

Assessment Summary Sheet for UKAB Meeting On 11 September 2013

Total	Risk A	Risk B	Risk C	Risk D	Risk E
14	2	2	6	1	3

Airprox	Reporting (Type)	Reported (Type)	Airspace (Class)	Cause	ICAO Risk	ERC Score
2013020	ASW27 (Civ Pte)	PA34 (Civ Trg)	Lon FIR (G)	A late sighting by the PA32 pilot and an effective non-sighting by the ASW27 pilot.	B	20
2013032	C37A (Foreign Mil)	BE200 (Civ Comm)	Lon FIR (G)	The C37A pilot turned into conflict with the BE200.	C	10
2013037	JS41 (CAT)	F15E (Foreign Mil)	Lon FIR (G)	The F15E pilot climbed into conflict with the JS41, which he did not see.	B	502
2013038	A320 (CAT)	Typhoon (Mil)	Lon FIR (G)	The A320 pilot descended into conflict with the Typhoon following a misheard clearance and uncorrected read-back error.	C	50
2013041	PA28 (Civ Club)	PA18 (Civ Club)	Kemble ATZ (G)	The PA28 pilot was concerned by the proximity of the PA18.	E	1
2013042	DR400 (Civ Club)	PA32 (Civ Pte)	Lon FIR (G)	A late sighting by both ac. Contributory: PA32 pilot flew through the NOTAM'd competition area.	A	20
2013046	Vigilant T1 (Mil)	Gazelle (Civ Comm)	Lon FIR (G)	Conflict in Class G, resolved by the Vigilant pilot.	C	2
2013047	Tornado GR4 (Mil)	Paraglider (Civ Pte)	Lon FIR (G)	Conflict in Class G, resolved by the Tornado pilot.	C	2
2013048	Lynx (1) (RN)	Lynx (2) (RN)	NRR2 (G)	A late sighting and non-sighting by the Lynx pilots. Contributory: Ineffective deconfliction plan.	A	20
2013049	ASK13 (Civ Club)	Light ac (NK)	Lon FIR (G)	The light ac flew close enough to cause the glider pilot concern.	D	N/S
2013050	Islander BN2 (Mil)	BE200 (Mil)	RAF Waddington ATZ (G)	The Islander pilot was concerned by the proximity of the BE200.	E	2
2013053	Typhoon T3 (Mil)	Paraglider (Civ Pte)	Lon FIR (G)	A conflict in the Linton on Ouse RW03RH TACAN hold.	C	2
2013054	B744 (CAT)	B748 (CAT)	UAR (C)	The pilots of ac on converging tracks flew into conflict because, although they acknowledged timely avoiding action, they did not follow it. Contributory: The Montrose T & P climbed the ac to the same level.	C	102
2013060	A319 (CAT)	MD902 (Civ Comm)	Gatwick CTR/ATZ (D)	Sighting report.	E	1

AIRPROX REPORT No 2013020

Date/Time: 20 Apr 2013 1315Z (Saturday)

Position: 5205N 00148W
(1nm E Honeybourne)

Airspace: Lon FIR (Class: G)

Reporting Ac Reporting Ac

Type: ASW27 PA34

Operator: Civ Pte Civ Trg

Alt/FL: 4300ft 4400ft
QNH (1034hPa) QNH (1032hPa)

Weather: VMC CLNC VMC CLOC

Visibility: >20km >10nm

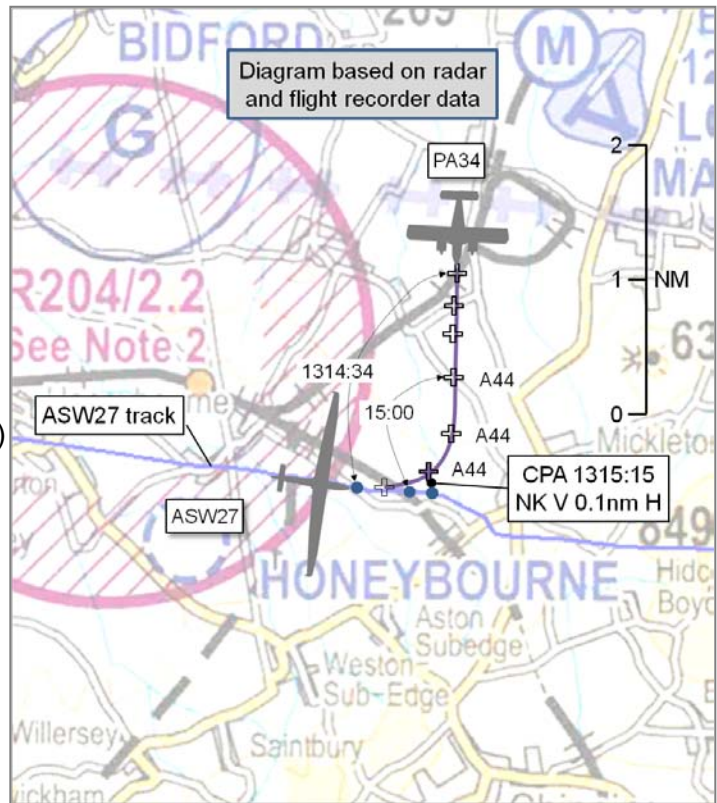
Reported Separation:

30ft V/10m H 0ft V/NK H

Recorded Separation:

NK V/0.1nm H

BOTH PILOTS FILED



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE ASW27 PILOT reports flying a cross-country task from Dunstable whilst listening out on Gliding Common frequency (130.100MHz). His turning points were Leighton Buzzard - Great Malvern – Bletchley – Cottam, with the Airprox occurring on the 2nd leg between Great Malvern and Bletchley. Visibility was >20km in VMC, the glider was coloured white, and FLARM was fitted. Close to Evesham, about 3min prior to CPA, he had completed a thermal climb to approximately 5000ft and commenced a cruise (glide) with IAS varying between 80kt and 50kt and heading between 090° and 100° as he responded to areas of lift/sink along track. Whilst flying at 4300ft QNH, with wings-level, at about 60kt, and in an area of rising air, he looked L and saw an ac approaching from his 9 o'clock about 50-100m away, at high speed and at the same level in a slightly climbing attitude. The other ac, a small twin-engine type, made a steep turn to the R so that it passed above and behind. The ASW27 pilot assessed the minimum separation to be about 30ft vertically and 10m laterally. The period between first sighting and the other ac passing to the rear was 2-3sec. There was no doubt in his mind that a collision would have occurred had the other ac not taken what he took to be avoiding action. He postulated that he had not seen the other ac until late either because his lookout was inadequate or the ac had approached from a blind spot under his L wing.

He assessed the risk of collision as 'High'.

THE PA34 PILOT reports conducting a dual IF training sortie from Oxford, VFR, and, at the time of CPA, in receipt of a BS from Oxford on 127.750MHz squawking 7000 with Modes S and C; IF screens were in use. The visibility was >10nm in VMC clear of cloud, and the ac was coloured white/blue with strobe lights switched on. The flight was initially an IFR departure to join airways en-route to DTY, then an ILS at Coventry, before a standard missed approach was flown to 14DME which placed the ac into Class G airspace. Whilst working with Coventry they advised him under a BS that Hinton was active. A session of GH was required so, after moving away from Birmingham's airspace, and observing numerous contacts to the S, he decided to avoid Hinton and Edgehill by taking up a W'ly track between 2500 and 4000ft, remaining S of Wellesbourne. This W'ly positioning also meant that he could, if required, then operate at a higher level (above 4500ft). The last item of the GH was an approach-configuration stall recovering at the first stall indication. The student was instructed to commence a turn onto heading 180° as his lookout turn prior to the stall. The stall

recovery was successfully completed and the instructor took control and levelled the ac. After a scan around his position for traffic, flying at 115kt, he requested the candidate's chart and used the GPS to orientate them (heads-down for 5sec). Whilst instructing the candidate to give him a heading for Oxford, he became aware of a glider in his 1 o'clock range 200m crossing R to L on an E'ly heading at the same level. It was close enough for him to immediately look to the R and roll into a 45°+ banked turn to avoid. He did not see the glider again, owing to his turn, and he resumed a S'ly track until the candidate tracked the OX NDB.

He assessed the risk of collision as 'High'.

Factual Background

The weather at Gloucestershire and Birmingham was recorded as follows:

METAR EGBJ 201320Z 21004KT 130V270 9999 SCT048 14/00 Q1031
METAR EGBB 201320Z 17007KT 110V250 CAVOK 14/M00 Q1031

Oxford ATC was not using radar due to a shortage of surveillance valid controllers and was providing a combined ADC and APP PS [127.750MHz]. The following NOTAM was issued:

L2171/13 NOTAMN

Q) EGTT/QSPLT/IV/B0 /A /000/999/5150N00119W005

A) EGTK B) 1304160800 C) 1304211700

E) RADAR OPR ON LIMITED MANNING, SHORT NOTICE CLOSURE OF RADAR MAY OCCUR. WHEN RADAR IS CLOSED A PROCEDURAL SERVICE WILL BE PROVIDED.

The ASW27 pilot was on a cross-country gliding task, having departed from Dunstable. The Airprox occurred as he routed between Great Malvern and Bletchley. The pilot reported having the gliding frequency 130.100MHz selected, and was not in receipt of an ATS.

The PA34 pilot was on an IF-training flight from Oxford to Oxford. The routeing commenced with an airways join at Daventry VOR (DTY), then an ILS approach at Coventry from which a standard missed approach was flown, placing the ac back in Class G airspace. A session of general handling then followed before the instructor and trainee prepared for the return to Oxford.

The Airprox was not reported to Oxford ATC.

ATSI Analysis

The PA34 pilot departed Oxford at 1215 and, having climbed to altitude 5000ft, was transferred at 1226 by Oxford ATC to London Control for airways clearance.

At 1302:22, the PA34 pilot called Oxford ATC, notified "*general handling to the north*" and requested a BS; this was agreed and the QNH [1032hPa] was passed. The PA34 was 19.3nm NNW of Oxford at altitude 2800ft. Under a BS pilots should not expect to receive TI, and the presence of the ASW27 was unknown to Oxford ATC.

The PA34 track was recorded on area radar; however the ASW27 was not detected. The ASW27 pilot supplied two GPS logger files, which were extracted and analysed. The available data suggested that, at 1314:50, the two ac were 0.88nm apart, with the ASW27 pilot flying eastbound and the PA34 pilot flying southbound. Immediately prior to the ASW27 crossing the PA34's 12 o'clock, at 1315:10, the available data suggested that the ac were some 0.22nm apart, with the PA34 approximately 350ft above the ASW27.

[UKAB Note(1): The glider pilot supplied 2 logger files from 2 independent loggers. Analysis of all 4 pressure sensor and GPS derived altitudes resulted in a number of different values, some of which

suggested a greater vertical separation than the co-altitude situation described by both the pilots. Whilst it is recognised that pilot judgement of altitude between ac is commonly subject to physiological error, it was felt that a co-altitude situation on a clear day with a good horizon could be assessed intuitively and that it was likely the ac were closer in V separation than 350ft at CPA.]

The surveillance data showed that the PA34 pilot made a turn to the R as the two ac crossed; the ASW27 logger data showed the glider pilot turned R after crossing and before continuing on an E'ly track.

Summary

The PA34 and ASW27 came into proximity in Class G airspace 24nm NW of Oxford A/D. Surveillance and GPS derived data showed that the PA34 pilot was in a R turn as the flight paths crossed and that the ASW27 pilot turned R after the flight paths had crossed. Although the PA34 pilot was in receipt of a BS from Oxford ATC, the presence of the ASW27 was unknown to ATC.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings and a report from the appropriate ATC investigation authority.

Board Members first considered the likely conditions prevalent on the day and how an understanding of those could have helped inform the pilots' planning. It was apparent that weather conditions were conducive to thermal cross-country gliding (as opposed to ridge or wave soaring) and, that being the case, would mainly limit glider activity to within the 'thermal layer', i.e. up to the cloud base. The Board opined that the PA34 pilot may have been better served by operating above cloud, but recognised that a multitude of factors were relevant and that this may not have been possible. Nevertheless, likely glider operating conditions and locations was felt worthy of inclusion as a planning consideration. Pilot members also discussed the selection of an appropriate ATS as a valuable planning consideration, especially if the sortie included use of lookout-limiting IFR screens and low-energy general-handling manoeuvres such as stalling. Whilst recognising that the glider may not have been radar significant, some members opined that a TS may have been more appropriate in these circumstances. Members also discussed Rule 23 of the Rules of the Air, (simulated instrument flight), which contains guidance on provision of a competent observer; in this respect, they were pleased to note that the use of IFR screens was no longer a mandatory CAA requirement thereby enabling the student to perform lookout duties whilst the instructor was conducting other tasks.

Ultimately, although the glider pilot had right of way, both aircraft were equally responsible for collision avoidance. The Board opined that the PA34 pilot had seen the glider first, albeit late, and that his subsequent manoeuvre had achieved collision avoidance. The glider pilot's even later visual sighting was non-effective. The Board agreed that the safety barriers pertinent to this Airprox were aircrew rules and procedures, visual sighting and aircrew action, and that safety margins had been much reduced below normal. The Board concluded that these barriers had been minimally effective and the Airprox was allocated a score of 20 on the Event Risk Classification Matrix.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A late sighting by the PA32 pilot and effectively a non-sighting by the ASW27 pilot.

Degree of Risk: B.

ERC Score: 20.

AIRPROX REPORT No 2013032

Date/Time: 2 May 2013 0714Z

Position: 5500N 0028W
(9nm SW Cambridge
- elevation 47ft)

Airspace: Lon FIR (Class: G)
Reporting Ac Reported Ac

Type: C-37A BE200

Operator: Foreign Mil Civ Comm

Alt/FL: 3000ft 3000ft
(NK) (QNH)

Weather: VMC VMC CAVOK

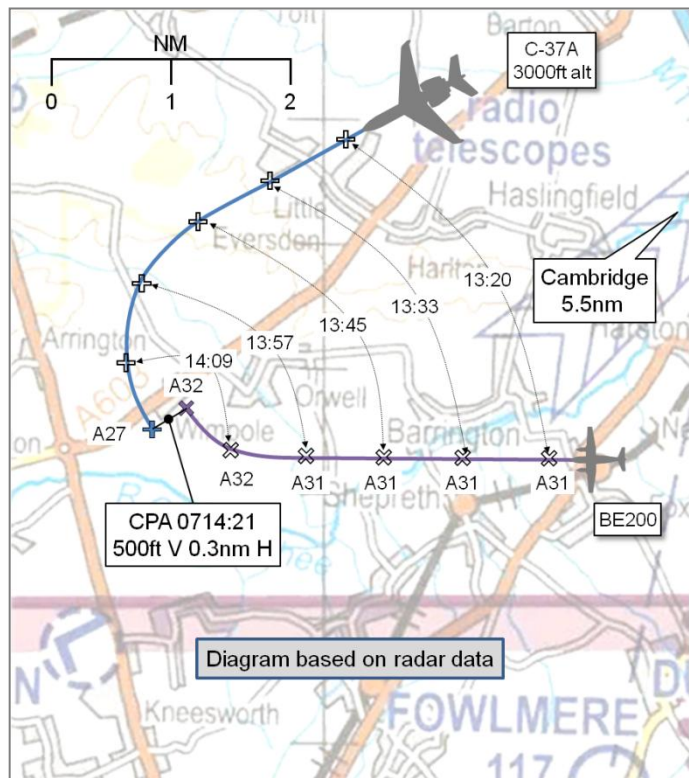
Visibility: >20km

Reported Separation:

0ft V/1nm H 500ft V/1nm H

Recorded Separation:

500ft V/0.3nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE C-37A PILOT (a military Gulfstream V) reports en-route from Turkey to Cambridge, IFR, heading 051° at 180kt and 3000ft, squawking Modes S and C. The flight deck crew complement was 2 pilots and an engineer. He reported receiving a BS, he thought, from Cambridge TWR on 125.9MHz. Whilst positioning for the RNAV(GNSS) RW05 at Cambridge, he received an RA from a white BE200 at co-altitude (he believed). Having entered the local IFR pattern at Cambridge, the TWR pointed out traffic holding SE of the airport. He saw the traffic and reported visual. As he turned to heading 051° to intercept final for the GPS approach, he received an RA from the same traffic. He descended 500ft and increased the rate of turn onto heading 070° to avoid the traffic. Once clear of traffic he re-established course and landed uneventually. He assessed the vertical separation as 0ft and horizontal as 1nm.

THE BE200 PILOT (single crew) reported en-route from Southend to Cranfield, VFR, heading W at 180kt and 3000ft. He was CAVOK, VMC, and the ac was coloured white, with white strobes, a beacon and navigation lights. The ac was squawking 7000 Modes S and C; TCAS was not fitted. He was supplied with a BS from Cambridge APP on 123.60MHz; Cambridge radar was not available. He was aware of a Gulfstream inbound to Duxford from the N, he deduced. After changing frequency to Cranfield APP, he thought, he obtained visual contact with the ac in his 2 o'clock at about 5nm, similar level, crossing R to L and possibly descending. He considered no manoeuvring action was needed at the time. At the 1230 position, at approximately 2nm, the Gulfstream started a descending L turn. To maintain visual contact he turned R and watched the ac disappear below and behind his LHS at least 500ft below, with a minimum range of 1nm.

THE CAMBRIDGE APP CONTROLLER reported that the C-37A, on an IFR flight, was co-ordinated inbound to CAM, descending to 5000ft with London Mil. At approximately 0709 the BE200 pilot called SE of the airport westbound at 3000ft, requesting a BS. The C-37A pilot requested a RNAV approach to RW05, inbound from the NE, under a PS. TI was passed to both ac. The C-37A pilot was instructed to descend to 3000ft and cleared own navigation to BEPOX for RNAV 05. The BE200 pilot requested to leave the frequency for Duxford Radio on 122.075MHz and confirmed he would maintain 3000ft. The C-37A was seen from the VCR passing approximately 0.5nm N of the airport, tracking SW towards BEPOX. Further TI about the BE200 was passed to the C-37A pilot, who reported visual. At approximately 0715, noticing the BE200 apparently close to the C-37A, the TI was

updated and visual contact was confirmed. The pilot then reported descending due traffic. The BE200 was observed to be making sharp turns to avoid the C-37A. Once on the ground, the C-37A pilot reported his intention to file an Airprox report.

Factual Background

The meteorological situation at Cambridge Airport was reported as follows:

METAR EGSC 020720Z VRB02KT CAVOK 08/01 Q1024=
 METAR COR EGSC 020650Z VRB03KT CAVOK 07/01 Q1024=

The Cambridge APP was providing combined Aerodrome and Approach PS without the aid of surveillance equipment. Cambridge ATC had commenced operational watch at 06:00 UTC and the APP had been in position for 1hr and 14min prior to the Airprox. Traffic was described as ‘very light’.

There is no requirement to separate IFR and VFR traffic in Class C airspace.

Cambridge Approach ATS provision is notified in the UK AIP at AD 2.EGSC, section 2.18 (2 May 2013), specifically, radar is available only intermittently Mon-Fri during normal working hours and by arrangement only:

Service Designation	Callsign	Channel(s)	Hours of Operation
1	2	3	4
APP	CAMBRIDGE AP-PROACH	123.600 MHz	Winter: Mon-Fri 0700-2100 Sat, Sun 0800-1900 and by arrangement Summer: Mon-Fri 0600-2000 Sat, Sun 0700-1800 and by arrangement
RAD	CAMBRIDGE RADAR	123.600 MHz	Available intermittently Mon-Fri during normal working hours and by arrangement only;

The UK AIP ENR 1.1-10 (13 Dec 2012), paragraph 2.3.3 states:

‘Under a Basic Service a pilot should not expect any form of traffic information from a controller; 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 unless the situation has changed markedly, or the pilot requests an update’

The UK AIP ENR 1.1-11 (13 Dec 2012), paragraph 2.6.1 states:

‘A Procedural Service is a non-surveillance ATS where, in addition to the provisions of a Basic Service, the controller provides instructions, which if complied with, shall achieve deconfliction minima against other ac participating in the Procedural Service. Neither traffic information nor deconfliction advice can be passed with respect to unknown traffic. A controller will provide traffic information on conflicting ac being provided with a Basic Service; however, there is no requirement for deconfliction advice to be passed, and pilots [under either service] are wholly responsible for collision avoidance’

ATSI Analysis

The C37A pilot called Cambridge at 0706:00 UTC and requested the RNAV procedure for RW05. This was approved and the C37A was cleared to BEPOX at 3000ft on QNH 1024hPa. Cambridge

informed the C37A pilot that it was a PS and specifically stated that the service was non-radar. The Cambridge conspicuity code 6177 was assigned. The RNAV 05 procedure is extracted at Figure 1 below.

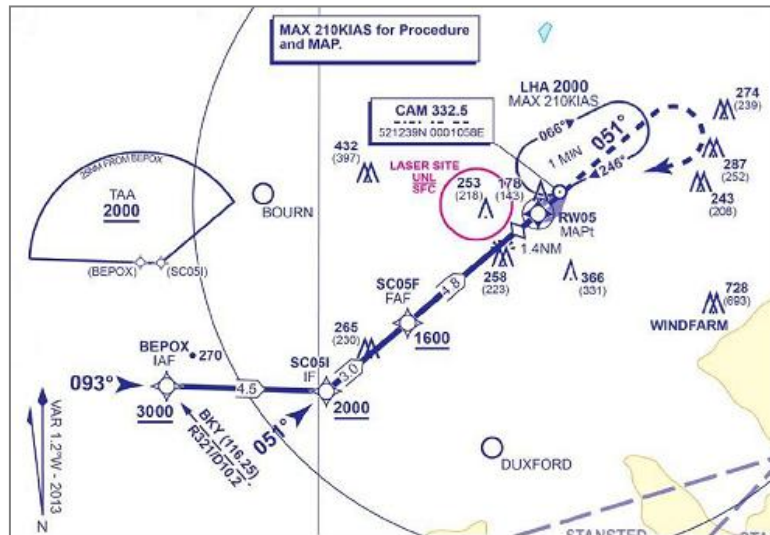


Figure 1: UK AIP AD 2-EGSC-8.2 (dated 4 Apr 2013): Cambridge RNAV (GNSS) RW05

At 0707:00 the BE200 pilot called Cambridge and requested a BS, which was agreed. He asked Cambridge, "...can you see any traffic at Duxford?" To which the Cambridge APP replied, "I'm not looking at radar I'm afraid but traffic information [0707:20] northeast of Cambridge er descending er t-westbound before inbound to the airfield is a er Gulfstream five descending initially to three thousand feet." This was acknowledged by the BE200 pilot and QNH 1024hPa was confirmed.

At 0708:40 the C37A pilot gave his estimate for BEPOX as 0714 and was instructed to report at BEPOX.

At 0709:20 the Cambridge APP passed TI to the C37A pilot on a C172 at 2000ft holding over the A/D and on the BE200, "on your er left-hand side westbound last reported three thousand feet." The C37A pilot reported, "searching". See Figure 2 below.

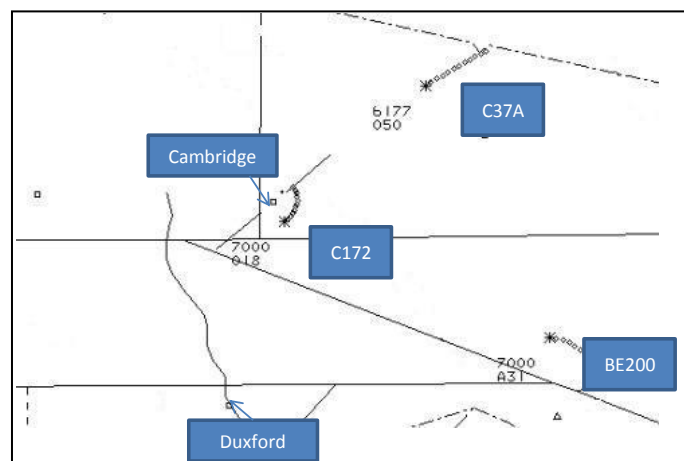


Figure 2: Stansted 10cm radar – 0709:20 UTC. Note: for reference the extended centreline markers for Cambridge RW05/23 represent 2nm.

At 0710:00 the BE200 was 8.5nm SE of Cambridge and 9nm ENE of Duxford. The pilot reported, "changing to Duxford 122.075." The Cambridge APP replied, "Roger and confirm you'll be maintaining three thousand feet [0710:10] at all times." The BE200 replied, "affirm", and left the frequency.

