

ASSESSMENT SUMMARY SHEET FOR UKAB MEETING ON 14 DEC 2011

Total	Risk A	Risk B	Risk C	Risk D	Risk E
13	2	3	8	0	0

No	Reporting	Reported	Airspace	Cause	Risk
2011058	Vans RV9 (CIV)	PA34 (CIV)	G	In the absence of TI, a conflict in Class G airspace resolved by the RV9 pilot.	C
2011071	PA42 IIIA (CIV)	Cirrus SR22 (CIV)	A (L975)	The SR22 pilot entered CAS without clearance. Contributory Factor: Doncaster APP allowed the SR22 to enter CAS without clearance.	C
2011075	SF340B (CAT)	Tornado GR4 (MIL)	G	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.	C
2011089	AS350 Squirrel (MIL)	PA28 (CIV)	G Shawbury AIAA	Effectively a non-sighting by the PA28 crew and a late sighting by the AS350 instructor.	B
2011091	Pegasus M/Light (CIV)	C130 (MIL)	G	A non-sighting by the C130 crew.	A
2011094	ATR72-500 (CAT)	TB10 (CIV)	A/D Channel Islands CTR/Jersey CTR	The TB10 pilot climbed into conflict with the ATR72 after assuming his altitude restriction had been removed.	C
2011095	C130 (MIL)	EMB500 (CIV)	D Brize Norton CTR	Oxford APP descended the EMB500 to 2500ft which put it into CAS without clearance and into conflict with the C130.	C
2011097	Sea King (MIL)	C152 (CIV)	G	A conflict in Class G airspace resolved by the pilots of both aircraft.	C
2011106	AS355 (CIV)	Tecnam P92 (CIV)	G Cumbernauld ATZ	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.	B

2011109	BE200 (CIV)	Typhoon (MIL)	G Leeming MATZ	Effectively non-sightings by the BE200 pilot and the Typhoon instructor.	A
2011110	Tucano TMk1 (MIL)	Untraced Glider (NK)	G Vale of York AIAA	A probable non-sighting by the glider pilot and a late sighting by the Tucano crew.	B
2011111	Vigilant (MIL)	DR400 (CIV)	G Woodvale ATZ	The DR400 pilot flew close enough to cause the Vigilant instructor concern.	C
2011118	AW139 (CAT)	Tiger Moth (CIV)	G	A conflict in Class G airspace resolved by the AW139 crew.	C

AIRPROX REPORT No 2011058

Date/Time: 2 Jun 2011 1050Z

Position: 5154N 00209W (1.25nm NE Gloucestershire - elev 101ft)

Airspace: LFIR (Class: G)

Reporting Ac Reported Ac

Type: Vans RV9 PA34

Operator: Civ Pte Civ Trg

Alt/FL: 2700ft ↓2800ft
(QNH 1034mb) (QNH 1034mb)

Weather: VMC CLBC IMC IICL

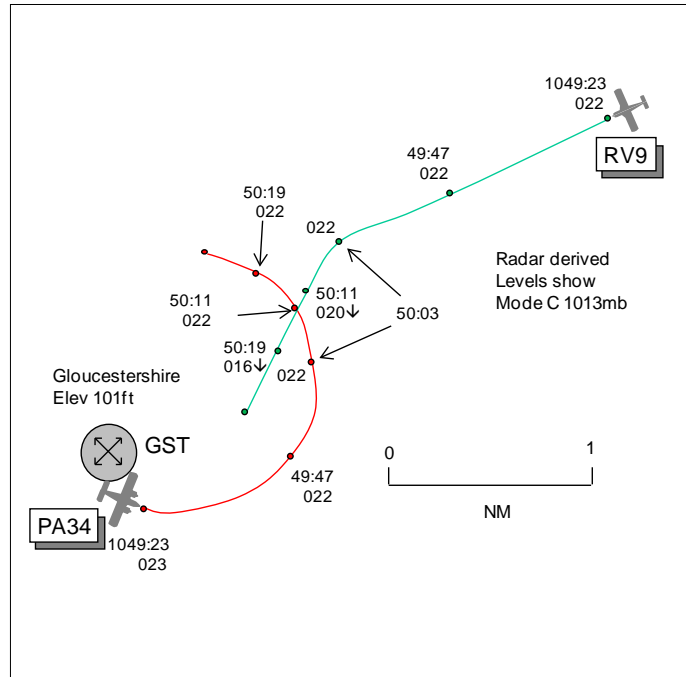
Visibility: 15nm 10km

Reported Separation:

Nil V/NR H Not seen

Recorded Separation:

>200ft V/<0.1nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE VANS RV9 PILOT reports flying VFR en-route to Perranporth via Gloucestershire and in receipt of BS from Gloster Approach on 128.55MHz, squawking 7000 with Modes S and C. The visibility was 15-20km flying 500ft below cloud in VMC and the ac was coloured red with strobe lights switched on. His planned route was via the O/Hs of Gloucestershire, Colerne, Frome and Newquay and, having previously worked Brize under BS and been told that Little Rissington was active, he had routed well to the N and then towards Gloucestershire. He called Gloucester Approach and informed them that it was his intention to route via the O/H at 2700ft QNH1034mb. When well inside the ATZ, he thought, he turned L onto heading 191° towards Colerne at 130kt and, when abeam, his passenger spotted an ac 0.5nm away in their 11 o'clock heading towards them, appearing to be at the same height. He banked sharply to the L and also descended, recovering at 2200ft before turning back onto track and climbing back to 2700ft. After recovering his composure he informed ATC of the Airprox and was told the other ac was a PA34 carrying out an IFR procedure; he queried the relevance of this information. He subsequently changed to Filton but when abeam Yeovilton he encountered low cloud so elected to return to Enstone routeing via Kemble. He assessed the risk as medium to high.

