.'

The Rules of the Air Regulations (2007), Section 4, General Flight Rules, states:

'Avoiding aerial collisions

Rule 8 (1) Notwithstanding that a flight is being made with air traffic control clearance it shall remain the duty of the commander of an aircraft to take all possible measures to ensure that his aircraft does not collide with any other aircraft.

Converging

Rule 9 (3)…….when two aircraft are converging in the air at approximately the same altitude, the aircraft which has the other on its right shall give way.'

The controller was responsible for issuing information and instructions to ac under his control to achieve a safe, orderly and expeditious flow of air traffic and to assist pilots in preventing collisions between ac flying in, and in the vicinity of, the ATZ. The DA40 and TB20 pilots were instructed to join overhead the airfield at 2000ft, but the controller did not provide TI that would have aided the situational awareness of each pilot, thereby assisting them in acquiring an earlier visual sighting of each other's ac.

The following were considered to be contributory factors:

The controller was not aware and did not recognise that traffic levels were increasing to the point when traffic management measures were appropriate.

The passing of minimal TI was not sufficient in general terms, to aid the situational awareness of pilots in, or joining the cct.

The two ac approached the overhead with the DA40 positioning to join a LH traffic pattern, but the TB20 turned R against the flow of traffic.

Notwithstanding the absence of TI, the two pilots did not obtain a visual sighting of each other's ac until they were in close proximity.

ATSI Recommendations

It is recommended that the ATSU in consultation with SRG, review the levels of staffing and service provision, to ensure that Aerodrome and Approach control services can be provided from split positions when warranted.

It is recommended that the ATSU in consultation with SRG, ensure that the controller is suitably apprised of the issues raised by this Airprox.

It is recommended that the ATSU review the guidance for operational staff in predicting, managing and limiting traffic levels, with an emphasis on the human factors aspects of overloads, highlighting the need for early planning and preventative measures.

It is recommended that the ATSU remind controllers of the requirement to pass TI to arriving flights on initial contact regarding the general traffic situation, runway in use, cct direction and joining instructions, together with the number of ac in the cct. This should then be updated as ac approach the airfield in order to provide additional TI in respect of local traffic.

It is recommended that the ATSU remind controllers regarding the importance of ensuring that incomplete readbacks are corrected and that they use correct and precise standard phraseology in accordance with MATS Pt1, Appendix E, Page 2, Paragraph 1.1, which 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.'

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, together with reports from the air traffic controller involved and the appropriate ATC authority.

The ATSI report had reveals the extreme amount of traffic that the combined Shoreham ADC/APP controller was dealing with during the period leading up to this Airprox. It was apparent that his workload had increased markedly to an excessive level over the period immediately before the Airprox occurred and the Board agreed that the controller was indeed overloaded, although he had not recognised this himself at the time. The Board discussed the SI issued by the Unit following Airprox 2011126, which laid out various traffic management measures that could have been implemented to reduce the traffic flow to more manageable proportions, and it was unfortunate that the controller had not recognised beforehand that such action was indeed warranted. Controller Members understood that once traffic had reached an excessive level it was a very difficult situation to resolve alone and it was clear there was no additional controller available to assist him at this stage. It seemed to some Members that there were not enough controllers on watch at Shoreham to meet the requirements of the two operating positions of ADC and APP when it got very busy. In the Board's view, this excessively busy and complex traffic scenario had a direct impact on the controller's ability to perform his primary duties as the ADC. Here, the controller was responsible for issuing information and instructions to achieve a safe, orderly and expeditious flow of A/D traffic. After first instructing the DA40 pilot approaching from the E to join overhead the airfield at 2000ft and just over one minute later instructing the TB20 pilot from the W to also join overhead, the controller did not provide TI to either pilot about the other ac. This he was required to do, and it would have warned the pilots to look out for each other as they flew into the A/D overhead from opposite directions to join the pattern for RW07. Thus neither the TB20 pilot nor the DA40 had been provided with any TI to forewarn them to look out for the other ac, or indeed about other cct traffic. The Board agreed that the lack of TI to either pilot from the overloaded controller was the first part of the Cause.

Whilst operating on the same frequency, only the DA40 pilot could potentially have gleaned any indication from the RT alone that another ac was joining overhead at the same height when the TB20 pilot called joining about 2min afterwards. Conversely, the DA40 pilot had made no further transmissions until after the TB20 pilot reported overhead and was instructed by the controller to "*..descend deadside and report downwind 07 lefthand...*", which the pilot acknowledged. About 16sec later the DA40 pilot gave the same report *"..overhead w-er 2 thousand feet"* and was instructed by the ADC to "*..hold overhead I'll call you for descent in about another 2 minutes."* These transmissions would have been the first indication to the TB20 pilot of any other ac in the immediate vicinity at his height but, possibly as a result of the rapidity and quantity of RT, it appeared that the other pilot's call had not registered with him. However, for the same reason it would have also made it difficult for the DA40 pilot to anticipate the appearance of the TB20 until he suddenly saw it flying directly towards him just left of the nose about 50-70ft away at the same height having turned R in the overhead. Members agreed that the TB20 did not arrange his join in the overhead well for the specified LH cct to RW07. By overflying the upwind end of the runway in a SE direction he was flying against the flow of ac positioning for an overhead join to RW07 LH. Members considered that he should either have arrived overhead the RW07 threshold ready to commence a LH descending turn on the deadside or offset the join further S allowing a L turn over the A/D. The Board agreed that the second part of the Cause was that the TB20 pilot did not position appropriately to join RW07 LH.

With this level of traffic, the ADC had not spotted the TB20 overhead turning R and was unable to intervene before the conflict with the DA40 occurred. However, in the prevailing good weather in this 'see and avoid' environment both pilots should have been looking out for other ac. Without the benefit of prior warning, when the DA40 pilot first saw the TB20 he initiated a steep avoiding turn to the R as the TB20 passed 20ft away to port at the same height. Even so, it was difficult to determine if this had any appreciable affect on the eventual separation. Due to

the limitations of the radar data update rate and the very close quarters geometry, the recording does not replicate the DA40 pilot's avoiding action turn, but it does reflect that both ac contacts merged at the same indicated level, confirming both pilots' reports that vertical and horizontal separation was minimal. Also unaware that another ac was approaching the overhead, by the time the TB20 pilot saw the DA40 pass 'very close' to port, it was too late to take any avoiding action. In the Board's view, neither pilot had seen the other's ac in time to take to action that might affect the outcome and Members agreed the final part of the Cause was effectively, non-sightings by both pilots. Moreover, this was a very close quarters encounter indeed and with little further debate Members agreed unanimously that an actual Risk of collision had existed in these circumstances.

Following their assessment of this incident, the Board discussed the series of Airprox that had occurred at Shoreham recently. The ATSI Advisor briefed Members on the recommendations made to address the staffing levels at Shoreham and that ATC manning is being closely monitored by CAA SRG, especially the Unit's capacity to split the combined ADC/APP positions when appropriate. Also central to the Members' concerns was the intensity and the complexity of the traffic scenarios revealed by the investigation of these Airprox; specifically the size of the A/D pattern with variable ccts L and R, coupled with the diversity of joins flown by pilots at Shoreham and all set against a background of flying training with a great diversity of experience amongst the GA pilots who operate at this busy A/D. Whilst Members were keen to translate their concern into action, to ensure that the Board was informed of action already in hand the SRG Standards and Policy Advisor undertook to brief the Chairman on the current status of work undertaken by ATSD Southern Region relating to Shoreham. Pilot Members were also concerned, in general terms, at the manner in which visual ccts were being flown at other GA A/Ds as revealed by recent Airprox. With a view to engendering better flying practice, the GA pilot Member also undertook to publish some advice about cct flying in popular GA magazines.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause:1. The overloaded controller did not pass TI to either pilot.

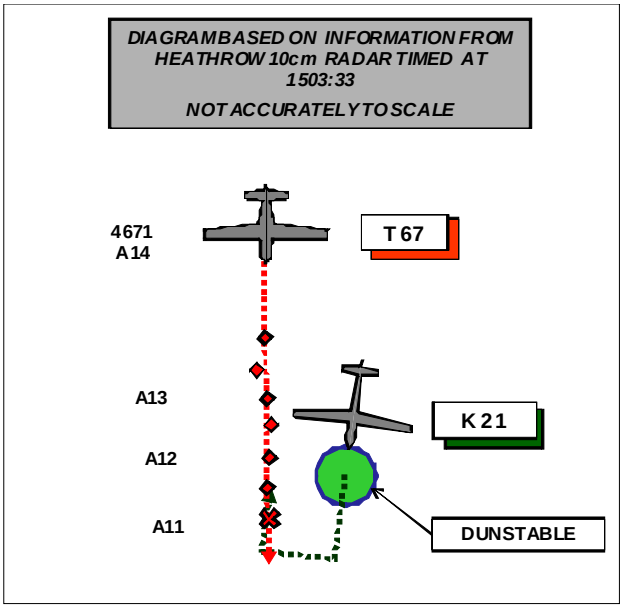
2. The TB20 pilot did not position appropriately to join RW07 LH.

3. Effectively, non-sightings by both pilots.

Degree of Risk: A.

AIRPROX REPORT NO 2011159

Date/Time:	18 Nov 2011 1504Z	
Position:	5152N 00035W (1nm W Dunstable Gliding Site - elev 500ft)	
Airspace:	Luton CTR	(Class: D)
	Reporting Ac	*Reported Ac*
Type:	ASK21 Glider	T67M
Operator:	Civ Club	Civ Pte
Alt/FL:	950ft	1100ft
	QFE	QNH (NR)
Weather:	VMC CAVOK	VMC NK
Visibility:	>10km	>10km
Reported Separation:		
	150ft V/0m H	200ft V/100ft H
Recorded Separation:		
	NR	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE ASK21 GLIDER PILOT reports flying a white glider with no SSR fitted but listening out on Dunstable Radio located in a mobile tower. He had just completed a winch to 1100ft and about 30sec after cable release turned R then R again to position for a normal cct. After the second turn at 950ft agl then heading 010° at 55kt he saw a white low-wing single-engine light ac with a large bubble type single piece canopy 1-200ft away and head-on to him; the ac passed 100-150ft below him. An observer on the ground stated the ac was initially at same height as his glider and dived underneath it.

The pilot considered the risk to be Medium as the incident was well within the '3nm radius' of the gliding site.

After landing he consulted his CFI who advised him to call LATCC; they advised him that the ac had been identified, had submitted a flight plan from Bagby to Denham and was directed not to exceed 2,000ft. They also advised him to file an Airprox.

He was concerned that they are having an increasing number of ac of all types flying closer and closer to their busy gliding site; he has had three similar incidents this year, though not as close as this one, and had previously expressed his concern to his CFI.

London Gliding Club is the second largest gliding club in the UK and operates seven days a week, all year round. It has about 300 members and there are 131 gliders on the site.

The pilot considers a major factor in this incident was that the published air charts do not clearly define this gliding site, and that most pilots would not expect a highly active and major gliding site within Luton class D airspace.

THE T67M PILOT reports flying a white ac with strobes switched on, on a private flight and, at the time, squawking with Mode C, in receipt of a TS from Luton APP [See ATSI report] while heading 180° at 110kt and at 1100ft QHN, en-route from Cranfield to BNN [VOR]. He was cleared by Luton APR to cross the CTR VFR not above 2000ft W of Dunstable Gliding Site and he was looking for gliders. He saw a glider in his 10 o'clock, at the same level, 1 to 2nm away, initially flying in the same direction; the glider then turned R to cross his track, so he descended to remain sighted with it. He passed well below the glider and there was never any risk of collision.

ATSI reports that the Airprox occurred at 1503:33, 0.9nm W of the Dunstable Downs Gliding site, which lies within the Luton CTR, Class D CAS, extending from the surface to an altitude of 3500ft. Dunstable Down does not have an aerodrome traffic zone (ATZ).

The ASK21 glider was operating VFR from Dunstable Gliding site, talking to Dunstable Radio, but not in receipt of an Air Traffic Control Service. Meanwhile the Slingsby T67M Firefly (T67) was operating on a VFR flight from Bagby to Denham, in receipt of an RCS [see below] from Luton Radar.

A letter of agreement exists between TC Luton and the London Gliding Club. Within the Luton CTR, airspace has been delegated to Dunstable Downs and is shown in the UK AIP, Page AD 2-EGGW-4-1 (10 Mar 11). The Airprox occurred within the delegated airspace Area 1, which extends from the surface to an altitude of 3500ft.

The UK AIP Page AD 2-EGGW (7 Apr 11) defines the latitude/longitude coordinates for Glider, Hang-gliding, Paragliding and Microlight activity and states:

'Pilots are advised that by arrangement with Luton ATC:

Pilots of IFR flights inbound to Luton airport will be vertically or laterally separated from all gliding or microlight activity within these areas through the application of normal ATC procedures;

Pilots of aircraft operating under VFR, or on a Special VFR clearance are advised to avoid these areas if at all possible. In addition, pilots operating on a Special VFR clearance are advised that due to the nature of these activities they cannot be given separation from gliders, aircraft towing gliders, hang-gliders, paragliders or microlights within these designated areas. Traffic information will NOT be passed by ATC.'

The LTC Manual of Air Traffic Services (MATS), Part 2, Section 11, Paragraph 11.5.9, states:

'If a VFR/SVFR Luton arrival or departure is likely to route through any delegated airspace, TC Luton shall notify the pilot of the intense gliding activity and if necessary, shall advise the pilot to avoid the immediate vicinity of Dunstable Downs. TC Luton shall pass generic traffic information based on reported or observed activity.'

CAA ATSI had access to the RTF and radar recordings, together with the written reports from both pilots and the ATSU investigation. The controller was not aware of the Airprox and did not file a report.

METAR 181450Z 18006KT 150V210 9999 SCT020 SCT024 13/10/Q1016=

The T67 pilot contacted Luton Radar at 1455:58, reporting overhead Cranfield at 3000ft, requesting a crossing clearance W of Dunstable Downs; he was instructed to squawk 4671, passed the QNH 1016, a TS was agreed and the T67 reported descending to 2000ft.

At 1457:00 Luton Radar cleared the T67 to cross CAS*, "(T67 C/S) you are cleared to transit the Luton Control Zone V F R not above altitude two thousand feet routeing to the west of Dunstable which are active"* and the pilot replied, *"Luton clears (T67 C/S) to cross west of Dunstable Downs which is active not above two thousand feet VFR".*

During the period from 1500:35 until 1506:57 a radar handover took place.

At 1502:46, radar recordings show the T67 had crossed the Luton CTR boundary into controlled airspace indicating an altitude of 1400ft (Luton Radar did not advise the pilot of the change to a RCS but this was not a factor in the Airprox).

The ATSU report indicates that no other traffic, either primary or secondary, was observed in the vicinity of Dunstable Downs. This was confirmed with the radar recordings, using the NODE Multi Radar Tracking (MRT), provided to TC positions through the use of the SYSTEM picture.

The Airprox was considered to have occurred at 1503:33, 0.9nm W of Dunstable Downs. Radar recordings available to ATSI, utilising the Debden and Stansted 10cm as single source radars, showed an intermittent contact overhead Dunstable Downs at 1502:10, 1503:17 and then again at 1503:36, 0.3nm N of the T67 tracking S and indicating an alt of 1100ft. This intermittent primary contact was believed to have been the ASK21 glider downwind in the circuit at 950ft agl on a N'ly track.

AIRPROX REPORT No 2011159

At 1506:55, as the T67 crossed the Southern boundary of the Luton CTR, the Luton controller downgraded the service to a BS and the T67 pilot reported changing to Denham.

The LTC MATS Part 2 requires the Luton Controller to notify VFR aircraft likely to route through the delegated airspace, of any intense gliding activity, if necessary advising the pilot to avoid the immediate vicinity with generic TI based on reported or observed activity.

Although Dunstable Downs was notified as active, the [Luton] radar system did not show any gliding activity. However, the controller advised the T67 pilot that Dunstable Downs gliding site was active and instructed the pilot to route W of the site.

The glider had launched from Dunstable Downs for a circuit. The T67 ac passed 0.9nm W of the ARP, passing in close proximity to the glider which had turned downwind into the visual circuit at 950ft agl.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

Members were shown photographs of the Dunstable Glider Launching Site to familiarise them with the local area. The gliding Member advised the Board that the high ground to the NW, precludes the ground party seeing ac approaching from that direction. They were also briefed that the glider site is very busy 7 days per week when the weather is suitable and therefore the entry in the UKAIP advises that ac transiting the Luton CTR under VFR give Dunstable a wide berth. There are no significant airspace restrictions to the W of Dunstable that would have precluded the T67 from routeing further to the W and avoiding the circuit area.

Although the incident took place in Class D Airspace, both ac were operating VFR under the ‘see and avoid’ principle and not deconflicted in any way by ATC. The gliding Member opined that it would be helpful if Luton controllers could remind transiting pilots of the maximum height of the launch cable as an incentive to remain clear of the site. In this case although both pilots saw the other ac in good time, thus removing any risk of collision, Members agreed that the T67 should have avoided the Dunstable Glider Launching Site and the associated circuit area by a greater margin.

The Gliding Member suggested that Luton ATC should, as well as stating that Dunstable is active, remind pilots that the cable height is 2000ft agl; the NATS Advisor agreed to investigate.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The T67 pilot flew close to Dunstable Glider Launch Site and into conflict with the ASK21 downwind in the circuit.

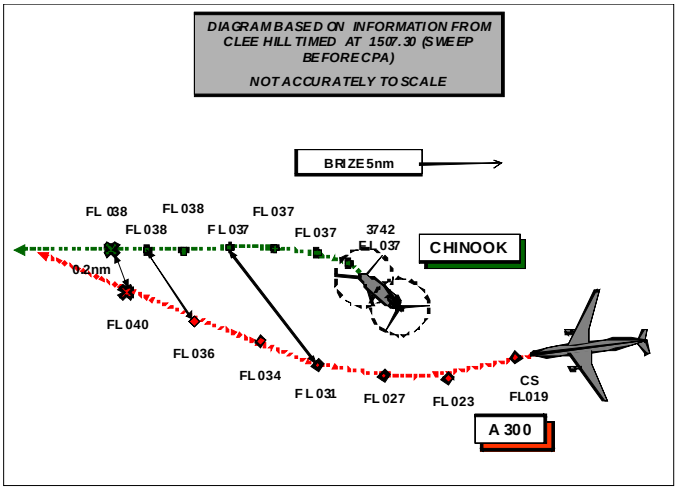
Degree of Risk: C.

AIRPROX REPORT NO 2011160

Date/Time: 18 Nov 2011 1507Z
Position: 5145N 00144W
(5nm W Brize Norton - elev 287ft)

	Reporting Ac	*Reported Ac*
Type:	Chinook	A300
Operator:	HQ JHC	CAT
Alt/FL:	3500ft	5000ft
	QFE (1005hPa)	1015hPa
Weather:	VMC NR	VMC NR
Visibility:	20km	NR
Reported Separation:		
	NR V/ 100ft H	300ft V/ NR H

Recorded Separation:
501ft V/0.05nm (90m) H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE CHINOOK PILOT reports flying an IFR training flight from Odiham to Brize Norton in a camouflage green ac, squawking 3742 with Mode C, in receipt of a TS from Brize DIR. They were joining the NDB/DME hold for RW26, had overflown the beacon on a parallel join and were part way through the left-hand turn to intercept the inbound QDM (passing a heading of about 180° at 120kt he thought) when a call was received from ATC to the effect that an ac would pass close to them. The ac (an airliner, believed to be an Airbus) was sighted in their 3 o'clock, about 100ft away, climbing away having passed over them. Brize ATC informed them that they would be filing an Airprox and he added that he would also be filing.