Duxford Aerodrome, its ATZ and provision of ATS services are notified as commencing/opening from 0900 UTC during summer. Recording of Duxford Information's frequency (122.075MHZ) is H24 voice activated; however, on the morning of 2 May this equipment was out-of-service. Therefore, any calls on the frequency by the BE200 cannot be verified.

At 0713:00 the Cambridge APP informed the C37A pilot, "the previously mentioned Beech Two Hundred traffic no longer on frequency however I'm visual from the control tower [0713:10] on your left hand side three thousand feet." The C37A pilot replied "has him in sight". See Figure 3 below.

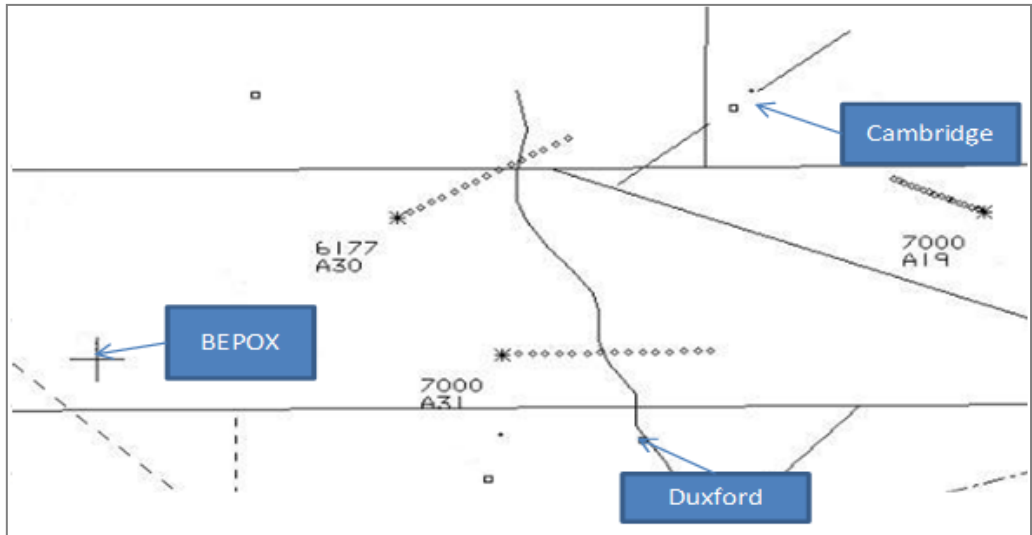


Figure 3: Stansted 10cm radar– 0713:10 UTC. Note: the BE200 passed 1.7nm N of Duxford A/D.

The C37A pilot reported at BEPOX at 0713:40; however, he was 4.1nm NE of BEPOX heading 245°. The pilot reported in a LH turn and requested clearance confirmation for the RNAV procedure. Confirmation was given and the pilot was requested to report established on the FAT.

At 0714:02 the C37A was in a L turn maintaining altitude 3000ft (approximately 3.5nm short of BEPOX). The BE200 was westbound at 3100ft, having just passed the SC051 waypoint. See Figure 4 below (waypoint SC051, which follows BEPOX in the RNAV procedure, is shown).

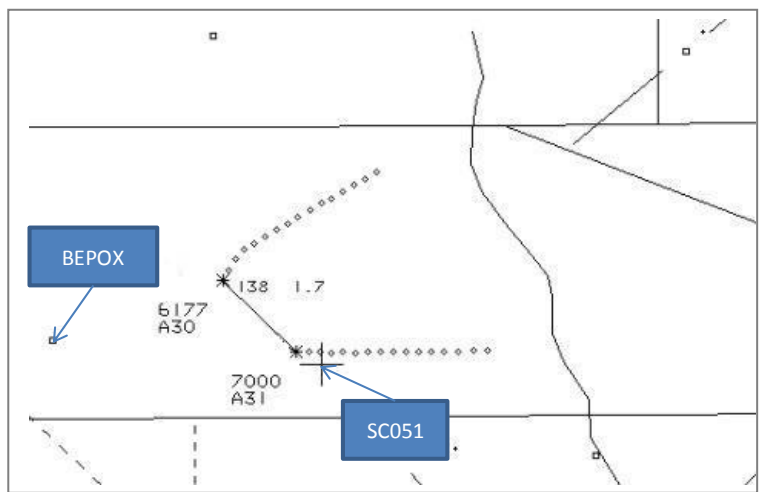


Figure 4: Stansted 10cm radar – 0714:02 UTC.

At 0714:10 the C37A pilot reported, "descending due to er traffic". The APP responded by asking whether the C37A pilot was still visual with the BE200, to which he replied, "affirm". The BE200 pilot's report indicated that he was visual with the C37A.

The C37A's L turn then appeared to stop as it descended to 2700ft. The BE200 turned R and climbed to 3200ft as the ac passed 0.4nm abeam. Figure 5 shows the closest distance between the two ac as recorded by the Stansted 10cm radar (ac-to-ac distance was 2481ft). The ac were 9nm SW of Cambridge.

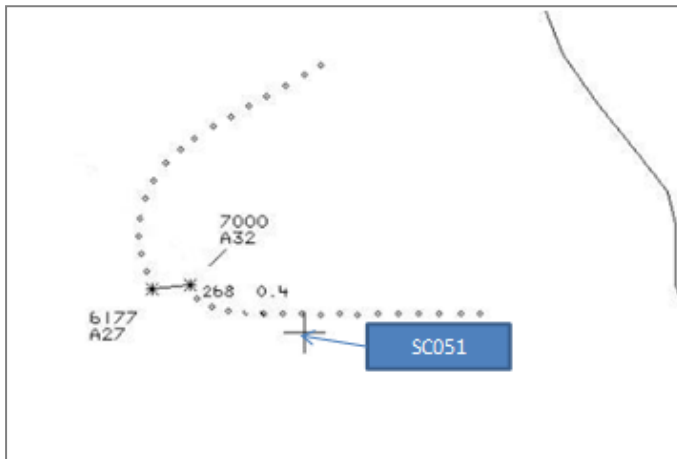


Figure 5: Stansted 10cm radar – 0714:20 UTC. Closest radar recorded distance.

Two TCAS RAs were recorded via Mode S downlink from the C37A to area surveillance facilities. At 0714:04 the C37A's TCAS issued a Descend Advisory and at 0714:14 an Adjust Vertical Speed advisory was issued. Simulation of the encounter using InCAS software corresponded well with the downlinked information received. The simulation suggested the CPA occurred at 0714:21, when horizontal distance was 0.3nm (556m) and vertical distance was 528ft (ac-to-ac distance 1898ft).

The C37A continued on to final approach and landed at 0718:45.

At approximately 0720:00 the BE200 pilot called Cranfield TWR (134.925MHz) and received no reply. Several more unanswered calls were made until, at 0729:00, a reply was received instructing him to recall Cranfield APP on 122.850MHz. Cranfield's ATS Operational Hours are notified as from 0730 UTC Mon – Fri during summer months. UK AIP AD 2.EGTC-1 (10 Jan 2013).

USAFE Comments awaited

Summary

The Airprox took place 9nm SW of Cambridge in Class G airspace when a C37A and a BE200 came into conflict at 3000ft. Both pilots were visual with each other having been given TI by Cambridge ATC. The C37A received a TCAS RA relative to the BE200.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The Board first considered the actions of the inbound C37A, which was being provided with a PS by Cambridge ATC. Although ATC had informed the pilot that a radar service was not being provided, members wondered whether the pilot really understood the meaning of a PS. They considered that the pilot, under IFR, may have mistakenly believed that he was being provided with separation from non-participating traffic by ATC. This impression was reinforced by the nature of the Airprox itself, and its reporting - the C37A pilot had turned his ac towards another ac that he had visual sighting of, passed close by, and then filed an Airprox.

The Board then discussed whether the C37A pilot had carried out the RNAV procedure correctly. While positioning for the RNAV procedure for RW05, the controller requested the C37A pilot to report at BEPOX. However radar recordings reveal that the ac turned about 3.5nm short of BEPOX. One of the pilot members explained that, unless the procedure states that an ac has to fly over a particular point, an early turn can be made in order to enable an ac to establish on the inbound leg. This was appropriate in the circumstances of this incident, where the C37A was approaching BEPOX from the NE, necessitating a 180° turn onto the final leg – an early L turn before BEPOX would allow the ac to be established on the inbound leg by SC051. Nevertheless, it was felt that confusion could have been caused in the minds of other pilots and controllers given the procedural nature of the approach and the fact that the C37A had reported being ‘at BEPOX’ after he had been requested to route there rather than report that he was ‘turning before BEPOX’.

As for the BE200, the Board noted that the pilot was transiting through Class G airspace, being provided with a BS, as he requested, by Cambridge ATC. Members reasoned that he was probably not expecting much other traffic to be in the vicinity, as it was fairly early in the morning (0814 local at the time of the Airprox). On asking the Cambridge controller if he could see any traffic at Duxford, Board members considered that the controller’s response when issuing TI about the C37A was ambiguous and may have led the BE200 pilot to believe that the C37A was inbound to Duxford rather than Cambridge. This may have been a factor in the BE200 pilot requesting a frequency change to Duxford before visual contact was established with the C37A. GA members wondered why he did not contact Duxford on another radio, thereby also remaining on the Cambridge frequency until he had visual contact with the other ac. They also wondered whether the Cambridge controller might not have been able to advise him that Duxford was closed until 0830 and therefore unlikely to respond. Notwithstanding, despite not being on the same frequency, the BE200 pilot did become visual with the C37A at a range of 5nm, and was able to turn away from it as it turned towards his ac.

Turning to examine the ATC aspects of the incident, it was apparent to the Board that the controller had properly informed the C37A pilot that a radar service was not being provided, and a PS service was, therefore, considered appropriate. TI was passed to the pilot about the presence of the BE200 and was later updated from a visual observation from the controller, allowing visual contact. TI was also issued to the BE200 and, although the message may have been ambiguous, it was effective in leading the pilot to sight the C37A.

The Board then considered the cause. Both ac were operating in Class G airspace and were responsible for their own separation. This relied on both pilots being visual with the other ac, which was achieved. However, when the C37A pilot sighted the BE200, he was still tracking SW. He then commenced a L turn on the RNAV procedure, resulting in him turning directly into close proximity with the BE200. The Board agreed that, overall, safety margins had not been much reduced below normal because both pilots were visual with each other; the BE200 turned away from the C37A and the latter ac reacted to a TCAS RA.

Considering the relevant safety barriers, the Board agreed that ‘ATCO Rules and Procedures’, ‘Controller Action’, ‘Visual Sighting’, ‘SA from RT’, ‘SA from ACAS’ and ‘Compliance with ACAS RA’ had all been relevant and effective. Of the other barriers, they considered that, although ‘Aircrew Rules and Procedures’ and ‘Aircrew Action’ had been reduced in effectiveness, overall, the safety barriers had been effective, which gave an Event Risk Classification score of 10.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The C37A pilot turned into conflict with the BE200.

Degree of risk: C.

ERC Score: 10.

AIRPROX REPORT No 2013037

Date/Time: 16 May 2013 1550Z

Position: 5358N 00014W
(9nm NE of Leconfield)

Airspace: London FIR LFA11
(Class: G) (Class: G)
Reporting Ac Reported Ac

Type: Jetstream JS41 F15E

Operator: CAT Foreign Mil

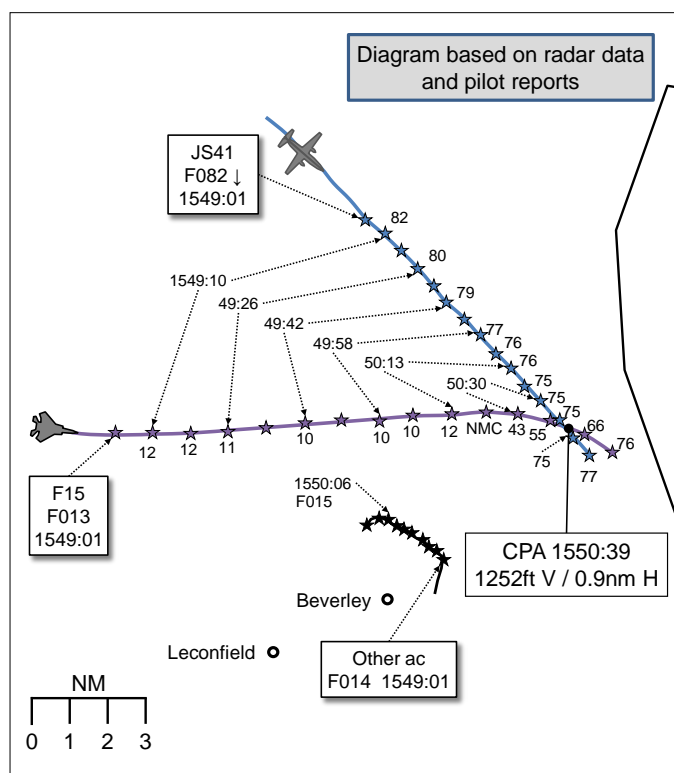
Alt/FL: FL80 FL80

Weather: IMC VMC

Visibility: NR 20km

Reported Separation:
NR V/1nm H NR V/NR H

Recorded Separation:
1200ft V/>0.1nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE JETSTREAM (JS41) PILOT reports descending to FL75 in intermittent IMC at 245kt under a DS from LATCC(Mil) NE. The crew received TI on LL traffic that they correlated with a return indicating 6000ft below on the aircraft's TCAS display; LATCC(Mil) NE advised them to turn on to 140° to remain clear of the other ac, and then handed them over to Humberside Radar [UKAB Note 1: the heading of 140° was to achieve the gap between radar returns required by DS minima against an ac squawking 3/A 7010 which was not physically involved in this Airprox]. During their initial call to the Humberside APR controller, and before 2-way communication had been established, the crew received a TA, on the previously correlated traffic, they thought. The return which they could see on their TCAS display was climbing and was indicating 3000ft below them [UKAB Note 2: this was in fact the F15 and not the ac squawking 3/A 7010. The JS41 pilot subsequently reported that he did not notice that the two events were related to different TCAS returns because the crew were scanning between the TCAS, the instruments and the sky]. The crew reports that 'within a second' of receiving the TA they received an RA instruction to climb and the Pilot Flying (PF) disengaged the autopilot and followed the instruction. A few seconds later the TCAS indicated that the conflict had been resolved. However, when they subsequently established 2-way communication with Humberside Radar, the controller issued an avoiding action turn on to 190°. The crew informed APR that they were clear of conflict, hdg 190° and descending to FL75; normal communications were established and the ac continued to its destination. The crew did not see the F15 other than on the TCAS display.

He assessed the risk of collision as 'Medium'.

THE F15 PILOT reports free-calling LATCC(Mil) E on the Initial Contact Frequency (ICF) for an ATS. They had been LL, hdg 142°, VMC, and had commenced a climb using their radar to search for traffic; they contacted LATCC(Mil) E on passing 4000ft, who instructed them to Squawk 3/A 6064. As the ac levelled at FL100, LATCC(Mil) E passed TI on traffic '12 o'clock, 1nm, at FL80' and asked if the crew could see it. The crew answered that they could not see the other ac, and that they had levelled at FL100. LATCC(Mil) E acknowledged, agreed a TS and instructed the crew to take up their own navigation to their base.

He assessed the risk of collision as 'Low'.

THE HUMBERSIDE RADAR CONTROLLER reports operating as the OJTI mentor for a trainee. LATCC(Mil) NE called to handover the JS41 8-10nm NW Hornsea, descending to FL70, he thought, under a DS. LATCC(Mil) NE had put the ac on a radar hdg of 140° to achieve a gap against a conflicting ac squawking mode 3/A 7010 but offered to turn the JS41 back towards OTR. Humberside Radar observed the F15 tracking E at 'low-level', around 5nm SW of the handover point and assessed that the suggested turn would place the JS41 'directly over' the F15. Consequently, Humberside Radar refused the turn, identified the JS41 and passed their contact frequency to LATCC(Mil) NE. Humberside Radar assessed that the relative speeds of the ac meant that the F15 would pass in front of the JS41, achieving a gap. At the same time as the JS41 crew contacted Humberside Radar, the controller observed the F15 squawk change to 6064 and the ac climbed rapidly 'in close proximity' to the JS41. Humberside Radar issued an avoiding action turn on to 170° and at the same time the JS41 crew responded to a TCAS RA. The Controller reports seeing the F15's return pass less than 1nm to the E of the JS41's return, indicate a climb to FL100 and then turn to track S along the coast.

THE LATCC(Mil) NE CONTROLLER reports that he was not made aware of the Airprox at the time of the event and does not recall the event. He reports that, although he would have carried out the handover to Humberside Radar, it is likely that he had handed over the control position before the actual Airprox took place.

THE LATCC(Mil) E CONTROLLER reports that his workload was 'high to medium' with 3 other ac on frequency when the F15 crew free-called; the task difficulty was described as low and it had been 25 minutes since his last break. The F15 crew free-called climbing to FL100; the controller instructed them to select mode 3/A 6064 and scanned the screen to identify the ac. The LATCC(Mil) NE controller pointed out the F15 and asked if the ac was receiving a service from the LATCC(Mil) E controller. The LATC(Mil) E controller moved his radar screen coverage and saw a return, with the squawk he had allocated to the F15, at FL80, tracking SE, in conflict with another ac which was tracking SW at the same level. The controller passed TI to the F15 crew and asked if they were visual with the ac now in their '6 o'clock, about 1 to 2 miles'; the crew replied that they were not. Noting that the F15 was now at FL100 and the other ac was at FL80, the controller instructed them to maintain their hdg in order to increase the separation as quickly as possible. Shortly afterwards the F15 crew continued en-route to work in the area of the Donna Nook AWR.

He perceived the severity of the occurrence as 'High'.

Factual Background

The Humberside OBS at 1520Z was:

080/07 8km -SHRA SCT1800 BKN3800 +11/+8 QNH 1001

Humberside Radar was manned by an experienced controller acting as OJTI to a trainee.

The Jetstream crew were flying from Aberdeen to Humberside under IFR and in receipt of a DS initially from LATCC(Mil) NE and subsequently from Humberside Radar. They had selected strobe, conspicuity and navigation lights on and had SSR modes 3/A, C and S selected on.

The F15 crew were flying a VFR sortie, in VMC, at 379kt, in LFA11, around 25nm N of Donna Nook AWR, with position lights and beacons turned on. The crew had also selected SSR modes 3/A, S and C.

An InCAS simulation was performed by NATS and indicated the following separation which correlates closely with the separation observed on the radar recording:

CPA:	1252ft V/0.09nm H
Minimum Lateral Separation:	1520ft V/0.01nm H
Minimum Vertical Separation:	13ft V/0.59nm H

Investigation Analysis

CAA ATSI had access to Humberside RTF and the area radar recording, the Humberside radar controller's and ATSU written reports, together with the written reports from both pilots.

The JS41 was in the process of establishing two way communication with Humberside Radar following a radar handover from LATCC(Mil) NE.

The F15 was operating on mode 3/A squawk of 0401 in Low Flying Area (LFA) 11 (Class G airspace) and was in receipt of a service from Newcastle Radar on a squawk of 3761 and then on a Leeming conspicuity squawk of 0401. The F15 passed NE of Leeming and continued SE at low level towards the Donna Nook AWR. The Humberside Manual of Air Traffic Services (MATS) Part 2, paragraph 4.9.4.3 states:

'An observed conspicuity code is to be regarded, effectively, as an unknown aircraft, whereas an aircraft transponding on a discrete unit code may be assumed to be receiving a service from the assigned unit, where a discrete code is assigned for the purpose of identification.'

The JS41 had been pre-noted by LATCC(Mil) NE (in accordance with the joint Letter of Agreement between the units and was allocated an acceptance level of FL75, with a squawk of 4277 and frequency 119.125MHz. This would normally be on a freecall basis, provided that the ac was clear of conflict.

The Humberside Radar controller's workload was considered to be medium. Humberside Radar operate a 10cm Watchman primary surveillance radar (4 second update rate) with an SSR feed from the Claxby area surveillance radar (8 second update rate).

FACTUAL HISTORY

The JS41 was in receipt of a DS from LATCC(Mil) NE and at 1549:43, the controller, having placed the JS41 on a radar heading, contacted Humberside Radar with a radar handover. Radar showed the JS41 squawking 4277 at FL79 (Figure 1) as well as two other ac, one squawking 7010, indicating FL014, and the second, the F15, squawking 0401 indicating FL010 (an altitude of 676ft using the Humberside QNH 1001 hPa, with 1hPa equivalent to 27ft). The F15 was 4.6nm SW of the JS41.

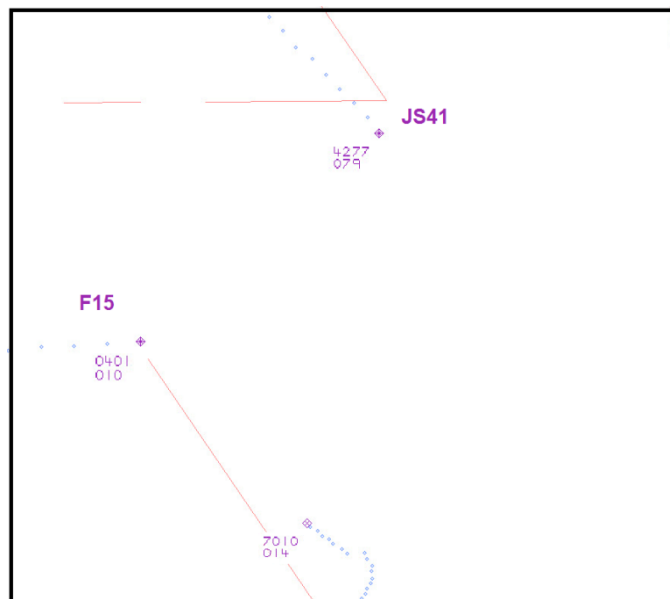


Figure 1 – Claxby & Manchester MRT at 1549:43

The F15 had been low-level for the previous 15nm and was displayed on the area MRT radar, which was likely available to the LATCC(Mil) E controller. During the radar handover the LATCC(Mil) NE

controller reported that the JS41 was bearing 350° from OTR at 15nm heading 140° and squawking 4277. The Humberside Radar controller responded, “Contact” and the LATCC(Mil) NE controller continued, “Descending flight level seven zero deconfliction service just turned him right ten degrees to get a gap on the seven zero one zero squawk erm but we’re happy to come to Otringham now if you are.” Humberside Radar replied, “Er no (JS41)c/s is identified continue that heading contact Humberside radar one one nine decimal one two five.” The Humberside Radar controller’s written report indicated that, from the relative speeds of the ac, he judged the 0401 squawk would pass in front of the JS41 and considered that a turn towards OTR would place the JS41 overhead the 0401 squawk. There was no discussion during the handover regarding the unknown 0401 squawk. The call was terminated at 1550:14 and at this point radar showed the two ac (JS41 and F15) converging at a range of 1.7nm. At 1550:20 the range had reduced to 1.3nm and the Mode C of the F15 was no longer shown on the Claxby radar (FL012 on MRT). The groundspeed of the F15 was 424kt (Figure 2).

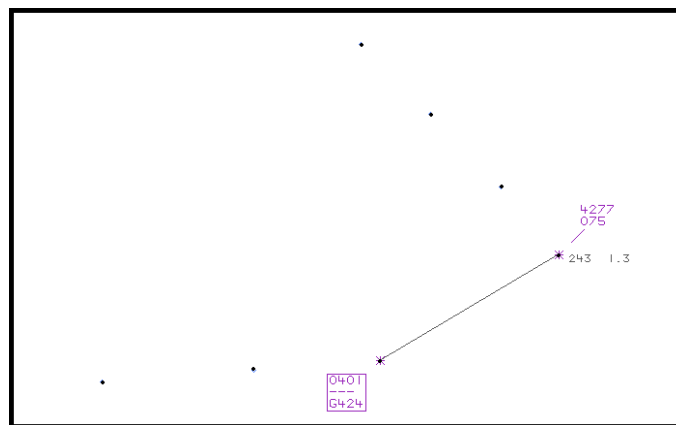


Figure 2 – Claxby single source at 1550:20

The next two successive sweeps of the Claxby radar, at 1550:28 and 1550:36, showed the F15 Mode C indicating FL043 and then FL055. (Figure 3 and Figure 4).