THE PA34 PILOT reports flying a dual IFR training flight from Oxford for an IR and in receipt of a PS from Gloster Approach on 128.55MHz, squawking 7000 with Modes S and C. The visibility was 10km when clear of cloud but they were IMC occasionally in and out of cloud. They had flown an ILS at Birmingham and were then carrying out a practice diversion to Gloucestershire, intending to fly an NDB hold followed by an approach to go-around and then a visual cct to touch and go before departing. As well as the student flying P1 in the LH seat there was another student in the rear acting as an observer. En-route to Gloucestershire on a S'y track, they were cruising at FL40 and the ATIS information 'India' gave RW09 LH in use with surface wind 040/07kt, visibility 10km, cloud few 3000, temperatures 20/12 and QNH 1034mb. Gloster Approach cleared them to the GST at FL40 and instructed them to report entering the hold, which they did. The hold entry and at least one hold were performed before he advised the student on the outbound leg of the hold to report ready for the NDB procedure. Approach cleared them for the NDB approach for RW09 and asked them to report beacon outbound. Having acknowledged this, the student set 1034mb on altimeter No1 and cross-checked the same setting on altimeter No2 and this now made their altitude approximately 4600ft. This was then followed by a gentle descent being initiated to 2800ft at 120kt on the inbound

turn and inbound leg of the hold. He was unable to say exactly what altitude they were at upon beacon passage but it was not below 2800ft and he believed they were still in the descent towards 2800ft. A call was made of "beacon outbound" and Approach asked them to report base turn complete. Shortly after this while in the outbound turn for the alternate procedure he heard another ac's pilot informing Approach that a twin-engine ac had passed over the top of his ac by about 400-500ft, he thought. He believed Approach replied that he only had a Seneca (meaning them) going beacon outbound for the NDB approach but it was at FL040; the other pilot replied that he wasn't instrument rated and did not understand what the controller meant by beacon outbound etc. They continued with their approach as published without further incident and completed the detail as planned before returning to Oxford. On the return to Oxford, Approach advised that the other ac's pilot had filed an Airprox, which he acknowledged. At FL040 they were in and out of few/scattered cloud and the same conditions prevailed whilst in the descent to 2800ft. At the platform altitude of 2200ft they were clear of cloud for the remainder of the flight at Gloucestershire. At no time did he or the students see the other ac. Upon being cleared for the NDB 09 approach the controller did not instruct them to remain at FL040 until beacon outbound nor was any reference made to traffic overflying the airfield.

THE GLOUCESTERSHIRE APPROACH CONTROLLER reports the RV9 pilot contacted him at 1047 and passed all his details requesting a BS routeing via the O/H from the E and then SW bound at altitude 2400ft, he thought. The PA34 flight was in the GST hold at FL040 ready for an approach under a PS. The PA34 flight was cleared for the NDB/DME approach to RW09 and the pilot called beacon outbound at 1049 which allowed the flight to descend to 2800ft. At 1050 the RV9 pilot reported O/H and wishing to file an Airprox due to the location and relative position of the PA34; its crew was informed of the RV9 pilot's intentions.

ATSI reports that the Airprox occurred in Class G airspace at 1050:16UTC, 1.25nm to the NE of Gloucestershire Airport at an altitude of 2800ft. This position is outside the Gloucestershire ATZ, which extends to a height of 2000ft above aerodrome level (elevation=101ft) and bounded by a circle 2nm radius centred on the mid-point of RW09/27.

The PA34 was inbound IFR from Oxford on a training flight and was planning to hold at the GST NDB, which is situated on the airfield, followed by a procedural NDB/DME approach to RW09. The NDB(L)/DME Instrument Approach Chart specifies an altitude at the IAF of 2800ft and also specifies that ac will normally hold not lower than 4000ft or the equivalent FL.

The Vans RV9 was operating on a VFR flight from Enstone to Perranporth, routeing via Gloucester, Colerne, Frome and Newquay.

The Gloucestershire controller was providing an Approach PS (Gloster Approach) without the aid of surveillance equipment. The ATSU is equipped with a primary radar system only, (without SSR). The availability of radar is subject to manning and utilised to expedite the procedural environment. The radar would not have displayed traffic in the O/H.

CAA ATSI had access to the RT recording and recorded area surveillance provided by NATS Swanwick, together with written reports from the controller and 2 pilots.

METAR EGBJ 021050Z 02003KT 9999 FEW035 21/11 Q1034=

At 1035:05, the PA34 flight established contact with Gloster Approach maintaining FL040 and requesting a PS. The Approach controller agreed a PS and cleared the PA34 flight to the GST at FL040 with no delay for an NDB/DME approach for RW09, to report taking up the hold. This was acknowledged correctly by the PA34 pilot.

At 1039:21, the PA34 pilot reported taking up the hold at FL040 (converts to an altitude of 4567ft on QNH 1034 with 1mb equal to 27ft). The controller instructed the PA34 pilot to report ready for the approach.

At 1045:16, the PA34 pilot reported, *“(PA34 c/s) ready for the N D B zero nine approach”* and the controller replied, *“(PA34 c/s) cleared N D B D M E approach Runway zero nine Q N H one zero three four report beacon outbound.”* The PA34 pilot acknowledged, *“Cleared er N D B er zero nine approach Q N H one zero three four wilco (PA34 c/s).”*

At 1046:32 the radar recording shows the PA34 in the descent passing FL038, 3.6nm WNW of the GST and commencing a L turn towards the beacon. The PA34 pilot's written report indicated that once cleared for the NDB approach and instructed to report beacon outbound, the pilot had selected QNH 1034 and started a slow descent to 2800ft on the inbound turn and inbound leg of the hold.

Later on the controller had indicated an expectation that the PA34 would maintain FL040 until beacon outbound. The controller was asked why the PA34 had not been given a restriction such as 'maintain FL040 until crossing the beacon outbound'. The controller responded that normally, had there been an outbound, such a restriction would have been given. With no reason to restrict, the controller had cleared the PA34 for the procedure, but had not considered that the pilot may have elected to descend to the published level for the procedure of 2800ft.

At 1045:58, the RV9 pilot established contact with Gloster Approach. The controller had just initiated a non-operational telephone call (regarding a shift the following day) and instructed the flight to standby. The radar recording shows the RV9 at a position, 10.4nm to the NE of the airfield.