He assessed the risk as being high.

THE A300 PILOT reports flying a white ac on an IFR departure from Brize Norton with all external lights switched on and squawking 5120 while in contact with Brize APP. They were departing on a MALBY SID, heading 285° at 250kt in VMC, when ATC passed TI on traffic which they saw on TCAS. They then looked outside and saw a Chinook helicopter, initially about 4nm away, on their right side in the 2 o'clock position at about the same altitude. ATC then instructed them to turn right to heading 020^{o} and simultaneously they had an 'RA climb' warning. They followed the RA climb guidance and advised ATC that they had maintained heading 285^{o} and were continuing to in accordance with the RA. If they had turned to heading 020° as instructed by ATC, a collision would have been unavoidable.

He assessed the risk of collision as being high.

THE BRIZE NORTON CONTROLLER reported that he had just taken over as the Approach controller (RA) at the start of his shift. He was fully refreshed, not at all tired and had no issues with currency in the RA seat. A Director (DIR) was in place who was working a Chinook that had requested that it enter the hold (situated directly above the airfield and orientated above the climbout lane). In order to facilitate the departure of an A300 on a MALBY departure he instructed DIR to climb the Chinook to 3500ft on the Brize QFE of 1005hPa to enter the hold. He had planned for the A300 to climb to 2200ft on the Brize QNH of 1015hPa, which would have given 1600ft separation between it and the holding Chinook.

The ADC rang to request release for the A300, the climbout restriction of 2200ft QNH was passed to him and he read it back. After he had finished talking to the ADC he rang LARS to initiate co-ordination against a 3716 squawk seen on the A300's planned departure route; he agreed that the LARS ac would remain not above 4000ft Brize QNH and that LARS traffic would avoid his A300 by 3nm until the A300 had climbed above 5000ft.

By that time the Chinook was manoeuvring to enter the Hold having levelled at 3500ft QFE, directly above the climbout lane. As soon as he had finished the co-ordination with LARS the A300 called on frequency (he believes without hearing the recording), "Brize Departure A300 C/S airborne standard MALBY departure". He replied something like, "A300 C/S Brize Approach identified, traffic 1 o'clock 1 mile similar heading helicopter co-ordinated above" and the pilot replied that he was visual with the co-ordinated traffic. At that time he was considering how he would climb the A300 from under the Chinook but over the top of the LARS ac that he had co-ordinated; he decided that he would turn the A300 onto a more Northerly heading so that he could climb it earlier. He then asked the A300 pilot what alt he was passing in order to verify his Mode C and to ensure that it was past the terrain safe level of 1800ft before he could turn the ac. The A300 replied that he was passing 2900ft – 700ft higher than its cleared level, so he told the pilot to stop climb immediately and turn right so that the ac would pass behind the Chinook but still keep it in sight. As soon as he had finished this transmission the A300 pilot called *"Passing 3-4, ...TCAS"* which he assumed was an RA as by this time the ac were very close, co-level and with the radar returns merged.

He immediately leaned over to the U/T DIR and told him to tell the Chinook that the A300 was climbing through his level. The A300 continued to climb above the Chinook with the contacts still merged.

Once the A300's Mode C indicated above that of the Chinook, he instructed the A300 to continue to climb to FL80. With hindsight he should not have done this as the ac was still responding to the TCAS RA; however, he was trying to establish separation as soon as possible and to continue the climb once the A300 had climbed above the Chinook seemed to be the best way to do this.

He did not inform A300 that he would be filing an Airprox; he believes that he was quite shocked by what had happened as this was the closest that he had ever seen 2 ac on radar.

He passed the A300 over to the civil sector and was relieved from the console.

UKAB Note (1): On request NATS helpfully provided a TCAS analysis reproduced (disidentified) below.

TCAS Performance Assessment

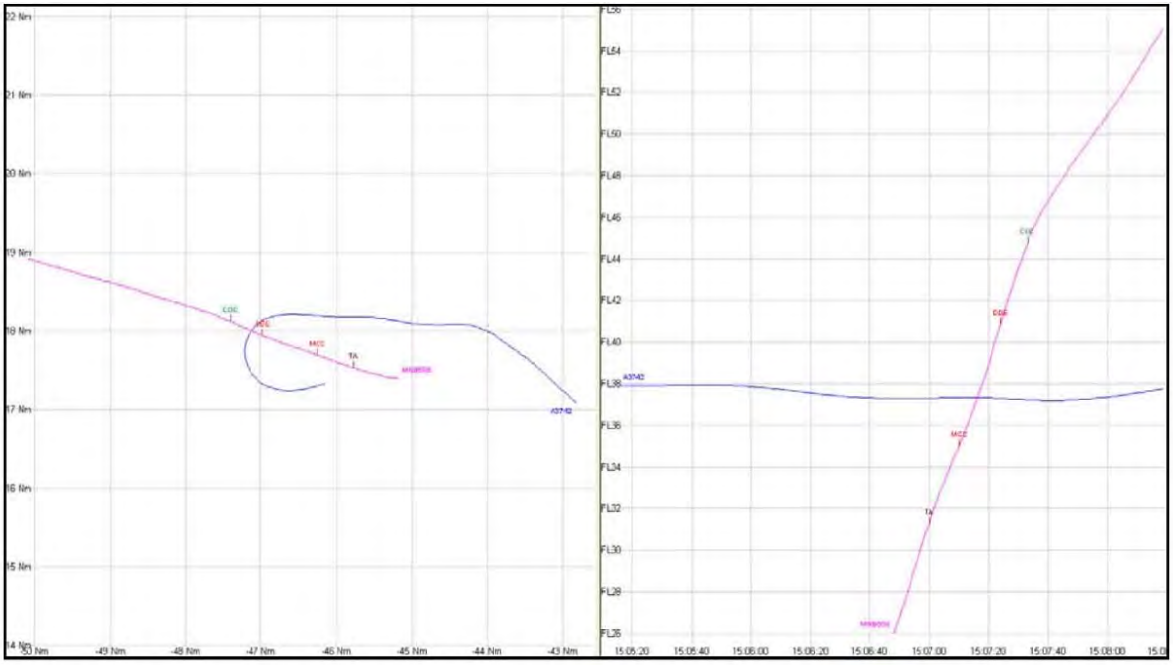
Summary:

This was a non-NATS incident that occurred 3nm West of Brize Norton around 1505 on the 18th of November 2011. The encounter was between a (non TCAS or Mode S equipped) Chinook and an A300. The Mode A squawks were 3742 and 5210.

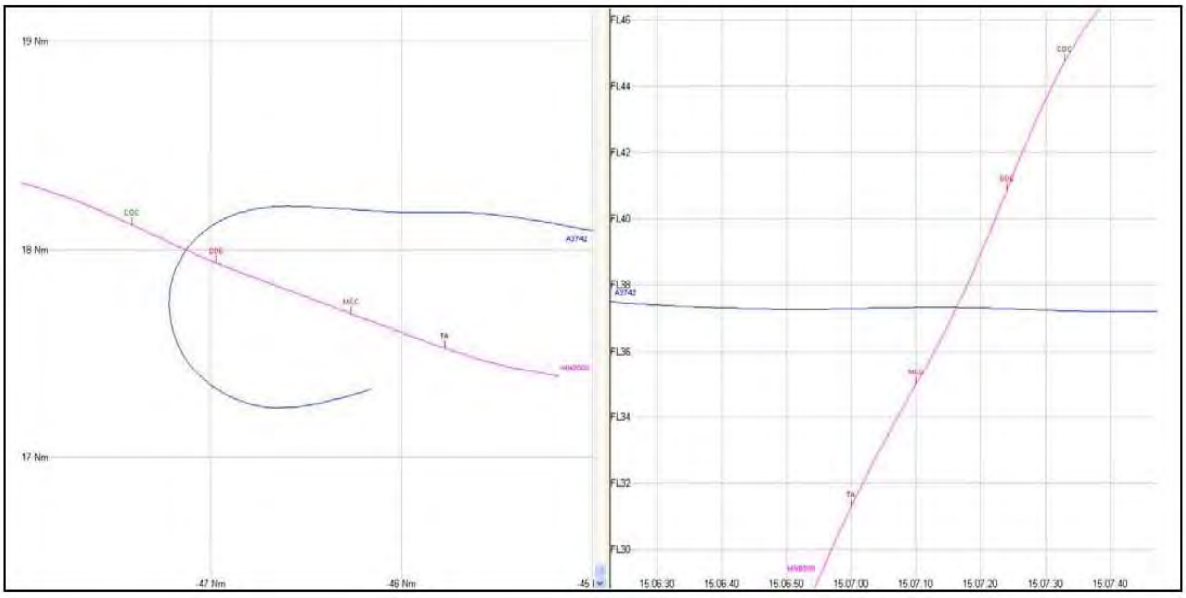
Mode S Downlink

ADVISORY CODE	*RA DL TIME*	*Source Mode-S*	*Threat Mode-S*	*Source Mode-A*	*Radars*	*Message sent Within previous: (s)*
CCL	15:07:11	4961750	n/a	5210	he1.deb.pea.cle	3
KVS	15:07:21	4961750	n/a	5210	deb.cle.he1	2
AVS	15:07:26	4961750	n/a	5210	pea.deb.he1.cle	3

In CAS Simulation



Encounter Diagram Based on Heathrow Single Source Radar Data

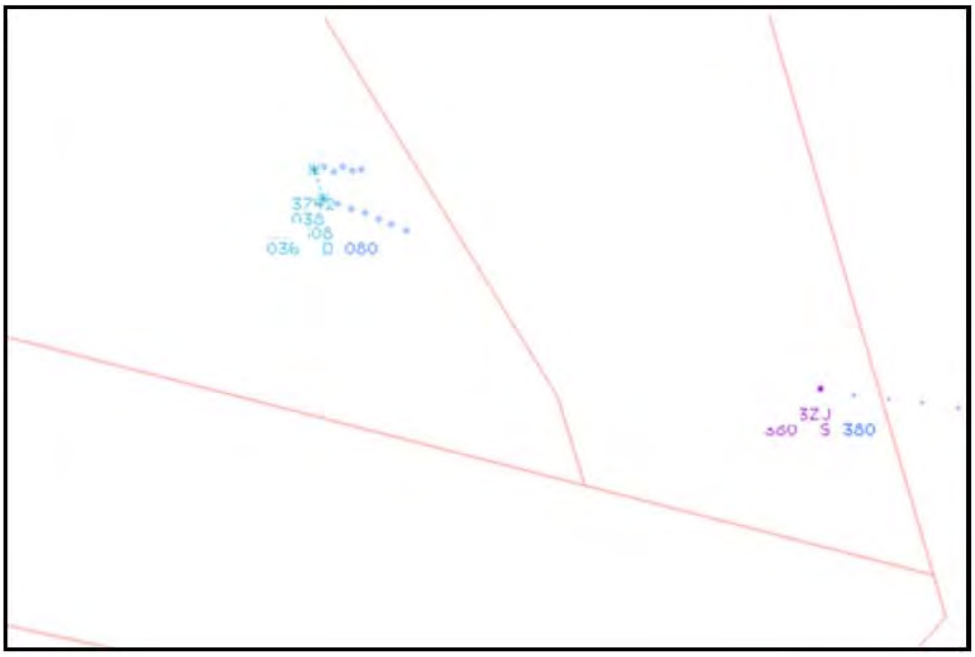


Encounter Diagram Based on Heathrow Single Source Radar Data

CODE	DESCRIPTION		CODE	DESCRIPTION
TA	Traffic Alert		MCC	Maintain Crossing Climb
RA	Resolution Advisory		DDE	Don't Descend
COC	Clear of Conflict			

AIRPROX REPORT No 2011160

STCA activated at 15:07:15 as observed from the radar recordings.



InCAS Alert Statistics

Callsign: A300 **Mode A:** 5210

Alert Time	*Alert Description*	*Altitude (FL)*	*Intruder Range (Nm)*	*Vertical Sep. (ft)*
15:07:00	TRAFFIC ALERT	31	0.83	569
15:07:10	MAINTAIN V/S CROSSING	35	0.62	202
15:07:24	ADJUST V/S	41	0.18	388
15:07:33	CLEAR OF CONFLICT	45	0.28	782

Callsign: CHINOOK **Mode A:** 3742

Alert Time	*Alert Description*	*Altitude (FL)*	*Intruder Range (Nm)*	*Vertical Sep. (ft)*
It is assumed that this aircraft was not TCAS II equipped				

Closest Point of Approach (CPA)

CPA Time	*Horizontal Sep. (NM)*	*Vertical Sep. (ft)*
15:07:27	0.05	501

Minimum Lateral Separation

Min. Latsep Time	*Horizontal Sep. (NM)*	*Vertical Sep. (ft)*
15:07:27	0.05	501

Minimum Vertical Separation

Min. Vertsep Time	*Horizontal Sep. (NM)*	*Vertical Sep. (ft)*
15:07:16	0.46	11

Assessment of TCAS Performance

Three sources of information are considered in this analysis: the resolution advisory (RA) messages recorded via mode S downlink which are recorded by Eurocontrol's automatic safety monitoring tool (ASMT); the mode S downlink from the Heathrow radar alone; and a simulation in the software tool InCAS.

The ASMT did not record any downlinked RAs from the Chinook and it is therefore assumed that this aircraft was not TCAS II equipped.

The A300 downlinked three RAs over a period of approximately 15 seconds. Only two of these appear in the InCAS simulation, which is most likely due to the track interpolation - single source radar data are typically available in six-second intervals and the simulator interpolates the track between these points. The missing RA, a *keep vertical speed* (KVS, enunciated 'maintain vertical speed, maintain') appears to have been short-lived; according to the mode S data recorded from the Heathrow radar the KVS was only downlinked in one cycle.

According to InCAS simulation, the A300 received a traffic alert (TA) at 15:07:00 and the first RA – *maintain crossing climb*, MCC, enunciated as 'maintain vertical speed, crossing maintain' – ten seconds later. This timing is in agreement with the mode S downlink, which recorded a crossing climb RA in the three seconds prior to 15:07:11. From the NATS radar recordings STCA is observed to activate at 15:07:15, which is shortly after the first RA. The KVS was issued in the two seconds prior to 15:07:21, which appears from the simulation to have been shortly after the aircraft crossed vertically around 15:07:16.

The final RA, an *adjust vertical speed* (AVS, enunciated 'adjust vertical speed, adjust') was issued in the three seconds prior to 15:07:26, which is in agreement with the simulated time. It should be noted that InCAS splits AVS RAs into several sub-types; on the graph above the AVS is labelled DDE for *do not descend*.

The *maintain crossing climb* RA is labelled red in InCAS simulation to indicate that it is considered to be a corrective RA. The IVSI for the A300 at the point at which the MCC was issued is shown below; the pilot was able to comply with the RA with only a very minor change in vertical speed.

IVSI for the A 300 at 15:07:10'

BM SAFETY MANAGEMENT reported that this Airprox occurred W of RAF Brize Norton (BZN) between a Chinook operating IFR in the NDB/DME hold for RW26, in receipt of a TS from BZN DIR, and an A300 departing IFR on a MALBY 26 SID, in receipt of an ATS from BZN APP. BZN was operating on RW26.

APP reported that his workload was medium to low, with moderate task difficulty and that he had just taken over the APP position so he felt fully refreshed and had no currency issues. At the time of the Airprox, the A300 was the only ac on the APP freq. The Supervisor added that the Unit workload was high to medium and that he did not witness the Airprox as he was assisting LARS who was busy.

The incident sequence commenced at 1458:29 when GND passed the A300 crew climb-out instructions, *"[A300 C/S] after departure climb MALBY SID flight level eight-zero, squawk five-two-one-zero and with Brize Approach one-two-seven decimal two-five-zero";* the pilot read this back correctly.

The MALBY 26 SID requires ac to first depart on the OSGOD SID, climbing on RW track to BZN 0·5DME or 500ft QFE, whichever is later, then turn right onto track 300° to intercept BZN 285R to OSGOD, climbing as directed. After OSGOD, ac are required to turn left direct to MALBY to join CAS 5nm N of MALBY at FL80. The BZN SIDs are, however, designed around the use of the BZN TACAN and to accommodate this, the SID TAP provides coordinates for OSGOD and, if required, ATC can provide civilian crews with climbout instructions so that they can fly the OSGOD SID accurately.

At 1502:55 APP called TWR and stated, *"A300 C/S climb out restriction two thousand two hundred feet Q-N-H, released"*; TWR then reconfirmed with APP "*two thousand two hundred feet on the Q-N-H?"* and APP replied, *"that's the one"* which TWR acknowledged, the landline call ending at 1503.03. As reported by APP, the climb out restriction of 2200ft QNH equates to 1900ft QFE and this height ensured that the A300 would be above the Terrain Safe Level of 1800ft QFE and also provided with 1600ft vertical separation against the Chinook at 3500ft QFE in the NDB/DME hold for RW26.

Having transferred to TWR's freq, at 1503:13 TWR passed the climb-out restriction to the A300 stating, *"A300 C/S climb out restriction two thousand two hundred feet on Q-N-H one-zero-one-five acknowledge"*; the A300 pilot replied, *"one-zero-one-five copied, we are also able to take the [holding point] Echo for departure"*. TWR immediately re-stated, *"A300 C/S just confirm climb out restriction two thousand two hundred feet on one-zero-one-five"* to which the pilot replied, *"yes, good, copied thank you"*. TWR then informed the A300 pilot that *"I need you to say back, climb out restriction, two thousand two hundred feet"*. The A300 pilot acknowledged this stating, *"yeah, two thousand two hundred feet copied"*. The A300 was then given line-up clearance at 1503:44, cleared for take-off at 1505:02 and left the TWR freq at 1506:13.

CAP 413 Chapter 2 Section 1.14.9 states that:

'when an amendment is made to a clearance, the new clearance shall be read in full to the pilot and shall automatically cancel any previous clearance.'

It is reasonable to argue that a climbout restriction is an amendment to a previously issued clearance. The form of this clearance is outlined at CAP 413 Chapter 2 Section 1.14.4 and states that instructions relating to height/altitude/level should be made as:

'[C/S] *climb to altitude/height/flight-level…'*

However, the RAF's Central ATC School (CATCS) teaches that when there is a requirement to pass an amended climb-out instruction to a departing ac, the following phraseology should be used:

'C/S not above height/altitude/level, cleared take-off…'

This phraseology was introduced by the CATCS following the introduction of CAP413 to mitigate the loss of the military-specific phrase 'climbout restriction' which was not included within CAP413. Consequently, the use of the phrase 'climb out restriction' has not been taught at the CATCS since the introduction of CAP413 [to the military]. However, investigation with RAF ATM STANEVAL and a small sample of Examining Officers at RAF ATC Terminal units has indicated that the phrase 'climb-out restriction' is still considered standard. Moreover, the phrase 'not above height/altitude/level…' introduced by CATCS does not appear in CAP413 in the context of clearances to ac and does not appear to have been publicised outside the CATCS.

As stated in the occurrence report, APP contacted LARS at 1505:48 to co-ordinate the departing A300 against LARS traffic 15.9nm WNW of BZN. Agreement was reached that APP would ensure that the A300 avoided the

LARS traffic, which was "climbing to four thousand feet QNH" by 3 miles until the A300 was "not below five-thousand feet QNH", the landline call ending at 1506:08.

At 1505:56, DIR passed TI to the Chinook on the A300 stating, *"Chinook C/S report ready for the procedure, traffic to depart Brize Norton, an a three hundred coordinated below"* which the pilot acknowledged.