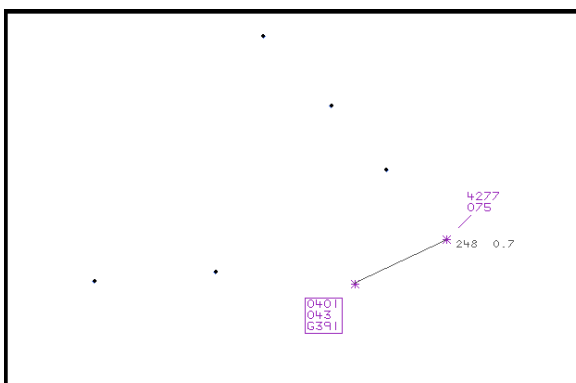


Figure 3 – Claxby single source at 1550:28

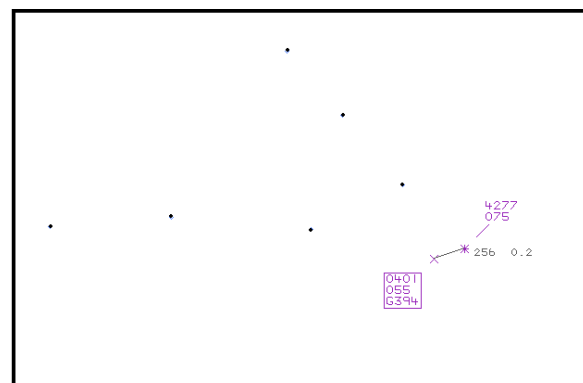


Figure 4 – Claxby single source at 1550:36

The F15 pilot’s report indicated that, after passing 4000ft in the climb, he contacted LATCC(Mil) E. The ATSU investigation report indicated that the Humberside Radar controller manipulated the ac labels to avoid them overlapping, noticing the Mode C of the 0401 squawk had jumped to FL042 and then FL055 in one sweep; he thought that this might be an error due to garbling but after the second sweep recognised that avoiding action was required. At 1550:42, the JS41 contacted Humberside Radar, “Humberside Radar good afternoon (JS41) just level flight just level flight level seven five we’re on a radar heading of er one four zero degrees request deconfliction service”.

The Humberside Radar controller replied, “(JS41)c/s Humberside Radar identified reduced deconfliction service due to displayed clutter - and avoiding action turn right heading one nine zero degrees traffic was ????? in your location eastbound last indicating flight level five five - now believed to be climbing.” It is likely that during this transmission the JS41 received a TCAS RA and radar

showed the JS41 climb to FL81. The JS41 pilot responded, “????? we’re now turning onto a heading of one nine zero degrees just passing flight level eight one and we’ll be levelling shortly.” The Humberside Radar controller then gave further avoiding action, “Roger that’s avoiding action immediate right turn further right heading two zero zero degrees traffic now east of you turning onto a southerly heading indicating slightly above your level believed to have pulled out of low level.” This was acknowledged by the JS41 pilot.

At 1550:32, the F15 pilot was instructed to squawk 6064 by LATCC(Mil) E and the new SSR code was displayed on the next sweep of the radar at 1550:44. The Claxby radar showed that the tracks had crossed with the JS41 at FL075 and the F15 at FL066 (Figure 5).

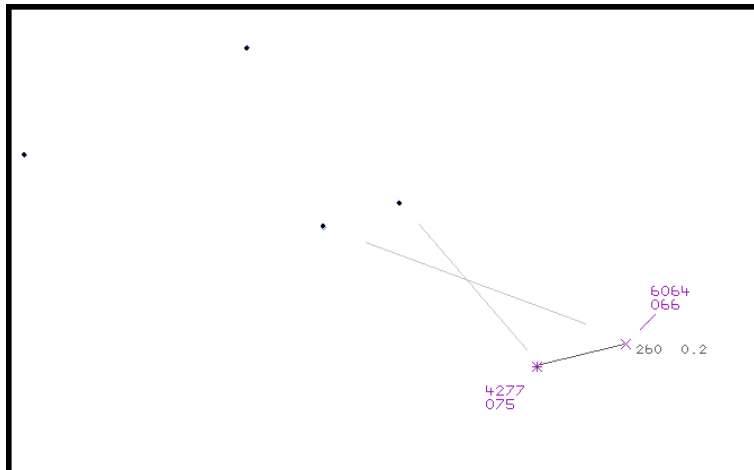


Figure 5 – Claxby single source 1550:44

The JS41 pilot’s report indicated intermittent IMC at FL75 and the F15 pilot’s report indicated VMC with flight visibility 20km. At no time was the F15 pilot visual with the other ac. The two ac continued to diverge and at 1551:06, the F15 was 1000ft above the JS41 (Figure 6).

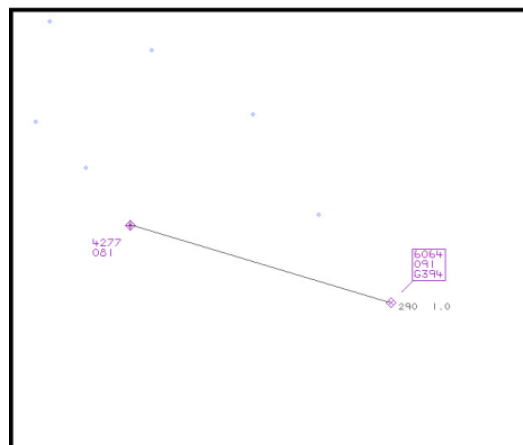


Figure 6 – Claxby & Manchester MRT at 1551:06

At 1551:41, the JS41 pilot reported, “(JS41)c/s is now clear of conflict and descending back to flight level seven five.” This was acknowledged by the Humberside Radar controller and the JS41 was instructed to descend to an altitude of 3000ft on QNH 1001hPa.

The JS41 pilot’s report indicated that he had received a TCAS TA from climbing traffic which was 3000ft below followed, during his initial transmission to Humberside Radar and before two way communication had been established, by a TCAS RA. He reported that Humberside Radar then gave an avoiding action turn which the crew accepted as they were by then ‘clear of conflict’.

The JS41 was then given vectors for the ILS Runway 20 and landed without further incident.

ANALYSIS

The Humberside Radar controller reported observing the F15 flying low-level for the previous 15nm. The F15 crew had not changed SSR code after leaving the Leeming frequency and they did not select the military climb out squawk of 7001 or high energy manoeuvre squawk of 7005. During the handover neither controller referred to the presence of the 0401 squawk. As the two ac converged at a range of 1.3nm the vertical distance was 6300ft. It is likely that the Humberside controller had an expectation that the unknown 0401 squawk would remain low level. CAP 774 UK Flight Information Services, Chapter 4, page 1, paragraph 6: states:

‘...The deconfliction minima against unco-ordinated traffic are:

- 5nm laterally (subject to surveillance capability and regulatory approval); or
- 3,000ft vertically and, unless the SSR code indicates that the Mode C data has been verified, the surveillance returns, however presented, should not merge...’

‘...Furthermore, unknown aircraft may make unpredictable or high-energy manoeuvres. Consequently, it is recognised that controllers cannot guarantee to achieve these deconfliction minima...’

The JS41 was between frequencies when the F15 commenced a rapid climb, such that the F15’s Mode C was not initially shown on the Claxby radar. When the rapid climb of the F15 was detected, the two ac were in close lateral proximity and the Humberside Radar controller’s options would have been limited with very little time to react to the situation. As soon as the JS41 came on frequency the Humberside Radar controller recognised the conflict and gave avoiding action with TI. However the tracks of the ac had already crossed and the JS41 crew had already responded to the TCAS RA. From MRT data the vertical distance at the point of crossing was calculated to be 1400ft and the deconfliction minima re-established when the F15 passed FL091.

CONCLUSIONS

The Airprox occurred when the F15 crew commenced a rapid climb from low level and into proximity with the JS41 at FL75 which, following the radar handover, was in between frequencies and not at the time in receipt of an ATS.

Unknown to the Humberside controller, the JS41 had responded to a TCAS RA and on the JS41’s initial call to Humberside the controller gave avoiding action.

BM SAFETY POLICY AND ASSURANCE reports that the F15 was in the process of freecalling LATCC(Mil) E Tac. The JS41 was in the process of transitioning to Humberside Radar’s frequency from LATCC(Mil) NE Tac, in receipt of a DS.

LATCC(Mil) E Tac reported ‘high to medium’ workload and low task complexity, providing ATS to 3 ac in addition to the freecalling F15. They also noted that the F15 crew reported VMC with 20km visibility whilst the JS41 pilot reported intermittent IMC. Of concern to BM Safety Policy and Assurance was that the JS41’s TCAS was unable to respond quickly enough to the rapidly developing conflict.

The incident sequence commenced at 1549:46 as the LATCC(Mil) NE Planner initiated the handover of the JS41 to Humberside Radar.

The handover between Humberside Radar and LATCC(Mil) NE Planner was completed at 1550:05; the Humberside controller reported that he was conscious of the ‘ac squawking 0401’ but, ‘given the relative speeds, it was hoped [F15 c/s] would pass in front of the [JS41 c/s], producing the required gap’.

AIP ENR 1.6.2 Para 2.2 states that the SSR mode 3/A 7010 is for use by ac operating in an Aerodrome Traffic Pattern, when instructed to do so by an ATS unit or local operating instructions, and must be considered un-validated and un-verified.

CAP 774 Chapter 4 Para 6 states that the deconfliction minima against un-coordinated ac are '5nm laterally or 3000ft vertically and, unless the SSR code indicates that the Mode C data has been verified, the surveillance returns, however presented, should not merge. (Note: Mode C can be assumed to have been verified if it is associated with a deemed validated mode 3/A code)'. MMATM Ch 35 Para 11 Para 5c states that 'where a controller can ascertain from the Code Allocation Plan that a discrete Mode 3/A code has been assigned by a unit capable of validating the code, and has not been notified that the code is corrupt, then that code can be deemed validated'. CAP 493 Section 1 Chapter 5 Para 4.4 states similar. Of note, none of these documents place a geographical limitation on this deeming rule, such that the observed mode 3/A code must be within the area of responsibility (AoR) of the unit to whom it is assigned within the Code Allocation Plan.

At 1550:22, as the JS41 pilot read back the frequency for Humberside to the LATCC(Mil) NE Tac, the F15's SSR Mode C 'dropped out', suggesting that it had initiated a rapid vertical manoeuvre. At this point, the F15 was 1.2nm WSW of the JS41, tracking E'ly and, on the previous sweep of the radar, was indicating 1200ft; the JS41 was level at FL75.

At 1550:23, the F15 crew free-called LATCC(Mil) E Tac, passing their callsign and were instructed by LATCC(Mil) E Tac to, "squawk 6-0-6-4, pass message." The F15 crew read back the squawk at 1550:30 and stated that they were, "requesting to route Flight Level one hundred, traffic service... [garbled but believed to be en-route to a point of destination]." As the F15 crew read back the SSR mode 3/A code, the Mode C data became visible on the radar replay, indicating a climb through 3800ft, 0.5nm WSW of the JS41; Figure 7 depicts the incident geometry at this point.

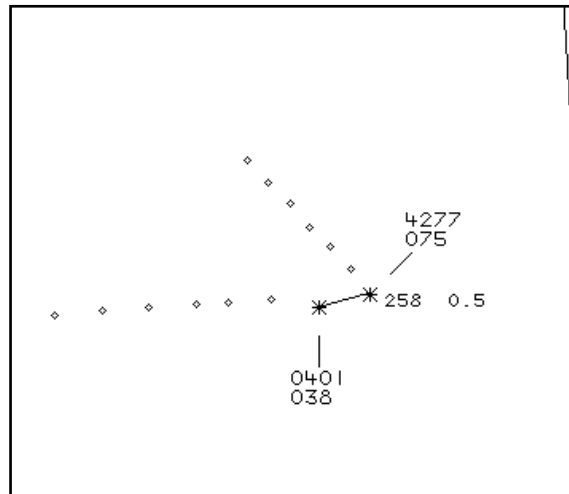


Figure 7: Incident Geometry at 1550:30

CAP 413 Chapter 3 Para 1.51 states that the initial call of an en-route VFR flt to an ATS unit should 'only include the minimum information needed to establish the service that an en-route flight requires' and that the ATS unit will 'respond with their callsign and "Pass Your Message" (optional)'. CAP 413 Chapter 3 Para 1.6.3 goes on to state that 'when instructed by the ATS unit to pass your message details, the reply [from the ac] should contain the following information, whenever possible in the order specified: the ac's c/s and type, departure point and destination, present position, level and additional details or intentions'.

The F15 crew called LATCC(Mil) E Tac on the East ICF approximately 10nm N of the boundary between LATCC(Mil) E and NE airspace; consequently, the LATCC(Mil) E Tac's surveillance display was centred on the E AoR, which delayed their subsequent identification of the F15. However, due to the timing of the F15 crew's initial call in relation to the CPA, this delay had no bearing on the incident.

The CPA occurred between sweeps of the radar at 1550:40 with no recordable lateral separation. The sweep before the CPA (:38) depicts the F15 climbing through FL58 and the sweep after (:42) depicts it climbing through FL64; the JS41 indicated FL75 throughout the incident. Figure 8 depicts the incident geometry at 1550:42. The SSR mode 3/A code assigned by E Tac to the F15 was not visible on the radar replay until 1550:50.

Given the non-standard response by the F15 crew to LATCC(Mil) E Tac at 1550:30, LATCC(Mil) E Tac had no way of determining the location and thus the identity of the F15 until the assigned SSR 3A code was displayed on their surveillance display. That said, given the timing of the F15 crew's initial call in relation to the CPA, even had the F15 crew included all of the relevant information, there would have been no time for LATCC(Mil) E Tac to have reacted and provided a warning to the F15 crew on the proximity of the JS41. Thus, whilst this Airprox has highlighted a number of additional ATM work streams, RAF ATM activity was neither causal nor contributory to this Airprox. Of concern was that the JS41's TCAS was unable to respond quickly enough to the rapidly developing conflict.

Although the F15 crew reported that they were VMC and utilising their radar to search for conflicting ac, they did not acquire the JS41 visually or electronically. Although the JS41 crew were alerted to the presence of the F15 by TCAS, they did not visually acquire the F15.

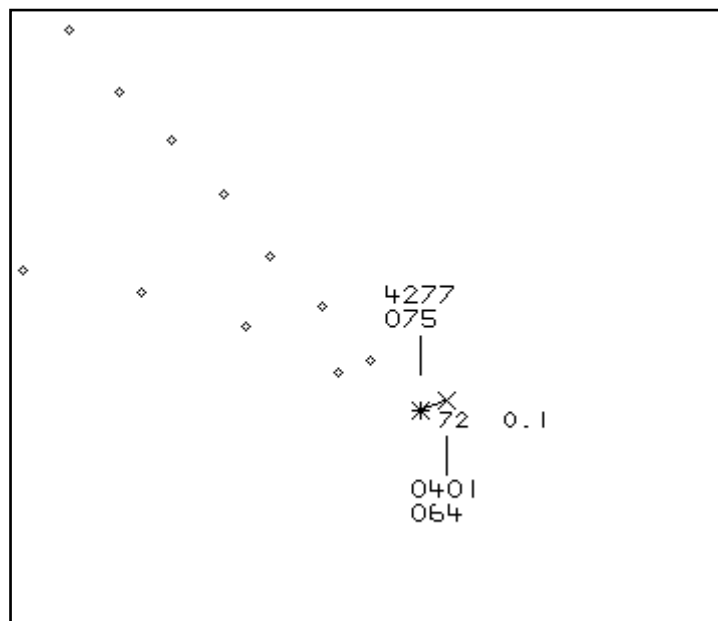


Figure 8: Incident Geometry at 1550:42

OBSERVATIONS & ACTIONS

It is noteworthy that the non-standard response by the F15 crew to LATCC(Mil) E Tac at 1550:30 was similar to that seen in Airprox 104/12 on 19 Jul 12, where the lack of detail in that F15 Formation's initial R/T call to ScATCC(Mil) was cited as a contributory factor to the Airprox. Following this incident, LATCC(Mil) have sought to engage with USAFE staffs at RAF Lakenheath but BM SPA have also highlighted this issue to the MAA, requesting that they monitor the situation to determine whether further Regulatory action is required.

Whilst the assumption by the LATCC(Mil) NE Tac and Planner that the F15s SSR mode 3/A code was validated and verified was neither causal nor contributory to this incident, this Airprox has identified a potential area for additional work. In this instance, the F15 was operating approx 50nm ESE of RAF Leeming, 106nm NNE of Birmingham and 98nm NNW of RAF Lakenheath and the SSR mode 3/A code could reasonably have been assigned to the F15 by any of those units. What is clear is that the F15 had gone en-route from Leeming and had not selected the appropriate low-level conspicuity mode 3/A code. Although it could be argued that deeming SSR data to be valid and verified outside the AoR of the unit to whom it is assigned is not a 'good practice', there is no reason

to make this assumption based on extant Regulation. Moreover, whilst some form of safety promotional activity to highlight to aircrews the importance of appropriate SSR mode 3/A code selection whilst flying autonomously would be appropriate, there may be an opportunity to highlight this issue through Regulation. BM SPA has requested that the MAA and CAA examine the current Policy and Regulation to determine a suitable course of action to address this issue.

LATCC(Mil) and BM SPA will include conspicuity code awareness in forthcoming safety promotional activity.

USAFE comments that a number of factors coincided to negate any preventative action: the JS41 was outside of the F-15E's radar cover; the JS41's TCAS was unable to respond quickly enough; the JS41 was between frequencies; and the timing of the F-15E's free call to LATCC(Mil) E Tac. The F-15E pilot said subsequently that he detected a slight hesitation or inflection in the controller's voice and immediately switched the radar from its 'search' mode to 'guns' mode, a move which still failed to reveal the JS41, probably because it was already behind him. Although not affecting the outcome, BM SP&A's comments are noted.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available to the Board consisted of the reports from the pilots of both ac, the air traffic controllers involved, and radar recordings and RT transcripts.

The Board first discussed the matter of the incorrect squawk being displayed by the F15 and its effect on the ATC service. Although it was agreed that it would have been more appropriate for the ac to have squawked Mode 3/A 7001 to indicate a low flying ac, and that this may have made the Humberside Radar controller more wary of the track, nonetheless, the ATC members agreed that it was unlikely to have changed the course of events because Humberside Radar would have been unlikely to have delayed the hand-over even if 7001 was being squawked given that they were indicating more than 6000ft apart at that point. Unfortunately, the Airprox sequence commenced whilst the JS41 crew were changing frequency, and the F15's Mode C display disappeared at the same time, so the Controllers could not have reacted any more quickly than they did.

The discussion then turned to the actions of the ac crews. It was noted that the JS41 was reporting IMC whilst the F15 was reporting VMC at the time; the JS41 crew had established a DS for their descent, and their actions were appropriate. The USAFE Advisor had discussed the meteorological conditions with the F15 crew, who confirmed that the weather was clear in their area, with perhaps some 'wispy' cloud around. They also confirmed that they were carrying out a controlled climb from low-level using their radar to search ahead. A pilot member noted the F15's significant rate of climb for a short period, and that its Mode C display had been lost at around this time; Mode C output is lost when rate of climb exceeds 8000fpm, and the member opined that this may have been the reason. The effect of the loss of Mode C was that the JS41's TCAS could not respond until it returned.

Pilot Members advised that a more appropriate climb-out profile for the F15 would have been to climb to the cloud-base (Humberside METAR indicating BKN at 3800ft), establish 2-way communication and an ATS with LATCC(Mil), and then commence further climb. It was also noted that, if the F15 crew had made a standard initial call they may have facilitated a faster identification, but it was felt that given the high rate of climb, it would not have changed the sequence of events on this occasion.

The Board agreed that, although the JS41 crew had responded to the TCAS RA, the loss of Mode C data had reduced the warning time given by TCAS; the Members agreed that the InCAS simulation CPA of 1252ft V and 0.09nm H indicated that there had been a risk of collision, and that safety margins had been reduced, thereby resulting in a Risk Grading of B.

The Board agreed that the safety barriers pertinent to this Airprox were: 'ATC rules and procedures', 'controller action', 'aircrew rules and procedures', 'visual sighting', 'aircrew action', 'situational awareness gained from RT', 'situational awareness gained from on-board systems', 'situational awareness gained from ACAS' and 'compliance with a TCAS RA'. The Board concluded that 'aircrew

rules and procedures', 'visual sighting', 'aircrew action', 'situational awareness gained from RT' and 'situational awareness gained from on-board systems' had not been effective; the remaining barriers had provided a minimal effect so the Airprox was allocated an Event Risk Classification score of 502.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The F15E pilot climbed into conflict with the JS41, which he did not see.

Degree of Risk: B.

ERC Score: 502.

AIRPROX REPORT No 2013038

Date/Time: 15 May 2013 1057Z

Position: 5321N 00009W
(20nm S of OTR VOR)

Airspace: London FIR (Class: G)

1st Ac 2nd Ac

Type: A320 Typhoon

Operator: CAT HQ Air (Ops)

Alt/FL: ↓FL60 FL150

Weather: VMC CLAC VMC CLAC

Visibility: 10km 20km

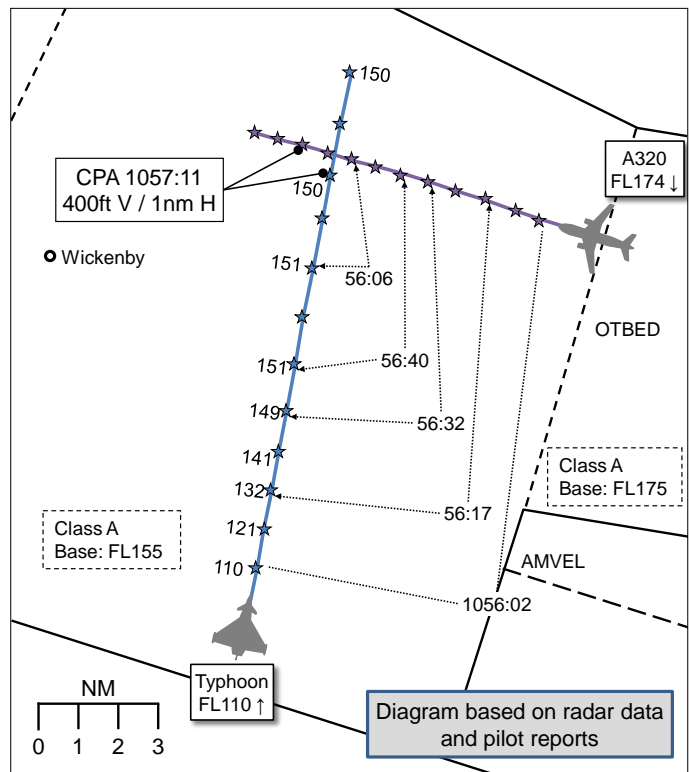
Reported Separation:

4-500ft V 6357ft Slant

3-6nm H

Recorded Separation:

400ft V/1nm H



Controller Reported

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE APR CONTROLLER reports that the A320 was released passing OTBED and on initial contact the crew requested a DS to leave CAS early. The APR trainee passed the Doncaster information and instructed the crew to descend to FL130. The OJTI saw the Typhoon climbing through FL80 and instructed to A320 crew to stop descent at FL160 which was read back he thought. APR continued to monitor the A320's progress and informed the crew that they would be remaining within CAS. The OJTI observed the A320 descending past FL160 and made broadcasts to the crew to maintain FL160, but did not receive any response initially. APR saw the Typhoon level at FL150 and the A320 descend to FL153 before climbing back to FL160. APR assessed the CPA as 1.5nm H and 300ft V.

THE A320 PILOT reports descending to FL160 under a 'traffic separation' service, he thought, from Doncaster APR and assessed the crew's workload as 'low to medium'. The crew received a further descent clearance to FL130 and shortly afterwards they received a clearance to continue descent to FL60, they thought; the Captain reports that both pilots understood the clearance, a read-back of the clearance to FL60 was transmitted and no correction was received. At around FL155-156 the crew received a TCAS TA indicating the Typhoon at FL150 crossing L to R, at 90° to the A320's track and in their 7-8 o'clock position, approx 3-6nm away and 400-500ft below them. They received, and complied with an instruction from APR to stop their descent immediately. Their lowest level was FL155, they thought.