At 1046:58, the controller asked the previous station calling to pass message and the RV9 pilot advised, *“er (RV9 c/s) is an R V nine A from Enstone to Perranporth routeing via your overhead and Colerne request a Basic Service er currently three miles to the northeast of your airfield.”* The radar recording shows the RV9, 8.4nm to the NE of the airfield.

At 1047:20 the controller ended the telephone conversation and responded to the RV9 flight, *“(RV9 c/s) sorry er I was on the landline could you er say again your point of departure and destination.”* The RV9 pilot replied, *“er Enstone Perranporth (RV9 c/s).”*

At 1047:32, the controller responded, *“(RV9 c/s) Basic Service Gloster Q N H one zero three four,”* which was acknowledged correctly.

The controller indicated that he had not heard the RV9 pilot's full message and was unsure if the RV9 was routeing to Perranporth E of the airfield or via the O/H. At 1047:43, the controller asked, *“(RV9 c/s) are you routeing via my overhead”* and the pilot replied, *“Affirm.”* The controller asked the RV9 pilot to report O/H. The radar recording shows the RV9, 6.7nm to the NE of the airfield, with the PA34 2.8nm WSW of the airfield.

The controller's written report indicated that he had considered the RV9 was at 2400ft and the PA34 at FL040. The controller acknowledged that the RV9 had not stated a level, neither had the controller requested the level (the RV9 reported at 2400ft after the incident). The controller was asked if he had considered passing TI to the PA34 (under a PS), on the RV9 operating VFR via the O/H. The controller indicated that he hadn't fully assimilated the position of the RV9 and had considered that the PA34 was shortly to go beacon outbound to the W at FL040.

At 1049:28, the PA34 pilot reported beacon outbound and the controller responded, *“(PA34 c/s) report base turn complete.”* The radar recording shows the PA34 has crossed the GST, on an ESE'ly track, indicating FL023 (converts to an altitude of 2867ft). The RV9 was 3NM NE of the airfield tracking SW towards the O/H indicating FL022 (converts to an altitude of 2767ft).

From 1049:38 until 1050:16, the controller was occupied in a two-way transmission with a PA28 inbound to the airfield.

[UKAB Note (1): At 1050:03 the radar recording shows both ac indicating FL022 (2767ft) with the PA34 turning L through a N'ly heading in the RV9's 10 o'clock range 0.6nm and crossing from L to R. The next sweep 8sec later at 1050:11 shows the PA34 crossing through the RV9's 12 o'clock range

0.1nm, the RV9 now tracking 210° and indicating a descent through FL020 (2567ft QNH). The CPA occurs immediately afterwards as the next sweep at 1050:19 shows the ac now diverging, the PA34 turning through heading 290° with the RV9 0.4nm to its S descending through FL016 (2167ft QNH). It is estimated that separation at the CPA was >200ft vertically and <0.1nm horizontally as the RV9 passes just behind and below the PA34.]

At 1050:25, the RV9 pilot reported, *“er Gloster approach (RV9 c/s) would like to report an a Airprox with a twin.”* The RV9 pilot advised, *“er (RV9 c/s) was overhead or just about overhead your field a twin was coming in from the southeast at my height I er reduced to reduced height to avoid.”*

The controller acknowledged, *“(RV9 c/s) roger that’s er believed to be a Seneca traffic in the Golf Sierra Tango just called me beacon outbound in the instrument procedure for Runway zero nine.”* The RV9 pilot acknowledged with, *“Roger”* and the controller added, *“and er that aircraft was last reported flight level four zero but will be descending with the procedure.”* The RV9 pilot replied, *“I’m not er I M C qualified so I’m not quite sure what that means (RV9 c/s).”* The controller requested the level of the RV9 and the pilot responded, *“er currently two thousand four hundred on a bearing of one eight two degrees.”*

Both ac continued without further incident.

The controller was asked what might have prevented the incident. The controller acknowledged that TI should have been passed to the PA34 and a level requested from the RV9 pilot.

As a result of the Airprox the ATSU unit investigation report was made available to Gloster controllers, together with reference to the MATS Part 1 guidance regarding the potential for non-operational conversations to distract controllers from their primary task of providing a safe air traffic service.

The controller initiated a non-operational telephone call just before the RV9 called at a range of 10.4nm from the airfield. This resulted in a distraction and delay in receiving the RV9 pilot’s message. The full details and intentions of the RV9 were missed. The controller did not fully assimilate the details and was initially confused about the position of the RV9. The Manual of Air Traffic Services (MATS), Part 1, Appendix E, Page 2, Paragraph 2, states:

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

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

The RV9 pilot did not report his level and the controller did not recognise the significance of the RV9’s routeing and the potential for conflict with the PA34.

Whilst in the holding pattern, the PA34 was cleared for the procedure without any restriction. The pilot did not report leaving FL040, nor did the controller request a leaving report. The phraseology used by the controller was ambiguous and did not convey the controller’s intention, which was for the PA34 to maintain FL040 until beacon outbound. However, the pilot having been cleared for the procedure without restriction, descended to the published level for the procedure (2800ft) prior to going beacon outbound. MATS Pt1, Appendix E, Page 2, states:

‘Radiotelephony provides the means by which pilots and ground personnel communicate with each other. Used properly, the information and instructions transmitted are of vital importance in assisting in the safe and expeditious operation of aircraft. However, the use of non-standard

procedures and phraseology can cause misunderstanding. Incidents and accidents have occurred in which a contributing factor has been the misunderstanding caused by the use of non-standard phraseology. **The importance of using correct and precise standard phraseology cannot be over-emphasised.'**

The controller was not aware that the RV9 was approaching the O/H at 2800ft and, also not aware that the PA34 was descending to 2800ft to go beacon outbound. This resulted in the 2 ac coming into close proximity at a similar level without the provision of any TI or warning that would have aided the pilot's situational awareness.