At 1506:16 the A300 pilot called APP on climb-out, *"Brize Departure good afternoon, A300 C/S airborne"*; the ac was identified and provided with TI on, *"traffic one o'clock, one mile, similar heading, coordinated one thousand feet above"* and the pilot reported, *"we have it in sight".* The subject of this TI was the Chinook which was 2nm WNW of BZN, tracking W at 3500ft QFE. APP reported that he considered the provision of TI about the Chinook a priority since the ac would have been displayed prominently on the A300 TCAS.

CAP413 Chapter 6 Section 1.1.2 states that:

pilots of all ac flying instrument departures shall include the following information on initial contact with the first en-route ATS unit: callsign, SID, current/passing level and initial climb level.'

There is no guidance on what ATCOs are to re-iterate in their first R/T contact with a departing ac. In the absence of any of this information however, the RAF CATCS teaches that, on initial R/T contact between a departing ac and ATC, the ATCO shall re-iterate the altitude/height/level instruction. This teaching is not reflected in any military ATM regulatory or policy document; however, investigation with RAF ATM STANEVAL and a small sample of Examining Officers at RAF Terminal units has provided agreement that CATCS teaching represents 'best practice'.

The A300 can first be seen on the radar replay at 1506:40, 2.1nm WSW of BZN indicating 1900ft, which is equivalent to 1700ft BZN QFE or 2000ft QNH. The radar replay shows the A300's SFL [Mode S derived Selected Flight Level] to have been set to FL80; however, Mode S is not available on the BZN radar and controllers therefore do not have access to SFL. At 1506:48 the radar replay shows the A300 had commenced a right turn to OSGOD, 2.5nm WSW of BZN, indicating 2500ft (2300ft BZN QFE or 2600ft QNH); this is later than required by the OSGOD SID described at above.

APP stated (in a conversation after he had completed his report) that, given the high workload for aircrew on departure, pilots who are instructed to level at 2500ft or below are not routinely asked to verify their Mode C, this being done when they report level. APP reported and confirmed subsequently, that, once the A300 was on freq, his focus was on determining how to climb the ac from beneath the Chinook, while avoiding and then climbing over the previously coordinated LARS traffic. Having decided to vector the A300 to the N to facilitate a further climb, in order to verify the A300's SSR Mode C and to confirm that they were above the TSL, he requested (at 1506:48) the A300's passing altitude. The pilot replied that they were, *"now above two thousand nine hundred and now setting the standard altimeter"*; APP immediately replied, *"A300 C/S your climb out restriction was two thousand two hundred feet, avoiding action stop climb immediately, turn right heading zero-two-zero degrees"*. At that point, the radar replay shows the Chinook 0.9nm NW of the A300, tracking W, with the A300 indicating 2800ft (2600ft BZN QFE or 2900ft QNH), tracking 300° to OSGOD.

At the end of APP's avoiding action instruction, the A300 replied at 1507:04 that they were, "*now above three thousand four hundred and right heading zero-two-zero confirm"*. At that point, the radar replay shows the Chinook to be 0.7nm N of the A300, continuing to track W with the A300 indicating 3200ft (3000ft BZN QFE), tracking 300°.

As stated by APP in his report and recorded on the tape transcript at 1507:08, APP leaned over to the [trainee] DIR and told him to tell the Chinook that, "*He's [the A300] gone right through his [the Chinook] level, tell him [the Chinook] about the [A300 C/S]*". Co-incident with the end of this warning, the A300 transmitted at 1507:11, *"TCAS call, so we are climbing"*. At 1507:12, DIR issued a warning to the Chinook stating, *"the A three hundred has gone through his level, he's one mile south of you, north-west bound, indicating one thousand one hundred feet below".* At that point, the radar replay shows the A300 to be 0.6nm SE of the Chinook, indicating 200ft below. The Chinook crew acknowledged the TI.

At 1507:16, with the A300 and Chinook indicating co-altitude on the radar replay, APP asked the A300, *"can you see the helicopter in your one o'clock by half a mile?"* and the pilot replied *"yeah we have it in sight...".* At 1507:25, DIR updated the TI to the Chinook stating, "*that traffic's now above you by two hundred feet*" with the Chinook crew replying at 1507:31 "*that's copied, we're visual, he went quite close over the top of us then*".

The CPA occurred at 1507:30 as the A300 passed approximately 500ft over the Chinook.

The immediate cause of this Airprox was the climb by the A300 above the climb-out restriction imposed by APP; however, to explain why that occurred would require access to the A300 crew which is outwith the mandate of BM SM and will be addressed in the parallel UK AAIB investigation.

A review of CAP413, the Manual of Military Air Traffic Management, RAF ATM Force Orders, CATCS teaching, liaison with RAF ATM STANEVAL and a straw-poll of ATM Examining Officers was conducted. This showed, as highlighted above, that significant discrepancies exist in terms of the phraseology to be used in the passing of climb-out restrictions to ac.

In terms specifically of the ATM aspects on the day of the incident and based upon the accepted standard of phraseology in use by RAF ATM terminal units, TWR and APP both acted correctly in passing the climbout restriction to the A300; moreover, the ADC should be commended for persevering with obtaining a readback of the climb out restriction from the A300 crew. APP, faced with a relatively complex task in facilitating the safe departure of the A300 against the Chinook and the LARS traffic, understandably focussed on planning, assuming that the A300 would adhere to the climbout restriction. Whilst hindsight and 'best practice' suggests that APP should have re-iterated the climb instruction to the A300 on the initial call, his stated priority was, understandably, providing the A300 with TI on the Chinook. Moreover, there is no clear regulatory guidance on this specific matter. Once APP noted that the A300 had climbed through 2200ft QNH, although his attempts to control the situation and ensure that DIR was apprised of the situation were commendable, given the A300's RoC, the opportunity for APP to avert the Airprox had been lost.

While the immediate cause of the Airprox was the A300's climb through the altitude assigned it by APP, based upon the anecdotal misunderstanding by the A300 crew of the phrase 'climbout restriction', this latent condition can be seen to have been the root cause.

SO1 ATM Regs at the MAA has undertaken to raise the issues identified with respect to CAP413 and 'climbout restriction' phraseology with the Phraseology Working Group.

BM SM has requested that RAF ATM Force Cmd liaises with RN Fleet ATM, BM SM, CATCS the MAA and the CAA to review CAP413 with regard to those issues identified with respect to 'climbout restriction' phraseology.

UKAB Note (1): Any small discrepancies in the timings of radar data are as a result the use of the recordings of different radar heads in different sections of the report. The timings on the RT transcripts accord with those on the Clee Hill Radar.

UKAB Note (2): The AAIB conducted an investigation of this occurrence under their remit to investigate serious incidents.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The Board noted the AAIB report (AAIB Bulletin 7/2012, on their website: Air Accidents Investigation: July 2012) and agreed their findings.

The CAA AATSD Advisor informed Members that CAP413 promulgates jointly agreed civil/military RT phraseology. It was his view that, although there were significant mitigating factors, the incorrect phraseology had contributed to the incident. A civil controller Member opined that the RAF should address the issue that the controller used a phrase that is not in CAP413, not taught at CATCS but appears to be widely used by RAF ATCO's and crucially by examiners. He opined that the phraseology 'after departure climb to altitude 2200', (due traffic... could be added as a nicety) is short and unambiguous. He went on to highlight the dangers to aircrew of not passing altitude and cleared level on departure. Another controller observed that, judging from the transcript, the crew were not native English speakers and emphasised the importance of the entire controlling team treating such crews with particular attention. Members were informed that foreign crews operate into Brize Norton as a matter

of routine and the controllers are fully aware of the need to make due allowances for non-native English speakers. Members noted BM SM's comments (in the Part A above) regarding correct phraseology for 'departure restrictions' and accepted that the teaching for military controllers had been amended.

Members sympathised with the Brize Norton ADC and commended his persistence in attempting to get a correct readback of the A300's departure clearance; however a controller Member pointed out that controllers must persevere until a full and accurate readback of any clearance is received; this provides him with an indication that the crew have understood the message. An airline pilot Member agreed but added that there might have been a flight deck CRM issue as both pilots should understand and agree any clearance. Since the AAIB Report indicates that both pilots understood the term 'climbout restriction', it appeared that one or both of the pilots might have been distracted by the short, but unfamiliar, taxi pattern or by the reduced RW length. He also pointed out that when the TWR controller passed the climb-out restriction and had to persist to get the crew to acknowledge, he did eventually get the pilot to say *"yeah, two thousand two hundred feet copied"*. This then places a responsibility on the pilot to understand what he has acknowledged despite not repeating the words 'climb-out restriction'. A pilot should not repeat a set of numbers to ATC requesting a read back and then completely ignore them, without considering what they relate to. The pilot had a responsibility in this respect that he did not fulfil. The crew's subsequent climb above their cleared altitude was more likely to be as a result of what was happening on the flight deck than a misunderstanding of the 2200ft 'restriction'. CRM broke down for whatever reason.

A Controller Member highlighted the issue of the A300 crew not checking-in with APP correctly (CAP413 Chapter 3 para 1.4.1) and APP not querying the A300's passing and cleared level on departure because he thought the crew were in a high workload and it is not routine for ac below 2500ft to be asked. Since this was not commented on by BM SM he opined that there may be a local instruction that goes against requesting a crew on departure to report their passing level if they do not pass it. Finally he commented that APP passed traffic info on first contact to the A300, rather than check passing level. He opined that RAF ATCO's need to adopt a more 'defensive controlling' attitude and prioritise their workload better; the first thing should have been to check the level passing and confirm to what level the ac was climbing. Once this is checked the TI becomes more relevant and accurate.

Putting all these factors together the Board agreed that there had been a chain of events leading to the A300 climbing through the altitude assigned by Brize Norton ATC. The crew did not assimilate the climb out restriction of 2200ft [although the AAIB report stated that they were aware of the intended meaning of the phraseology] and the ADC did not persevere in his efforts to make the crew read back the instruction in full. Once airborne the A300 crew did not confirm their cleared altitude when they checked in and the APP did not challenge the crew's understanding of their cleared altitude. Once this final barrier had been breached the high climb rate of the A300 left no time for further intervention by ATC.

In assessing the risk Members looked at the barriers remaining to prevent a collision. Both the APP controller and the Chinook crew detected the confliction too late to affect the outcome. However, the A300 crew first saw the Chinook at a range of 1900m, then reacted correctly to their TCAS warning. A majority of Members considered the resulting separation was less than optimum, with the A300 climbing through the Chinook's level at a range of 850m; at the CPA in azimuth of 100m, the A300 was 500ft above the Chinook. Nevertheless, given the A300 crew's visual sighting and correct response to TCAS, Members were satisfied that the risk of actual collision had been effectively removed.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The A300 crew climbed above the altitude assigned by Brize Norton ATC.

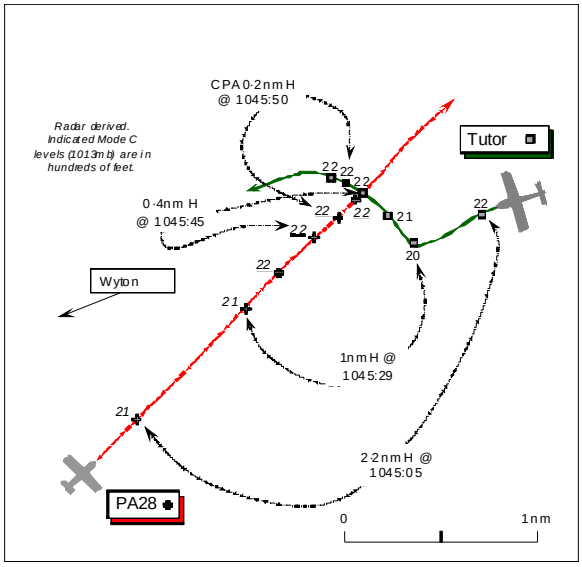
Degree of Risk: C.

Contributory Factors: The use of non-standard RT phraseology.

AIRPROX REPORT No 2011161

AIRPROX REPORT NO 2011161

Date/Time:	25 Nov 2011 1045Z	
Position:	5226N 00010E (11nm ENE of Wyton)	
Airspace:	London FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Grob Tutor TMk1	PA28
Operator:	HQ Air (Trg)	Civ Pte
Alt/FL:	2000ft	2500ft
	RPS (1017hPa)	NK
Weather:	VMC CLAC	VMC NK
Visibility:	20km	>10km
Reported Separation:		
	Nil V/100m H	Not seen
Recorded Separation:		
	Nil V/0·2nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE GROB TUTOR TMK1 PILOT reports he was conducting a local VFR solo continuation training sortie from Wyton, whilst in receipt of a reduced TS from Marham ZONE on 124·15MHz. A squawk of A3662 was selected with Mode C; elementary Mode S and TAS are fitted.

During GH, flying into wind to track towards Wyton for a stalling setup, he encountered a shallow layer of FEW cumulus clouds at 2000-2400ft so he entered a climb to remain VMC. He was not able to out climb the cloud, so following a full lookout with nothing seen he commenced a climbing turn to the R. Once established in the climbing turn, ZONE transmitted a traffic call advising of traffic, close - 2-3nm away - but not on a conflicting track. He rolled out of the turn into a straight climb at 80kt. When checking the 'downgoing' port wing, another ac [the PA28] was seen 'close' in his 10 o'clock 100-200m away flying at the same level, on a conflicting course. The white PA28 appeared from within the cloud gap but had not been visible beforehand. To avoid it he initiated an evasive turn to the R at 60° AOB flown at full power. The conflicting PA28 maintained a straight and level course with no avoiding action apparent. No prior indication had been given by his Tutor's TAS about the PA28, which passed about 100m to port with a 'very high' Risk of collision. He reported the Airprox to ZONE over the RT as the PA28 passed into his 6 o'clock with no further conflict.

His Tutor is coloured white and blue; the white strobes were on.

THE PIPER PA28 PILOT reports he was flying a solo VFR NAVEX from Cambridge and return in a level cruise at 2500ft at 105kt. He was in receipt of a BS from Cambridge APP on 123·600MHz and a squawk of A7000 was selected with Mode C; Mode S is not fitted. He flew a route from Cambridge – Oakington (disused A/D) – Earith – along the Bedford Levels to the Ely/March railway line – March; thence following the railway line to Whittlesey – Grafham Water to return to Cambridge. The Grob Tutor flown by the reporting pilot was not seen.

His aeroplane is coloured white/grey/red; the HISLs and red tail beacon were on.

THE MARHAM ZONE CONTROLLER (ZONE) reports that he was instructing an ab-initio controller under training in ZONE working a single VHF frequency. He assessed his workload as Medium with 6 ac on frequency: 1 ac under a TS and 5 ac under BS over a 40nm range from Marham.

The Tutor pilot declared a PRACTICE PAN with simulated engine mechanical failure, executing a PFL. The UT controller gave the Tutor pilot a heading for Wyton and a terrain reminder, requesting that the pilot report climbing away after the PFL. After climbing away with the PFL complete, the Tutor pilot levelled at 2000ft heading W. Traffic information was given on unknown ac squawking A7000 [the PA28] 2nm SW of the Tutor tracking NE indicating

2000ft Mode C. Traffic information was called for a second time when the unknown ac was 1nm SW of the Tutor tracking NE indicating 2000ft, whereupon the Tutor pilot reported visual. Later, once well clear, the Tutor pilot reported an Airprox with the unknown ac. The Airprox position, weather and details were noted and the Tutor pilot requested to contact the Marham ATC SUPERVISOR after landing. He and his UT were relieved from the console shortly afterwards.

BM SAFETY MANAGEMENT reports that this Airprox occurred to the W of Littleport some 19.2nm SW of Marham; the Tutor pilot was in receipt of a reduced TS from Marham ZONE following the selection of radar processing filters to reduce surveillance clutter; the PA28 pilot was in receipt of a BS from Cambridge APP.

ZONE was manned by an ab-initio recently graduated from the Joint ATC Course and an experienced instructor. The incident sequence commenced at 1044:00 as the Tutor called "*climbing away*" from a PFL which had been instigated at 1038:53. At this point, the PA28 was 5.7nm SW of the Tutor, tracking NE'ly towards the Ely-March railway line, indicating 2100ft Mode C (1013hPa); the Tutor was tracking W'ly indicating 600ft Mode C (1013hPa).

At 1044:37, with 3.9nm lateral separation between the two ac, as the Tutor climbed through 1100ft it turned L onto a WSW'ly track. Between 1044:43 and 1045:00, ZONE was involved in liaison with unrelated traffic operating N of Marham.

At 1045:22, ZONE provided TI to the Tutor pilot about the PA28 stating, "*traffic south-west 2 miles* [radar replay shows 1.4nm]*, opposite direction, indicating same*" which was acknowledged by the pilot. Up to this point, both ac had maintained their respective NE'ly and WSW'ly tracks which, by extrapolation, would have seen them pass with approximately 0.3nm lateral separation.

Subsequent to completing his report, the ZONE instructor has stated that during the time from 1045:00 until 1045:22, the trainee was continuing to divide his attention between other ac on frequency. They did not believe that, given the relative speeds of the ac, there was a requirement to provide TI earlier.

CAP774 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… 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 and to allow for an update in traffic information if considered necessary.'

At 1045:30, the Tutor commenced a right turn to steady on a NW'ly track at 1045:42. During this turn, at 1045:38, ZONE updated the TI on the PA28 stating, "*previously called traffic, south west, 1 mile* [radar replay shows 0.7 nm]*, indicating 2 thousand feet*." The Tutor pilot replied immediately at 1045:46 that he was visual with the PA28 and later reported that the 'aircraft came from within the cloud gap but was not visible beforehand.' The PA28 passed 0.1nm SE of the Tutor. Potentially of note is the fact that the CPA was approximately 1nm S of the Ely-March rail line, the PA28 pilot's notified turning point.

[UKAB Note (1): The CPA was recorded on the Stansted 10cm single source radar as occurring at 1045:50, as per the diagram, with the PA28 tracking NE 0·2nm S of the Tutor that was heading NW, with both ac indicating 2200ft Mode C.]

Given the pilot's responsibility to 'see and avoid', this incident was caused by a late sighting on the part of the Tutor pilot, contributed to by the cloud reported in the area, and a non-sighting by the PA28 pilot. From an ATM perspective, whilst the TI provided at 1045:22 was timely enough to enable the Tutor pilot to assimilate the information, it is reasonable to argue that this was as a result of the relative speeds of the two ac, rather than deliberate decision making by ZONE that they could delay passing TI.

Although there were no RT transmissions between 1044:04 and 1044:43, it was not until the Tutor turned onto a WSW'ly track at 1044:37 that the risk of confliction was introduced between the 2 ac and, by inference, the requirement to pass TI to the Tutor. Given that ZONE was busy with unrelated traffic between 1044:43 and

1045:00, this allowed only a relatively short time window in which ZONE could have provided TI earlier; 1044:37 to 1044:43 and from 1045:00.

From conversation with the ZONE instructor it appears that, from the trainee's perspective, the delay in providing TI was caused by the interruption of their work cycle by the unrelated traffic at 1044:43, the place of the Tutor within that work cycle and the wide geographic spread of the traffic. However, whilst the instructor felt that the TI was timely and did not perceive a requirement to intervene, BM SM contends that when provided at 1.4nm separation, the TI was later than is both ideal and required. Whilst the delay in providing TI did not cause the late sighting of the PA28 by the Tutor, it was, alongside the cloud structure, a contributory factor.

ATSI reports that at 1034:10 the PA28 pilot called Cambridge APP (123.600MHz) as it left the cct. The pilot requested a BS, which was agreed and reported that the flight would be GH to the W and NW. The ATS from Cambridge ATC was provided without the assistance of surveillance radar.