He assessed the risk of collision as 'Low'.

THE LATCC(Mil) NORTH-EAST CONTROLLER (LATCC(Mil) NE) reports having no ac on frequency but was waiting for the Typhoon, which had been pre-noted for departure from RAF Coningsby to route N to OTA E at FL350. The Typhoon was handed over to LATCC(Mil) NE by Coningsby ATC under a DS, squawking Mode 3/A 6050 and climbing to FL150 to keep the ac clear of CAS. LATCC(Mil) NE saw the A320's radar return and noted that its data-block was indicating that the ac was inbound to Doncaster and had been cleared to descend to FL160, which would keep the ac inside CAS. The LATCC(Mil) NE controller planned to restrict the Typhoon to FL150 until it was N

of Y70. When the Typhoon pilot contacted him, LATCC(Mil) NE identified the ac and agreed a TS. The controller saw the Mode S of the A320 change to FL60 and its Mode C indicated a descent. The LATCC(Mil) NE controller passed TI to the Typhoon pilot when the A320 was 5nm away and 800ft above the Typhoon. The Typhoon pilot reported visual with the A320 and the controller assessed that the ac passed each other around 2nm apart with the A320's mode C indicating FL154. The controller was then informed by the Supervisor that Doncaster ATC were on the landline requesting co-ordination.

He perceived the severity of the occurrence as 'Low'.

THE TYPHOON PILOT reports departing Coningsby, under a DS initially, and climbing to FL150. Once the ac was level he achieved radar contact with the A320 bearing 030° and range 12nm from his ac indicating 16000ft. He agreed a TS with LATCC(Mil) NE and received TI corresponding to the A320, with which he maintained visual and radar contact throughout the encounter; the minimum slant range separation recorded on the Typhoon's radar was 6357ft.

He assessed the risk of collision as 'Low'.

Factual Background

The A320 was IFR, inbound to Doncaster from the E, in receipt of an RCS from Doncaster APR, and transponding Mode 3/A code 0551. The crew had selected the strobes, navigation lights, anti-collision lights and Modes C and S to on. The ac was flying at 240kts IFR in VMC and was equipped with TCAS2.

APR was providing surveillance services with the use of primary and secondary radar. There were no reported equipment unserviceabilities. APR was manned by a medium-hours trainee and OJTI controller. They had been in position for approximately 5 minutes at the time of the Airprox.

The Typhoon had departed Coningsby en-route to OTA E and the pilot was receiving a TS from LATCC(Mil) NE squawking Mode 3/A 6050. The pilot had selected HISLs, navigation lights and transponder Mode C to on and Mode S to off. The ac was flying at Mach 0.8 and hdg 010°.

Analysis

ATSI reports:

ATSI had access to the Airprox report from APR, both pilot reports, area surveillance recordings and transcription of Doncaster's frequency, 126.225MHz. Supplementary information was obtained from Prestwick Centre Investigations and the APR telephone lines were also recorded.

The A320 was N-bound on airway UY70 and, at 1049:32 UTC, called Prestwick Centre (PC) E sector as it 'reached FL280'. The A320 pilot reported ready for further descent and was informed that this would be given shortly.

At 1050:27, the PC E Planner called APR for a release level on the A320. FL160 was given, and the A320 was released by PC E to Doncaster Approach passing OTBED.

At 1052:40, PC E descended the A320 to FL180, and this was read back correctly. As the A320 passed FL263, in the descent to FL180, the pilot informed PC E, '*we're ready for deconfliction service*'. The pilot was informed that this would not be required at that time.

At 1054:48, PC E descended the A320 to FL160, which was read back correctly and, as the A320 passed FL207 in the descent to FL160 it was transferred to APR.

The Typhoon became airborne from Coningsby's RW25 at 1054:45. The Typhoon took up a N'ly track, climbed to FL150, and was maintaining FL150 by 1056:40, approximately 11nm N of

Coningsby. Subsequently the pilot reported achieving radar contact with the A320 when the Typhoon levelled. At this time, the A320 was in the Typhoon's 1 o'clock, range 6.4nm, passing through FL164. The Typhoon pilot then acquired the A320 visually.

That part of airway Y70 between OTBED and VEGUS (15.4nm distance) is Class C airspace above FL195; the airspace is Class A below FL195. This section of the airway has a base/lower vertical extent of FL155. Whilst high terrain is not an issue in this case, as notified in the UK AIP, the lowest usable level of an airway will always be at least 500ft above the airway's base¹.

The A320 called Doncaster APR at 1055:20, "descending flight level 160 on course to VEGUS information Romeo ready for deconfliction service." APR replied, "...vectors I L S approach runway 20 and er descend [1055:40] initially flight level 130." This was read-back correctly. See Figure 1.

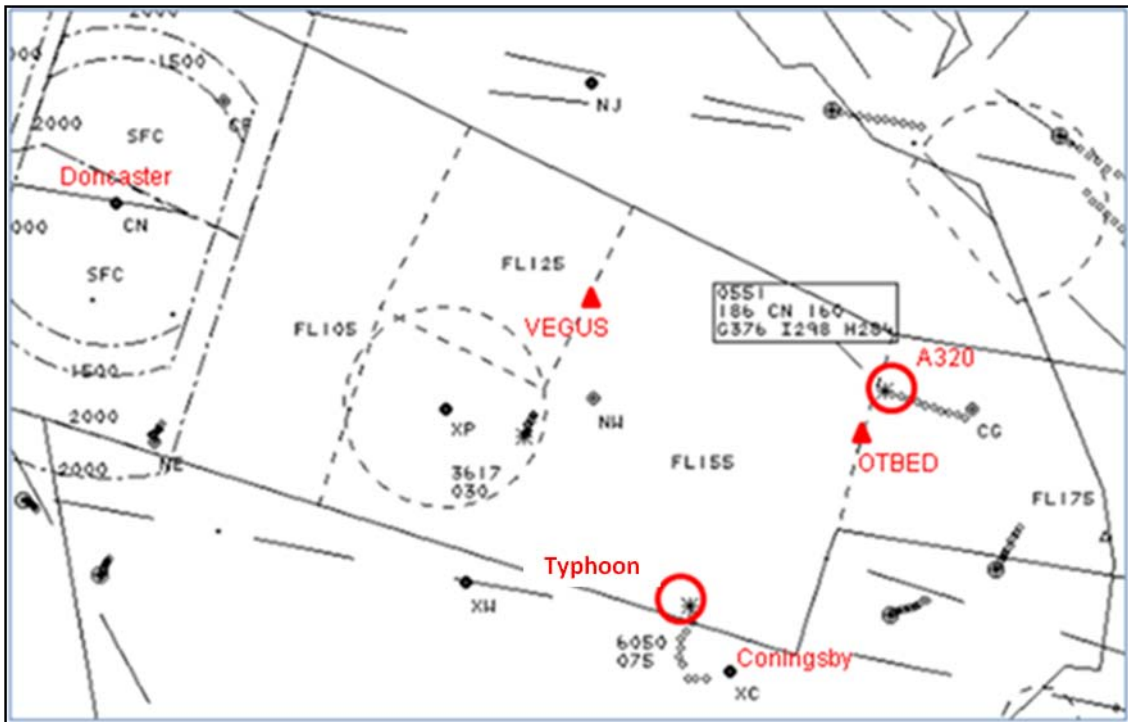


Figure 1: Area Multi Radar Tracking – 1055:40 UTC

The APR OJTI observed the Typhoon climbing-out of Coningsby on a N bound track and, at 1055:54, the APR OJTI took operational control and rapidly instructed the A320, "c/s stop your descent flight level 160." The A320 pilot replied, "Descend flight level six zero c/s".

Ac data transmitted by Mode S is not available to Doncaster's ANSP. At 1056:06, the surveillance replay (St. Annes) showed the A320's Mode S SFL change from 130 to 060. The A320 had approximately 47nm to touchdown.

Doncaster's ANSP utilises SSR data from, amongst others, the St. Annes radar. Therefore St. Annes' SSR data is referred to herein. The radar head has a 4 second update rate.

APR called LATCC(Mil) at 1056:40 to request co-ordination against the Typhoon; however, LATCC(Mil) stated that the ac was not yet working them and the request was disregarded.

At 1056:55 the A320 was in the Typhoon's 12 o'clock range 2.9nm passing FL160 (Figure 2). The A320's rate of descent at this time was 1728fpm.

¹

UK AIP ENR 1.1-7 paragraph 1.6.1.2 (13 Dec 2012); and CAP493 Manual of Air Traffic Services (MATS) Part 1, Edition 4. Section 1 Chapter 6 paragraph 8.2 (22 November 2007).

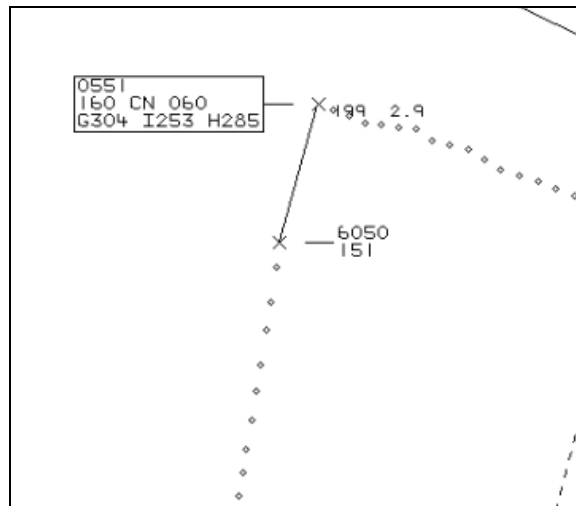


Figure 2: St. Annes – 1056:55 UTC.

NOTE: The Mode S data (SFL, IAS etc. was not available to APR)

At 1056:59 St Annes SSR showed the A320's Mode C as FL158. CAP493 states that 'Controllers may consider an ac to be at an assigned level provided that the Mode C readout indicates 200 feet or less from that level'².

At 1057:00 the APR trainee informed the A320 that it would be kept inside CAS due to activity below the base of CAS and that further descent would be given shortly.

Mode C information from the St. Anne's Radar showed the A320's level at 1057:03 and 1057:07 as FL157 and FL156 respectively. The ac's rate of descent at this time was in excess of 1900fpm.

Immediately after the APR trainee had advised the A320 of the need to keep the ac inside CAS, at 1057:10, the APR OJTI resumed operational control and rapidly transmitted, "c/s confirm maintaining flight level 160".

There was no response and 7 seconds later the OJTI transmitted, "c/s you were instructed to maintain flight level 160":

- A320: "Confirm flight level 160 not six zero c/s"
- OJTI: "No you confirmed er you were told to stop [1057:30] your descent flight level 160"
- A320: "We understood we are cleared for flight level six zero c/s"
- OJTI: "Negative you were st- stop your descent flight level 160"
- A320: "Maintaining one six zero c/s".

During the above exchange, the incident was observed by the PC NE Planner, who placed a call to LATCC(Mil) and informed them that the A320 was with APR should the incident be mentioned by the Typhoon.

At 1057:11 the A320 passed FL154, leaving CAS, still descending as the Typhoon, maintaining FL150, flew behind it from left to right at a range of 1.1nm (Figure 3). This was the closest radar-derived point of approach: 6695ft ac to ac distance. [UKAB Note 1: The Claxby Radar indicates a CPA of 1nm/400ft V.] The Typhoon subsequently reported a minimum slant range of 6357ft.

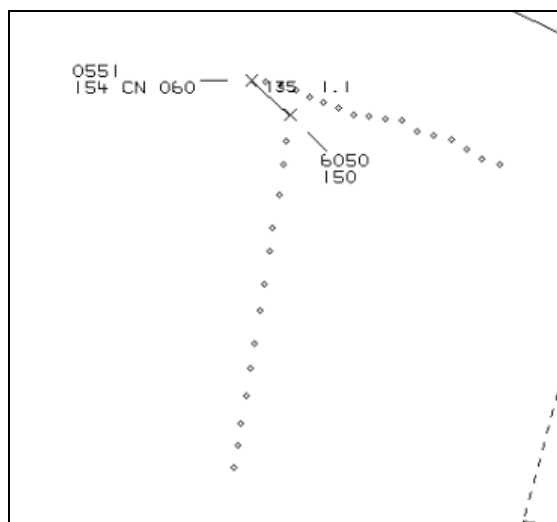


Figure 3: St Annes – 1057:11 UTC

The A320 pilot subsequently reported receiving a TCAS TA. The A320's Mode C showed that the ac levelled at FL153 for 22 seconds as its inertia changed from a rate of descent of 1696fpm to a rate of climb of approximately 500ft. The A320 resumed a slow climb and Mode C indicated that FL160 was not re-attained.

At 1058:22 as the A320 passed VEGUS the APR trainee resumed operational control and issued the A320 with descent to FL130. The A320 pilot replied, "*confirm flight level one two zero.*" This was corrected by the trainee, "*c/s it's er one tree zero*". A correct read-back was then received.

At 1107:30 LATCC(Mil) called APR to discuss the incident stating that TI had been passed to the Typhoon and the pilot had seen the A320.

Comment

The UK AIP states that pilots of turbojet ac inbound to Doncaster are expected to apply continuous descent, low power, low drag approach techniques at all times³. Additionally, inbound ac are to maintain as high an altitude as practical. These expectations are presented in the context of Doncaster Airport and its notified airspace. It is noted that no Standard Terminal Arrival Routes (STARs) are published for traffic from the E inbound to Doncaster.

Doncaster's ANSP reported to ATSI that inbounds from the E very often request to leave CAS and accept a DS to allow for a more direct routing onto left or right base for RW20 or RW02 respectively. It was also reported that APR do not routinely allow traffic to leave CAS during the day time because of the increased possibility of military and VFR movements in the area, particularly traffic departing from Coningsby routing to the N. Similar requests during the evenings or at night would normally be accommodated and appropriate co-ordination made with neighbouring Humberside ATC.

The A320 passed abeam OTBED at FL186. The Figure 4, annotated with a nominal 3% continuous descent from OTBED (50nm from touchdown), shows that the A320 would have needed a shallower rate of descent to remain inside CAS until VEGUS. The blue arrows on Figure 4 illustrate the descent profile required to remain inside CAS; it can be seen that, for a straight-in approach (with no extending vectors), the base of CAS only reduces from FL105 to altitude 2000ft at approximately 16nm from touchdown.

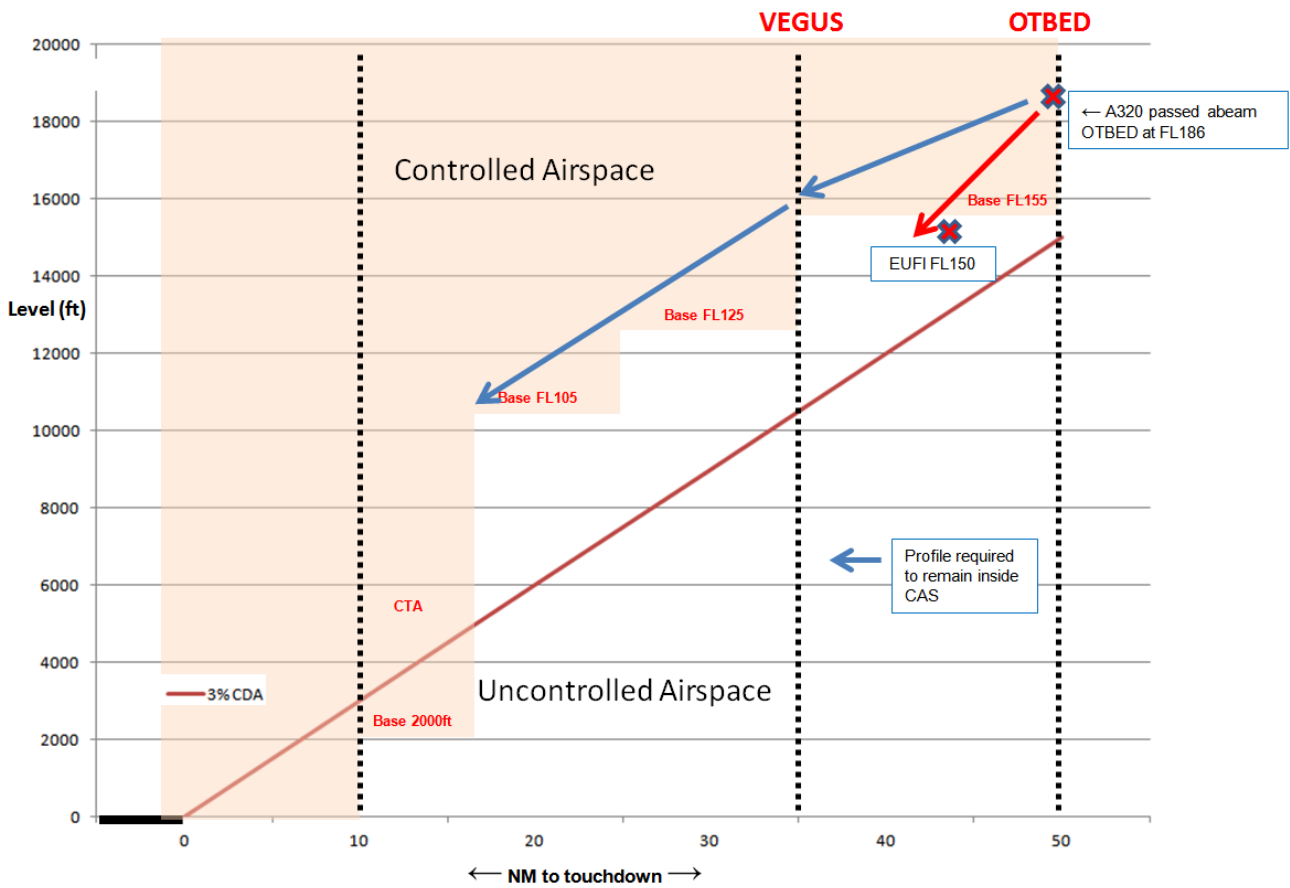


Figure 4: Descent Profiles

Prior to the establishment of CAS in the vicinity of Doncaster Airport in 2008 the pre-existing airways structure was as shown below in Figure 5. It can be seen that the bases of airway Y70 were, as they are now, from N to E: FL85, FL105, FL125, FL155. This facilitated climbs and descents for Manchester TMA and Leeds-Bradford traffic. When the Doncaster's CTAs were introduced there was no similar allowance made in airspace design.

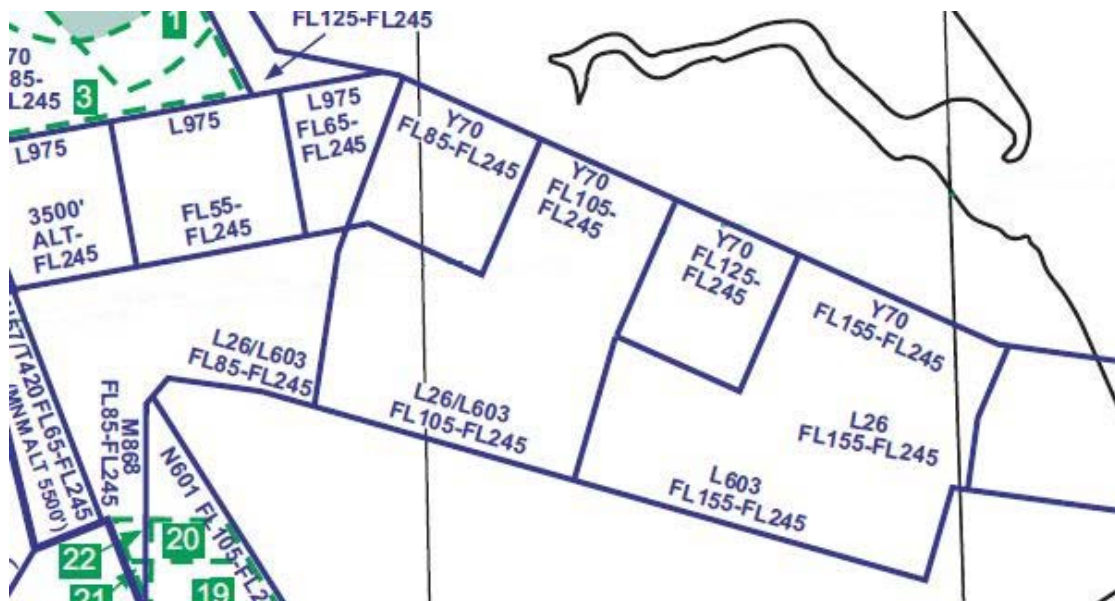


Figure 5: UK AIP ENR 6.1 AIRAC 08/2008

The A320 pilot informed ATC twice that they were ready for a DS. This very likely indicated an awareness of the nature of the A320's preferred descent profile, i.e. outside CAS, and an implication that the crew knew they were above their ideal level.

The APR trainee instructed the A320 to descend to FL130 when the ac was passing FL186 with 15nm still to run until the base of CAS lowered to FL125. There was no mention in the clearance of leaving CAS. Whether or not this was based on a judgement about the A320's flight profile, the APR OJTI spotted the presence of the Typhoon and took action to amend the trainee's instruction.

The delivery of the OJTI's stop instruction to the A320 was deemed by ATSI to have been delivered in a rapid manner. This may have compounded the crew's non-assimilation that they had been instructed both to stop descent and that the stop level was above that for which they had already been cleared.

Both the APR trainee and OJTI did not detect that an incorrect read-back had been received. It is possible that their attention may have been drawn to co-ordinating a possible radar solution with LATCC(Mil).

The APR OJTI was alert to the A320's level as it passed ahead of the Typhoon. This is supported by the OJTI's quick challenge to the A320 regarding its level once it had passed FL158.

The A320's reluctance to re-establish at FL160 may also support the statements above regarding the A320 being above its ideal profile and a preparedness to continue descent.

BM SAFETY POLICY AND ASSURANCE reports that the LATCC(Mil) NE Tac described their workload as low, providing ATS to only the Typhoon, and the task complexity as 'very easy'. The Typhoon pilot reported VMC, with 20km visibility and flying between layers of cloud with SCT at 5000ft. (All heights/altitudes quoted are based upon SSR Mode C from the radar replay unless otherwise stated.)

The incident sequence commenced with the handover of the Typhoon from Coningsby ATC to NE Tac, which occurred between 1056:16 and 1056:45. Immediately prior to the handover, at 1056:07, the Mode S 'selected level' data for the A320 changed to indicate that the pilot had selected FL60; Figure 6 depicts the incident geometry at this point, with the Typhoon climbing to FL150.



Figure 6: Incident Geometry at 1056:07.

NE Tac reported that they had sighted the A320 on their surveillance display, with a Doncaster inbound designator, and believed that it was indicating a Mode S of FL160 and that 'there was no requirement to ask Coningsby to call the [A320 during the handover]...as the [A320] was inside CAS and not indicating a further descent'. NE Tac also reported that they observed that the Mode S

'selected level' changed after the Typhoon had reported on their freq. Analysis of the radar replay and transcript demonstrated that NE Tac had either incorrectly recalled the sequence of events in compiling their report – a not un-usual occurrence due to the fragility of human memory – or, more likely, had made an error in interpreting the selected level data – probably due to the similarity of the 2 selected levels, FL60 and FL160 – possibly aided by expectation bias that the ac would remain within CAS. This notwithstanding, this error was neither causal nor contributory to this Airprox.

LATCC(Mil) UOB Section 3 Order 01.08 states that Doncaster Sheffield 'traffic squawking **6175, 6 and 7** will be joining or leaving Airway Y70 at ROGAG/OTBED'. Thus LATCC(Mil) controllers should expect that other Doncaster Sheffield inbound traffic with an assigned ORCAM SSR 3A code will remain within CAS. Although the A320's SSR 3A code was code callsign converted, the 3A code was 0551.

MMATM Ch 35 Para 18 states that 'Selected Levels display intent-based information only and **should not** be used for the purposes of separation'. Para 19 states that 'there are occasions where whilst the flight crew have correctly interpreted the ATC instruction, the Selected Level will be at variance. These situations will vary according to ac type, ac operator, and mode of operation, but may include...SID/STARs with vertical restrictions, where pilots may select the final cleared level, and utilise the ac flight management system to achieve the vertical constraints'. On that basis, it is reasonable to argue that the A320 could display a selected level of FL60, whilst remaining within the confines of CAS and posing no risk of conflict to the Typhoon at FL150.