The PA34 was IFR and in receipt of a PS. CAP774 UK Flight Information Services, Chapter 4, Page 5, states:

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

The controller shall provide traffic information, if it is considered that a confliction may exist, on aircraft being provided with a Basic Service and those where traffic information has been passed by another ATS unit; however, there is no requirement for deconfliction advice to be passed, and the pilot is wholly responsible for collision avoidance. The controller may, subject to workload, also provide traffic information on other aircraft participating in the Procedural Service, in order to improve the pilot's situational awareness.'

Both flights were operating within Class G airspace. CAP774, Chapter 1, Page1, Paragraph 2, states:

'Within Class F and G airspace, regardless of the service being provided, pilots are ultimately responsible for collision avoidance and terrain clearance, and they should consider service provision to be constrained by the unpredictable nature of this environment. The Class F and G airspace environment is typified by the following:

- It is not mandatory for a pilot to be in receipt of an ATS; this generates an unknown traffic environment;
- Controller/FISO workload cannot be predicted;
- Pilots may make sudden manoeuvres, even when in receipt of an ATS.'

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

Although this Airprox occurred in Class G airspace where both crews were responsible for maintaining their own separation from other traffic through see and avoid, it was clear to Members that there were opportunities to break the chain of events leading up to the Airprox. Once APP had cleared the PA34 flight for the procedure, without applying a level restriction, the crew were entitled to descend to the initial approach altitude of 2800ft QNH. Pilot Members thought that good practice would have been for the PA34 pilot to have called when commencing descent and this would most likely have broken the chain at this early stage. However the crew was not asked to report leaving FL40 and the controller incorrectly thought the flight would maintain FL40 until going 'beacon outbound'. The RV9 pilot should have volunteered his cruising altitude when invited by the controller to pass his message. However, it was clear that the controller did not assimilate the RV9 pilot's intentions while distracted by his non-operational telephone call, and did not ask for the flight's cruising level (it could have been cruising at FL40). In the absence of this information and having

confirmed that the RV9 pilot intended to route via the O/H, the controller should have identified the potential for a conflict and passed TI to the PA34 pilot in accordance with CAP774: this was another opportunity lost. Controller Members agreed that the passing of generic TI to the RV9 flight about another ac routeing through the O/H would have been 'good controllership'; it would have given the RV9 the pilot SA on the potential conflict and could have broken the chain. An experienced pilot Member stated that although the PA34 flight was IFR training, this incident was a timely reminder of the crew's need to continue exercising a good lookout for unknown traffic. Also, the PA34 crew's SA would have been improved if they had heard and assimilated the RT exchanges between ATC and the RV9 pilot. As it was, the PA34 flight was descending in IMC through cloud to 2800ft, its crew unaware of the approaching RV9 which passed unsighted during their 'belly-up' turn onto the outbound leg. Similarly, the RV9 pilot was unaware of the PA34's presence; the only clue from the RT would have been the PA34 pilot's call of 'beacon outbound' and this required the pilot to have knowledge of the IF procedures in use at the time. In the event, the RV9 pilot turned on track towards Colerne just before the O/H and saw the PA34 0.5nm away; the Board agreed that his prompt and robust avoiding action had resolved this conflict and removed the risk of collision.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: In the absence of TI, a conflict in Class G airspace resolved by the RV9 pilot.

Degree of Risk: C.

AIRPROX REPORT No 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 PA42 IIIA 2nd Ac Cirrus SR22

Operator: Civ Comm Civ Pte

Alt/FL: ↓FL60 ↓7000ft
SAS QNH

Weather: VMC VMC

Visibility: >10km NR

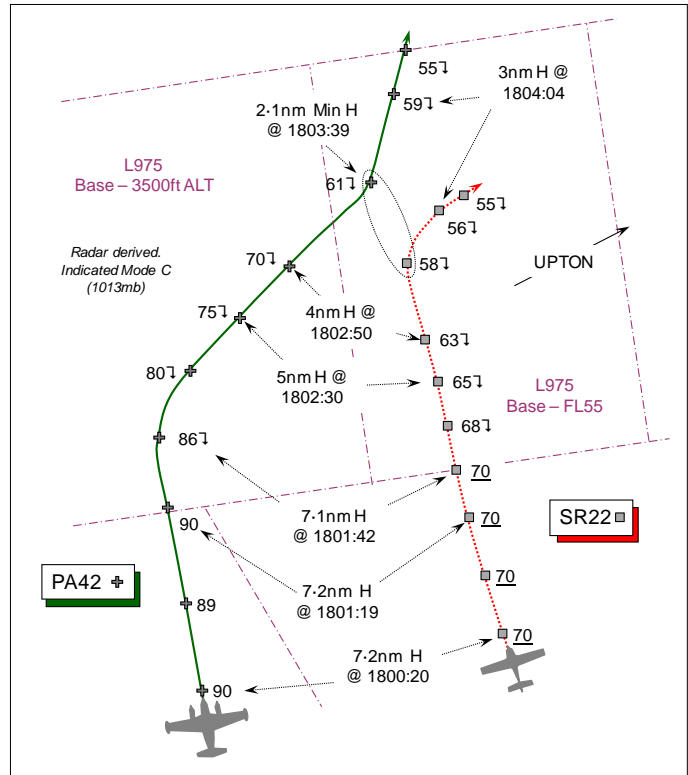
Reported Separation:

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, routing direct to the 'centre fix' (RW32) and released out of FL90. Both controllers during this conversation were male.