The Cambridge weather was: visibility in excess of 10km and cloud FEW at 2200 feet, QNH 1022hPa.

At 1039 the PA28 reported O/H Oakington. The PA28 pilot's report indicated that the navigation exercise being followed would route Oakington – Earith – along the Bedford Levels to its intersection with the Ely/March railway. A course would then be set to March. Surveillance Replay confirmed this as the route being flown and at 1043 the PA28 was observed to turn R at Earith and route NE bound parallel to the Bedford Levels.

[UKAB Note (2): ATSI also provided a very helpful radar synopsis, broadly in accord with the diagram and that of BM SM, but omitted here in the interests of brevity.]

Both ac were in Class G airspace at the time of the Airprox, where the avoidance of collision rests with the pilots.

At 1047:40 the PA28 reported having climbed to 3100ft and being W of Ely, en-route to March.

HQ AIR (TRG) comments that there are several inconsistencies in the Tutor pilot's report, but these do not materially change the assessment of the event. The pilot reports taking evasive action based on his sighting of the PA28, which occurred after rolling out from a R turn. The reported evasive turn to the R is not apparent from the radar trace. The sighting appears to occur when the PA28 is at about 0.7nm in the Tutor's 9.30-10 o'clock. The lateness of the TI was a significant factor as it gave little time to achieve a visual acquisition, and more so because the TAS proved ineffective in this instance. Equally, it gave the pilot minimal time to consider opting for a DS, and even less time for such a service to be effective. In the event, the PA28 was sighted as early as practicable, using effective lookout techniques, and the encounter was a conflict in Class G. Following the turn, the geometry of the conflict left the Tutor pilot with few options to increase separation, other than to climb, descend, or increase speed. Albeit late due to the cloud, the sighting by the Tutor pilot, aided by the TI passed, meant that he retained the ability to avoid an actual collision, even if the geometry had been worse. It is a concern that the PA28 pilot, who emerged from an area that the Tutor pilot had assessed to be unfit for VFR flight, did not see the Tutor despite it passing through his 12 o'clock, co-altitude, at about 0·4 - 0·6nm. This event highlights the rationale behind the VFR requirements in terms of separation from cloud, and the short acquisition time available at the limits of those requirements.

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 Tutor pilot had wisely obtained a TS from Marham ZONE to assist his lookout, albeit that this was a 'reduced' service as the use of primary radar filters to reduce clutter will inevitably attenuate the radar's capabilities somewhat. Whilst taking account of the 'reduced' TS, the Tutor pilot would have expected timely and accurate TI to be provided on other ac observed by ZONE in the vicinity that might present a conflict. The Board recognised that the LATCC (Mil) radar recording does not replicate the radar picture displayed to Marham ZONE, but the BM SM report nevertheless highlights that the first iteration of TI about the PA28 had been passed when the aeroplane was at a range of about 1·4nm – not the 2nm transmitted within the ZONE trainee's call. The radar recording substantiates that this TI was being transmitted as the Tutor pilot was executing his R turn NW'ly; whilst the TI was

relatively complete, Members agreed that this was given later than ideal. Although the mentor suggested his trainee was busy beforehand, it seemed that he should have ensured that his ab-initio trainee was giving due priority to the TS traffic where necessary, ensuring the TI was timely and stepping-in himself if necessary. Members suggested that when the Tutor pilot reported climbing away from his PFL might have been a more appropriate juncture. While it is often difficult to judge how much latitude to give a trainee before stepping-in, the essential point here is that the instructional setting should not be allowed to adversely impact the provision of the TS to the Tutor pilot to any significant degree.

Whilst the TI had alerted the Tutor pilot to the unseen PA28 somewhat late, it was apparent that cloud had masked its presence until the Tutor pilot saw it in his 10 o'clock, whereupon he turned away robustly at 60°AOB under full power. Whereas the pilot reports this sighting range as 100-200m, the radar recording suggested that at that point the range was somewhat more than his estimate; the minimum separation was also slightly greater and in the order of 0·2nm – 400yd - as evinced by the Stansted 10cm recording. This convinced Members that the Tutor pilot had seen the PA28 as early as he could in this situation, despite the absence of an alert from the Tutor's TAS. It was not clear why the TAS had not reacted but the Board was reassured to learn from the HQ Air Trg Member that the Tutor pilot's Unit are tracking the performance of the Tutor TAS installation closely. The Board agreed that TCAS I devices such as TAS should only be considered as an adjunct to a thorough lookout regimen. The Board concluded that for his part, the Tutor pilot had done all that might be expected of him in these circumstances.

Turning to the PA28 pilot's account, it was plain that he had elected to remain with Cambridge ATC during his VFR NAVEX and the ATSI report confirms that he had been afforded a BS. Cambridge were unable to supplement that with a radar service even if he had asked for one and Members perceived that it might have been preferable in this instance to call Marham ZONE and request a TS. As it was, the PA28 pilot did not see the Tutor at all as it crossed less than ½nm ahead of his aeroplane from R – L, indicating exactly the same level the radar recording reveals. It seems that the PA28 pilot's lookout might have been impacted by the same clouds that had encouraged the Tutor pilot to climb above them to ensure that he could maintain VMC. The PA28 pilot shared a responsibility to 'see and avoid' other ac whilst operating VFR in Class G airspace. Moreover, the geometry of this encounter was such that the Tutor was always to his R and in this situation he was required by the 'Rules of the Air' to 'give way' to traffic to his R. However, he had not seen the Tutor, leading the Board to conclude that the Cause of this Airprox was a non-sighting by the PA28 pilot. Nevertheless, the Board agreed that any Risk of a collision had been countered effectively by the Tutor pilot's sighting and robust avoiding action, resulting in the minimum separation evinced by the radar recording.

PART C: ASSESSMENT OF CAUSE AND RISK

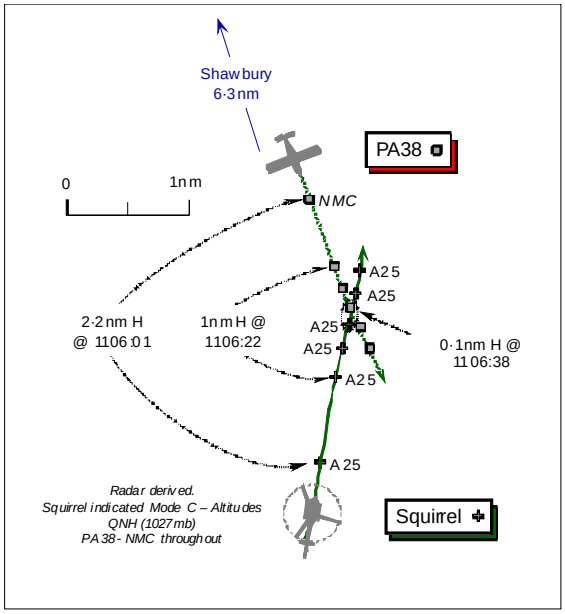
Cause: A non-sighting by the PA28 pilot.

Degree of Risk: C.

AIRPROX REPORT No 2011162

AIRPROX REPORT NO 2011162

Date/Time:	23 Nov 2011 1106Z	
Position:	5242N 00235W (163° Shawbury A/D 6·3nm - elev 249ft)	
Airspace:	Shawbury AIAA	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Squirrel HT Mk1	PA38
Operator:	HQ Air (Trg)	Civ Trg
Alt/FL:	2200ft	2000ft
	QFE (1014hPa)	QFE
Weather:	VMC CLOC	VMC CAVOK
Visibility:	10km	>10km
Reported Separation:		
	300ft V	NK
Recorded Separation:		
	<0·1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE SQUIRREL HT Mk1 HELICOPTER PILOT reports he was conducting an instrument training sortie from Shawbury; the PF in the RH seat was using an IF training visor. After departing 'Box 'C', which is part of the Shawbury instrument flying training area, the Squirrel was descended from 3000ft to 2200ft QFE under a TS from Shawbury APP on 282·00MHz. A squawk of A0237 was selected with Mode C; neither TCAS nor Mode S is fitted.

Heading 010° at 90kt, level at 2200ft QFE (1014hPa) in VMC with SCT cloud at 3000ft, inbound for a radar to PAR recovery to Shawbury, APP passed TI about traffic 4nm away but with no height information available; the traffic was not seen. The traffic was reported again at 3nm range without height information and remained unseen. About 2min later, a white single engine low-wing civilian light ac was first seen ¼nm away approaching from 1 o'clock on a reciprocal heading, which passed 300ft underneath his helicopter in level flight and slightly to starboard. Although in no immediate danger - he assessed the Risk as 'low' – both pilots were concerned at the late sighting and close-proximity of the ac as it passed.

His helicopter has a black/yellow colour-scheme; the HISLs and landing lamp were on.

THE PIPER PA38 TOMAHAWK PILOT reports he was conducting an instructional VFR flight with a student routeing from Hawarden direct to a turning point just S of Telford at 90kt, in a level cruise at 2000ft Shawbury QFE. Following the MATZ transit, he was in receipt of a BS from Shawbury RADAR (LARS) on 120·775MHz. The assigned squawk of A0241 was selected; neither TCAS, Mode C nor Mode S are fitted.

As they cleared the summit of the hill to the SW of Telford [after the Airprox occurred], heading 150° slightly into Sun, they began an 80kt cruise climb to 2300ft QFE to clear the operating cooling towers ahead, informing RADAR of their new height when level. After turning at Broseley they routed NW at the same height. The helicopter flown by the reporting pilot was not seen.

His ac is coloured white with a blue stripe; the HISLs were on.

THE SHAWBURY APPROACH CONTROLLER (APP) reports he was mentor to a trainee controller on the APP position. The crew of the Squirrel helicopter was under a TS descending to 2200ft Shawbury QFE when conflicting traffic was spotted, he thought 3nm N of the Squirrel. TI was given in the correct format [and actually transmitted by the trainee at a range 4nm] and was subsequently updated, advising the Squirrel crew of the 'previously reported traffic 12 o' clock, 3 miles crossing left to right..', which the crew acknowledged. At no time did he believe there was a danger of collision as the correct TI had been passed and it was evident from his displayed radar

picture that the contacts would not merge. The pilot of the Squirrel did not ask for any further TI or avoiding action, but then reported seeing a light civil ac passing about 500ft below them.

THE SHAWBURY ZONE CONTROLLER (LARS) reports taking over the position at about 1055Z; several tracks were handed over that were in receipt of a BS. One of these was a PA38 from Harwarden on a NAVEX, using the SWB beacon to transit through the Shawbury O/H from NW to SE. When he took over the operating position the PA38 crew had already been cleared through the MATZ at 2500ft QFE and then several other flights called for a BS in the area; traffic levels were moderate at the time. After the PA38 had passed through the O/H, it continued on its SSE'ly track towards The Wrekin and the Mode 'C' readout was intermittent, he thought [no Mode C is fitted to the PA38], but the weather and traffic conditions were such that he did not consider it an issue. At no point did he consider there to be any confliction or that the PA38 was likely to merge with any other contacts.

BM SAFETY MANAGEMENT reports that this Airprox occurred between a Squirrel HT1 in receipt of a TS from Shawbury APP and a PA38 in receipt of a BS from Shawbury LARS. Shawbury ATC benefits from open-microphone recording; consequently, BM SM had access to all communication between personnel within the ACR. APP was manned by a trainee and an experienced screen controller who described their workload as 'medium to low' with minimal task complexity. Whilst LARS also described their workload as 'medium to low' with minimal complexity, the SUPERVISOR believed that the controller's workload was high to medium and this view is supported by BM SM. The controller had taken over the LARS position about 8½min before the Airprox and was providing a service to 8 ac on LARS – 5 with a BS and 3 under a TS – and bandboxed with Shawbury Low-Level.

The incident sequence commenced at 1058:15 as LARS passed TI to APP on the PA38 crossing the Shawbury CMATZ. LARS stated that the PA38 was, *"Sleap northeast 4 miles tracking south squawking 0-2-4-1 through your overhead 2 thousand feet Q-F-E",* which was acknowledged by APP. No further liaison was conducted between APP and LARS in relation to the PA38 and Squirrel. There was no liaison recorded between the SUP, APP or LARS throughout the incident sequence.

At 1104:12, APP turned the Squirrel onto N from its previous heading of 030°. By extrapolation, at this point the PA38 was 7½nm N of the Squirrel tracking SSE'ly at 2000ft Shawbury QFE, some 2.7nm SE of Shawbury crossing the CMATZ; however, the PA38 squawking A0241 was not displaying Mode C. At 1104:27, APP instructed the Squirrel crew to "*set Shawbury Q-F-E 1-0-1-4 descend to height 2 thousand 2 hundred feet*." Shawbury ATC has confirmed that the descent to 2200ft was to take account of the terrain safe level around The Wrekin, it was not to take account of the PA38 at 2000ft. At this point, the PA38 was maintaining its SSE'ly track approximately 6.4nm N of the Squirrel.

At 1105:14, APP provided TI to the Squirrel crew about the PA38 stating, "..*traffic north 4 miles* (2-sec pause) *tracking east no height information*." This TI was acknowledged by the Squirrel pilot who reported *"..roger now maintaining 2 thousand 2 hundred feet 1-0-1-4".* The radar replay shows the PA38 maintaining its SSE'ly track. At 1105:46, APP updated the TI to the Squirrel crew stating "..*previously called traffic now 12 o'clock* [radar replay shows 11 o'clock] *3 miles crossing left-right, no height information*." Analysis of the radar replay shows that the 2 ac were on constant, almost reciprocal, converging tracks from the start of the incident sequence. Subsequent to completing his written account, the Squirrel pilot has stated that the mental picture that the crew developed, based upon this TI, was that the PA38 was no factor and would pass E of them; however, this may have been made with hindsight. APP gave no further update of TI and subsequently reported that 'at no time did he believe that there was a danger of collision…and it was evident from the radar picture that the contacts would not merge.'

CAP 774 Chapter 3 Section 5 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.'

CAP 413 Chapter 5 1.6.1 states that:

'Whenever practicable, information regarding traffic on a possible conflicting path should (include the) relative bearing of the conflicting traffic in terms of the 12 hour clock with the optional prefix 'left or right' as appropriate; distance from the conflicting traffic; direction of flight of the conflicting traffic; relative speed of the conflicting traffic

or the type of aircraft and level if this is known…Relative movement and level should be described by using one of the following terms as applicable: closing, converging, parallel, same direction, opposite direction diverging,

overtaking, crossing left to right, crossing right to left.'

The PA38 was in receipt of a BS and no TI was passed on the Squirrel; RT on the LARS frequency was continuous throughout the incident sequence. LARS reported that 'at no point did I consider there to be any point of confliction, or that the PA38 was likely to merge with any other contacts.' LARS has subsequently stated that whilst they recall making this assessment at some point during the incident sequence, they cannot recall when.

Between 1106:00 and 1106:25, APP was involved in liaison with unrelated Squirrel traffic. [The CPA occurred, in between sweeps, just after 1106:38 when the PA38 was marginally L of the Squirrel's 12 o'clock at a range of 0·1nm.]

Notwithstanding the non-sighting and effective non-sighting respectively by the PA38 and Squirrel crews and their responsibilities to 'see and avoid' in Class G airspace, the ATM aspects of this Airprox warrant further analysis. Whilst APP passed the initial TI to the Squirrel crew on the PA38, the description of the PA38's track at 1105:14 as "*..tracking east..",* did not accurately describe that track. Moreover, given the PA38's converging track, the description of its track relative to the Squirrel at the update at 1105:46 "*..3 miles crossing left-right*..", did not adequately describe that track either. Combined, these errors may have caused the Squirrel crew's incorrect mental picture. Moreover, although the Squirrel crew did not request updated TI or deconfliction advice, given that they had not called visual with the PA38 and that it continued to pose a definite hazard, the TI should have been updated after 1105:46. Given APP's moderate taskload and low complexity, it is difficult to comprehend how both the mentor and trainee mis-perceived the surveillance display and determined that the PA38 did not pose a continued 'definite hazard' to the Squirrel. Furthermore, whilst it could be argued that the vector onto N at 1104:12 introduced the risk of confliction between the PA38 and Squirrel, there is a hindsight bias inherent in this argument, given the separation that existed when the turn was issued combined with the dynamic nature of operating in Class G airspace. However, given the respective ATSs, whilst the instruction to descend to 2200ft was in-line with regulation, it did not reflect good practice as APP had received prior notification of the PA38 maintaining 2000ft QFE.

LARS was not required to pass TI to the PA38 crew under a BS and even if he had judged correctly that a confliction existed between the two ac that warranted a warning the RT frequency was too busy.

The remaining ATM related safety barrier in this occurrence would routinely be expected to have been provided by a Supervisor. Whilst the SUP states that he witnessed the occurrence, he is unable to recall the event with any clarity and does not appear to have taken a part in the incident sequence. However, whilst direct liaison between APP and LARS may have been difficult given LARS' workload and RT loading, the absence of any liaison being conducted within the ACR suggests that there was a disconnect between the control positions, which would routinely have been filled by the Supervisor.

From an ATM perspective, the TI from APP to the Squirrel crew did not accurately or adequately describe the PA38's track. Given APP's moderate taskload and low task complexity, as the PA38 continued to pose a definite hazard a further update to the TI was warranted.

HQ AIR (TRG) comments that they concur with the BM SM assessment of the incident and agree that the Squirrel crew formed an incorrect mental air picture based on misleading TI. This TI was based on an erroneous assessment that the geometry of the situation was not a definite hazard. Without accurate height information on the PA38, it is not clear how this assessment was reached. As it was, the PA38 was spotted at a late stage and slightly low, so avoiding action was not required to prevent an actual collision. Had the crew opted for a DS, a more comfortable separation might have been achieved. However, with the information provided and the flight conditions prevailing it was entirely reasonable to be operating under a TS.

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 noted that the Squirrel pilot had received two transmissions of TI from APP, but did not see the PA38 until it was ¼nm away, moments before it passed slightly to starboard and beneath his helicopter. The BM SM report shows that the first TI was passed at 4nm and stated that the PA38 was, "..*tracking east no height information*." This TI was incomplete because it did not include the PA38's height of 2000ft QFE, which was known traffic to APP from the co-ordination effected by ZONE, when the PA38's squawk was pointed out to APP prior to the MATZ crossing. The TI was also inaccurate. It was evident to Members that the PA38 was not tracking E when this TI was given and it should also have been clear to the APP mentor that his trainee's TI was plainly wrong as the PA38 cleared from the Shawbury overhead heading SSE, which should have been corrected. It had been suggested by BM SM that the Squirrel safety pilot's mental air picture had been distorted by this inaccurate TI and pilot Members agreed that the pilot's perception would have been of traffic ahead clearing to the E and not flying towards his helicopter. This perception would have been reinforced by the subsequent call of, "..*3 miles crossing left-right*..", which inadequately described the geometry of the situation less than 1min before the CPA. Members agreed that inaccurate TI was part of the Cause. Moreover, as the PA38 continued to pose a hazard, notwithstanding that the Squirrel pilot had not asked for it, a further update of TI was warranted. It was not until the PA38 crossed ahead of the Squirrel into its 1 o'clock that the instructor safety pilot spotted it passing beneath his helicopter. This convinced the Board that the safety pilot in the LH seat had not seen the PA38 until after the conflict was subsiding; therefore, with the PF in the RH seat 'under the hood', this was effectively a non-sighting by the Squirrel instructor and another part of the Cause.