The guidance material to CAP 774 Chapter 3 Para 5 states that 'Traffic is normally considered to be relevant when, in the judgement of the controller, the conflicting aircraft's observed flight profile indicates that it will pass within 3nm and, where level information is available, 3,000 ft of the aircraft in receipt of the Traffic Service...Controllers shall aim to pass information on relevant traffic before the conflicting aircraft is within 5nm, in order to give the pilot sufficient time to meet his collision avoidance responsibilities and to allow for an update in traffic information if considered necessary'.

At 1056:53, the Typhoon made initial contact with NE Tac who replied immediately "[Typhoon c/s] London Mil, identified FL150 Traffic Service. Traffic 12 o'clock, 3 miles, crossing right-left, indicating 800ft above, descending inbound to Doncaster." The Typhoon's pilot replied that they were "visual", later reporting that they had acquired the A320 on AI radar at 12nm and visually acquired it at 10nms. Figure 7 depicts the incident geometry at the time of the Typhoon's initial call to NE Tac.



Figure 7: Incident Geometry at 1056:53.

At 1057:03, the A320 indicated descent through FL157. Based upon the report of the A320 pilot, there may have been some confusion between the A320 and the Doncaster Sheffield controller over the A320's cleared level, which appears to have resulted in the A320 descending beneath the Base of CAS. The CPA occurred at 1057:10 as the Typhoon passed 1nm ESE of the A320; Figure 8 depicts the incident geometry at this point.



Figure 8: Incident Geometry at 1057:10

Given that the Typhoon pilot had acquired the A320 on AI radar at 12nms and visually acquired it at 10nms, the provision of TI inside 5nms by NE Tac was not a contributory factor to this Airprox. Given that the A320 descended through FL160 7sec prior to the CPA, and that this would have been the first point at which the NE Tac became aware of a potential problem, they were not in a position to affect the outcome of the incident. The E Bank Supervisor has stated that Doncaster Sheffield contacted them, rather than the NE Sector, to attempt to agree co-ordination but that they arrived at the console as NE Tac was providing TI at 1056:53 and thus too late to effect co-ordination.

BM SPA has highlighted to OC LATCC(Mil) the potential misunderstanding on the part of NE Tac, regarding their responsibilities for the provision of TI on ac within CAS to ac outside CAS.

LATCC(Mil) has agreed to BM SPA's request to liaise with Doncaster Sheffield to ensure that they have appropriate contact details for LATCC(Mil) sectors.

HQ Air(Ops) comment that the causal factors in this case related to the incorrect assimilation of the level instruction and the lack of detection of the incorrect readback of the instruction. In the event there was no risk as the Typhoon was well aware of the A320's presence through their service from LATCC(Mil) and their onboard systems. The ATSI citing of 'aggravating factors' is potentially misleading in that this normally indicates something that made the outcome of the occurrence worse. At best, those cited are contributory in that they made the event more likely. HQ Air contest the ATSI analysis that the airspace design was a factor in this event; the Airprox could have occurred even if the airspace was CAS and the Typhoon was there on a crossing service. Aircraft descending into Doncaster must be aware of the fact that a CDA profile will require flight outside CAS and prepare accordingly, or have a non-CDA option if they expect to remain in CAS throughout. Had the A320 been on a CDA before the incident there would have been no Airprox as the A320 would have been 2000 ft below the Typhoon.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available to the Board consisted of the reports from the Typhoon pilot, A320 crew and air traffic controllers as well as RT transcripts and radar recordings.

The Board considered the issue of airspace design and whether it was common for CAT ac to leave CAS in this area. The Airline pilot members explained that, whilst a continuous descent profile would be preferred by most operators, and that this would likely require them to leave CAS under such a profile, they would be comfortable accepting a different profile in order to stay inside CAS, especially if there was any conflicting traffic. Whilst the Board agreed that CAT pilots should think carefully before leaving the protection of CAS when optimising their approaches, they concluded that the airspace design was not a significant influence on this Airprox.

The Board agreed that the root of the occurrence was that, having been cleared to FL130 previously, the A320 crew had not heard the revised clearance to FL160 correctly, and that the Doncaster APR controllers had subsequently not detected their incorrect read-back of FL60. Several members noted that mishearing and uncorrected readback had been a cause or contributing factor in a number of recent Airprox. Some ATC members opined that APR could have used the prefix phrase 'avoiding action', and passed TI in order to emphasise the new level to the A320 crew and change their mental model (which was probably to expect a further descent and which may have predisposed them to hear FL60 rather than FL160); The Board agreed that such a prefix would have been a helpful course of action. The Members wondered whether communication of flight levels below FL100 might be better enunciated as FL 0-6-0, for example, rather than FL 6-0 in order to provide another opportunity to cue pilots and controllers correctly, but it was felt that there would be potential for headings and flight levels to be confused so the Board decided not to make a recommendation in this area.

The Board noted that the LATCC(Mil) controller and the Typhoon pilot had acted as expected, and that the Typhoon pilot, having maintained both radar and visual contact with the A320 throughout, would have been able to take effective avoiding action if the conflict required it.

Overall, the Board agreed that, whilst there had been a serious reduction in normal safety margins, APR had reacted quickly when the A320 passed FL160, and that the Typhoon pilot had been in a good position to take further avoiding action if it had been necessary. Therefore the Board concluded that effective and timely actions had been taken, resulting in a Risk Grading of C.

The Board considered that the safety barriers pertinent to this Airprox were: 'ATC rules and procedures', 'controller action', 'controller action prompted by technology', 'aircrew rules and procedures', 'visual sighting', 'aircrew action', 'situational awareness gained from RT', 'situational awareness gained from on-board systems', 'situational awareness gained from ACAS' and 'compliance with a TCAS RA'. Of these, the Board concluded that 'ATC rules and procedures', 'controller action', 'aircrew rules and procedures' and 'situational awareness gained from RT' had produced limited or minimal effect, but that all of the other barriers, including those which still remained in reserve, had been effective: overall the Board graded the barriers as effective and the Airprox was allocated an Event Risk Classification score of 50.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The A320 pilot descended into conflict with the Typhoon following a misheard clearance and uncorrected read-back error.

Degree of Risk: C.

ERC Score: 50.

AIRPROX REPORT No 2013041

Date/Time: 16 May 2013 1433Z

Position: 5139N 00205W
(1.5nm W of Kemble)

Airspace: Kemble ATZ (Class: G)

Reporting Ac Reported Ac

Type: PA28 PA18

Operator: Civ Club Civ Club

Alt/FL: 1000ft QFE 2000ft QNH
(983hPa) (998hPa)

Weather: VMC CAVOK VMC CAVOK

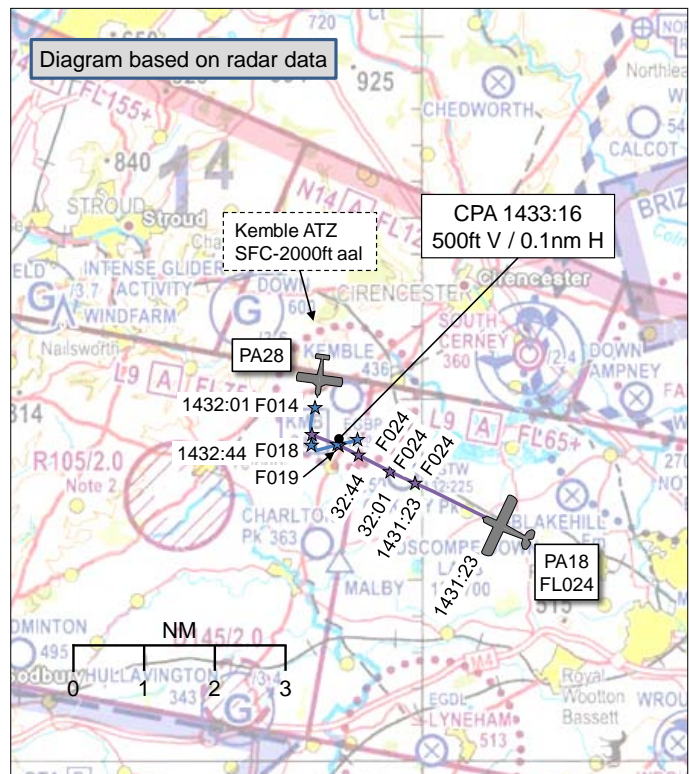
Visibility: >50km 50nm

Reported Separation:

500ft V/Nil H 500ft V/10m H

Recorded Separation:

500ft V/0.1nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PA28 PILOT reports flying a visual circuit detail at Kemble, under a BS he thought, with a student as the handling pilot; visibility was '50km plus' with a cloud-base of 'at least 3500ft'. They were LH downwind for RW26, hdg 080°, at 1000ft QFE, flying at 95kt, when they saw the PA18 approaching 'head-on' and close enough 'to easily read its registration.' He expressed concern that 'Had we been climbing into the overhead for a departure, the ac would have been invisible below our nose and a collision quite probable.' The pilot reported the event on Kemble Information's frequency.

He assessed the risk of collision as 'Low'.

THE PA18 PILOT reports hdg 300°, in a predominantly white ac, from White Waltham to Gloucester, via Membury and Oaksey Park, with no lights but squawking Mode 3/A 7000 with Mode C switched on. He planned to route OH Kemble so, at 10nm from the OH, he contacted Kemble Information for an AFIS and requested clearance to cross the ATZ at 2000ft QNH 998hPa [UKAB Note 1: 1595ft QFE]. He was requested to report OH Kemble and 'monitored the frequency closely' to maintain his situational awareness of the Kemble traffic; he noted some ac departing the area to the N, and ac taxiing on the airfield. He heard the FISO advise an ac that gliding was in operation at Aston Down and decided to maintain his current track until clear to the W of Aston Down. He informed Kemble Information that he now intended to pass 1-1.5nm SW of the airfield instead of through the OH, and recalls being requested to report 'West abeam the field'. About this time, he heard an ac calling for departure from RW26 and could 'clearly see a white dot line up and take off'. As he did not have any TI on the departing ac the pilot reports maintaining visual contact to establish its intentions. He watched the PA28 as it 'climbed ahead, turned left still climbing, and eventually turned left again onto a track more-or less in the opposite direction' to his own. He noted that the PA28 had levelled off below his ac and appeared to be entering the vis cct. He reports maintaining 'clear and continuous visual contact' with the PA28 until it was clear of his ac. As he assessed the vertical separation to be 500ft, he expressed surprise that the PA28 pilot had been concerned at their proximity.

He assessed the risk of collision as 'None'.

Factual Background

Kemble ATZ is Class G airspace, notified as a circle, 2nm radius centred at 514005N 0020325W on the longest notified runway (RW08/26) from surface level to 2000ft aal. The Kemble Aerodrome elevation is notified as 436ft.

The PA28 was operating VFR, in the LH cct for RW26, and was in receipt of an AFIS from Kemble Information.

The PA18 was operating VFR, on a flight from White Waltham to Gloucester and was in receipt of an AFIS from Kemble Information.

The Gloucester METARs are provided for 1420 and 1450 UTC:

EGBJ 161420Z 11003KT 9999 FEW040TCU 14/M01 Q0998=
EGBJ 161450Z 00000KT 9999 FEW040 14/M01 Q0998=

Investigation Analysis

ATSI had access to written reports from the pilots of the PA28 and the PA18, area radar recordings, RTF recordings and transcripts of the Kemble Information frequency together with the unit report from Kemble. CAA ATSI also interviewed the Kemble FISO. The Kemble recordings are on a voice activated system, not a continuous recording, therefore the timings of transmissions are approximate (within 30 seconds).

At 1420:00 the PA28 contacted Kemble Information requesting ccts. The Kemble FISO advised that RW26LH was in use and gave the QFE as 983hPa. The PA28 pilot read back the QFE as 998hPa, which was the prevailing QNH.

At 1425:30 the PA18 pilot contacted Kemble Information having just passed Swindon at 2000ft on 995hPa [UKAB Note 2: 1676ft QFE] requesting to route via the overhead.

The Kemble FISO requested the PA18 pilot to state his pressure setting and he replied 995hPa. The FISO advised the PA18 pilot that there was one aircraft to depart heading for Benson and to report entering the zone; he replied "WILCO" and was informed that Kemble was "active, we're two six left hand QNH is 998". The PA18 pilot replied that he was setting 998hPa.

Having taxied out and reported ready for departure from RW26, at 1430:00, the PA28 pilot was advised to take off at his discretion.

The PA28 was observed, on the radar recording, conducting the circuit at FL018 which converts to 1395ft QNH [UKAB Note 3: 990ft QFE] using 27ft=1hPa. The cct height at Kemble is 1000ft aal (1433ft QNH), so the incorrect readback of the pressure setting, although not corrected by the FISO, did not appear to have any bearing on the incident.

At 1431:30 the PA18 pilot reported "*just passed Oaksey Park entering your ATZ we'll actually be passing about a mile and a half to the southwest*"; the FISO asked him to report 'west abeam' Kemble.

At 1432:43 the PA28 had turned downwind, indicating FL018, with the PA18 opposite direction, indicating FL023, 1.2nm apart. The ac continued to converge until the radar tracks crossed 1.5nm to the SSW of Kemble with the PA28 indicating FL019 [UKAB Note 4: 1090ft QFE] and the PA18 indicating FL024 [UKAB Note 5: 1590ft QFE]). The PA28 pilot reported to Kemble that the PA18 had just passed directly opposite the PA28 about two hundred feet higher in the circuit. The FISO replied that the PA18 pilot had reported that he was going to be 1.5nm W.

The PA28 pilot replied that if he had been 200ft higher “*it would have been an airmisss*”.

The PA18 pilot reported having the PA28 in sight at all times and maintaining 2000ft on the QNH 998hPa [UKAB Note 6: 1595ft QFE].

The written report from the pilot of the PA28 stated that, having turned downwind at 1000ft on the QFE, the PA18 was seen approaching head on but above. The PA18 passed over the PA28 close enough that the pilot of the PA28 could easily read the registration.

The PA18 pilot reported that he heard the PA28 pilot being given line-up clearance and watched as the PA28 became airborne and entered the circuit. The PA18 pilot kept the PA28 in sight and judged that the PA28 passed him approximately 500ft below and to the left; he considered that there was no risk of collision.

The Kemble FISO stated at interview that he’d asked the PA18 pilot to report OH, which is common practice for ac above 2000ft. When the PA18 pilot reported that he was routeing to the SW, and the FISO asked the pilot to report “*west abeam*”, he believed that the PA18 would remain outside the ATZ and did not consider the traffic to be relevant to the PA28 in the circuit.

ANALYSIS

Both ac were operating in Class G airspace where ultimately both pilots are responsible for their own collision avoidance.

CAP797 the Flight Information Service Manual, Section 2, Chapter 1, paragraph 1.3 states:

‘Traffic information on traffic operating in the vicinity of an aerodrome shall be issued in a timely manner when, in the judgement of the FISO, such information is necessary in the interests of safety, or when requested by aircraft. When a pilot report indicates, or an FISO considers, that there may be a collision risk, specific traffic information shall be passed to each pilot concerned.’

The PA18 pilot was informed that the LH cct was active but no TI was passed to the PA28 pilot. The PA18 pilot reported that he would pass approximately 1.5nm SW of Kemble at 2000ft, having been passed the QNH by the Kemble FISO. The PA18’s transit of the Kemble ATZ was consistent with the pilot’s intended and reported track.

The Kemble FISO believed that the PA18 would remain clear of the ATZ due to being told to report “*west abeam*”. It is possible that, amongst local pilots, the use of the phrase “*west abeam*” has come to be understood that an aircraft should remain outside the ATZ, however, there is no official definition of the phrase “*west abeam*” and therefore no associated restriction regarding the ATZ.

The Kemble FISO believed that he’d asked the PA18 pilot to report OH but, in fact, he had asked the pilot to report entering the ATZ. The PA18 pilot had already reported entering the ATZ prior to being told to report “*west abeam*” and was therefore unlikely to route outside the ATZ as the FISO was anticipating.

CONCLUSIONS

An Airprox was reported between a PA28 and a PA18 1.5nm to the SSW of Kemble Aerodrome, inside the ATZ. The PA28 pilot was informed by the Kemble FISO that the LH cct was active but more specific TI was not passed. TI on the PA18 was not passed to the PA28 pilot due to the FISO’s erroneous belief that the PA18 would remain outside the ATZ, despite the PA18 pilot’s report that he was entering the ATZ, and his compliance with his declared intention to transit at 2000ft QNH, 1.5nm southwest of Kemble.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available to the Board consisted of the reports from the pilots of the PA28 and the PA18, radar recordings and RT transcripts of the Kemble Information frequency.

A Board member asked whether it would have been more sensible for the PA18 pilot to have climbed and transited above the Kemble ATZ; this would have then negated any need to contact Kemble at all or avoid its cct traffic. The GA members responded by noting that the Kemble vis cct is 1000ft QFE vice the 1500ft flown by the PA18, and informed the Board that 500ft separation within an ATZ is normal. They also noted that the PA18 pilot was listening carefully to the RT, and had maintained visual contact with the PA28 from the moment it lined-up for departure. The Board noted that, although the FISO had not passed TI on the PA18 to the PA28 pilot, he was not required to do so; furthermore, the PA18 pilot had discussed his routing with the FISO after the PA28 pilot had checked in on frequency, so there had been an opportunity for the PA28 pilot to have gained situational awareness from the RT. There had been some confusion in the mind of the FISO about the PA18s actual routing and the Board noted that the use of potentially ambiguous calls such as 'report west-beam' may not have helped the situation.

The Board members noted that the PA28 pilot was concerned that, if he had been climbing further then the incident may have been more serious; however, because the PA18 pilot had maintained visual contact with the PA28 throughout, the Board decided that it was unlikely that safety would have been further compromised. Although either better RT or the passing of TI from the FISO could have increased the situational awareness of the PA28 pilot such that he would have expected to see the PA18 as he rolled out downwind, overall the Board concluded that normal separation standards for GA ac in an ATZ had pertained; the Board allocated a Risk Grading of E.

The safety barriers pertinent to this Airprox were: 'FISO rules and procedures', 'aircrew rules and procedures', 'visual sighting', 'aircrew action' and 'situational awareness gained from RT'. The Board concluded that, although 'situational awareness from RT' had a reduced effect due to the use of potentially ambiguous phraseology and the fact that the PA28 pilot was not aware of the PA18's presence, overall the barriers had been effective. In addition, the Board felt that, in the circumstances as they occurred, there had not been a likely accident outcome so the Airprox was allocated an Event Risk Classification score of 1.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The PA28 pilot was concerned by the proximity of the PA18.

Degree of Risk: E.

ERC Score: 1.

AIRPROX REPORT No 2013042

Date/Time: 25 May 2013 0937Z (Saturday)

Position: 5111N 00104W
(1nm NW Lasham G/S
- elevation 618ft)

Airspace: Lon FIR (Class: G)

Reporting Ac Reported Ac

Type: DR400 PA32

Operator: Civ Club Civ Pte

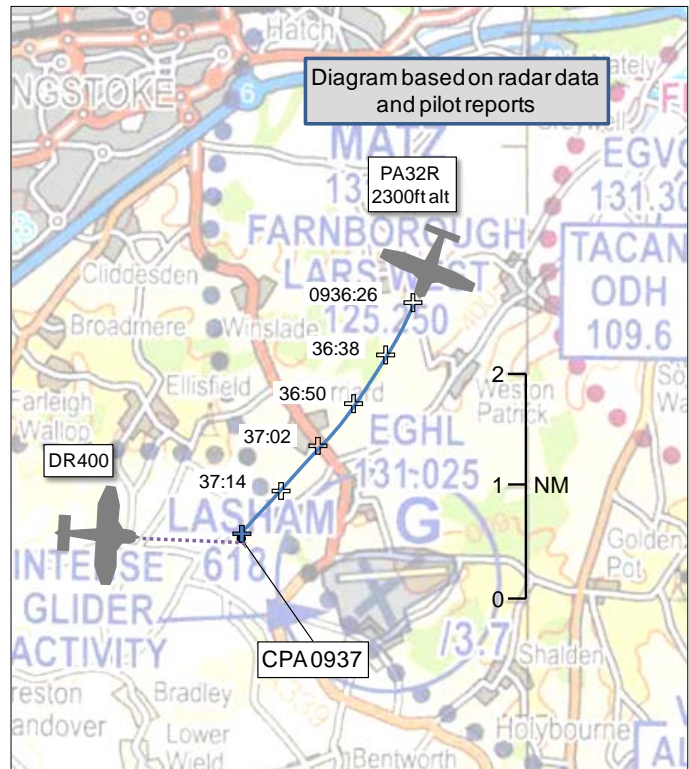
Alt/FL: 1500ft 2400ft
QFE (NK) QNH (1022hPa)

Weather: VMC CLBC VMC NK

Visibility: >20km >10km

Reported Separation:
0ft V/50ft H 0ft V/100m H

Recorded Separation:
NK



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE DR400 PILOT reports conducting glider tug operations to the W of Lasham A/D in support of the first day of the week-long 2013 Club-Class Nationals & Lasham Regionals gliding competition. He was operating under VFR, in VMC, without an ATS, in contact with Lasham Radio [131.025MHz]. The yellow and black ac had navigation, strobe and landing lights selected on; the ac was not fitted with an SSR transponder but was fitted with FLARM. He had just released a glider and was returning to the A/D for a downwind join for RW27. Descending through approximately 1500ft QFE, about 0.5nm NW of Lasham A/D, and heading 090° at 110kt, he saw a low-wing, single-engine, retractable-undercarriage ac 'at the last minute' on a reciprocal hdg, displaced slightly to the L at a range of about 100yds. The other ac was at the same height and passed down his LH side 'a wing span away'. He banked R to increase separation and heard the other ac's engine as it passed.

He assessed the risk of collision as 'High'.

THE PA32 PILOT reports transiting from Elstree to Bembridge with 2 passengers. He was operating under VFR, in VMC, with a BS from Farnborough RAD [125.250MHz]. The white, blue and yellow ac had the beacon light selected on, as was the SSR transponder with Modes A, C and S. The ac was fitted with TCAS, which was on and with which he could 'pick up usual traffic'. He believed he had the Farnborough RAD frequency selected when the incident occurred. Lasham A/D was at his 10 o'clock position, and he reports flying S at 150kt and about 2400ft QNH. He suddenly saw the other ac in his 2 o'clock position at a range of 250m, crossing R to L across his intended flight-path before disappearing at a similar level. He immediately disengaged the auto pilot and turned sharply L in order to avoid a possible collision. He stated that the weather was fine and that there was no workload on his part. He also noted that one of his passengers saw a cable trailing behind the other ac, which was not visible to the pilot.

He assessed the risk of collision as 'Medium'.

Factual Background

The Farnborough METARs for 0920 and 0950 were recorded as follows:

EGLF 250920Z 34009KT 290V020 9999 SCT026 10/05 Q1022=
EGLF 250950Z 33008KT 300V010 9999 SCT028 09/04 Q1022=

The gliding competition NOTAM was recorded as follows:

H1488/13 NOTAMN

Q) EGTG/QWGLW/IV/M /W /000/100/5111N00102W010

A) EGTG B) 1305250401 C) 1306022012

D) SR-SS

E)

MAJOR GLIDING COMP INCLUDING X-COUNTRY ROUTES. MAIN ACTIVITY WI 10NM RADIUS OF PSN 511107N 0010157W (LASHAM AD, HAMPSHIRE). UP TO 100 GLIDERS AND 10 TUG ACFT MAY PARTICIPATE. GLIDERS WILL OPR BLW THE INVERSION LVL OR BTN THE TOPS OF ANY CU AND 500FT AGL.

AFTER LAUNCH MOST ACFT MAY BE CONCENTRATED DOWNWIND THE SITE OR ON THE FIRST LEG OF THE X-COUNTRY RTE. FOR INFO ON RTES FOR THE DAY CTC GLIDER CONTEST CTL TEL 07802 708 670 OR VIEW WWW.BGALADDER.CO.UK/SHOWTASK.ASP FOR LASHAM SITE.

RTF CONTACT 131.025MHZ. 13-05-0117/AS 2.

F) SFC G) FL100)

The DR400 pilot was operating under VFR on a local flight from Lasham and was not in receipt of an ATS but was in contact with Lasham G/S on 'Glider Ops' [131.025MHz].