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 routing 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 descent 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 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

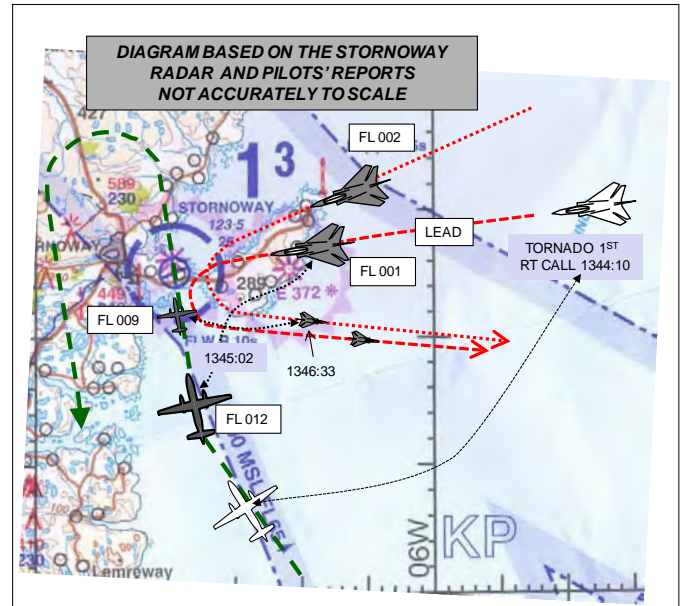
Visibility: 60km 20km

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
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 conflict 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 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

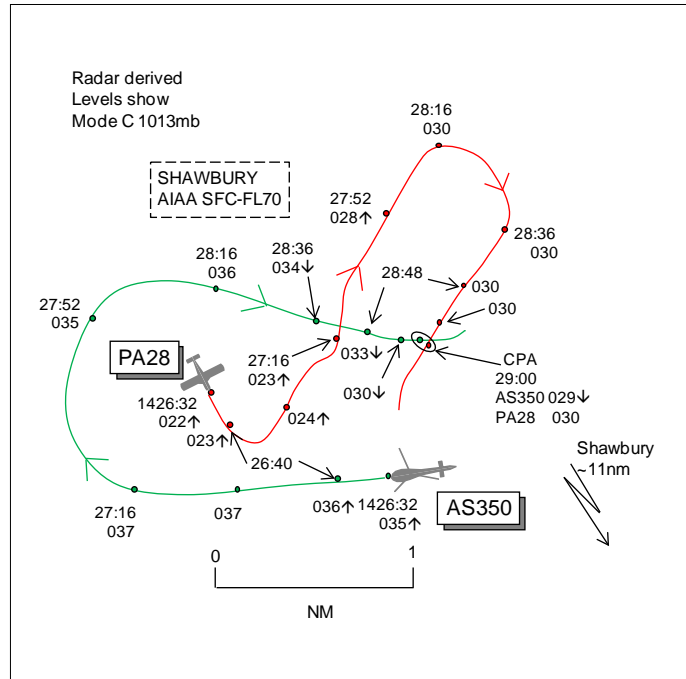
Visibility: 10km >10km

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

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

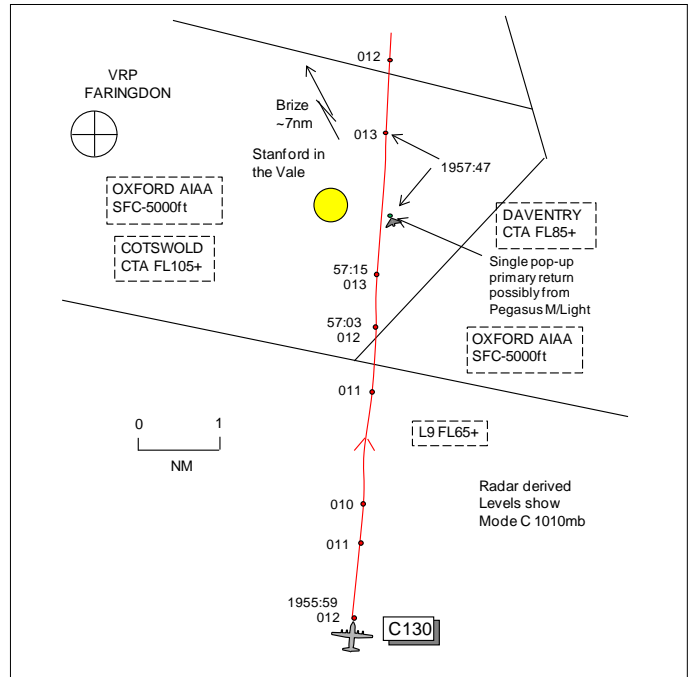
Visibility: 50km NR

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 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

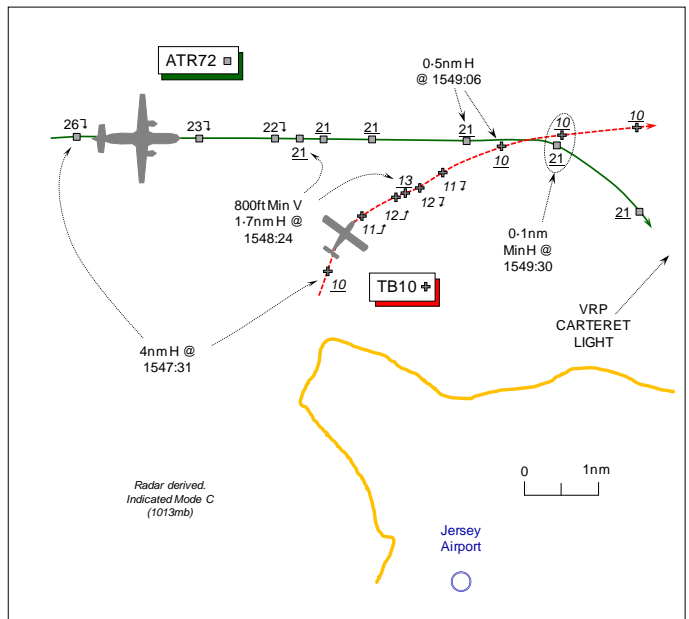
Reported Separation:

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 a level 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