Moments after the first transmission of TI was given by APP the Squirrel pilot reported *"..now maintaining 2 thousand 2 hundred feet 1-0-1-4"* – on the QFE. Therefore, in following the trainee's instructions the Squirrel crew had descended to just 200ft above the PA38's height that had earlier been passed to APP. This should have raised a concern with the APP mentor and controller, and Members questioned the mentor's appreciation of the traffic situation. It was accepted that under the ATSs afforded the respective crews, neither APP controlling the Squirrel under the TS, nor ZONE providing the BS to the PA38 crew, were required to effect separation between these two ac. Nevertheless, Members were perplexed as to why the two controllers had not foreseen the possibility of a confliction or that these two ac contacts were likely to merge with each other. Whilst the radar recording does not reflect the same radar picture displayed to the Shawbury APP and ZONE controllers, the potential for a conflict should have been readily apparent, contrary to both controllers' reports, as it is clear from the recorded radar data that these ac would fly into close quarters. This caused some Members to question why a warning had not been issued to the PA38 crew about the proximity of the Squirrel under the ZONE controller's duty of care. However, no liaison had been effected with ZONE to advise of the Squirrel's descent and, as the BM SM report had contended that the frequency was too busy and the controller's workload was 'high to medium', the Board accepted that ZONE might not have seen the helicopter's Mode C indications, thus a warning might not have been feasible in this instance. Operating under VFR, without the benefit of a TS, the PA38 crew were relying solely on their own lookout scan, but the PIC reports they did not see the Squirrel. It seemed that the PA38 pilot had requested a BS but a TS from ZONE, if available, might have forewarned the pilot of the approaching helicopter. Given that the PA38 crew had an equal responsibility to 'see and avoid' other traffic operating in Class G airspace and did not do so, the Members agreed this was the final part of the Cause. The Board concluded, therefore, that this Airprox had resulted from a non-sighting by the PA38 crew and, following inaccurate TI, effectively a non-sighting by the Squirrel instructor.

Turning to the inherent Risk, only one pilot here had sighted the other ac and that was after the conflict had passed. In the absence of any intervention by ATC, neither crew had seen the other ac in time to take positive steps to ensure appropriate separation was maintained. Indeed it was fortuitous that there was about 200ft of vertical separation as the PA38 passed less than 0·1nm ahead and then down Squirrel's starboard side. Although the Squirrel instructor's sighting at a range of ¼nm and his estimated vertical separation of 300ft would have been sufficient to avert an actual Risk of collision, the Members concluded unanimously that the safety of these two ac had been compromised.

PART C: ASSESSMENT OF CAUSE AND RISK

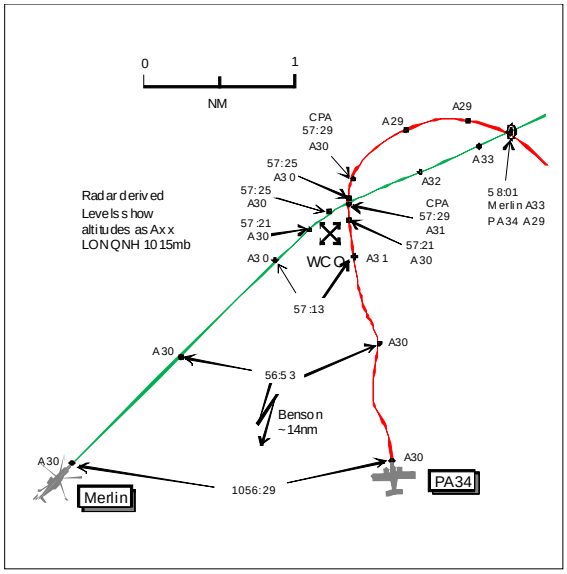
Cause: A non-sighting by the PA38 crew and, following inaccurate TI, effectively a non-sighting by the Squirrel instructor.

Degree of Risk: B.

AIRPROX REPORT No 2011163

AIRPROX REPORT NO 2011163

Date/Time:	2 Dec 2011 1057Z	
Position:	5151N 00057W (WCO)	
Airspace:	London FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Merlin	PA34
Operator:	HQ JHC	Civ Trg
Alt/FL:	3000ft	3000ft
	QNH (1015hPa)	QNH
Weather:	VMC CLBC	VMC CLOC
Visibility:	20km	10km
Reported Separation:		
	Nil V/50-100m H	400ft V/NR H
Recorded Separation:		
	100ft V/0·1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE MERLIN PILOT reports en-route to Cranfield under IFR on an IRT and in receipt of a TS from Benson on 376·65MHz, squawking an assigned code with Modes S and C. The visibility was 20km flying 2000ft below cloud in VMC and the helicopter was coloured green with nav, both landing lights and HISLs all switched on. They had completed IF GH to the W of Benson and were routeing to Cranfield via WCO NDB. Heading 060° at 120kt and level at 3000ft QNH 1015mb with approximately 1nm to run to WCO the Capt saw a white and blue coloured light, twin-engine ac 100m away converging from their R at an identical altitude. The HP, seated on the RHS, took avoiding action to the L, although this was after the ac had passed 50-100m in front, before it banked hard L and then around to the R and departed to the NE. He assessed the risk as very high.

THE PA34 PILOT reports flying a dual training sortie from Oxford, VFR and in receipt of a BS from Oxford on 125·325MHz, squawking 7000 with Modes S and C. The visibility was 10km flying clear of cloud in VMC and the ac was coloured white/blue. Over WCO the student started a R turn onto heading 160° at 120kt and 3000ft QNH when he saw a Merlin in their 4 o'clock 200-300yd away and 400ft above. They continued the turn to pass behind and below it, assessing the risk of collision as none.

THE BENSON APPROACH CONTROLLER reports working the Merlin under a TS before 3 Tutor flights called in quick succession. He looked up at the Merlin and was happy that it had no traffic to affect. He identified each of the Tutors, placing them under a TS and checking the Mode C. He passed TI to all the Tutor pilots with regard to each other and gave them their departure clearances. He then code c/s converted one of the squawks so that it was easier to maintain ident. At this time there was a change of Wx information affecting the QNH and QFE. As all ac were flying on the QNH he made an 'all stations' broadcast and then started to receive acknowledgements from all of the flights on frequency. After an acknowledgement from all of the Tutor pilots he looked up at the Merlin to check its track and get an acknowledgement. He then saw a 7000 squawk approximately 0·5nm away just as the pilot called Airprox. After the pilot passed the details he informed the Supervisor.

THE BENSON SUPERVISOR reports that he did not witness the incident. Having just finished speaking to a pilot regarding the use of the airfield for a non-related flying event he left the ACR; the APP was working one flight. He then carried out a safety brief with a Safety Management team member and on completion of the brief he was advised that an Airprox had occurred. He immediately informed the relevant authorities and impounded the tapes.

BM SAFETY MANAGEMENT reports that this Airprox occurred between a Merlin HC3 operating IFR in VMC in receipt of a TS from Benson APP and a PA34 operating VFR in VMC in receipt of a BS from Oxford APP.

All heights/altitudes quoted are based upon SSR Mode C from the radar replay unless otherwise stated.

The respective narratives of the aircrews, APP and SUP are accurate enough to provide an adequate picture of what occurred during the incident.

From the Merlin crew's perspective, the PA34 had been on a constant relative bearing, co-altitude in their 2 o'clock, since 1055:34. This, combined with the use of an IF visor by the HP in the RHS affecting the crew's lookout to starboard and the lack of TI from APP, caused them to sight the PA34 late. There is no mention in the PA34 pilot's report of any factors that may have affected their ability to visually acquire the Merlin.

The CPA was at 1057:29 with the PA34 at 3000ft having passed ahead of and now 0·1nm from the Merlin in it's 11 o'clock showing 3100ft.

This Airprox was caused by a late sighting by the Merlin crew and an effective non-sighting by the PA34 crew. From the Merlin's perspective, this was contributed to by a lack of TI from APP and the use of an IF visor by the RHS HP combined with the conflicting path of the PA34.

ATSI reports that the Airprox occurred at 1057:29, in Class G airspace, overhead WCO NDB, between a PA34 and a Merlin HC3 helicopter. The PA34 flight was operating VFR in receipt of a BS from Oxford Approach and the Merlin was in receipt of a TS from Benson Radar.

CAA ATSI had access to RT and area radar recordings, together with the written reports from both pilots. The Oxford controller was not aware that an Airprox had occurred and did not complete a report.

The weather for RAF Benson and RAF Brize Norton are provided:

METAR EGUB 021050Z 20003KT CAVOK 06/03 Q1015 BLU NOSIG=

METAR EGVN 021050z 24005KT CAVOK 04/02 Q1015 BLU NOSIG=

The PA34 flight departed from Oxford, VFR contacting Oxford Approach at 1047:22. The PA34 pilot reported passing 2000ft on QNH 1014 and the Oxford controller replied, *"(PA34 c/s) Oxford Approach Basic Service Oxford has no other reported traffic known to the east of the airfield."*

At 1047:33 the PA34 pilot reported, *"and (PA34 c/s) we'll be operating at three thousand feet over the Westcott er NDB."* This was acknowledged by the Oxford controller.

At 1054:15 the radar recording shows the PA34 manoeuvring 3nm to the SE of WCO, with the Merlin 8·2nm SW of, and tracking towards, WCO. Both ac are indicating an altitude of 3000ft.

At 1057:13 the radar recording shows both ac on tracks converging towards WCO. The Merlin is shown 0·5nm to the SW of WCO indicating an altitude of 3000ft and the PA34 0·3nm SE of WCO indicating an altitude of 3100ft.

At 1057:21 the radar recording shows both ac approach WCO at an altitude of 3000ft. The PA34 is tracking NNW with the Merlin in the PA34's half past eight at a range of 0·3nm tracking NE on a converging heading.

[UKAB Note (1): The next radar sweep at 1057:25 shows the PA34 crossing 0·2nm ahead of the Merlin, both ac at altitude 3000ft. Four seconds later at 1057:29 the CPA occurs, the PA34 level at 3000ft having crossed R-L ahead of the Merlin indicating 3100ft QNH, in the Merlin's 11 o'clock at a range of 0·1nm.]

The Merlin then continues on a NE'ly track and the PA34 commences a R turn to re-cross the Merlin's track at 1058:01, at a position 1·4nm NE of WCO. The Merlin is indicating an altitude of 3300ft and the PA34 2900ft. The 2 ac then begin to diverge.

The PA34 pilot's written report indicates that the Merlin was sighted at 4 o'clock and 400ft above. This is believed to correspond with the second pass at 1058:01.

The Merlin pilot's written report indicates that after the first encounter, the PA34 departed NE. It is not clear if the Merlin pilot was aware of the second encounter at 1058:05.

AIRPROX REPORT No 2011163

At 1117:53, the PA34 flight contacted Oxford Approach, 10nm E of Oxford for an O/H join. The controller was not aware of the Airprox and no comment was made by the PA34 pilot.

The PA34 was in receipt of a BS from the Oxford controller, who was not aware of the Merlin helicopter or of the Airprox. CAP 774, UK flight Information Services, Chapter 2, Page1, Paragraph 1, states:

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

Basic Service relies on the pilot avoiding other traffic, unaided by controllers/FISOs. It is essential that a pilot receiving this service remains alert to the fact that, unlike a Traffic Service and a Deconfliction Service, the provider of a Basic Service is not required to monitor the flight'.

HQ JHC comments that the reduced scan from the RHS pilot when conducting the IF sortie with an IF visor and lack of TI from the Benson App resulted in the late sighting of the PA34 conflicting traffic. However, the effective non-sighting by the PA34 pilot flying VFR under a BS from Oxford also contributed to this Airprox. With the limitations of a BS, pilots must always remain vigilant and a comprehensive lookout scan is essential. HQ JHC is also actively pursuing a collision avoidance system, which would have given the Merlin crew vital SA. This Airprox will be used to remind Benson ATC and Merlin crews of the necessity to maintain good situational awareness and lookout for aircrew in high workload environments in the busy Benson local area 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, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

As this incident occurred in Class G airspace, there was equal responsibility on both crews to maintain their own separation from other ac through see and avoid. The Merlin crew, flying under IFR in VMC, was augmenting their look-out by receiving a TS from Benson but the controller did not provide the crew with TI as he was concentrating on 3 Tutor flights that had called for a service. The Supervisor was unable to assist APP in seeing the confliction, as he had left the ACR when only the Merlin was on frequency and was made aware of the Airprox after it had occurred. Members thought that APP should have allocated his priorities better by giving more attention to the ac he already had under service. The Merlin crew's lookout was undoubtedly degraded by the HP, seated on the RHS, using an IF visor; however, the PA34 was there to be seen for some time converging from their R. Pilots should take these factors into account and mitigate this risk by moving their heads or the ac's nose during their lookout scan. It was not clear from their report whether there were rear crewmen on board the Merlin to supplement the lookout on the RHS. In the absence of TI, the crew reported seeing the PA34 100m away as it was converging from their R and taking avoiding action but only after it passed ahead, which Members agreed was effectively a non-sighting and part cause of the Airprox. Members wondered if the PA34 crew was also carrying out simulated IF as, from the radar, the ac appeared to be tracking the WCO NDB and turning O/H the beacon as the Airprox occurred. If so, the Instructor's lookout from the RH seat could also have been impaired if the ac was fitted with IF screens or the HP was using an IF hood or goggles. It was noted that the PA34 crew was in receipt of a BS from Oxford when a radar service may have been available from Brize Norton to supplement their lookout. The Merlin would have been visible to the PA34 crew in their L 8 o'clock position before the PA34 crossed ahead however, the PA34 crew only saw the Merlin in their 4 o'clock as they were turning R, after they had passed ahead of it, effectively a non-sighting and another part cause of the Airprox. Although the PA34 had right of way under the RoA Regulations, these rules only work if pilots see each other's ac in order to comply with them. With both ac passing each other by luck, with neither crew seeing the confliction in time to take effective avoiding action, the Board concluded that an actual risk of collision existed during the encounter.

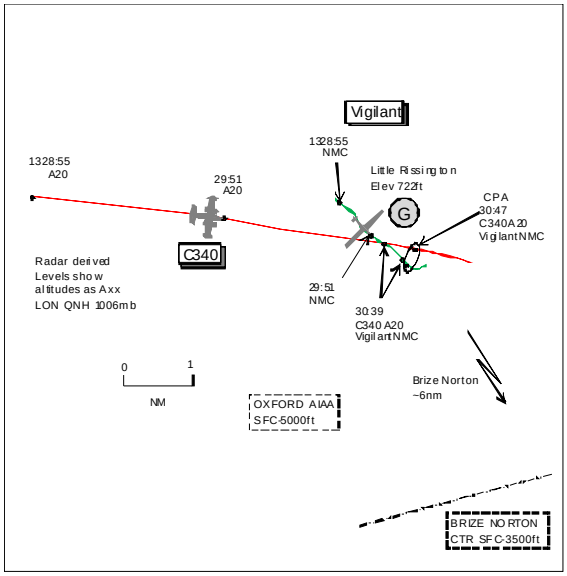
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A non-sighting by the PA34 crew and, in the absence of TI, effectively a non-sighting by the Merlin crew.

Degree of Risk: A.

AIRPROX REPORT NO 2011164

Date/Time:	11 Dec 2011 1331Z (Sunday)	
Position:	5152N 00142W (0·5nm S Little Rissington - elev 722ft)	
Airspace:	Oxford AIAA	(Class: G)
	Reporting Ac	*Reporting Ac*
Type:	Vigilant	C340
Operator:	HQ Air (Trg)	Civ Pte
Alt/FL:	800ft	2000ft
	QFE (979hPa)	QNH
Weather:	VMC CLBC	VMC CLBC
Visibility:	10km	>10km
Reported Separation:		
	200ft V/0·25nm H	500ft V/1nm H
Recorded Separation:		
	0·25nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE VIGILANT PILOT reports flying a local dual training sortie, VFR and in receipt of an A/G service from Little Rissington on 124·1MHz, squawking 7000 with NMC. The visibility was 10km flying clear below cloud in VMC and the ac was coloured white/day-glo with landing, nav and strobe lights all switched on. Heading 175° at 60kt, level at 800ft QFE 979hPa, as he was commencing a crosswind join for RW22, a light twin engine ac was seen to his L and behind at range 0·25nm approaching from the NW on a SE'ly heading at an estimated height of 1000ft aal. This ac was then seen to fly through the established cct pattern, passing 200ft above and 0·25nm away laterally behind his ac. He maintained straight and level on the crosswind leg, delaying his turn onto downwind. The other ac was observed to continue SE'ly and then commence a climb before disappearing into a cloud layer. TI was given to him by the Duty Instructor, which assisted him to visually acquire the twin-engine as it passed. He assessed the risk as medium. Brize were contacted by telephone in order to attempt tracing action and a controller stated that he was not working the traffic but saw a 7000 squawk tracking SE at about 180kt indicating 2000ft.

THE C340 PILOT reports en-route from Gloucestershire to Oxford, VFR and in receipt of a BS from Gloucestershire then Oxford, squawking 7000 with Modes S and C. The visibility was >10km flying 1500ft below cloud in VMC and the ac was coloured white/blue; lighting was not reported. Heading 100° at 2000ft QNH and 145kt, a white with pink/red wing-tips coloured motor-glider was seen at about 1500ft passing ahead and about 500ft below on an approximate heading of 170° (70° relative to his ac) in uncontrolled airspace to the S of Little Rissington. The Motor-glider was seen clear to his R 500ft below and 1nm clear at the CPA and he assessed the risk of collision as none. His track had taken him close to the S of Little Rissington and the airfield was seen as inactive on the ground and in the area at the time of passing, other than the sighted ac. No course change was initiated or was considered necessary as there was no conflict.

ATSI reports that Gloucestershire ATC confirmed that the C340 flight was in receipt of a BS and was requested to report 10nm E of Gloucestershire which it duly did with the C340 pilot reporting changing frequency to Oxford at 1328:17. At the time of the Airprox the C340 pilot would have been establishing contact with Oxford for a BS. Oxford is not surveillance equipped and would not have been aware of the presence of the Vigilant.

UKAB Note (1): The Brize METARs show EGVN 111250Z AUTO 20010KT 9999 –SHRA BKN039/// BKN049/// 09/05 Q1004= and EGVN 111344Z 20012KT 9999 SCT017 BKN040 09/06 Q1003 WHT TEMPO 6000 RA SCT012 GRN=

UKAB Note(2): The UK AIP at ENR 5-5-1-4 promulgates Little Rissington as a glider launching site centred on 515200N 0014136W where tug ac/Motor-gliders may be encountered sunrise to sunset Fri, Sat, Sun & PH or as notified by NOTAM; site elevation 722ft.

UKAB Note (3): The recorded radar clearly captures the incident. At 1328:55 the C340 is seen 5·3nm W of Little Rissington tracking 095°, G/S 175kt, indicating altitude 2000ft LON QNH 1006hPa. At the same time a 7000 squawk with NMC, believed to be the Vigilant, is seen in the C340's 1130 position range 4·4nm, just 1nm W of Little Rissington, tracking 135° G/S 45kt. The ac converge and by 1329:51, separation has reduced to 2·1nm as the Vigilant is about to cross obliquely ahead of the C340 from L to R. At 1330:39 as the C340 is passing 0·6nm SW of Little Rissington the Vigilant is still tracking SE'ly on the crosswind leg for RW22 in the C340's 1 o'clock range 0·3nm. The CPA occurs on the next sweep 8sec later at 1330:47 as the C340 passes through the Vigilant's 0830 position range 0·25nm. Thereafter the C340 continues to the E and the Vigilant is seen to turn L towards the NE onto the downwind leg for RW22. The Vigilant pilot reported level at 800ft QFE 979hPa during the incident which equates to 1500ft QNH, which would place the Vigilant 500ft below the C340 level at altitude 2000ft as they pass with 0·25nm lateral separation at the CPA.