The PA32 pilot was operating under VFR on a flight from Elstree A/D to Bembridge A/D and was in receipt of a BS from Farnborough LARS(W) [125.250MHz]. His altitude was recorded as 2300ft [QNH 1022hPa] from the Heathrow 10cm radar picture, equivalent to a height of 1700ft from Lasham.

ATSI Analysis

CAA ATSI had access to written reports from the DR400 and PA32 pilots and area radar recordings together with RTF recordings and transcript of the Farnborough LARS(W) frequency. On enquiring with Farnborough, the unit reported that the LARS(W) frequency was busy at the time of the reported Airprox and that the controller had no recollection of the incident.

At 0928:14, the PA32 pilot contacted Farnborough LARS(W) at 2200ft and requested a BS and transit over Odiham. The Farnborough LARS approved the Odiham MATZ crossing, agreed a BS, and issued a squawk of 0436.

At 0937:10, as the PA32 was 1.1nm to the NW of Lasham, the Farnborough LARS controller advised the pilot "...*just caution Lasham very busy at the minute winch launch gliding up to three thousand seven hundred feet there's a couple of gliders just southwest of you by a mile but they're all around*" (See Figure 1). The PA32 pilot acknowledged the call.

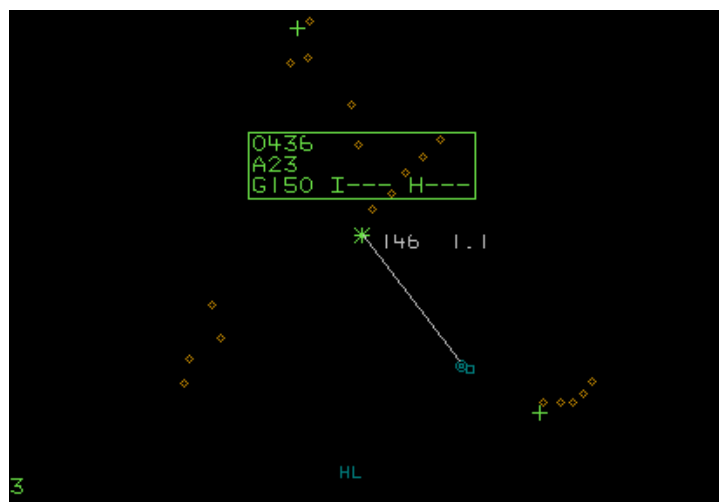


Figure 1: 0937:10

Figures 2 and 3 show radar recording screenshots indicating the PA32 about 1nm NW of Lasham with a primary contact crossing R to L. Figure 3 shows the PA32 pilot appears to have conducted a sharp L turn, whilst the primary contact appears to have conducted a sharp R turn. It is possible that the screenshots show the reported Airprox but, as the DR400 cannot be positively identified, this cannot be positively asserted.

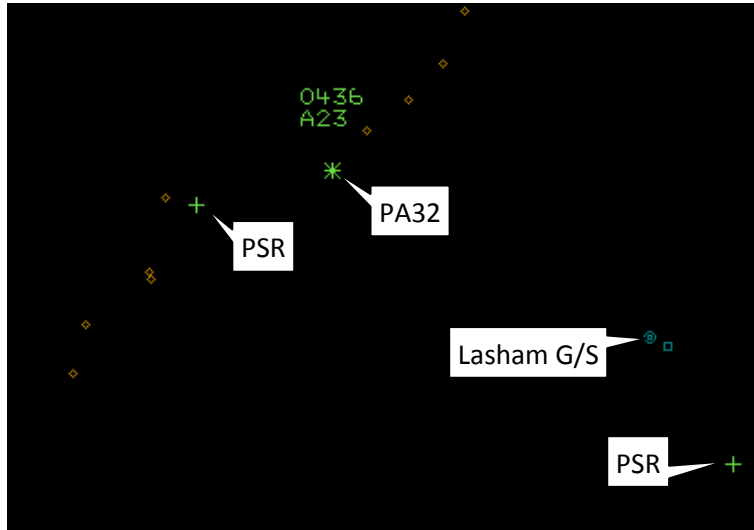


Figure 2: 0937:22

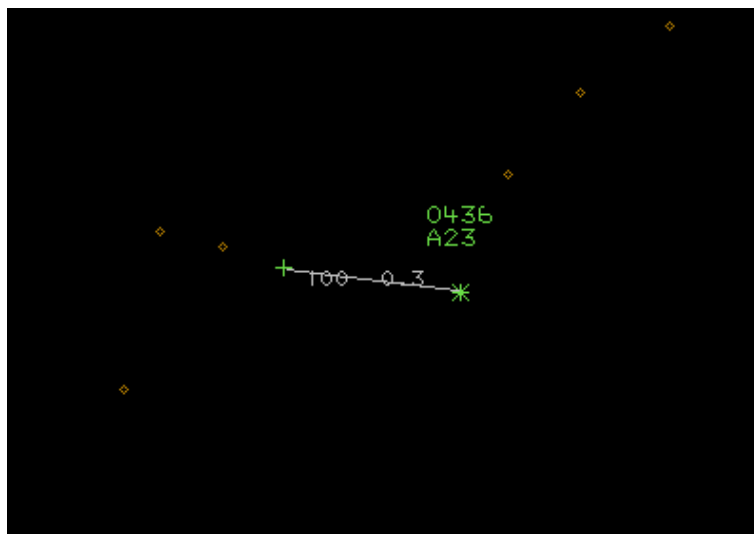


Figure 3: 0937:28

Summary

An Airprox was reported in Class G airspace in the vicinity of Lasham G/S when a DR400 and a PA32 flew into proximity with each other as the DR400 glider tug was returning to the G/S following the release of a towed glider to the W. Radar recordings could not definitively determine the exact geometry of the encounter. The DR400 pilot was not in receipt of an ATS. The PA32 pilot was in receipt of a BS from Farnborough LARS(W). Under the terms of a BS there is no requirement for a controller to monitor the flight; however, as the PA32 pilot flew close to Lasham, the controller passed general TI on activity in the vicinity of Lasham, and a warning on contacts to the SW of the PA32. Both ac were operating in Class G airspace where, ultimately, both pilots had equal responsibility for collision avoidance; the DR400 pilot had right of way.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, a transcript of the relevant RT frequency, radar video recordings and a report from the appropriate ATC investigation authority.

The Board first considered the pilots' actions. Both were entitled airspace users operating under VFR, in Class G airspace, with an equal responsibility to see and avoid; the DR400 pilot had right of way. Pilot members opined that the incident stemmed from the PA32 pilot's apparent lack of appreciation of the NOTAM'd Lasham activity, the amount of traffic that would be associated with it, and his choice of routeing in the immediate vicinity. Whilst it was recognised that he was not required to avoid the area detailed in the NOTAM, members were of the unanimous opinion that he would have been better served by routeing around it, either vertically or laterally or both. Members noted that the airspace structure in the area was such that he had had the opportunity to climb above the majority of glider activity shortly before he reached Odiham, and that he could have continued his routeing to Bembridge at an altitude of 5000ft, which would have placed him above glider-tow activities. He also could have contacted the NOTAM'd Lasham telephone number before T/O, or called them on the NOTAM'd frequency, to check activity levels. Members opined that the PA32 pilot's report indicated an unwise level of reliance on TCAS in Class G, and probably a lack of appreciation of the type of ATC service he was receiving with regard to TI under BS.

Members then considered the actions of the LARS controller. He had applied a BS, as requested, and had also given the PA32 pilot relevant and timely TI; actions for which he was commended by the Board. The Board noted that the terms of a BS include:

'... , on initial contact the controller/FISO may provide traffic information in general terms to assist with the pilot's situational awareness. This will not normally be updated by the controller/FISO unless the situation has changed markedly, or the pilot requests an update. ... , if a controller/FISO considers that a definite risk of collision exists, a warning may be issued to the pilot.'¹

When considering the cause and risk, the Board opined that both pilots had seen each other late, the PA32 pilot marginally before the DR400 pilot, it appeared. The PA32 pilot reported making a 'sharp' avoiding action turn and the DR400 pilot 'banked right', but whether these actions had materially altered the dynamics of the situation was not clear to the Board. However, it was clear that the DR400 pilot had heard the PA32 as it passed by, had seen it at very close range, and that the range was sufficiently close that a passenger in the PA32 had seen the glider tug tow rope. The Board therefore concluded that, although the situation had stopped short of an actual collision, separation had been reduced to the minimum.

The Board agreed that the safety barriers pertinent to this Airprox were 'ATC/FISO rules and procedures', 'controller action', 'aircrew rules and procedures', 'visual sighting', 'aircrew action' and 'SA gained from RT'. The Board concluded that 'ATC/FISO rules and procedures' and 'controller action' had been of limited effectiveness, and that 'aircrew rules and procedures', 'visual sighting' and 'aircrew action' were either of limited, minimal or no effectiveness. Hence the Airprox was allocated a score of 20 on the Event Risk Classification Matrix.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A late sighting by both ac.

Contributory Factor(s): The PA32 pilot flew through the NOTAM'd competition area.

Degree of Risk: A.

ERC Score: 20.

¹ CAP774 (UK Flight Information Services), Chapter 2 (Basic Service), paragraph 5 (Traffic Information), dated 19 Nov 09

AIRPROX REPORT No 2013046

Date/Time: 1 Jun 2013 1155Z (Saturday)

Position: 5203N 00024W
(4nm WNW Henlow)

Airspace: Lon FIR (Class: G)

Reporting Ac Reported Ac

Type: Vigilant T1 (Grob 109) Gazelle

Operator: HQ Air (Trg) Civ Comm

Alt/FL: ↓1000ft 1000ft
QFE (1017hPa) QNH (NK)

Weather: VMC CLBC VMC NK

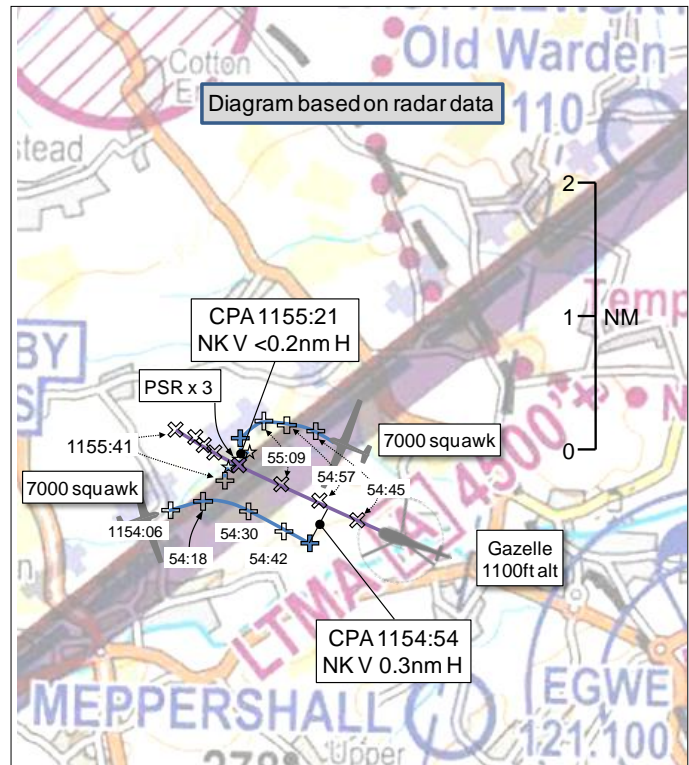
Visibility: >10km 10km

Reported Separation:

200ft V/250m H NK

Recorded Separation:

1154:54 NK V/0.3nm H
1155:21 NK V/<0.2nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE VIGILANT T1 PILOT reports descending to rejoin RAF Henlow RW31 cct downwind, operating under VFR, in VMC, with an A/G Service from Henlow Information [121.100MHz]. The white and dayglo orange ac had landing, navigation and strobe lights selected on, as was the SSR transponder with Mode A selected; the ac was not fitted with an ACAS. When 1nm NW of Henlow, whilst descending through 1000ft QFE on an approximate heading of 110° at 60kt, the pilot observed a red helicopter (possibly a Gazelle) at a range of 500ft and height of about 1200ft, flying straight and level and transiting diagonally across his line of sight on an approximate heading of 320°. He turned R to avoid possible conflict. He reported the incident to the Duty Instructor upon landing and assessed the risk of collision as 'Low'.

THE GAZELLE PILOT reports transiting VFR from Stapleford to Sywell, in VMC, with a RCS from Sywell, he thought. The red helicopter had navigation and strobe lights selected on, as was the SSR transponder with Modes A and S; the ac was not fitted with an ACAS. The pilot had telephoned Sywell earlier in the day; he was informed that 'they were very busy' and that he would need to arrive before 1230 as there was 'a flying exhibition' between 1230 and 1315. He used proprietary flight planning software to check NOTAMs and entered route information into a GPS unit in the ac. After T/O he routed N, just E of Panshanger ATZ and E of the Luton CTR. At the N/E tip of the Luton CTR he turned W and then NW, remaining W of Henlow and Old Warden and E of Cranfield onto Sywell. He changed frequency to Sywell when W of Henlow, as he was turning NW, at an altitude of about 1000ft at 90kt. He stated that he was maintaining a good lookout at all times and, when about 2nm WNW of Henlow, saw a glider on the RH side, flying E, which appeared to be about 300-400ft higher. He did not see where it came from and assumed it had been much higher as it appeared to be descending when he saw it. He stated that 'it was a good clear day', and that he assumed he would have seen a glider if it was close to him; he did not make an assessment of the risk.

Factual Background

The weather at Luton was recorded as follows:

METAR EGGW 011050Z 33012KT 9999 BKN020 12/07 Q1023

Airprox Secretariat Analysis

Radar identification of the subject Vigilant proved problematic despite further conversation with the Vigilant pilot and Duty Instructor. The diagram shows the 2 likeliest tracks; the N'ly 7000 squawking ac was closer in the horizontal at CPA and correlated with the Gazelle pilot's report of seeing a glider on his RH side but did not correlate with the Vigilant pilot's reported hdg and avoiding action. The S'ly track conforms more closely with the Vigilant pilot's reported actions, albeit at a greater horizontal range at CPA than that reported.

HQ Air Command commented that it was difficult to determine the exact circumstances of the event due to the inability to correlate the pilot's report with the available radar data. A more detailed report by the Vigilant pilot of the manoeuvring immediately before and after the event might have assisted, although the altitude of the Vigilant might preclude it appearing on the radar replay in any case. RAF FS will approach HQ 3 FTS to request that they address the lack of 'pilot pictures' on VGS Airprox reports, as this additionally hampers investigations. In the event, the Vigilant pilot saw and avoided the helicopter.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The Board first considered the pilots' actions. The Board noted that the Gazelle pilot had made an early change to Sywell's frequency and they wondered whether he might have been under some misapprehension as to the ATS that he might receive from them. As a result, he may not have fully realised his collision avoidance responsibilities under a BS (the only service he could have received from Sywell at the Airprox location). Pilot Members opined that, at his chosen transit altitude, he may have been better served by contacting A/Ds in proximity to his flight path and thereby could have been informed of local activity. Alternatively, a climb to the base of CAS could have reduced the potential for conflict. Some pilot members were also of the opinion that giving Henlow a wider berth would have been of benefit. Notwithstanding potential strategies to mitigate collision risk during a transit, the Board recognised that both pilots were entitled airspace users, operating under VFR in Class G airspace and with equal collision avoidance responsibility. From the available evidence, members opined that the subject Vigilant was most likely the S'ly of the 2 VFR squawking tracks shown on the radar recording, and hence the Gazelle pilot had right of way¹. From the information in his report, members opined that the Gazelle pilot had most likely seen the N'ly of the 2 ac and had not seen the S'ly. The Vigilant pilot had seen the Gazelle in good time, albeit at a greater range than reported if his ac was the assumed S'ly track, and had taken appropriate action in the circumstances.

Turning to Cause and Risk, the Board unanimously agreed that there had been a conflict in Class G airspace and that the Vigilant pilot had resolved it by taking effective and timely action. The Board agreed that the pertinent safety barriers were 'aircrew rules and procedures', 'visual sighting' and 'aircrew action' and concluded that although 'visual sighting' had been of limited effectiveness (only one pilot saw the other), 'aircrew rules and procedures' and 'aircrew action' had been effective. Therefore, the Airprox was allocated a score of 2 on the Event Risk Classification Matrix.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Conflict in Class G airspace, resolved by the Vigilant pilot.

Degree of Risk: C.

ERC Score: 2.

¹ The Vigilant T1 (Grob 109B) is classed as a flying machine for the purposes of Rule 9 (Converging) of the Rules of the Air 2007.

AIRPROX REPORT No 2013047

Date/Time: 3 Jun 2013 1640Z

Position: 5158N 00303W
(Pandy Ridge,
7nm SSE of Hay-on Wye)

Airspace: LFA7/7T London FIR
(Class: G) (Class: G)
Reporting Ac Reported Ac

Type: Tornado GR4 Paraglider

Operator: HQ Air (Ops) Civ Pte

Alt/FL: 250ft 1630ft
RPS (1026hPa) QNH (NK)

Weather: VMC CLBC VMC CLBC

Visibility: 20km 40km

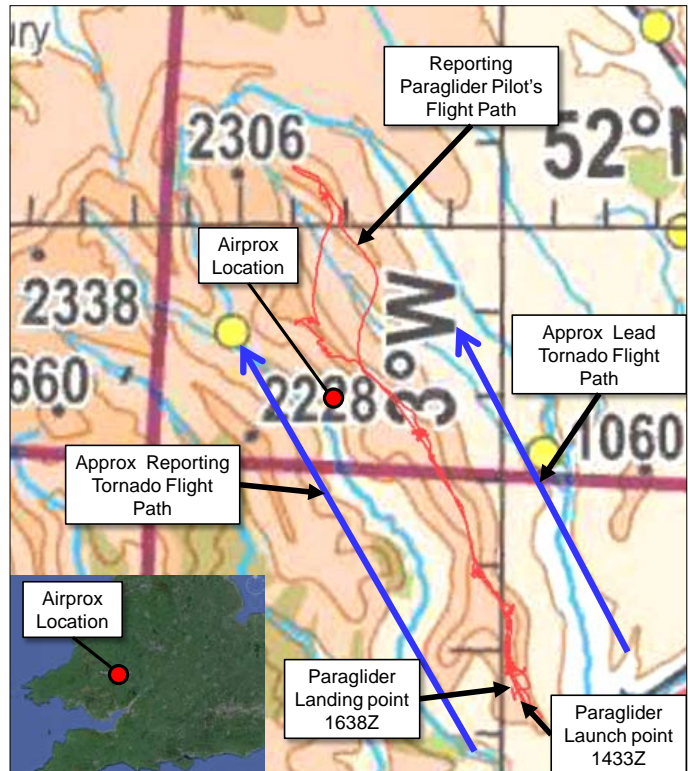
Reported Separation:

1000ft 1100ft V/1.5nm

H

Recorded Separation:

NK



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE TORNADO PILOT reports operating at low level as the No 2 of a pair of ac with navigation lights and strobes turned on, squawking Mode 3/A 7001, with Modes C and S selected. They had booked in to LFA 7 from 1630-1710Z, and the formation were flying N-bound along two valleys separated by a ridge. His ac was hdg 340°, at 250ft, with the RPS of 1026hPa set, when the pilot saw several paragliders ahead and elected to pull up to 2000ft to avoid any unseen paragliders. During the climb, approximately another 10 paragliders were spotted slightly below and, as the crew were levelling off, the WSO spotted yet more paragliders above the aircraft. The pilot estimated that he saw the first paragliders at 1-2nm distance, and achieved a minimum separation of about 1000ft on these following his climb. Once clear, the aircraft was climbed further to avoid the paragliders which were estimated to be around 3500-4000ft. No NOTAM had been issued. A call was made on the formation frequency; the crew of the lead ac saw the paragliders from a distance but had no conflicts in the valley they were following.

He assessed the risk of collision as 'Medium'.

[UKAB Note 1: The paraglider involved could not be positively identified but several pilots were identified as being airborne at the time of the Airprox; one of them witnessed a pair of Tornados passing and agreed to submit a report, his helmet-camera photos and his flight-tracker data files to help the Board's understanding of the circumstances.]

A PARAGLIDER PILOT, who was in the area, reports flying a 25km cross-country flight on his red and white paraglider and returning to 'the official launch/landing location on the Pandy ridge in Wales'. He was at 1630ft AMSL when he saw two fast jets; he believed the ac to be Tornados flying on either side of the ridge from S to N. He had the clearest view of the E'ly Tornado but both ac appeared to be below the ridge line; the E'ly ac appeared to be clear of the paragliders he could see in his area.

The paraglider pilot reports that he checked the NOTAMs in the morning before his flight but did not submit a CANP for his flight because he made the decision to fly shortly before he took off and he was planning to fly cross-country, which would mean notifying an extended and uncertain area. He commented that it was common for paragliders and sailplanes to use the launch site on the Pandy Ridge but he was not sure if a CANP had been submitted by one of the '15 or so Paraglider pilots flying that day'. Figure 1 shows a photograph from the paraglider pilot's helmet camera taken at 1633, looking N up the Pandy Valley, at 1600ft amsl, indicating the lead Tornado, which was the E'ly of the two and is labelled 'Jet No2'.



Figure 1. The Lead Tornado ac labelled 'Jet No2'

Factual Background

The SE Wales Paraglider Sites Guide indicates that the Pandy site may only be flown by members of the SE Wales Hang Gliding and Paragliding Club, and by members of the Welsh Free Flight Federation. (http://www.sewhgpgc.co.uk/sites/sites.php?site_name=pandy).

There is no record of a CANP being submitted for paragliding activity in this location on the day of the Airprox.

HQ AIR (OPS) comments that the Tornado crew were presented with a difficult situation when they encountered such a large number of paragliders over a relatively wide area and range of heights. Whilst they would have been likely to sight any canopy directly in their flight-path, it was nevertheless an uncomfortable situation. Had any of the paragliders involved submitted a CANP, the Tornado would have received a specific warning of the NOTAM'd area. The proliferation of launch sites around the UK has led to the removal of site locations from the military Low Flying Chart in favour of the CANP system and a general warning of paragliding activity. This decision will be reviewed in due course by LF Ops and RAF Flight Safety.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available to the Board consisted of the reports from the crew of the Tornado and a paraglider pilot who was not involved in the Airprox but was in the area and agreed to assist the Board. A radar recording was available but the paraglider involved in the Airprox could not be identified.

The Board first discussed the fact that no CANP had been submitted by any of the paraglider pilots using the Pandy site. The CANP system normally records paragliding activity with a 1nm surrounding circle, which is not a mandatory avoidance area. Notwithstanding, the Low-Flying Booking Cell (LFBC) advisor informed the Board that free-text could be used to warn crews of activities happening over extended areas, and that information on filing CANPs is promulgated on the British Hang-gliding

and Paragliding Association (BHPA) web-site. The Gliding member opined that, if this activity had been notified by CANP, then the Tornado crew may have adjusted their route, or at least had early warning to improve their lookout. He would like to see more use of the CANP system, and welcomed the use of more modern and intelligent systems to help predict and notify active areas.

A discussion then ensued about LFBC and HQ Air(Ops) working together to find ways of using modern planning systems so that NOTAMS and CANPs can be displayed more easily and effectively to military crews. The Gliding member noted that activation of notified hang-gliding and paragliding sites could be predicted very accurately by reference to the wind direction at those sites. He also thought that a consolidated list of gliding, hang-gliding and paragliding sites would be useful to other airspace users. The HQ Air(Ops) member commented that he is involved in the early stages of a project aiming to use Met Office data to predict and map areas where gliding, hang-gliding and paragliding activity is likely; this will take some time, but it could be published with CANPs to give wide distribution.

The Board then discussed the cause of the Airprox and, because the subject paraglider could not be traced, some felt it would be difficult to assess accurately. This Airprox was unusual as the Tornado crew reported avoiding several paragliders. The Board were clear that there had been a risk of collision but, because the Tornado crew reported achieving 1000ft separation from all of the other ac, they concluded that the crew's timely action had been effective and allocated a Risk Grading of C.

The safety barriers pertinent to this Airprox were: 'aircrew rules and procedures', 'visual sighting' and 'aircrew action'. The Board concluded that these barriers had been effective and allocated an Event Risk Classification score of 2.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Conflict in Class G, resolved by the Tornado pilot.

Degree of Risk: C.

ERC Score: 2.