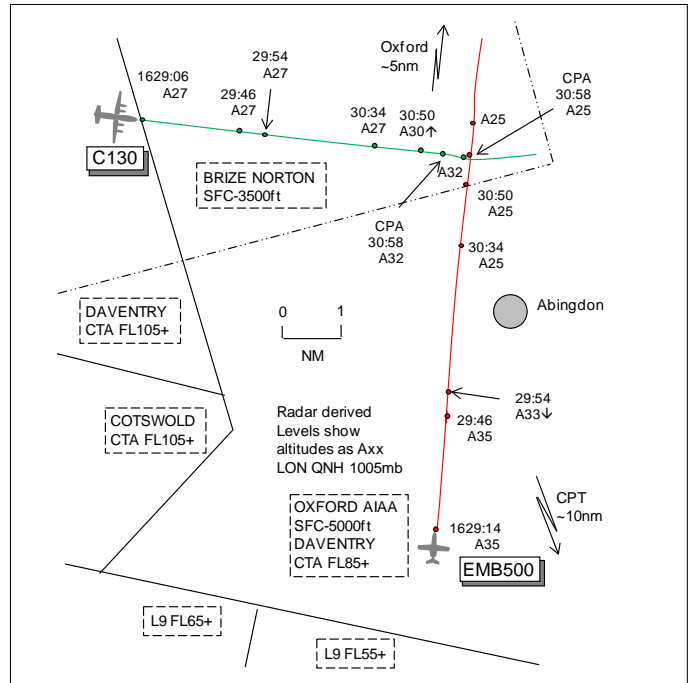
Visibility: 10km 10km

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

11:15 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

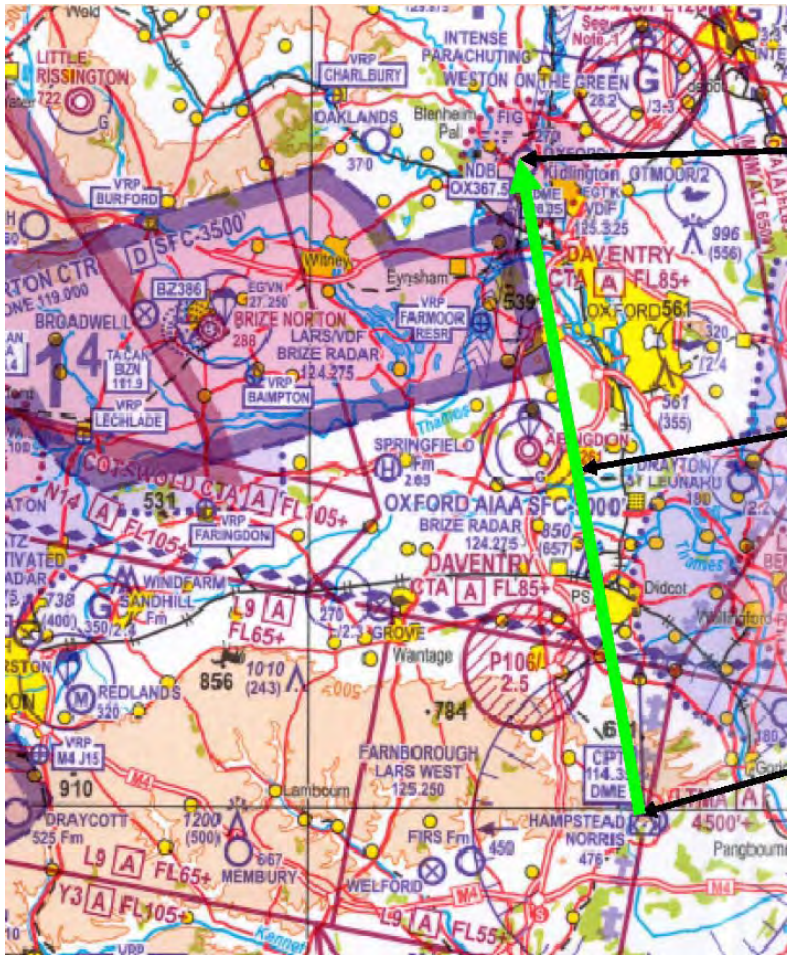
Oxford Airport has an ATZ with radius 2nm centred on the longest runway (01/19). The vertical limit of the ATZ is from the surface to 2000ft aal. The airspace above the ATZ is Class G.

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.



OX NDB

DIRECT TRACK FROM CPT VOR TO OX NDB REMAINS CLEAR OF THE BRIZE CTR

CPT VOR

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.

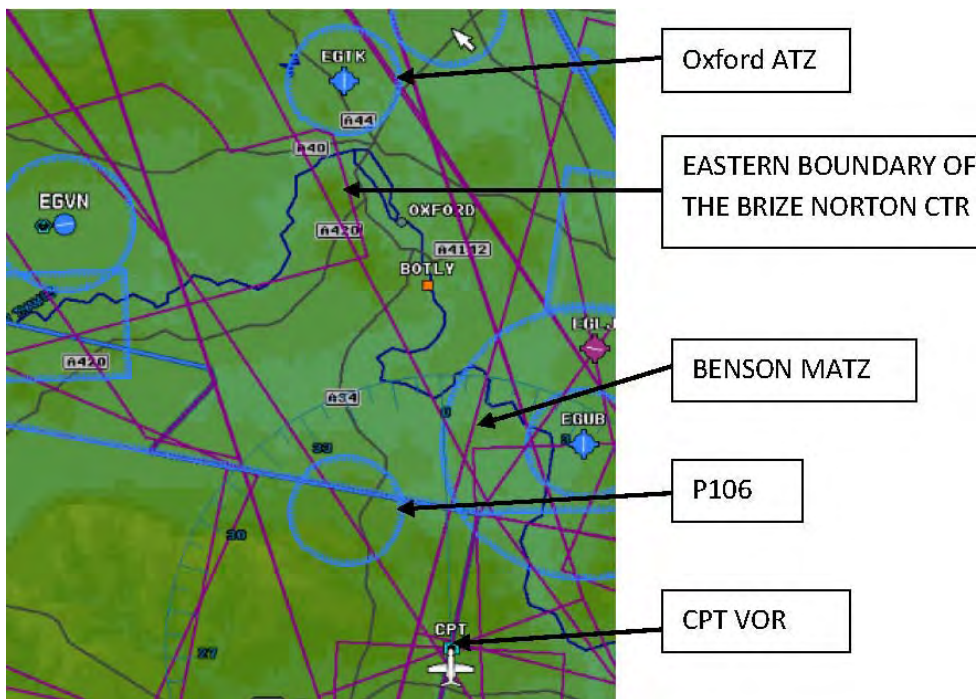
The information extracted from the taped conversations was consistent with the events in the ASR except that the Brize controller claimed that the crew made no attempt to exit the Brize zone. This is addressed in the section above.