HQ AIR (TRG) comments that the Duty Instructor provided an excellent service to his ac by providing TI that allowed the pilot to gain tally on an ac approaching from astern. The C340 pilot appears to have seen the Vigilant from some distance ahead as it crossed his nose and perceived no need to take further avoiding action. Whilst he appears to have passed through an active glider site, he was aware of the traffic and maintained sufficient separation, albeit that the Vigilant pilot was still concerned by his proximity. Operations in uncontrolled airspace attract a certain level of risk, which is mitigated through good awareness and lookout. The highest risk, around launch and recovery sites, is reduced if transiting ac remain sufficiently clear.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, radar video recordings, and reports from the appropriate operating authorities.

Little Rissington is depicted on the topographical charts as a glider launching site but with no maximum activity height as winch launching does not take place. A pilot Member commented that although activity is infrequent, transiting pilots should take due regard of traffic operating in an aerodrome cct environment by avoiding the airspace with sufficient separation margins. The C340 pilot had seen the Vigilant as crossing traffic at 1500ft and had deemed that, as it was passing 500ft below his flightpath, there was no need to take avoiding action, Little Rissington appearing to be inactive. However as Little Rissington is on high ground over 700ft amsl, the Vigilant was actually at cct height and joining on a crosswind leg and it was the C340's passage through the cct area which had caused the Vigilant pilot concern and led to the filing of an Airprox. Members commended the Duty Instructor's provision of TI to the Vigilant pilot which enabled him to visually acquire the C340 passing behind and to his L. The Vigilant pilot estimated vertical separation as 200ft; however, this was not borne out from the radar recording which shows the C340 in level flight at altitude 2000ft, 500ft above the Vigilant and the visual cct, with lateral separation measured at 0·25nm. In the circumstances that pertained, the C340 pilot had maintained visual contact on the Vigilant and watched it pass clear to his R and below which allowed the Board to conclude that no risk of collision existed during this encounter.

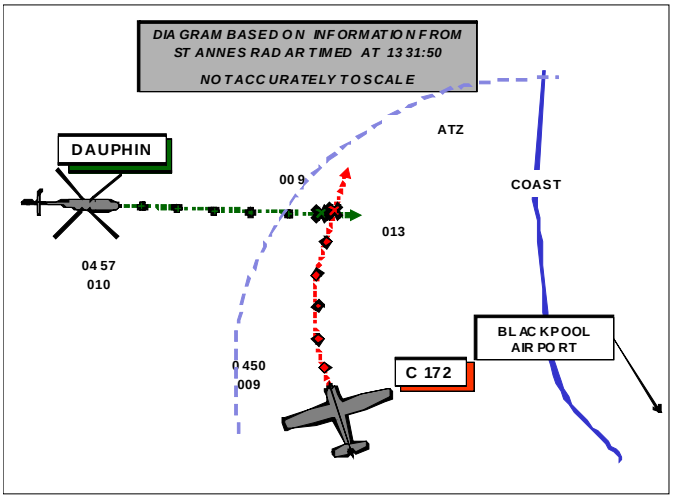
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The C340 pilot flew close to the cct area of an active glider site causing the Vigilant pilot on the crosswind leg concern.

Degree of Risk: C.

AIRPROX REPORT NO 2011165

Date/Time:	30 Nov 2011 1332Z	
Position:	5348N 00304W (2nm NW Blackpool Airport - elev 34ft)	
Airspace:	Blackpool ATZ	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Dauphin 365N3	C172
Operator:	Civ Com	Civ Club
Alt/FL:	1000ft	1000ft
	QNH	QFE
Weather:	VMC CAVOK	NR
Visibility:	35km	NR
Reported Separation:		
	0ft V/300yd H	NR
Recorded Separation:		
	400ft V/0.1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE DAUPHIN 365N3 PILOT reports flying a commercial VFR flight inbound to Blackpool in receipt of a BS [ACS, See ATSI report] from them, while squawking with Mode C and TCAS was fitted. They were heading 090° at 120kt, were cleared by ATC to join the cct from the W, were informed of a C172 on climb out and that its intention was to turn N towards them. ATC then asked them if they were visual; he replied that they were not and the C172 was instructed to pass behind them. The Cessna replied they had the Dauphin visual and would pass behind it as instructed, he thought [see ATSI report] and would climb to 1000ft. They had a TCAS indication of close proximity, but it was not accurate enough at the very close range to establish the exact position of the contact.

As they continued their lookout, they first saw the C172 about 300yd away in the position indicated on TCAS [UKAB Note (1): His diagrams showed the C172 in his 2 o'clock crossing from R to L at the same height ahead of him]. After taking avoiding action, their ac was landed without further incident. He has no criticism of ATC as all their instructions were concise and apparently also understood by the C172 pilot. They had no reason to believe that there was any risk of collision but reported the incident to ATC on landing.

THE C172 PILOT reports that his original Airprox report was mislaid but when contacted he made a further report passing it to the flying club owning the ac who in turn forwarded it to the UKAB, albeit later than desirable.

He departed Blackpool from RW28 and turned N at 800ft climbing at an indicated 1100fpm and 70kt, establishing a heading of 360° at 1000ft.

The Dauphin helicopter was first seen at about his height and descending into Blackpool and he reported visual contact with it to the ADC when it was about 2nm from the coast [offshore] in his 10-11 o'clock position. He then mentally assessed that their tracks would intersect in about 1min without any confliction. He assessed the helicopter was flying at about 120kt which gave him 1min to climb from 800ft to about 2200ft at his indicated performance.

ATC then requested that he position behind the helicopter but this request came much too late for him to comply with.

There was a >40kt Southerly wind at 2000ft and the wind effect on a left turn to crosswind at that stage would have positioned him virtually on a reciprocal heading to the helicopter, would have reduced his climb rate and positioned the helicopter in his blind spot under the nose.

After the ATC request the only safe course of action was to continue with his original plan which proved to be correct and he had the helicopter in view at all times and had adequate vertical separation.

In summary it was he who had the initial visual contact; as he was on the right he had right of way, so in the event of a conflict the helicopter should have given way to him.

THE BLACKPOOL ADC reports that at about 1325, the Dauphin pilot called on frequency and requested joining instructions; he was instructed to join the cct, RH downwind for RW28 and expect to break off to land on taxiway B.

The C172 was cleared to line up on RW28 shortly afterwards and the pilot was passed TI about the Dauphin inbound from the W. The Dauphin pilot was also passed TI about the C172 that was just rolling on RW28 and after airborne it would be turning to the N. Updated TI was then passed to the Dauphin as the ac approached the downwind position as the C172 became airborne. The Dauphin pilot reported that he was not visual with the Cessna, at which point, the C172 pilot reported visual with the Dauphin. The C172 pilot was then instructed to pass behind the Dauphin and to contact Blackpool Radar but the Dauphin pilot reported that the C172 had passed in front of him.

THE DSATCO AT BLACKPOOL AIRPORT reports that TI was passed to both pilots. The Cessna pilot was then instructed to pass behind the helicopter but he passed in front of it causing its pilot it to take avoiding action.

ATSI reports that an Airprox occurred at 1331:51, in the Blackpool ATZ (Class G airspace), which comprises a circle radius 2.5nm centred on RW 10/28, extending from the surface to 2000ft above aerodrome level (34ft).

The Eurocopter AS365N3 helicopter (Dauphin) was operating VFR on a flight from the offshore rigs to Blackpool and was in receipt of an ACS from Blackpool TWR.

The Cessna 172 (C172) was operating on a VFR local flight from Blackpool and was also in receipt of an ACS from Blackpool TWR (on the same frequency).

The Blackpool TWR controller was providing an ACS in Class G airspace. CAP493, the MATS Part 1, Section 2, Chapter 1, Page 1, Paragraph 2.1 states that:

'Aerodrome Control is responsible for issuing information and instructions to ac under its control to achieve a safe, orderly and expeditious flow of air traffic and to assist pilots in preventing collisions between:

a) ac flying in, and in the vicinity of, the ATZ;

b) ac taking-off and landing;

c) ac moving on the apron;

d) ac and vehicles, obstructions and other ac on the manoeuvring area.'

CAP774, Flight Information Services, Chapter 1, Page 1, Paragraph 2, states that:

'Within Class F and G airspace, regardless of the service being provided, pilots are ultimately responsible for collision avoidance and terrain clearance.'

CAA ATSI had access to recordings of RTF from Blackpool and area radar recordings together with written reports from the pilot of the Dauphin and the Blackpool ADC.

The Blackpool METARs are provided for 1320 and 1350 UTC:

METAR EGNH 301320Z 18016KT 9999 FEW045 11/07 Q1013=

METAR EGNH 301350Z 19019KT 9999 –SHRA FEW044 11/07 Q1013=

At 1321:00 the C172 contacted Blackpool TWR requesting taxi; the pilot was given taxi instructions to holding point E2 via Bravo, Charlie and Echo.

At 1328:20 the Dauphin pilot contacted Blackpool TWR with 9nm to run to the airfield and was instructed to report with 3nm to run and to position for a downwind right hand join "*east about*". Blackpool MATS Part 2, Section 1, Chapter 20, Paragraph 1.3 states that with regard to rigs-contracted helicopter operations:

'the pilot may request an arrival or departure directly into wind or east about the tower'.

At 1329:00, the C172 was given a squawk and then clearance to line-up. The controller gave TI about the Dauphin joining downwind right hand, which the C172 pilot acknowledged and he was cleared for take-off; the Dauphin pilot was then passed TI on the departing C172.

When the C172 was airborne the ADC asked the Dauphin pilot, "*are you visual with that traffic now*" and updated the position of the C172 but he informed the controller, "*not visual yet*".

At 1331:20 the C172 pilot reported visual with the Dauphin and climbing to 1000ft. The ADC instructed him to pass behind the helicopter and to contact Blackpool Radar; the pilot readback the frequency change but did not readback or acknowledge the instruction to pass behind the helicopter. (The instruction "*pass behind*" does not specifically require a compulsory readback as dictated in CAP493, Appendix E, Page 11, Paragraph 5.3.1).

Radar recordings show the C172 in a right turn at 1331:32, heading towards the Dauphin. The Dauphin pilot's report states that he heard the instruction from ATC and expected the C172 to pass behind him. Radar recordings at 1331:51 show the C172 crossing right to left in front of the Dauphin at a distance of 0.1nm; the Dauphin pilot saw the C172 late and descended to avoid it and at 1331:40 the pilot informed the ADC that the C172 had climbed in front of them.

Both ac were operating VFR in Class G airspace under an ACS. The ADC gave TI to both pilots and the C172 reported having the Dauphin in sight. When the controller issued the C172 pilot an instruction to pass behind the Dauphin, the instruction was not readback or acknowledged by the pilot; it is not clear whether or not the C172 pilot understood the instruction to pass behind the Dauphin. The instruction to route behind the Dauphin was given in the same transmission as a frequency change and it is possible that the ADC took the readback of the frequency as an acknowledgement of the instruction to pass behind.

As both ac were operating VFR in Class G airspace, and the C172 had reported visual with the Dauphin, there was therefore a reasonable expectation by the ADC that the C172 pilot would discharge his responsibility for collision avoidance appropriately whether or not any instruction was issued.

As there is no written report available from the pilot of the C172 it is unclear why the pilot flew in front of the Dauphin.

UKAB Note (2): The recording of the St Annes Radar shows the incident. The Dauphin approaches the CPA from the W, squawking 0457 with Mode C indicating FL010. After getting airborne the C172 is first seen at FL005 commencing a right turn and squawking 0450. The C172 rolls out on N at 1331:37 continuing its climb and the Dauphin continues tracking E at FL010. The C172 crosses 0.1nm in front of the Dauphin and 400ft above it at 1331:50 just inside the ATZ, as shown in the diagram above.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

Members noted that the C172 pilot informed ATC that he was making a right turn out after the Dauphin was on frequency; shortly afterwards ATC reiterated that it was departing to the North and later passed a further report of its position. This gave the Dauphin crew three opportunities to assimilate that there might be a conflict.

Members observed that it is the duty of ATC to provide information to traffic in the vicinity of the ATZ to allow pilots to prevent collisions. Both ac were operating VFR and the C172 being on the Dauphin's right should have had

right of way under the RoA. While not strictly required to do so, the controller instructed the C172 pilot to route behind the Dauphin and Members agreed that, in the circumstances, this was a reasonable instruction. Bearing in mind the C172 pilot's report however, Members agreed that the call came too late for the pilot to enact it safely. One Military Member disagreed with this view stating that there was sufficient time available and even a small turn to the left would have broken the immediate collision risk and allowed the helicopter to pass ahead. Another Member also pointed out that as the C172 pilot opted not to accept the controller's instruction to go behind the Helicopter for safety reasons, then, notwithstanding that 'pass behind' is not a mandatory readback item, good airmanship would have been to tell ATC that he was not accepting the instructions and why; this would have had the additional benefit that the Dauphin pilot would have had more accurate information as to the C172 pilot's intentions.

The C172 pilot had the Helicopter in sight until it disappeared well below and behind him and was relatively unconcerned by the incident. Despite accurate TI and slightly less accurate TCAS indications, the Dauphin pilot did not see the C172 until it was an estimated 300yd away in his 2 o'clock. Although the Dauphin pilot thought the C172 was at the same alt, the radar showed it to be above him and climbing, giving a separation of 400ft when their flightpaths crossed. Although in the event the ac were well separated, the Dauphin crew was startled and concerned to see the C172 passing ahead of them when they expected it to pass behind. Members agreed that the cause of this concern had been the late sighting of the C172 rather than its proximity.

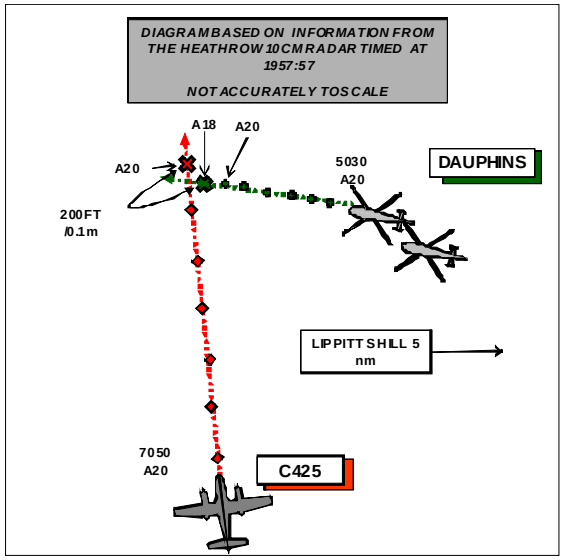
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A late sighting by the Dauphin pilot.

Degree of Risk: C.

AIRPROX REPORT NO 2011166

Date/Time:	5 Dec 2011 1958Z (Night)	
Position:	5140N 00007W (5nm W of Lippitts Hill)	
Airspace:	Lon FIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	Dauphin X 2	C425
Operator:	HQ JHC	Civ Exec
Alt/FL:	2000ft Lon QNH	NR
Weather:	VMC CLBC	VMC CLBC
Visibility:	>10km	NR
Reported Separation:	NR V/0 H	NR
Recorded Separation:	200ft/0.1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE DAUPHIN PILOT reports that he was leading a pair of helicopters that had departed Lippitts Hill heading 270° en-route under VFR to the South Coast for a routine exercise. They were in fairly close line-astern formation with No2 slightly offset to the left, flying with the leader displaying reduced lighting compliant with NVG ops and No2 displaying full lighting as required by the ANO, including nav lights and a beacon. They were squawking with Modes C and S but TCAS was not fitted and were in receipt of a BS from Farnborough North who informed them of a contact in their left 11 o'clock at the same level. The pilots of both ac had visual contact with the ac in their 9 o'clock about 4nm away. The ac closed and both ac had to take major avoiding action by entering an autorotation and a hard bank to the right to avoid a collision; the other ac did not deviate from its track or height.

He reported the incident to Farnborough on the RT and assessed the risk as being high.

THE C425 PILOT reports that he was flying an executive flight solo under IFR from Biggin Hill to Leeds Bradford. He was squawking as directed with Modes C and S and TCAS 1 was fitted. While heading N in the cruise to the E of London under a TS from Thames then Farnborough N as he left CAS, he was advised of conflicting traffic namely 2 helicopters in formation but he could not recall by which unit. He only saw one helicopter and flew above and behind it as it crossed ahead of him from right to left. He was more than 180m [the distance on the radar recording and passed to the pilot by the UKAB] from the helicopter that he saw so he assumes that the [recorded] separation was from the ac that he did not see. He did not receive any TCAS indications.

THE FARNBOROUGH LARS NORTH CONTROLLER reports that at 1953 he was called by the leader of a pair of Dauphin helicopters routeing from Lippitts Hill to a training area near Bournemouth. He gave them a squawk of 5030 and passed the London QNH, 1007hPa. He identified the ac and offered them a BS. About 2min later he saw an ac squawking 7050 leaving the London Control Zone tracking N towards his formation. He considered there to be a risk of collision so he called the traffic to the Dauphins. About 1min later he updated the TI and the leader stated that he was visual with the traffic. Once the tracks had crossed the Dauphin leader stated that his wingman had to descend to avoid a collision. He called Thames Radar and obtained the details of the ac, which was a C425 en-route from Biggin Hill to Leeds Bradford.

At 2000 he closed the frequency and transferred the Dauphins to Farnborough LARS West.

The Dauphin pilot rang the following morning to say that he was filing an Airprox report.

UKAB Note (1): NATS provided a unit investigation report but for brevity it has not been included.

AIRPROX REPORT No 2011166

THE THAMES CONTROLLER reports he was requested to submit a report six days after the event.

A C425 departed Biggin Hill squawking 7050; he issued the pilot a clearance to transit the London City CTR via the London Eye not above an alt of 2000ft.

As the ac was leaving the Zone Northbound he issued either a BS or TS, he could not recall which without reference to the recordings. However, he does recall issuing TI with regard to a radar return that he considered to be in conflict, N of the C425 and tracking to the W. As the ac neared the return, he reiterated the TI and at that point the pilot reported visual. He was observed to pass very close to the traffic before going en-route.

Farnborough LARS called the controller shortly after and asked for details, stating that his traffic had to make a turn to avoid.

He did not take any reporting action because, as far as he was aware, he performed the necessary actions required of his role with regard to the passing of appropriate TI with regard to the service being provided, and again as far as he is aware, in this instance, he was not responsible for the pilot's actions outside CAS.

ATSI reports that an Airprox was reported by the lead pilot of a Dauphin, when the ac came into proximity with a C425 to the E of Elstree at alt 2000ft.

The Dauphins departed Lippitts Hill for a VFR flight to the South Coast and were in receipt of a BS from Farnborough LARS North on 132.8MHz. The C425 departed Biggin Hill for an IFR flight to Leeds Bradford and was initially in receipt of a TS from Thames Radar on 125.325MHz. The Farnborough Controller was providing services in the Farnborough LARS North area of responsibility and the position was closed after the Dauphin was transferred to LARS West; the controller reported that he was using the Heathrow 10cm radar.

The Thames controller was operating using Swanwick Multi Radar Tracking (MRT) surveillance data (verified by replay of the 'slave' picture). Services were being provided to ac within and around the London and London City CTRs.

On 5 December 2011 sunset was 1553. Meteorological information for airfields in the vicinity of the incident was:

METAR EGLC 051950Z 25011KT CAVOK 05/01 Q1007=

METAR EGLL 051950Z 27013KT CAVOK 05/01 Q1007 NOSIG=

The C425 departed Biggin Hill at 1949 and the pilot called Thames Radar at 1950:20; the ac was identified and issued a transit clearance for the London City CTR. A TS was assigned while outside CAS and a RCS assigned while inside the London City CTR; the [London] QNH 1007hPa was passed and read-back.