AIRPROX REPORT No 2013048

Date/Time: 4 Jun 2013 2310Z (Night)

Position: 5111N 00244W
(11.5nm NNW Yeovilton)

Airspace: NRR 2 (Class: G)

Reporting Ac **Reported Ac**

Type: Lynx(1) Lynx(2)

Operator: RN RN

Alt/FL: 200ft agl 200ft agl

Weather: VMC CLOC VMC CLOC

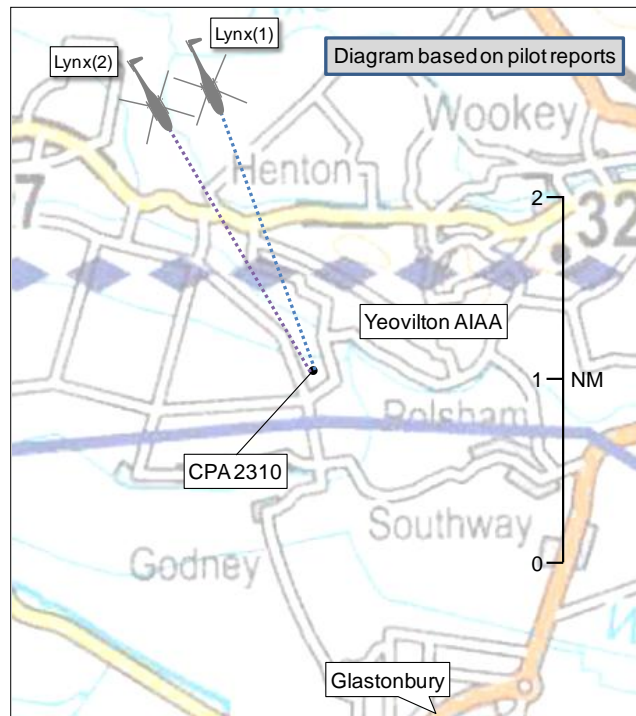
Visibility: 10km 25km

Reported Separation:

20ft V/50ft H NK

Recorded Separation:

NK



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE LYNX(1) PILOT reports conducting a night, low-level NVG navigation exercise at 200ft agl. The grey camouflaged ac had steady bright navigation lights and flashing red anti-collision beacon selected on, as was the SSR transponder with Modes A, C and S. The ac was not fitted with ACAS. The crew were operating under VFR, in VMC, with a BS from Yeovilton APP. The handling pilot was seated in the RH seat, with an instructor occupying the LH seat. Whilst heading about 150°, at 80kt, and prior to crossing a 200ft power line, the instructor observed another Lynx ac, subsequently identified as an ac from the same squadron, vertically displaced above by 20ft and offset to the R, approximately 50ft away on a marginally converging heading. The other ac appeared to be at a slightly faster speed. On sighting, the instructor intervened by taking control of the ac and rapidly altered course to the L, maintaining level flight. The RH seat pilot then reaffirmed his intention to cross the pylon and the instructor initiated a climb to clear it. The instructor contacted the other Lynx pilot on a squadron discrete frequency and ascertained that he had not seen the Lynx to his LH side.

The instructor highlighted that his field of view was restricted due to the use of NVG, and that the ac were on converging headings, approaching from either side of a ridge line; he stated that during the squadron's night-flying brief the Lynx sorties had planned to deconflict by time through a known point of route crossing. During ac start-up Lynx(1) was delayed by 15min due to an ac unserviceability. Once airborne, about 5min prior to the incident, the Lynx(2) pilot had visually identified Lynx(1) before their routes separated, and had estimated that a time deconfliction still existed.

He assessed the risk of collision as 'High'.

THE LYNX(2) PILOT reports flying the latter stages of a NVG sortie. The grey camouflaged ac had navigation and anti-collision lights selected on, as was the SSR transponder with Modes A and C. The ac was not fitted with ACAS. The crew were operating under VFR, in VMC, with a BS from Yeovilton APP. He had completed 1hr of NVG exercises at RNAS Merryfield and was near the end of a 20min low level NVG navigation exercise to the N of RNAS Yeovilton, heading about 160° at 90kt, when he was contacted by a fellow squadron pilot, in Lynx(1), on the squadron discreet frequency. He was told that they had flown within 50ft of each other on a slowly converging heading whilst lining up to cross a 200ft electricity pylon approximately 3nm N of Glastonbury. After further lookout, neither Lynx(2) crew member was able to acquire the other ac but they ascertained that the Lynx(1) pilot was visual with them and that he was astern, remaining clear.

He stated that, as the authoriser of both sorties, he was aware of the route Lynx(1) would be flying, and had discussed planned deconfliction at the night flying brief with the Lynx(1) pilot, who was due to launch 15min before him. Lynx(1) experienced a technical problem during start-up, resulting in a request for a delay to T/O time over the squadron discreet frequency, which he granted, noting that Lynx(1) would now be in the same vicinity as him by the end of the sortie, and that he needed to 'keep a sharp lookout for them'. He became visual with Lynx(1) about 10min before the incident, passing him to the N of their route, which was a longer route than his. He noted again that Lynx(1) would not be far behind him as their tracks merged, and again spoke [in cockpit] about keeping a 'close lookout for them'. He did not see them for the remainder of the sortie.

THE YEOVILTON APP CONTROLLER reports that Lynx(1) departed Merryfield to the N to conduct a low level navigation sortie under a BS. Lynx(2) departed Merryfield approximately 20min later on a low-level navigation sortie, also under a BS. Shortly after departing Merryfield each ac disappeared from radar coverage and reappeared on an intermittent basis. On completion of their sorties, both ac returned to Yeovilton for visual recoveries. Neither pilot reported an incident on frequency at any time during the sortie. At the reported time of the incident, an ATS was being provided on 2 separate frequencies. He noted that there is no Supervisor present during night flying.

THE RN INVESTIGATION summary reports that this was a very serious incident that could potentially have ended with fatalities. The overriding contributory factor was deemed to be the complexity of low-level NVG operations and the associated restricted field of view. More could be done to mitigate risk of collision in this environment and ensure operation to Tolerable and ALARP principles. The following points were worthy of note:

Deconfliction: The implementation of CADS at Yeovilton has already gone some way to addressing the issue of deconfliction in time and space although, in this specific case, it would have made no difference to the outcome of the incident. Both ac Commanders believed that they had deconflicted sufficiently in the planning stages, and one had seen the other within 10 minutes of the incident; no CADS information could have provided this real-time update.

Although an associated Occurrence Review Group (ORG) agreed in spirit with the majority of the RN investigation recommendations, it was felt that, even had they been implemented, some would not have reduced the likelihood of this incident occurring. For example, even if Merryfield had been open 24 hours, had the landing lamp been on, had a brighter anti-collision light been fitted (notwithstanding additional anti-collision lights) nothing changes the fact that both Aircraft Commanders remained content with their deconfliction arrangements despite the subsequent delay in Lynx(1)'s departure. In a dynamic and ever-changing environment, deconfliction in the planning stages, whilst essential (and improved through use of CADS), will never be 100% effective when impacted by external factors, and will never replace the necessity for a thorough lookout. Better and more regular use of low-level common frequency is one method of improving situational awareness and assisting in directing lookout towards potential areas of confliction.

Equipment Improvements: The ORG agreed that the most effective way to improve lookout in the low-level NVG environment is to make system improvements. Wider field of view NVGs would naturally contribute to improved aircrew peripheral vision. Whilst this requires an equipment upgrade, such systems are available today and arguably would have enabled the crews, in this case, to have seen each other at a much earlier stage.

Collision Avoidance or Traffic Warning Systems are widely used on both civilian and military ac types, and are considered an effective tool in directing aircrew lookout to sources of potential danger. Whilst they may have limitations in the low level environment, it is likely that this Airprox would not have occurred had such a system been installed in the Lynx Mk8.

RN Command commented that this incident served as a salutary reminder of the need to retain an effective de-confliction plan and maintain a good lookout for other ac, especially at night and whilst using NVD. Both crews' lookout scans narrowed as they focussed on crossing the wires at approximately the same point. One of the QHIs sighted the other ac, albeit extremely late and only

just in enough time to manoeuvre away and avoid collision, the crew of which at no time saw how close they had come. Whilst ATC have reported that they were providing ATS on 2 separate frequencies, both of the Lynx were in receipt of a BS on the same frequency from the same controller. At no point was an Airprox declared on this frequency and reporting action only commenced the next day. Whilst the ac were painting intermittently on radar, they were not both being tracked at the same time and the controller had no indication of their relative proximity.

Collision was avoided by a very late sighting by one of the aircrew and his quick reactions to take control from the PF. There were no barriers left after this. In this instance it is probable that an ACAS would have aided their situational awareness and assisted their lookout.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The Board members were initially briefed by the RN Ops Member on the background and detail surrounding the incident. It was apparent that both crews were aware of potential conflict before T/O, and had incorporated a deconfliction plan into their sorties based on time separation. It was also apparent that the delayed T/O of Lynx(1) had negated this plan and the Board therefore firstly considered the sortie planning aspects.

Both aircraft were being operated from the same squadron facilities, with the crews able to communicate a mutual deconfliction plan to each other for their respective sorties. Based on achieving set T/O times, this deconfliction plan crucially did not appear to incorporate any other contingent mitigation such as ATS, timed waypoint or RT coordination in the event of a subsequent deviation from plan. The Board recognised that the crews were conducting operational training using devices which only gave restricted peripheral vision. Notwithstanding the fact that anti-collision and navigation lights had been left on and should therefore be highly visible to night-vision devices or the naked eye if within line-of-sight, the Board considered that relying on such visual methods alone in areas of hilly or ridge terrain was not sufficiently effective to address multiple contingencies. In this case the Board felt that the crews placed a degree of over-reliance on deconfliction being achieved by separate T/O times and visual lookout, whereas the actual hazard of the common pylon crossing point was not explicitly deconflicted. The only remaining barrier of 'see and avoid' was compromised by the limited field of view of NVG, the crews' necessary prioritisation of lookout towards the pylons for their imminent crossing, and the fact that they had approached each other from opposite sides of a ridge line and therefore could not have achieved an early visual sighting.

The Board agreed that the cause of the Airprox was a late sighting, and non-sighting, by the Lynx pilots; lack of an effective deconfliction plan was a contributory factor. Members also opined that in this case the safety margins were reduced so far below normal that the situation had only just stopped short of actual collision. The Board agreed that the safety barriers pertinent to this Airprox were 'aircrew rules and procedures', 'visual sighting', 'aircrew action' and 'SA gained from RT'. It was concluded that the barriers were minimally effective, so the Airprox was allocated a score of 20 on the Event Risk Classification Matrix.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A late sighting and non-sighting by the Lynx pilots.

Contributory Factor(s): Ineffective deconfliction plan.

Degree of Risk: A.

ERC Score: 20.

AIRPROX REPORT No 2013049

Date/Time: 8 Jun 2013 1227Z (Saturday)

Position: 5123N 00130W
(6nm W Newbury)

Airspace: Lon FIR (Class: G)

Reporting Ac Reported Ac

Type: ASK13 Light ac

Operator: Civ Club Unknown

Alt/FL: 2200ft NK
QFE (NK hPa) NK

Weather: VMC CLBC NK

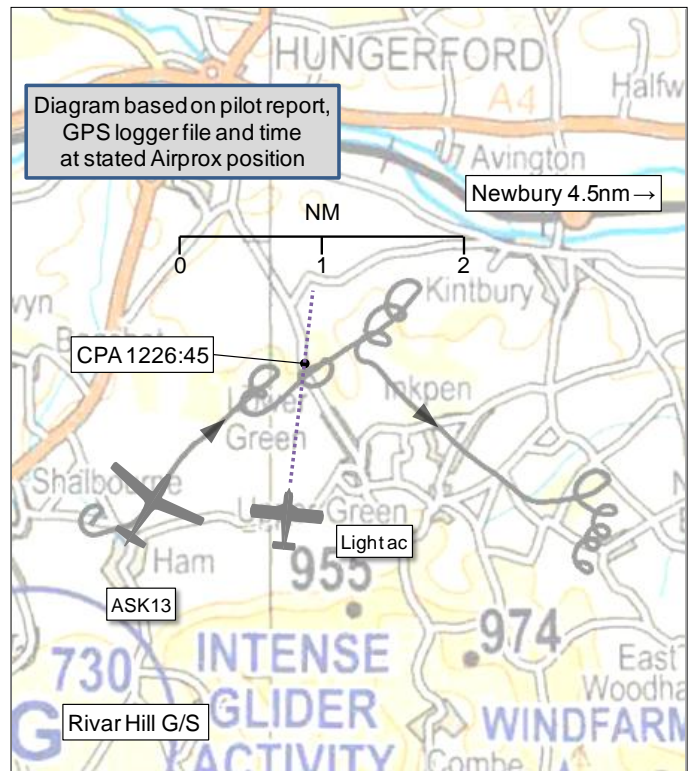
Visibility: 30nm NK

Reported Separation:

100ft V/50ft H NK

Recorded Separation:

NK



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE ASK13 PILOT reports conducting a training flight operating under VFR, in VMC, without an ATS. The blue and white ac was not fitted with lights, a radio or an SSR transponder but was equipped with FLARM. Whilst following 'a line of slight lift', at about 2200' QFE, heading 050° at 50kt, he heard a piston engine ac but was unable to see it. He made no large heading, altitude or speed changes as he could not establish the other ac's position. Within 20sec of first hearing it, he saw a predominantly white, low wing, single-engine piston light ac pass from R to L 50ft behind, 100ft above, and at 40°-50° to his heading. There was no indication that the other pilot had seen him or deviation apparent in his course or height; he assessed the risk of collision as 'High'.

[UKAB Note(1): Regrettably, and despite extensive tracing action, it has not been possible to find the pilot of the other ac.]

Factual Background

The Boscombe Down and Benson METARs were recorded as follows:

EGDM 081150Z 04016KT 9999 FEW030 17/08 Q1020 BLU TEMPO 04015G25KT BLU
EGDM 081250Z 04015KT 9999 FEW030 17/08 Q1020 BLU NOSIG

EGUB 081150Z 04015KT 9999 BKN028 15/08 Q1021 BLU NOSIG
EGUB 081250Z 04014KT 9999 SCT030 16/08 Q1021 BLU NOSIG

Airprox Secretariat Analysis

Both pilots were operating in Class G airspace and had equal responsibility for collision avoidance; the glider pilot had right of way. The other ac apparently approached him from behind meaning that it was outside the glider pilot's normal frontal lookout field of view and was approaching from up-sun. The incident was not apparent on radar, with only one intermittent PSR observed in the vicinity.

Summary

An Airprox was reported by an ASK13 glider pilot in Class G airspace in the vicinity of Newbury. No other information was available with which to conduct an assessment, nor could the other pilot be traced; radar recordings did not provide additional information for analysis.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Glider-pilot Board members were of the opinion that, having heard the approaching aircraft, it may have been advantageous for the ASK13 pilot to have turned quickly to cover 'blind spots' but recognised that he was uncertain of its range and was aware of the risk of exacerbating the situation by turning into a potentially unsighted conflicting aircraft. It was also opined that an exaggerated wing-rock, whilst maintaining course and speed, may have assisted the other pilot to gain visual contact. However, in the absence of the other pilot's report it was not possible to ascertain whether he had in fact either seen or reacted to the glider and therefore not possible to conduct a meaningful analysis of the incident.

The Board concluded that, with the reported separation, the cause of the Airprox was that the light aircraft flew close enough to cause the glider pilot concern. However, without a report from the other pilot, a meaningful assessment of the risk could not be made. Similarly, it was not possible to score the incident on the Event Risk Classification Matrix because it was not known to what extent the applicable barriers were effective.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The light ac flew close enough to cause the glider pilot concern.

Degree of Risk: D.

ERC Score: Not score-able

AIRPROX REPORT No 2013050

Date/Time: 7 Jun 2013 0953Z

Position: 5310N 00031W
(RAF Waddington Visual Cct
- elevation 231ft)

Airspace: RAF Waddington ATZ (Class: G)

Reporting Ac Reported Ac

Type: Islander BN2 BE200

Operator: JHC HQ Air (Trg)

Alt/FL: 450ft 1000ft
QFE (1014hPa) QFE (1014hPa)

Weather: VMC NK VMC NK

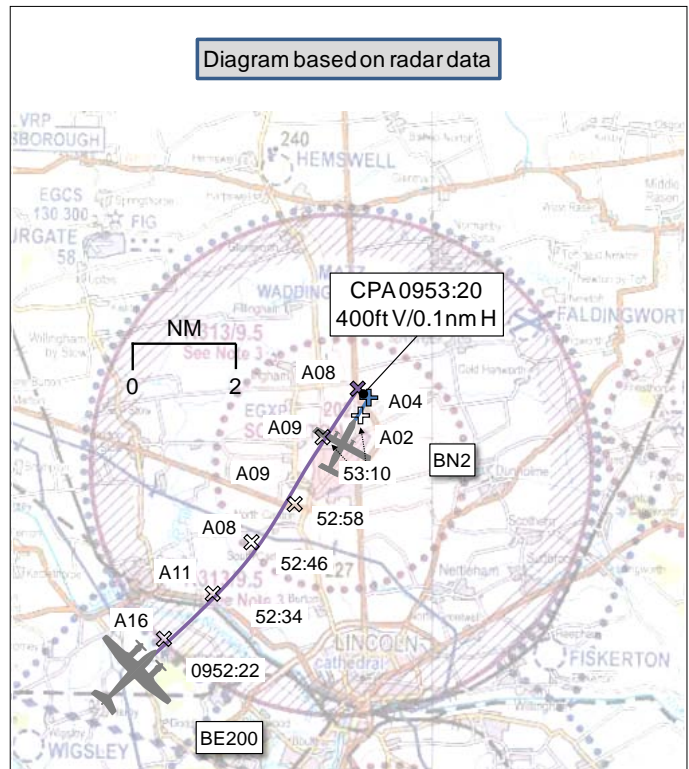
Visibility: 40km NK

Reported Separation:

300ft V/0nm H 0ft V/0.6nm H

Recorded Separation:

400ft V/0.1nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE BN2 PILOT reports that he had booked out for a sortie from RAF Waddington, to depart to the W, climbing to FL100. He was operating under VFR, in VMC, in communication with Waddington ADC [121.300MHz]; the agreed ATS was not reported. The grey ac had navigation, landing and strobes lights selected on, as was the SSR transponder with Modes A, C and S. The ac was not fitted with an ACAS. He was cleared to taxi to the Foxtrot hold for RW02 RH at 0945 and, when approaching the hold, saw a 'light single', believed to be a Cessna, rolling to join the visual cct. Once this ac had rolled he was cleared to line up and wait. Around this time the BE200 pilot requested, and was cleared, to join; the controller passed TI on '2 in', one upwind and 'one on'. The BN2 pilot was then cleared to take-off with the Cessna in sight. Once the BN2 was airborne, the BE200 pilot was asked if he was visual with the departing traffic (which was not specified) to which he replied 'affirm'. About this time a 'HeliMed' called ready to depart, and was cleared not above 500ft. The BE200 pilot called extending upwind to fit in with downwind traffic. As the BN2 pilot was passing about 450ft, on RW track at 75kt in the climb and beginning to look L to turn W, the BE200 passed directly overhead, crossing from the dead side to active with an estimated 300ft V separation. The BN2 crew believed separation had been lost and that a significant risk of collision had existed.

He assessed the risk of collision as 'High'.

THE BE200 PILOT reports he was the ac Captain for a cct training detail and had instructed the student to carry out a Radar-to-Initials join to Waddington for visual ccts. The blue and white ac had HISLs selected on, as was the SSR transponder with Modes A and C. The ac was fitted with TCAS. When approaching the rwy 'Initial Point', ATC advised him of 3 other ac in the cct; one light ac on crosswind/downwind, one helicopter on the ground and one BN2 to depart shortly. He assessed that the best course of action would be to extend upwind to gain separation from the light ac; this intention was transmitted to ATC. As he flew along the deadside at 220kt he could see the BN2 become airborne and decided not to configure, but to maintain speed in order to ensure suitable overtake and adequate lateral clearance on the departing traffic. Having ensured that he was sufficiently ahead of the departing BN2, and with adequate spacing to follow the light ac downwind, he initiated the turn onto downwind. He stated that the other ac were kept in sight throughout and that there was no risk of collision.

THE WADDINGTON U/T ADC CONTROLLER reports that the BE200 joined on the dead-side from a Tower-to-Tower procedure and, on passing the joining clearance, the U/T controller stated "1 in, 1 shortly for departure". As he made this call, the BN2 was taxiing and in RT contact on 121.300MHz, he believed, and the 'one in' (the Cessna), was upwind. He cleared the BN2 pilot to line up and wait, and asked the BE200 pilot if he was visual with 'the one on', to which he replied in the affirmative. The Cessna turned downwind and the U/T controller issued take-off clearance to the BN2 pilot; the ac took-off shortly afterwards. The BE200 pilot declared he was extending upwind for spacing behind the Cessna, by which time the BN2 was airborne and the U/T controller again asked if the BE200 pilot was visual with the departing traffic, which he called the position of. The BE200 pilot stated he was. The BN2 departed, turned on to a W'yly heading and continued with Waddington APR.

He perceived the severity of the incident as 'Low'.

THE WADDINGTON OJTI ADC CONTROLLER reports screening a U/T controller. He was not aware of the Airprox until 0958, when the BN2 pilot declared his intention to file against the BE200 whilst departing from the visual circuit. At this point, the BN2 pilot was about to change to his en-route frequency, and was 5nm E of Syerston.

THE WADDINGTON SUP reports that although he was in the Approach Control Room (ACR), he was monitoring the ADC RTF [121.300MHz]. At 0950, the ADC controller had 4 ac on frequency: a Cessna flying visual ccts, a HeliMed on start for a VFR departure to the NE, a BN2 on taxi for a VFR departure to the W and a BE200 joining through initials. The BE200's joining instructions included the information "one in & one shortly for departure". Although the BE200 pilot did not acknowledge on the first transmission, after the BN2 pilot had been cleared to "line up & wait" the information for the BE200 pilot was transmitted again and was acknowledged. The HeliMed departed to the NE. As the Cessna turned downwind and the BE200 was joining through deadside, the BN2 pilot was given departure clearance. The BE200 pilot declared his intention to extend upwind for spacing behind the Cessna and that he was visual with the departing BN2. Neither the BE200 pilot nor the BN2 pilot stated anything regarding an Airprox, of being too close to each other, or of anything else regarding turning, climbing or descending to avoid. He was unaware of an Airprox until the BN2 pilot declared his intention to file at 0958. The SUP stated that the ATC Unit's workload was 'Medium to Low' and he assessed the ADC U/T Controller's workload as 'Medium'.