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

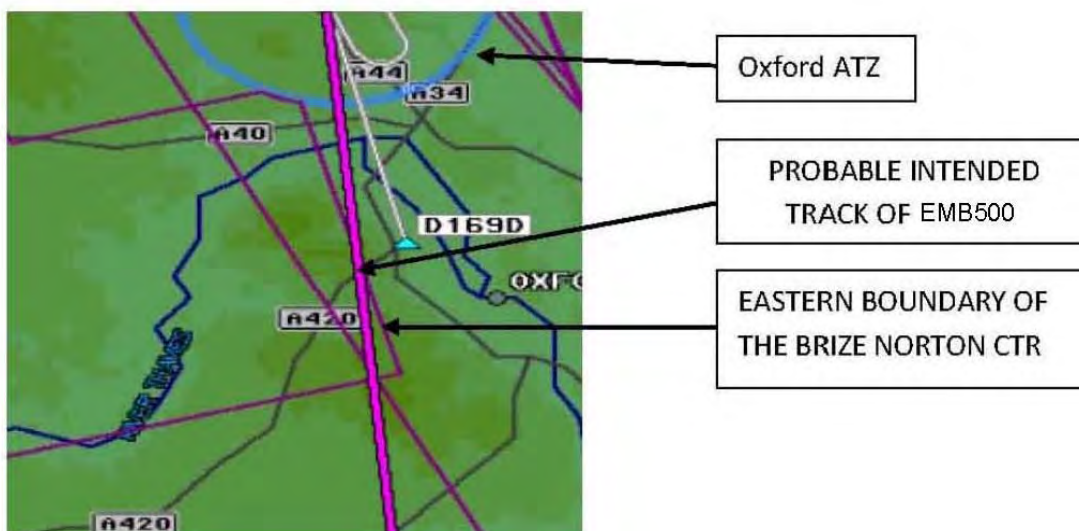
of CPT and the revised track took the ac over the stub of the Brize CTR.

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

- 1) 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 led to a descent clearance being issued without an instruction to remain clear of the Brize zone.
- 2) 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

- 1) 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".

- 2) 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'y 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 Control 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 routing 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 routing 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 routing 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 routing 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 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

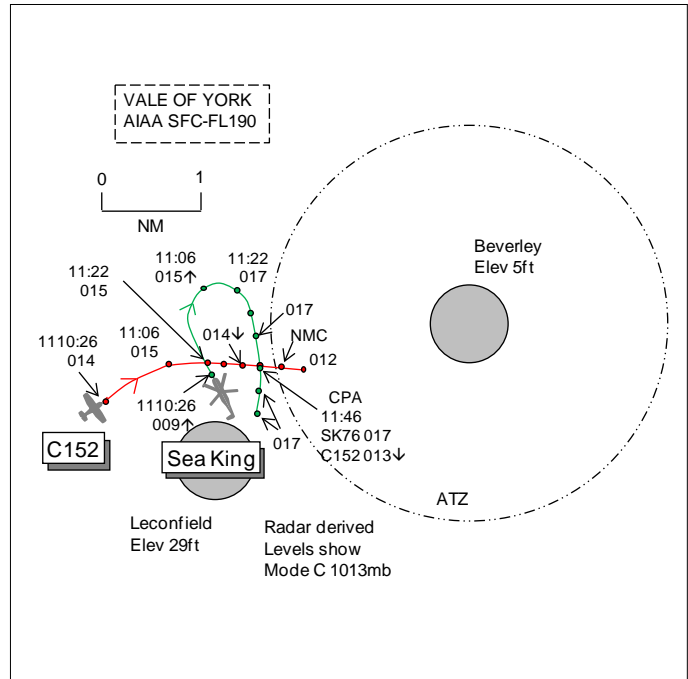
Visibility: 30km 5000m

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 Beverley, 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'y 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'y 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'y onto a NE'y 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'y 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 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

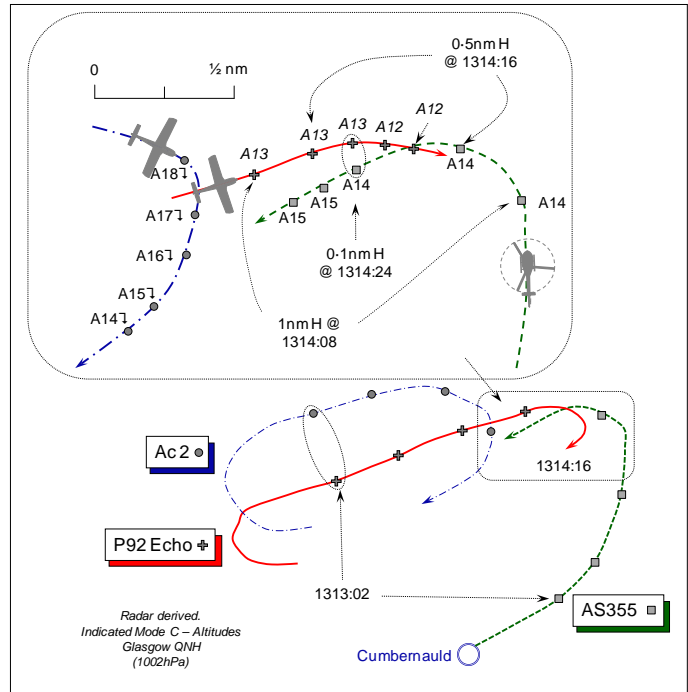
Visibility: 10km 10km

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 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