At 1952:40 the lead Dauphin pilot called Farnborough LARS North when the ac were approximately 1nm N of Lippitts Hill and Swanwick MRT surveillance replay shows the two ac as two distinct primary targets with associated Mode A and Mode C readouts. A BS was assigned and the QNH 1007hPa passed and read-back.

At 1953:30 the Mode A code of the lead Dauphin changed to that assigned by the Farnborough controller: 5030; thereafter, the Farnborough controller requested that the second Dauphin to squawk standby; at 1954:23 the SSR of the second Dauphin disappeared and both position indication symbols became resolved as one target, associated with the lead Dauphin's SSR information.

The Dauphin's SSR indicated that the ac had climbed to alt 2000ft and, at 1955:10, the pilot reported, "*we're gonna adjust to two thousand two hundred one zero zero seven as once we clear the zone it'll keep us out of the night region"* and the Farnborough Controller acknowledged. The Dauphin was 10nm E of Elstree aerodrome in Class G uncontrolled airspace, underneath the London TMA, the base of which in that area is 2500ft.

The second Dauphin's SSR then began to show again on the MRT replay and, at 1955:40, the Farnborough controller reported this to the lead Dauphin pilot. By 1956:00 the position indication symbols of the two ac had amalgamated as one and were associated with the lead Dauphin's SSR information.

The C425 exited the London City CTA at 1956:15 and was Northbound maintaining alt 1900ft. The C425 was 5.3nm south-southwest of the lead Dauphin which was westbound at alt 2000ft.

At 1957:00, immediately after dealing with another ac, the Thames Controller passed TI to the C425, *"…you've left controlled airspace look out for traffic coming into your right one o'clock right to left same alt westbound",* the pilot acknowledged the TI and was then instructed, *"not above 2400 feet traffic service"* and this was read-back by the pilot.

The Farnborough Controller passed TI to the Dauphin flight, *"traffic… south of you* [1957:10] *two miles northbound similar alt";* the C425 was in the Dauphin's 10 o'clock at a range of 2.4nm, both ac an alt of 2000ft. As later reported, the Farnborough controller considered that there was a risk of collision.

At 1957:25 the lead Dauphin pilot called visual with the traffic; at that time the C425 was at a range of 1.6nm, same relative bearing at alt 1900ft while the Dauphin was at 2000ft. The Thames Controller passed updated TI to the C425 at 1957:37 and asked the pilot if visual and he replied affirm; both ac were displaying a Mode C converted alt of 2000ft.

At 1957:54 the ac were 7nm E of Elstree with the C425 was in the Dauphin's 11 o'clock at a range of 0.2nm, crossing left to right; the C425 was at 2100ft and the Dauphin at 2000ft (see Figure 1).

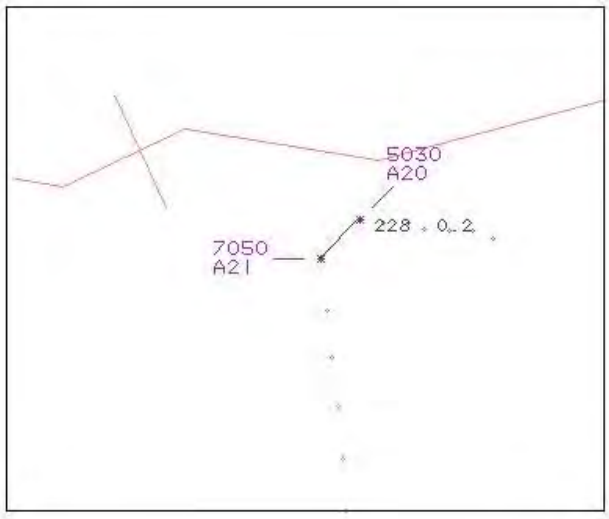


Figure 1: Swanwick MRT at 1957:54

The C425 crossed through the Dauphin's 12 o'clock, left to right, at 1957:58. The C425 was at 2100ft, 0.1nm ahead of the Dauphin, which was at 1900ft (see Figure 2).

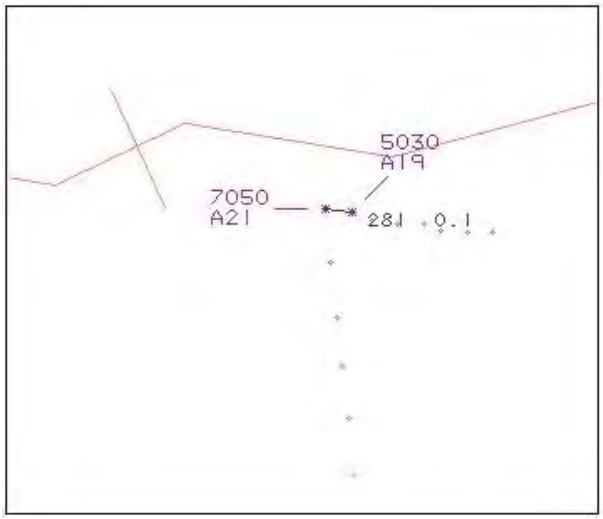


Figure 2: Swanwick MRT at 1957:58

The next update of the MRT replay, at 1958:02, showed the C425 in the Dauphin's 3 o'clock, range 0.2nm (see Figure 3).

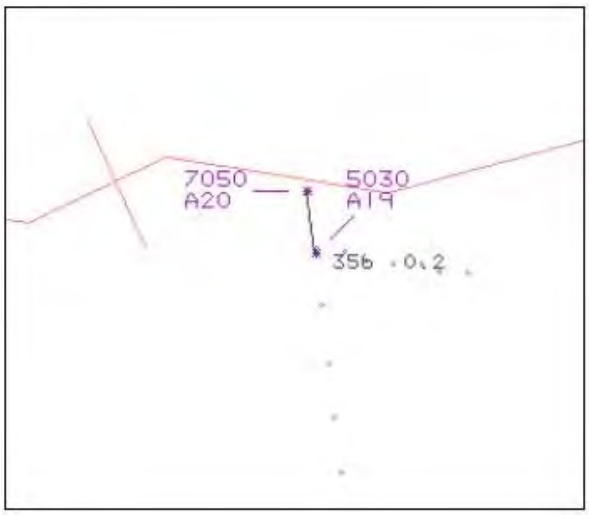


Figure 3: Swanwick MRT at 1958:02

At 1958:20 the Thames controller terminated the service to the C425 and the pilot was instructed to freecall Luton Radar; at the same time, the Dauphin pilot reported to Farnborough, *"that er traffic just flew straight across our path".* The Dauphin pilot also reported that the second Dauphin of the pair had had to, "*descend quite dramatically to avoid him".* The Dauphin was then transferred to the Farnborough LARS West frequency.

At 2000 the Farnborough Controller called the Thames Controller, the incident was discussed and details of the ac involved exchanged.

In accordance with the Service Principles for a TS, the Thames Controller provided specific surveillance derived TI to assist the C425 pilot in avoiding other traffic. Under a TS the avoidance of other traffic is ultimately the pilot's responsibility.

The TI provided by the Thames Controller was based upon the surveillance information available i.e. the pair of Dauphins were resolved on the controller's display as a single position indication symbol. There was no information available to the Thames Controller to indicate that the traffic was a pair of ac and there is no requirement upon controllers providing a TS to ascertain the nature of traffic upon which they pass information.

In accordance with the Service Principles of a BS, the Farnborough controller considered that a definite risk of collision existed and therefore issued a warning, in the form of TI, to the Dauphin pilot. Under a BS the pilot remains responsible for collision avoidance at all times.

The encounter took place at night in Class G uncontrolled airspace. The C425 was flying IFR; however, the Rules of Air applicable to IFR flights outside controlled airspace (RoA Rule 34) contain no specific level requirement for an ac flying at the alt chosen by the C425 i.e. 2000ft. The Dauphin reported operating VFR.

Before, during and after the encounter, surveillance evidence shows that neither the C425 nor Dauphin altered their lateral courses. Both pilots reported visual with each other at approximately the same time, 20 to 30sec prior to the CPA. Any vertical manoeuvre executed by the second Dauphin was not seen as the ac's transponder was not transmitting.

The Dauphin pair and the C425 came into close proximity at alt 2000ft when the minimum recorded distance between the C425 and lead Dauphin was 0.1nm and 200ft. TI was provided to both pilots by the Thames and Farnborough Controllers. There was no discernable surveillance evidence to indicate avoidance manoeuvres by either ac but both pilots reported visual.

HQ JHC comments that contrary to the Dauphin's pilots opening statement, both of the Dauphins were apparently displaying normal lighting. That is upper red strobe with navigation light on bright, this is a standard configuration and in accordance with current regulations. The crews were also using Night Vision Goggles (NVG). Even with the use of NVG it would have been difficult identifying an ac against the background of the cultural lighting. This would also apply to the pilot of the C425.

It is disappointing to note that the Dauphin crews were not utilising the benefits of a TS but it is noted that timely TI was given by Farnborough whilst providing a BS. HQ AAC assesses the incident as a 'late sighting by both' and the confliction was resolved by the Lead Dauphin pilot.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

UKAB Note (2): Since the actual geometry at the CPA was unclear, the Board was shown a snapshot of the Stansted 10cm (single source) radar. They were also informed that prior to the CPA, this radar clearly showed the SSR of the trailing Dauphin being switched to standby when the pilot was requested to do so by Farnborough; at the time the ac was just over 240m behind the leader (within the bounds of the SSR accuracy). The Stansted radar also verified the snapshot at Figure 2 above, in that the C425 passed ahead of the lead Dauphin by an estimated 60m and that the lead Dauphin descended by an estimated 200ft as it approached the CPA; the No2 Dauphin did not paint at any time after its SSR was switched to standby. Although the leader reported that he was squawking with Mode S, no Mode S info was seen on the Radar recordings from either ac.

The HQ AAC Advisor informed the Board that he had contacted the Lead pilot to clarify some aspects of the incident. He informed the Board that both helicopters had been displaying full lighting, which includes nav lights and anti-collision beacons. Since the ac were not operating in the UKNLFS or under a NOTAM this lighting regime is considered mandatory; however he opined that the (military) lighting regulations for ac operating VFR and not in the NLFS are unclear, therefore crews comply with the ANO. He also informed Members that the norm is for trailing ac to formate on their lead 3 rotor spans apart (36m) and suggested that, after he switched his SSR to standby, the No 2 Dauphin had been closing to achieve this. He went on to remind Members of the limitations of NVGs, particularly when operating in areas where there is substantial cultural lighting.

Members discussed the ATC services used by both ac. The C425 had just exited CAS (at 1956:15) and had limited time to agree a service and build his SA of other traffic. The pilot had, however, agreed a TS with Thames at 1957:00, over 45sec before the CPA. In addition, he was passed TI on the Dauphins, controller Members agreed, as early as the situation permitted. The Dauphins requested a BS but in reality were passed the same information they would have received had they requested a (more appropriate, Members thought) TS due to the risk of collision perceived by the Farnborough controller. Despite the inadequacy of their NVGs when looking towards the built-up area, this TI enabled the crew to see (reported at 1957:20) the C425 at distance estimated by the pilot to be 4nm (at 1957:20, 2nm on the radar). They monitored the C425 for a short period before initiating a descent which can first be identified on the radar recording at 1957:53.

The Board observed that they had reviewed several incidents where ac left CAS and almost immediately flew into conflict with traffic avoiding it either laterally, vertically or, as in this case both. Members urged caution by pilots and controllers in such circumstances.

Members considered the route and alt selected by the C425. Although quite legally operating IFR at 2000ft, a controller familiar with operating Thames, opined that a slightly higher alt would have been available had it been requested.

The incident took place about 4nm to the N of the London City CTR boundary and under the base of the CTA, which is 2500ft amsl, in Class G airspace where 'see and avoid' pertains. Members noted the under the RoA the Dauphins had right of way being on the C425's right despite that they were operating under VFR and the C425 under IFR.

In assessing the Risk, Members considered the hazards associated with 'see and avoid' at night using NVGs and by eye alone. Despite effective TI and both flights gaining visual contact as early as their circumstances allowed, it was late contact and the C425 pilot only ever saw one of the helicopters. Although the Dauphins had reacted to the C425 crossing their flight path, the lack of action by the C425 pilot and the limited separation at the CPA persuaded Members that normal safety margins had been eroded.

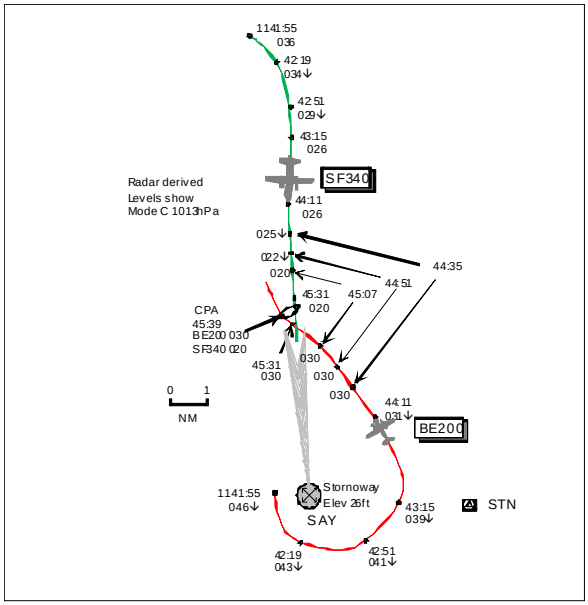
PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict in Class G Airspace resolved by the Dauphin crews.

Degree of Risk: B.

AIRPROX REPORT NO 2011167

Date/Time:	31 Dec 2011 1146Z	
Position:	5818N 00621W (5nm N Stornoway - elev 26ft)	
Airspace:	SFIR	(Class: G)
	Reporting Ac	*Reported Ac*
Type:	SF340	BE200
Operator:	CAT	Foreign Mil
Alt/FL:	2000ft	NK
	QNH (990hPa)	QNH
Weather:	IMC KLWD	NK
Visibility:		
Reported Separation:		
	300ft V/4nm H	TBC
Recorded Separation:		
	1144:35 400ft V/4·7nm H	
OR	1145:39 1000ft V/0·4nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE SF340 PILOT reports inbound to Stornoway, IFR and in receipt of a PS from Stornoway Approach on 123·5MHz, squawking 7426 with Modes S and C. They were approaching Stornoway at the same time as 3 foreign military ac which were using the same c/s prefix with different suffix numbers. As they started their approach the first of these ac had landed, the second ac was on the LLZ RW18 and their SF340 was initially restricted to 3000ft whilst the third ac, the subject BE200, was behind [to the S approaching the SAY] and above them. As they approached the LLZ they were now at 2000ft on QNH 990hPa and the BE200 following them was cleared outbound in the procedure not below 3000ft until advised. Several times during all radio calls the QNH was given as "990 hectopascals or millibars". On their TCAS display they could see that the BE200 traffic 12nm away following them in the procedure did not level-off 1000ft above but kept on descending. Heading 190° at 160kt level at altitude 2000ft flying in cloud in IMC, they were now opposite direction with the distance between them quickly reducing. They asked ATC to confirm the BE200's cleared altitude and ATC replied 3000ft before asking the BE200 flight to confirm their altitude. The BE200 crew confirmed that they were at 3000ft; however, TCAS showed the BE200 as 300ft above their ac. By now separation was around 4nm and reducing so he decided to leave 2000ft early to ensure more vertical separation; this descent was initiated probably 1nm early. Having local knowledge of flying in and out of Stornoway he knew that terrain separation would be alright, with terrain up to 800ft on their L but only a few hundred feet elevation between their ac and the airport. It so happened that there was an opening in the clouds just as the BE200 passed over their ac. They saw it for only a few seconds but judging the separation visually they thought it was 1000ft above; they were passing 1300ft. After landing they told the BE200 crew to check their QNH as 990. An altimeter setting of 1013hPa or 29·90in would result in an ac flying 700ft too low.

RAC MIL reports the BE200 was transiting through Stornoway en-route to the USA. Assistance was requested through HQ3AF to contact the pilot concerned; however, no report has been forthcoming.

ATSI reports that the Airprox was reported by the pilot of a SF340 against a BE200, as the SF340 approached to land at Stornoway, RW18.

The SF340 had departed Edinburgh on a flight to Stornoway and was in receipt of a PS/Aerodrome Control Service (ACS) from Stornoway ATC on 123·5MHz. The BE200 had departed Prestwick on a flight to Stornoway and was in receipt of a PS from Stornoway ATC.

AIRPROX REPORT No 2011167

The Stornoway controller was providing a combined PS and ACS. When the SF340 and BE200 flights initially called Stornoway, service was provided by an outgoing controller. A handover/takeover of the operational position took place and at the time of the incident both flights were being controlled by the second controller.

Meteorological Information:

METAR EGPO 311120Z 20019KT 6000 -RADZ FEW005 SCT009 BKN011 10/10 Q0990=

METAR EGPO 311150Z 20018KT 9999 FEW008 SCT022 11/10 Q0990=

[UKAB Note (1): The UK AIP at AD 2-EGPO-8-1 promulgates the Stornoway LOC/DME/NDB(L) for RW18 as O/H NDB(L) SAY at 3000ft track QDR 360° descending to 2000ft until 6·5D and then carry out a procedure turn L before turning R inbound to establish on FAT 180°. The SAY hold is 1min RH racetrack QDM 180°. The alternate procedure (extended holding pattern) is O/H NDB(L) SAY at 3000ft extend the outbound leg of the RH holding pattern descending to 2000ft, at STW DME 9 (CAT A,B) STW DME 10 (CAT C,D) turn R onto LOC and continue as for the basic procedure.]

The SF340 flight called Stornoway Approach at 1123:20 (UTC) maintaining FL100, 46nm from the STN (VOR/DME). A PS was assigned and an EAT of 1140 was issued. The SF340 flight was instructed to route to the SAY (NDB) to hold. Further descent to FL085 was given.

The BE200 flight called Stornoway Approach at 1125:30 passing FL130 for FL110. A PS was assigned, an EAT of 1150 was issued and the flight was instructed to route to SAY to hold. The BE200 pilot responded, "*Roger at one one thousand c/s.*"

At 1130:10, the SF340 crew was cleared, "*descend to altitude three thousand feet the QNH niner niner zero hectopascals.*" This was read-back correctly by the pilot. After the SF340 had left FL085, the BE200 flight was cleared, *"(BE200 c/s) when ready descend flight level eight five.*" The pilot responded, *"(BE200 c/s) out of one one zero for eight five*."

Between 1131 and 1134 there was a handover/takeover of the Stornoway Approach controller position.

At 1135:50, following a discussion about speed reduction and the prevailing traffic situation, the SF340 flight was instructed, *"…you're clear for the localiser NDB DME procedure runway one eight from the Sierra Alpha Yankee not below three thousand until advise*d…"

At 1136:40, having confirmed that altitude 4000ft had been vacated by the SF340, the controller instructed the BE200 to, *"…descend to altitude four thousand feet on the QNH niner niner zero hectopascals.*" This was read-back by the BE200 pilot as, *"Roger down to four thousand nine nine zero for (BE200 c/s)."*

The SF340 crew called beacon outbound at 1137:40 maintaining altitude 3000ft and was instructed to report localiser established. The Prestwick Centre Multi-Radar Tracking replay displayed the SF340 and BE200 levels in relation to Standard Atmospheric pressure, i.e. as FL. QNH was 990hPa, therefore (23hPa x 27ft/hPa) there was a level difference of 621ft between the displayed FL and the ac's actual altitude. When the SF340 crew called beacon outbound the ac was at FL037.