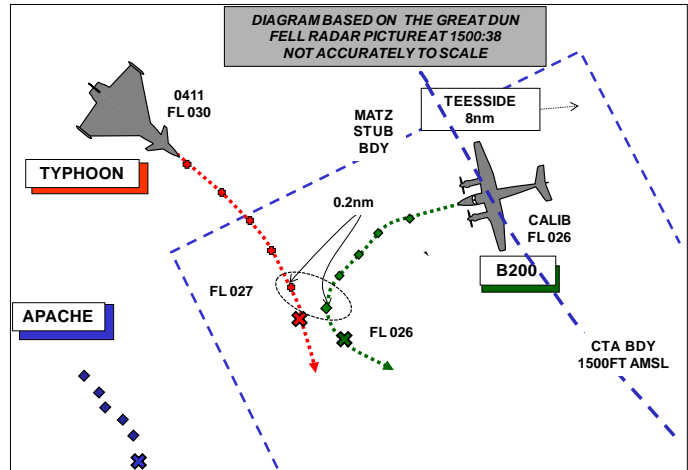
Visibility: 8nm 30km

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 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 conflicts 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 conflict 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 conflict 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 conflicts 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:

1. 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.
2. 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

Date/Time: 22 Aug 2011 1518Z

Position: 5410N 00059W (12nm
NE Linton-On-Ouse -
elev 53ft)

Airspace: Vale of York AIAA (Class: G)

Type: Tucano T Mk1 Untraced Glider

Operator: HQ Air (Trg) NK

Alt/FL: 5000ft NK
QFE (1017hPa) NK

Weather: VMC CLOC NK

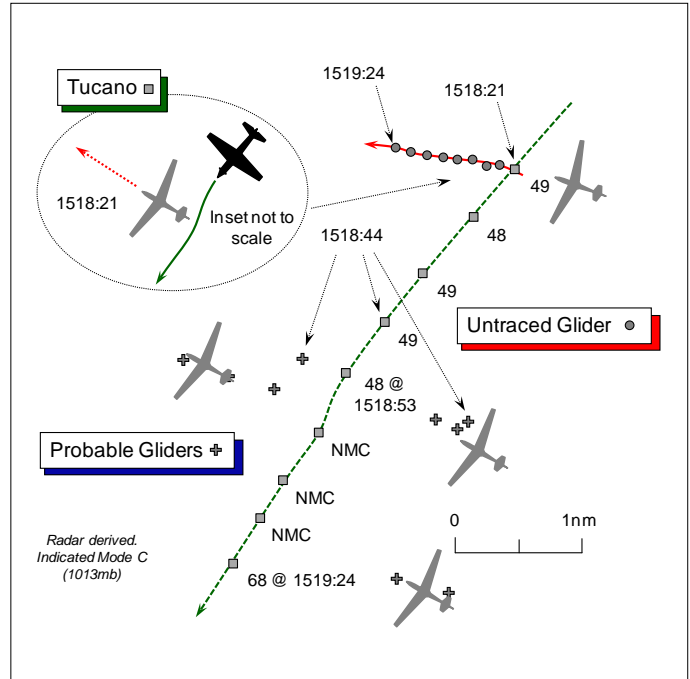
Visibility: 40km NK

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 taxiing 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 taxiing 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

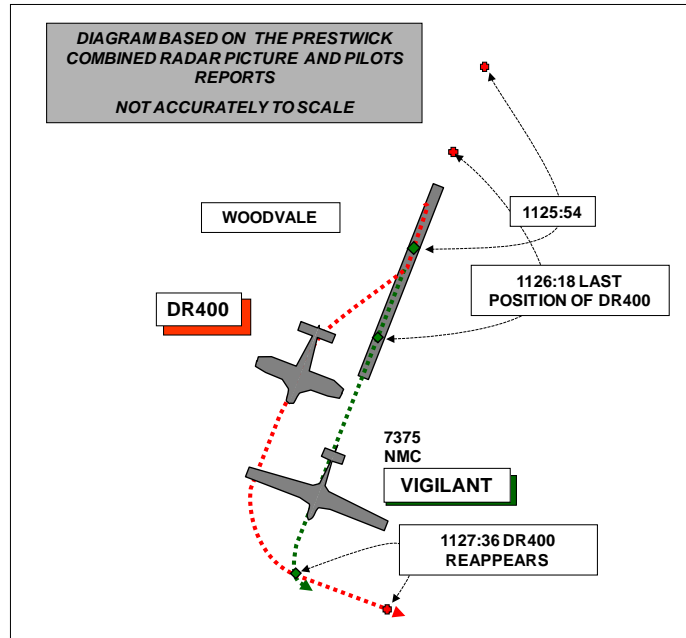
Visibility: 15km 9999km

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 conflict. 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 conflict 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 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

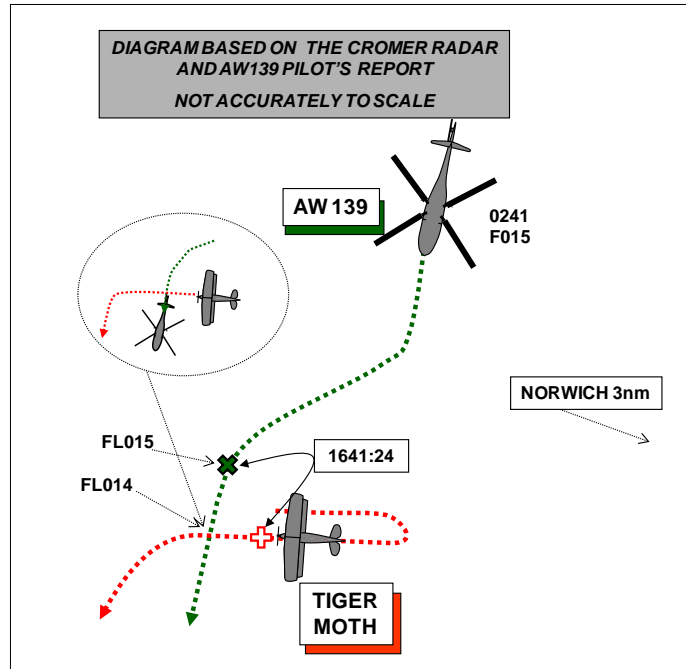
Visibility: 9999 10km

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 of '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: EGSB 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 0241 with 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 11 o'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.