[UKAB Note (2): The radar recording at 1137:40 shows the BE200 carrying out a parallel entry into the SAY hold from the S tracking N descending through FL080. The ac then turns L at 1139:00 5·5nm N of SAY rolling out on a S'ly track 1min later.]

At 1138:30 the controller requested a level check from the BE200 flight. The BE200 pilot responded, *"Roger seven thousand two hundred*…" Replay showed the BE200 at FL072. The controller requested a further report when the BE200 was, *"…passing altitude six thousand*." The BE200 pilot reported, *"…(BE200 c/s) is six thousand",* at 1140:30.

The SF340 flight became number one to land at 1142:00 and was cleared to continue descent, report leaving altitude 3000 feet and report when localiser established. The SF340 was at FL036 (~A3000ft). The SF340 pilot replied that the ac was localiser established and that the ac was now descending to 2000ft at 11nm. The ac was observed to descend and level at FL026 (~A1979ft).

At 1142:50 the controller instructed the BE200 crew to, *"…descend to altitude three thousand feet on the QNH niner niner zero hectopascals and report your position in the procedure now, in the hold I should say".* The BE200 pilot replied, *"descending through four thousand for three thousand and we are turning back to sierra alpha uniform currently"*.

Between 1142:59 and 1143:07 the BE200 was observed momentarily to be maintaining FL040 (~A3379ft) as it made a L turn outbound from the SAY, having passed 1nm W abeam the NDB. The BE200 flight was then cleared, *"(BE200 c/s) there's er one aircraft ahead on the localiser approximately ten miles at this er time on er passing overhead the sierra alpha yankee overhead the airfield you are clear to commence the alternate procedure that's the er extended holding pattern procedure er from the Sierra Alpha Yankee but not below three thousand feet until advise*d." The BE200 pilot replied, *"(BE200 c/s) roger er we'll extend our holding pattern."*

The SF340 flight was cleared to land at 1143:50. After the SF340 crew read-back the landing clearance the following RT exchanges took place:

SF340: *"Er Stornoway confirm cleared altitude for the number two aircraft*"

Controller: *"(BE200c/s)* [1144:10] *you may descend to altitude three thousand feet but to continue not below three thousand feet until advised"*

BE200: *"(BE200 c/s) roger we are levelling at three thousand."*

At 1144:20 the controller asked the BE200 pilot if he was familiar with the procedure for extending the holding pattern and then turning onto the localiser. The BE200 pilot responded, *"(BE200 c/s) yes sir I'm completely er we're we're fighting this wind right now we're trying to get back over on that side."* After this exchange the SF340 again enquired as to the altitude of the BE200:

SF340: *"Can we just double check that aircraft's altitude we've got him as yeah he's about four miles about eight hundred above* [1144:50]*"*

Controller: *"That er that's er level at three thousand feet for the BE200 c/s (SF340c/s)"* [1145:00]

Controller: *"(BE200 c/s) just confirm that you're level at altitude three thousand feet on the QNH of niner niner zero hectopascals"*

BE200: *"Yes sir* [1145:10] *level three thousand two nine nine zero".*

Controller: *"Roger.*"

At 1144:35 the SF340 commenced a descent from altitude 2000ft (FL026) approximately 7nm N of the Aerodrome Reference Point (ARP). The BE200 was in the SF340's 11 o'clock, range 4·7nm maintaining FL030 (~A2379ft), converging from the L.

At 1145:07 the SF340 had descended to maintain FL020 (~A1379ft) with the BE200 in its 11 o'clock, from the L, range 2·3nm maintaining FL030 (~A2379ft).

The SF340 crew reported at 4nm at 1145:30 and was again cleared to land. The BE200 passed through the SF340's 12 o'clock, L to R, at 1145:31 at a range of 0·7nm, the ac are maintaining FL030 and FL020 respectively. The ac are approximately 5nm N of the ARP. The SF340 is observed to continue its descent at 1146:20.

[UKAB Note (3): The CPA occurs 1145:39 as the BE200 passes 0·4nm SW of the SF340 with vertical separation still 1000ft.]

At 1147:20 the BE200 pilot requested when permission would be given to, *"…turn back inbound… and descend to two thousand.*" The controller instructed the BE200 flight to turn inbound and establish on the localiser and that further descent would follow in approximately 30sec.

As the BE200 continued its approach the following RT transmissions took place:

SF340: *"And (BE200 c/s) check your QNH nine nine zero"*

Controller: *"(BE200 c/s) that's affirm er niner niner zero hectopascals er or niner niner zero millibars that's what it used to be* [1148:50]*"*

SF340: *"Yeah that's what we thought thanks".*

The BE200 flight was cleared to land at 1149:50.

Both controllers that spoke to the BE200 flight passed the pressure in the correct manner, i.e. when pressures are below 1000hPa; "hectopascals" is appended to the QNH value in RT transmissions.

Neither controller challenged the pilot of the BE200 on the quality of read back information, e.g. "one one thousand", "down to four thousand nine nine zero". The BE200 crew never included the word 'hectopascals' in any read back of pressure setting.

At 1145:10 the BE200 pilot gave a read-back of the pressure as, "*two nine nine zero*." This went unchallenged by the controller. It is not known if the controller fully heard this read-back; however, the absence of a challenge likely indicates the controller had not assimilated what had just been said.

29·90 inches of Mercury is equivalent to 1013hPa – Standard Atmospheric Pressure. Allied with the surveillance replay, it can be seen that the BE200 was flying in relation to Standard Atmospheric Pressure, and not the local QNH.

The SF340 crew was fully aware of the developing situation and most likely understood the error that had been made on the flight deck of the BE200. The SF340 pilot adjusted the level of his ac so that the BE200 passed ahead and above by 1000ft.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of the SF340, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC authorities.

Members were disappointed that a report from the BE200 crew had not been received, which denied Members an insight of the crews perspective on the incident. From the thorough ATSI report and the recorded radar data it was clear that the BE200 crew had erroneously set an incorrect pressure on their altimeter subscale, which had led to the crew descending below their cleared altitude and into conflict with the SF340, causing the Airprox.

In the UK it is incumbent on flight crews to ensure that the pressure passed by ATC is assimilated and set correctly on the altimeter subscale, taking into account the units passed and any conversion that needs to be applied for it to be set on the altimeter subscale. The potential for confusion arises when the atmospheric pressure falls below 1000hPa as the value, in this incident 990hPa, was taken as (2)9·90inHg. Procedures in the UK specifically address this issue by requiring the controller to include the unit of hPa with the actual pressure value.

Conversely, CAT pilot Members, familiar with flying operations abroad where inHg are used, stated that careful attention is paid when the atmospheric pressure is given in inHg to ensure the correct conversion is made to hPa from a conversion table, if needed, on the flightdeck. Modern flightdecks with glass cockpits have the ability to set either pressure on the appropriate MFD. Also, UK ac that are manufactured in countries where inHg is the standard pressure unit usually have dual subscales on the altimeter. CAT Members also stated that it is common in the USA that if the pressure is <30·00inHg the value passed by ATC omits the leading 2 from the 4 figure value and no units are mentioned, i.e. “altimeter 990” (29·90inHg).

From the ATSI report it is evident that the Stornoway APP had on several occasions passed the QNH with hPa units however the BE200 crew did not include the word ‘hectopascal’ in any read back of the pressure setting. Military controller Members advised that Mil ATC units have conversion tables readily available to controllers and routinely pass the pressure in both hPA and inHg to visiting flights from countries where inHg is SOP. Members noted that the APP did have 1 opportunity to break the chain when, just 30 sec before the CPA, on being asked to confirm their altitude on 990hPa, the BE200 crew had read back “level 3000 2990”, the incorrect pressure setting. Without knowing the clarity of the RT read back, it was not known if the numbers “2990” were clear enough for the APP to have heard the initial 2 ahead of the 990; up until then the BE200 crew had only ever read back “990” with no mention of units. For whatever reason this incorrect value was not assimilated by the APP who appeared to be unaware of the potential for confusion between units of pressure when the barometric pressure is <1000hPa. Members believed that this potential for confusion needed to be highlighted to controllers and pilots and agreed that a recommendation should be made to the CAA to this effect. Apart from it leading to this Airprox, setting an erroneous pressure setting does have the potential for CFIT with an ac flying below MSA whilst positioning towards the FAT in IMC - a salutary lesson for all aviators.

Members agreed that the SF340 crew had shown excellent SA and correctly alerted APP that they had seen on TCAS the BE200 descending below 3000ft. However, this warning did not have the desired outcome, as the BE200 crew was convinced they were flying at the correct altitude on the correct barometric pressure and the incorrect pressure read back went unchallenged by the APP. In the end, cognisant that the BE200 was flying 600-700ft too low, the SF340 crew elected to descend early to increase vertical separation. This prevented any TCAS alerts/warnings, the ac eventually passing with 1000ft of vertical separation at the CPA with the SF340 crew in visual contact with the BE200 well above. The Board considered that had the SF340 crew maintained 2000ft, their TCAS would almost certainly have generated an RA ‘descend’ or ‘maintain v/s’, depending on where the LOC procedure descent profile had occurred, but probably only for a short duration owing to the 300-400ft of separation that pertained initially. Members discussed the wisdom of this early pre-emptive descent and agreed it was the

correct thing to do. It was done in exceptional circumstances by a crew with excellent SA, familiar with the local terrain in an ac equipped with GPWS. This had placed the ac marginally below the nominal GP initially but the actions taken had removed any risk of collision between the subject ac.

Members noted that the BE200 crew had not flown the alternate procedure (extending the downwind leg of the hold) but had erroneously turned L at the NDB instead of turning R; this had the effect of reducing the lateral separation at the CPA but vertical separation would have still been lost.

Director UKAB was directed to ensure that the US FAA and DoD are made aware of this incident

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Having set the incorrect pressure on the altimeter subscale, the BE200 crew descended below their cleared altitude and into conflict with the SF340.

Degree of Risk: C.

Recommendation: The CAA is recommended to issue a Safety Notice reminding controllers and pilots of the potential for confusion over the units of pressure, which could lead to incorrect altimeter subscale setting when the barometric pressure is below 1000hPa (or 30·00inHg).

Airprox	Date	Aircraft	Position	Risk	Page
2011066	03/07/11	Ventus Glider v OV10 Bronco	2nm N Littleport	C	15
2011067	01/07/11	Sea King HC Mk4 v Untraced Light ac	5nm NE Yeovilton A/D	C	17
2011068	01/07/11	Hawk T1 v DA42	22nm SW Leeming	C	20
2011069	02/07/11	C550B v Discus Glider	2nm NE Cambridge Airport	C	23
2011071	03/07/11	PA42 IIIA v Cirrus SR22	8nm W Upton	C	27
2011072	08/07/11	BE200 King Air v Cessna C525	8nm E ROBIN	C	33
2011073	10/07/11	Nimbus 3 Glider v BE90	3nm WNW Bicester	B	39
2011074	05/07/11	RJ100 v ATR42-300	London City Airport	E	41
2011075	12/07/11	SF340B v Tornado GR4	2.5nm S Stornoway	C	45
2011076	10/07/11	Luscombe 8A v Cessna 172	3nm N Goodwood	A	52
2011077	13/07/11	EC135 v C172	1¼nm SW Godrevy Point	B	54
2011078	12/07/11	VC10 v Tornado GR4	9nm NNE Wyton	C	58
2011079	12/07/11	Tutor v R44 Helicopter	12nm WSW Wittering	B	63
2011080	15/07/11	EC135T2 v Bell 206B	Ash 4½nm SW Manston	C	67
2011081	03/07/11	C152 v DA40	Shoreham	B	70
2011082	14/07/11	EC225 v TL2000	1nm S Newcastle	C	74
2011083	01/07/11	Merlin HC3 v Untraced Light ac	3nm SE Tempsford	B	80
2011084	01/07/11	ASW27B v PA28	1.5nm SW Bourn	C	82
2011085	23/07/11	B757 v Discus BT	12nm E Glasgow	B	84
2011086	18/07/11	Squirrel (A) v Squirrel (B)	1nm SSW Peplow A/D	C	88
2011087	14/07/11	Bell 206 v Bell 206	FATO Sandwich Helipad	C	91
2011088	24/07/11	Discus B v P51 Mustang + Spitfire	2nm N Newport Pagnell	C	95
2011089	22/07/11	AS350 v PA28	11nm NW Shawbury	B	97
2011091	25/07/11	Pegasus M/Light v C130	7.5nm SSE Brize Norton	A	101
2011092	26/07/11	Puma v C42 Ikarus	3nm FIN APP RW01 Benson	C	103
2011093	28/07/11	PA31 v PA24	2nm FIN APP RW24 Goodwood	A	108
2011094	23/07/11	ATR72-500 v TB10	6nm N Jersey Airport	C	111
2011095	08/07/11	C130 v EMB500	9nm SE Brize	C	114
2011096	26/07/11	Vigilant MG v Europa	3nm ENE Syerston	B	128
2011097	26/07/11	Sea King v C152	1.25nm NE Leconfield	C	131
2011098	29/07/11	Viking Glider v AW139	0.75nm NE Wethersfield GLS	C	134
2011099	05/08/11	A109 v C150	9nm W Sheffield	C	136
2011100	05/08/11	BN2T Islander v BE350	2nm SSW Waddington	C	139
2011101	09/08/11	Grob Astir v Untraced M/Light	6nm NW Milton Keynes	A	143
2011102	30/07/11	Vigilant v C172	0.5nm FIN APP RW16 Newtownards	A	145
2011103	05/08/11	Merlin v Tutor	1nm SW Benson	C	147
2011104	02/08/11	Bolkow Bo207 v Squirrel x 2	10nm W Boscombe Down	C	152
2011105	14/08/11	Bolkow 209 v PA28	12½nm SW Rochester A/D	B	155
2011106	06/08/11	AS355 v Tecnam P92	2.3nm NNE Cumbernauld A/D	B	159
2011107	19/08/11	Grob Tutor TMk1 v AS355 F1	1.3nm E Wyton A/D	C	162
2011108	22/08/11	PA34 v PA28	2.4nm NNE Oxford	C	167
2011109	24/08/11	BE200 v Typhoon	9nm Final 05 Durham Tees Valley	A	170
2011110	22/08/11	Tucano TMk1 v Untraced Glider	12nm NE Linton-on-Ouse	B	177
2011111	20/08/11	Vigilant v DR400	Woodvale	C	180
2011112	29/08/11	TriStar v Untraced Paramotor	8nm W Brize Norton	A	184
2011113	31/08/11	KC-135R v Grob G109B	14nm NW Mildenhall	C	187
2011114	31/08/11	Apache AH1 v MC130P	15nm NNE Wattisham	C	190
2011115	03/09/11	Vigilant v Bell 206	Topcliffe ATZ	B	194
2011117	01/09/11	Alpha Jet v DA42 Twinstar	1nm N Henstridge	C	197

2011118	31/08/11	AW139 v Tiger Moth	3nm NW Norwich	C	201
2011119	09/09/11	B737-300 v C172	6nm ESE Blackpool	E	204
2011120	07/09/11	Merlin HM Mk1 v Hawk TMk1	5nm E Culdrose-Helford River	A	209
2011121	08/09/11	Hawk TMk2 v Grob Tutor	10nm W Leeming	B	216
2011122	14/09/11	C152 v Pipersport	16nm E Biggin Hill	B	220
2011123	14/09/11	Hawk (A) v Hawk (B)	4nm E Valley	B	223
2011124	15/09/11	BE200 King Air v Marchetti S205/R	6nm ESE Waddington	E	227
2011125	24/09/11	DHC-1 &ASK13 Glider v C172	1½nm SSW THLD RW05 Lee-on-Solent	C	230
2011126	24/09/11	R22B v BE90	2.4nm N Shoreham Airport	B	234
2011127	27/09/11	PA28 v CZAW SportCruiser	0.25nm SW Shoreham	C	241
2011128	29/09/11	C152 v PA23	Stapleford CCT	B	246
2011129	26/09/11	Merlin v Puma	6nm NE Benson	B	248
2011130	28/09/11	Bell 206 v PA28	2nm SW Duxford	A	257
2011131	02/10/11	G550 v Socata TB21	8nm N Oxford/Kidlington	C	261
2011132	17/09/11	EC145 v PA34	5nm W LAM	E	265
2011133	03/10/11	EMB505 v PA34	14.5nm NW Oxford	C	269
2011134	04/10/11	Hawk TMk1 v Duo Discus	30nm SE Valley	B	274
2011135	05/10/11	SF340 v SF340	6nm N Stornoway Airport	C	278
2011136	06/10/11	Tornado GR4 pr v Hawk TMk1	Initials RW28 Lossiemouth-TDZE	C	286
2011137	08/10/11	A330 v Ikarus C42	10nm E Brize Norton	C	292
2011138	02/10/11	Zenair Zodiac v Robin 2160	13nm E Bournemouth	C	297
2011139	13/10/11	BE200 v Untraced	7nm N Kemble	B	300
2011141	15/10/11	Sigma Paraglider v KA6 Glider	1½nm SSW The Park GLS – nr Mere, Wilts	A	302
2011142	18/10/11	Tutor v PA31	4nm SSW Newark	C	304
2011143	19/10/11	FA20 v SNC34C Glider	3nm SW Milfield	B	307
2011144	18/10/11	B737-800 v Diamond DA40	2nm W Bournemouth	C	310
2011145	13/10/11	Cirrus SR22 v C208	4nm SE Northampton/Sywell	C	315
2011146	20/10/11	PA23 v Hawk TMk 1	24nm NW Newcastle	C	320
2011147	21/10/11	JS32 v C172	APR RW09 Jersey	C	324
2011148	23/10/11	MD902 v R44	1.5nm SW Tonbridge	B	329
2011149	21/10/11	C130J v PA31	2nm SW Daventry RC E waypoint	E	331
2011150	24/10/11	Puma v Grob Tutor TMk1	13nm SSE Shawbury	C	334
2011151	27/10/11	Hawk TMk1A v MD902	1.5nm NNW Leeming	C	338
2011152	27/10/11	A319 v EC135	0.5nm SW Belfast/Aldergrove	C	344
2011153	29/10/11	EC145 v Gazelle	Central London	C	349
2011154	26/10/11	Lynx HAS 3 v PA28R	2¼nm NE Merryfield A/D	B	353
2011155	31/10/11	Grob Tutor TMk1 v Grob Tutor TMk1	2nm NNW Wyton	C	357
2011156	30/10/11	Ka13 v Europa	O/H Aston Down G/S	B	363
2011157	01/11/11	C177 RG v T67M	1nm N WOD	A	365
2011158	19/11/11	Diamond DA40 v TB20	0.4nm E Shoreham Airport	A	369
2011159	18/11/11	ASK21 Glider v T67M	1nm W Dunstable Gliding Site	C	379
2011160	18/11/11	Chinook v A300	5nm W Brize Norton	C	382
2011161	25/11/11	Grob Tutor TMk1 v PA28	11nm ENE Wyton	C	391
2011162	23/11/11	Squirrel HT Mk1 v PA38	163^{o} Shawbury A/D 6.3nm	B	395
2011163	02/12/11	Merlin v PA34	WCO	A	399
2011164	11/12/11	Vigilant v C340	0.5nm S Little Rissington	C	402
2011165	30/11/11	Dauphin 365N3 v C172	2nm NW Blackpool	C	404
2011166	05/12/11	Dauphin x 2 v C425	5nm W Lippitts Hill	B	408
2011167	31/12/11	SF340 v BE200	5nm N Stornoway	C	414