Factual Background

[UKAB Note(1): The RT transcript was recorded as follows:

From	To	Speech Transcription	Time
BN2	ADC	Waddington Ground Good morning [BN2 C/S]	0947.01
ADC	BN2	[BN2 C/S] on Ground, Good morning pass message	0947.04
BN2	ADC	[BN2 C/S], Islander 4 POB, we got Foxtrot copied looking for start, departing as briefed	0947.09
ADC	BN2	[BN2 C/S] err information Foxtrot correct, start	0947.15
BN2	ADC	Start [BN2 C/S Digits Only]	0947.17
Cessna	ADC	[Cessna C/S] downwind touch and go	0947.50
ADC	Cessna	[Cessna C/S], surface wind 070 13 knots	0948.01
HeliMed	ADC	Waddington Tower, [HeliMed C/S]	0948.13
ADC	HeliMed	[HeliMed C/S] Waddington Tower standby	0948.21
ADC	HeliMed	[HeliMed C/S] pass message	0948.51
HeliMed	ADC	[HeliMed C/S] err request start 4 POB routing 3 miles NE of Branstan	0948.57
ADC	HeliMed	[HeliMed C/S] runway 02 QFE 1017 surface wind 070 12 knots, confirm this isn't an Alpha call	0949.10

HeliMed	ADC	Cleared start 02 right hand, err it's a PR event at Branstan, negative priority and can you say QFE again please Helimed	0949.19
ADC	HeliMed	[HeliMed C/S] that's 1017	0949.20
HeliMed	ADC	1017 [HeliMed C/S]	0949.24
Cessna	ADC	[Cessna C/S] finals touch and go	0949.27
ADC	Cessna	[Cessna C/S] cleared touch and go	0949.30
Cessna	ADC	Touch and go [Cessna C/S]	0949.32
ADC	SUP	On Landline	
BN2	ADC	[BN2 C/S Digits Only] ready for taxi	0949.45
ADC	BN2	[BN2 C/S] Runway zero ...	0949.52
ADC	BN2	[BN2 C/S] runway 02 right hand QFE 1017, err taxi 02 Foxtrot hold	0949.56
BN2	ADC	Taxi 02 Foxtrot hold 02 right hand 1017 [BN2 C/S]	0949.59
ADC	BN2	[BN2 C/S] err depart as requested and when airborne continue with Waddington Approach stud 3, do you require a squawk	0950.10
BN2	ADC	Negative given the pre brief squawk and departing as requested and then stud 3 [BN2 C/S]	0950.19
ADC	BN2	[BN2 C/S]	0950.19
BN2	ADC	[BN2 C/S] to Tower	0950.28
ADC	BN2	[BN2 C/S]	0950.30
BN2	ADC	Waddington Tower Hello [BN2 C/S] ready on reaching	0950.36
ADC	BN2	[BN2 C/S] Good afternoon, correction Good morning err Waddington tower hold	0950.42
BN2	ADC	Hold [BN2 C/S Digits Only]	0950.45
BE200	ADC	Waddington Tower [BE200 C/S] request join	0951.13
ADC	BE200	[BE200 C/S] join runway 02 right hand, QFE 1017, 1 in,1 shortly to depart	0951.19
ADC	BN2	[BN2 C/S] line up and wait	0951.25
BN2	ADC	Line up and wait [BN2 C/S]	0951.27
		Garbled	0951.30
BE200	ADC	Waddington tower [BE200 C/S] how do you read	0951.31
ADC	BE200	[BE200 C/S] Waddington Tower runway 02 right hand QFE join runway 02 right hand, QFE 1017, 1 in, 1 shortly to depart	0951.39
BE200	ADC	02 1017 just through initials [BE200 C/S]	0951.45
ADC	BE200	[BE200 C/S] 1 in, up 1 upwind, 1 on	0951.48
BE200	ADC	Roger	0951.49
ADC	BN2	[BN2 C/S] cleared for take-off surface wind 070 9 knots gusting 15 knots	0951.59
BN2	ADC	Cleared for take-off [BN2 C/S]	0952.00
Cessna	ADC	Err Waddington [Cessna C/S] we'll depart VFR west after this next err touch and go	0952.10
ADC	Cessna	[Cessna C/S] roger standby	0952.16
HeliMed	ADC	[HeliMed C/S] ready for departure	0952.21
ADC	HeliMed	[HeliMed C/S] not above height 500 feet take off your discretion bay 1-0 surface wind 070 7 knots gusting err 15 knots	0952.32

HeliMed	ADC	Cleared take off not above 500 feet [HeliMed C/S]	0952.36
ADC	BE200	[BE200 C/S] are you visual with the one departing	0952.38
BE200	ADC	Affirm [BE200 C/S]	0952.40
		On Landline frequency garbled	0952.52
ADC	ALL	Station calling Waddington tower say again	0952.57
BE200	ADC	[BE200 C/S] extending upwind to slightly avoid the downwind traffic	0953.01
ADC	BE200	[BE200 C/S] roger confirm you are visual with the traffic in your left 11 o'clock	0953.07
BE200	ADC	Affirm [BE200 C/S Digits Only] we got airborne with the traffic behind us departing, is this the one you mean	0953.19
ADC	BE200	[BE200 C/S] Affirm and the erm HeliMed is just lifting 500 feet on the north eastern side of the airfield	0953.24
BE200	ADC	[BE200 C/S] copied	0953.26
Cessna	ADC	[Cessna C/S] late downwind touch and go	0953.30
ADC	Cessna	[Cessna C/S] surface wind 080 07 knots gusting 15	0953.34
BN2	ADC	[BN2 C/S] continue with Waddington Approach stud 3	0953.40]

Investigation Analysis

BM SAFETY POLICY AND ASSURANCE reports that the Airprox occurred within the visual cct at RAF Waddington (WAD) at 0953:22 on 7 Jun 13, between a BN2 Islander and a BE200 King Air, whilst WAD were operating to RW02RH. The BN2 pilot was departing the A/D and the BE200 pilot was conducting a Radar-to-Initial (R2I) join; both ac were receiving an ATS from WAD ADC.

All heights/altitudes quoted are based upon SSR Mode C from the radar replay unless otherwise stated. WAD QFE was 1017hPa, equating to approximately 120ft difference between heights reported by the aircrew and those associated with the radar replay. Ranges from WAD quoted within the report are based on the ARP; Figure 1 refers. The WAD RWY 02RH magnetic heading is 023°.

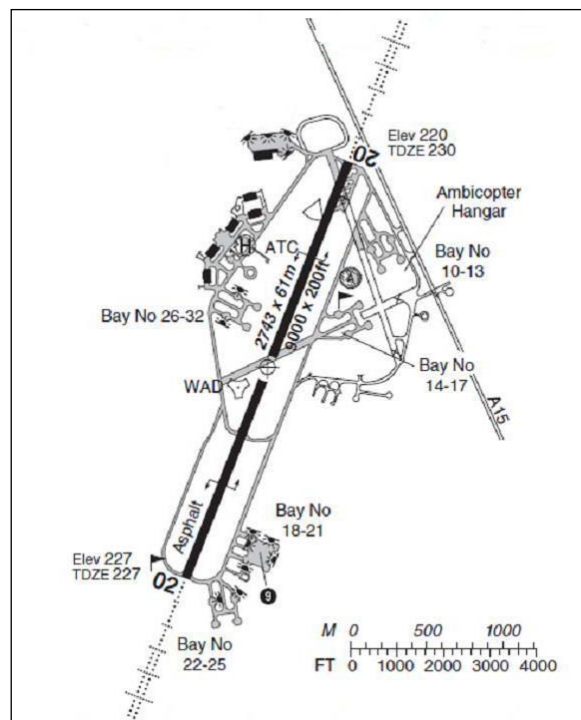


Figure 1: RAF Waddington Aerodrome Layout

Both aircrews reported VMC, with nil cloud. The WAD ADC reported moderate workload but did not assess the task complexity; they were providing ATS to 4 ac, including the BN2 and BE200.

The incident sequence commenced at 0951:13 as the BE200 pilot called ADC to “request join” and was instructed to “join runway 0-2 right hand, Q-F-E 1-0-1-7, one in, one shortly to depart.” The BE200 crew did not acknowledge or readback the joining clearance and airfield details. At this point the BE200 was 6nm SW of WAD, indicating descent through 3200ft, tracking 036°; the BN2 was at the hold, not yet airborne. Figure 2 depicts the incident geometry at this point; SSR 3A 3631 and 0020 were the unrelated ac being provided with an ATS by WAD ADC. The IP for WAD RW02RH is 4nm S and 1nm W of the RWY centre-line; at 0951:13, the BE200 was positioned 2.2nm W of the RWY centre-line.

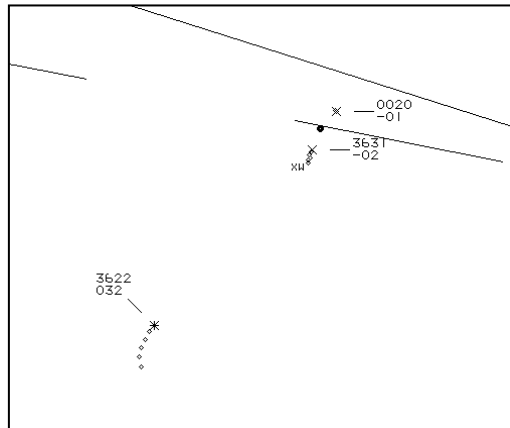


Figure 2: Incident Geometry at 0951:13.

At 0951:25, the ADC instructed the BN2 pilot to “line up and wait” which was acknowledged and, at 0951:31, the ADC returned to the BE200, asking “how do you read?” The BE200 crew did not reply and, at 0951:39, the ADC re-iterated the BE200’s joining clearance, “[BE200 C/S] Waddington Tower, runway 0-2 right hand, Q-F-E...join runway 0-2 right hand, Q-F-E 1-0-1-7, one in, one shortly to depart”. At this point, the BE200 was 4.6nm SW of WAD, indicating descent through 2400ft. The BE200 crew acknowledged the joining clearance stating “0-2, 1-0-1-7, just through initials [BE200 C/S]”. The ADC immediately replied, advising the BE200 of “one in, up...one upwind, one on” which was acknowledged.

At 0951:59, the ADC instructed the BN2 pilot, “cleared for take-off, surface wind 0-7-0, 9 knots, gusting 1-5 knots”, which was acknowledged. At this point the BE200 was 3.6nm SW of WAD and 1.4nm W of the extended RWY Centre-line, tracking 036° and indicating descent through 1900ft.

At 0952:38, the ADC asked the BE200 crew “are you visual with the one [BN2] departing?” who replied that they were. Figure 3 depicts the incident geometry, with the BE200 1.5nm SW of WAD and the BN2 not yet airborne. At this point, the BE200 had closed to 0.7nm W of the extended RWY centreline and was tracking 045°.

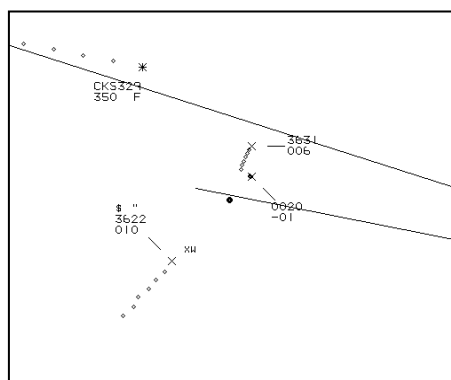


Figure 3: Incident Geometry at 0952:38.

From 0952:54, some track jitter is evident on the radar replay; however, it appears that the BE200 had manoeuvred W'ly to open their distance from the extended centreline. At 0953:01, the BE200 crew advised ADC that they were “extending upwind to slightly avoid the downwind traffic [SSR 3A 3631 in Figure 3]” which was acknowledged by the ADC at 0953:07, asking them to “confirm you are visual with the traffic [BN2] in your left 11 o'clock?” The BE200 crew replied “Affirm [BE200 C/S] we got airborne with the traffic [BN2] behind us departing, is this the one you mean?” The ADC replied in the affirmative. At 0953:09, the BE200 passed 0.3nm W of the RWY, tracking 037°. The BN2's crew related in their DASOR that they were aware of this R/T exchange between the ADC and the BE200 pilot; however, they were unaware that it related to them as the ADC had specified “one departing” rather than ‘a BN2 departing’.

The CPA occurred at 0953:20 as the BE200 passed 0.1nm down the BN2's L side, indicating 400ft above; Figure 4 depicts the incident geometry. At 0953:26, the BE200 passed 0.2nm through the BN2's 12 o'clock, breaking downwind at 0953:50, 0.8nm NE of the BN2 and co-altitude with it.

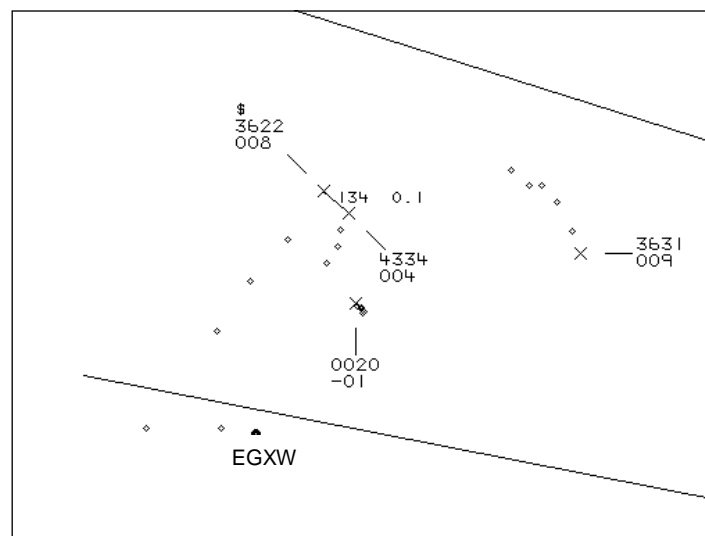


Figure 4: Incident Geometry at 0953:22.

WAD ADC correctly passed cct TI to the BE200 and checked on 2 separate occasions that the BE200 crew was visual with the departing aircraft. The BE200's crew stated in their DASOR that the BN2 was 'kept in sight throughout and there was no risk of collision'.

HQ AIR (OPS) comments that apart from the missed response to the initial join clearance and the call of ‘..left, 11 o'clock’ rather than ‘...right, 1 o'clock’, nothing abnormal occurred in this instance. The BE200 crew ensured safe lateral visual separation from the departing traffic, and passed well ahead and above the BN2's flight-path during the turn onto the downwind leg. It was kept in sight at all times and there was no risk of collision. This report is almost identical to an Airprox reported in the same location in Aug 2011. As in that case, the concern of the Islander pilot appears from the reports to be centred on the perception that the King Air was unaware of his location.

JHC comments that the BN2 pilot, concerned that the BE200 pilot was not visual with his aircraft, is fully justified in submitting an Airprox. The perception of the BN2 pilot that the BE200 was not visual, could have easily been resolved with clearer and less verbose R/T transmissions from both the ADC Controller and the BE200 pilot. If either had mentioned the type of aircraft taking off/departing in their transmissions it would have served to increase the SA of the BN2 crew, as it is clear that in this circumstance the BE200 was visual with the BN2 aircraft throughout.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available to the Board consisted of the reports from both crews, the controllers and the ATC Supervisor as well as radar recordings and RT transcripts.

The Board's initial discussion centred on the RT calls made by the ADC. Some members felt that the JHC suggestion that the inclusion of ac types in the cct joining instructions might well have improved the BN2 and BE200 pilots' overall situational awareness but not greatly given that the BE200 pilot had twice confirmed that he was visual with all the aircraft in the cct and was taking separation accordingly. The Board noted that the joining and departure clearances were transmitted in quick succession, and some members opined that the transmissions may have merged or been garbled as a result, and therefore difficult to follow. Other Members felt that the speed of transmission was normal for a busy aerodrome, and that the RT transmissions were acceptable and accurate.

It was noted by the Board that the ADC had checked twice that the BE200 pilot was visual with the BN2, and that the BN2's pilot was on the Tower frequency when ADC transmitted the joining clearance to the BE200 crew. The Board agreed that either the BN2's pilot had not heard or assimilated the joining clearance (and was therefore surprised when the BE200 appeared), or that he had heard the transmissions but was simply uncomfortable with the separation that the BE200 pilot had given him.

Notwithstanding the BN2 pilot's discomfort at the proximity of the BE200, the Board concluded that such separation was normal for a military visual circuit and that the BE200 pilot had all aircraft in sight and was avoiding them appropriately. The Board therefore allocated a Risk Grading of E to the Airprox; it met the criteria for reporting but, by analysis, it was determined that the occurrence was so benign that it would be misleading to consider it an Airprox event. Normal procedures, safety standards and parameters pertained.

The safety barriers pertinent to this Airprox were: 'ATC rules and procedures', 'controller action', 'aircrew rules and procedures', 'visual sighting', 'aircrew action' and 'situational awareness from RT'. The Board concluded that, whilst the BN2's crew had probably not gained complete situational awareness from the RT transmission, the other barriers had been 'effective' and allocated an Event Risk Classification score of 2.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Islander pilot was concerned by the proximity of the BE200.

Degree of Risk: E.

ERC Score: 2.

AIRPROX REPORT No 2013053

Date/Time: 25 Jun 2013 1315Z

Position: 5408N 00100W
(10nm NE Linton-on-Ouse)

Airspace: Vale of York AIAA (Class: G)

Reporting Ac Reported Ac

Type: Typhoon T3 Paraglider

Operator: HQ Air (Ops) Civ Pte

Alt/FL: FL50 FL48

Weather: IMC CLBC IMC CLBC

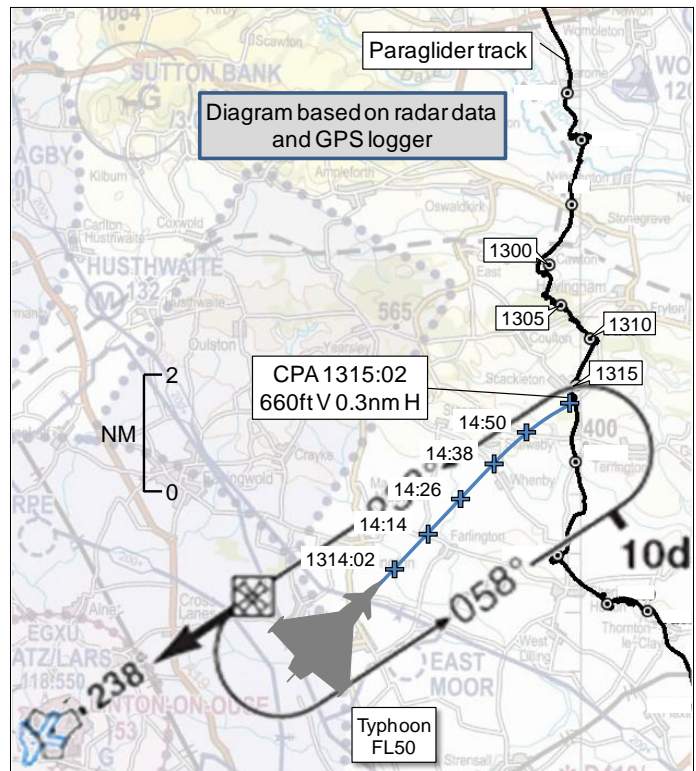
Visibility: 8km NK

Reported Separation:

200ft V/3000ft H 500ft V/1000ft H

Recorded Separation:

660ft V/0.3nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE TYPHOON PILOT reports conducting an instrument rating test in the rear seat, with the examinee pilot in the front. He was operating under IFR in IMC, 200ft below cloud, with a TS from Linton DIR. The grey camouflaged ac had navigation lights and HISLs selected on, as was the SSR transponder with Modes A and C. When established in the Linton-on-Ouse RW03 TACAN hold at FL50, heading 043° at 230kt, DIR passed TI on non-squawking traffic 12 o'clock at 1nm with no height information. Both pilots subsequently became visual with 4 paragliders in the 10-11 o'clock position at an assessed range of 3000ft, which passed down the LH side about 200ft below. Having passed clear of the paragliders, care was taken not to direct jet exhaust towards them. He subsequently curtailed the TACAN procedure and left the hold. He also noted that the ac AI radar was unserviceable.

He assessed the risk of collision as 'High'.

THE PARAGLIDER PILOT reports undertaking a flying task, routing from the N York Moors to a point 4nm N of Goole, 300ft horizontally and 500ft vertically clear of cloud. He was using a red, yellow and blue canopy and was not equipped with lights, SSR transponder, a radio or an ACAS. He was transiting S, in a loose group of 4 paragliders, when he heard the sound of an ac jet engine and then saw a Typhoon, slightly higher and at a range of about 1000ft, as it passed down his LH side.

He assessed the risk of collision as 'None'.

THE LINTON DIR reports he was with a trainee and was providing a TS to a Typhoon carrying out a TACAN approach to RW03. He noted that the 'air picture was busy'. He endeavoured to call all tracks iaw the agreed service. The Typhoon pilot initially broke off his approach at about 4nm finals and was then vectored back to the FAF where he then completed the approach. He stated that the Airprox was not reported on frequency at the time.

THE LINTON SUP reports that the local 'Glider Ops Procedure' was in force due to a perceived increase in local glider activity. He noted that the Typhoon pilot had passed a message to the DIR strongly advising a 2nd Typhoon not to carry out a TACAN approach due to the amount of unknown traffic in the vicinity of the TACAN hold. He noted there was no indication at the time that an Airprox had been raised.

Factual Background

The reported METAR for Linton-on-Ouse was recorded as follows:

EGXU 251250Z 30005KT CAVOK 18/05 Q1028 BLU NOSIG
EGXU 251350Z 32006KT CAVOK 18/05 Q1028 BLU NOSIG

Linton-On-Ouse Controllers' Order Book states:

When the DSS invokes the Glider Ops and Recovery Procedure, all departures will be 'call for release'. Before release is granted, an indication of any glider activity within 15 miles of LOO is to be passed by the Departures Controller. In accordance with the procedure, all departures will request at least a TS. For a VFR departure, a heading will not be provided or suggested subject to the RVC unless requested once airborne and identified. IFR departures will be handled as normal and may be held on the ground if a release cannot be granted. For recoveries, at least a TS will be requested and pilots are to be warned of traffic as normal depending on their ToS. Tower to tower transits from TP and DH will still switch to Linton tower stud 2 directly. Therefore any relevant glider activity is to be obtained from the RA Controller when the ac is prenoted inbound.

A transcript of the Linton DIR RTF is reproduced below:

From	To	Transcribed Speech	Time
Typhoon	LIN DIR	[Typhoon C/S] happy to go traffic service now	13:12:01
LIN DIR	Typhoon	[Typhoon C/S] traffic service	13:12:04
Typhoon	LIN DIR	traffic service [Typhoon C/S]	13:12:06
LIN DIR	Typhoon	Typhoon one eight one Tucano will climb out below you not apologises [Typhoon C/S] there's one Tucano climbing out below you not above flight level four zero	13:12:59
Typhoon	LIN DIR	[Typhoon C/S]	13:13:08
Typhoon	LIN DIR	[Typhoon C/S] apologies established in the hold	13:13:35
LIN DIR	Typhoon	[Typhoon C/S] traffic north four miles tracking south slow moving no height information further traffic north east five miles tracking south no moving no height information	13:13:40
Typhoon	LIN DIR	[Typhoon C/S] looking	13:13:55
LIN DIR	Typhoon	[Typhoon C/S] traffic northwest one mile your speed's keeping you clear further traffic twelve o'clock one mile manoeuvring no height information	13:14:40
Typhoon	LIN DIR	[Typhoon C/S]	13:14:49
Typhoon	LIN DIR	[Typhoon C/S] visual loads of paragliders	13:15:02
LIN DIR	Typhoon	[partial Typhoon C/S] roger report approaching the initial approach fix for the procedure.	13:15:07
Typhoon	LIN DIR	Wilco [Typhoon C/S]	13:15:12

BM Safety Policy And Assurance Analysis

The Typhoon pilot was operating under IFR on an Instrument Rating Test in the LIN TACAN hold at FL50, in receipt of a TS from LIN DIR; the paraglider pilot was operating under IFR.

The Typhoon was being flown by an OCU student and an Instrument Rating Examiner (IRE), initially at FL50, 200ft beneath an overcast cloud layer in 8km visibility; their AI radar was unserviceable. The DIR was manned by a trainee and an experienced instructor, who described their workload and task complexity as moderate to low; the Typhoon was the only ac on freq with DIR during the incident sequence. However, based on analysis of the transcript, which benefitted from the inclusion of 'off-mic' exchanges between the instructor and the trainee, the trainee appeared to be relatively busy planning for the Typhoon's approach and scanning for conflicting ac.

The incident sequence can be deemed to have commenced at 1313:35, as the Typhoon crew advised DIR that they had entered the TACAN hold on the 058° radial; depicted in Figure 1.

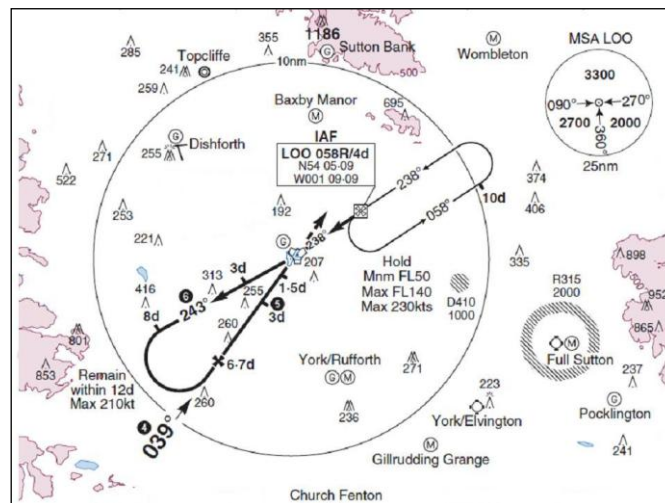


Figure 1: TACAN Approach to LIN RW03

Acknowledging the Typhoon crew, DIR advised them at 1313:40 of, “*traffic north, 4 miles, tracking south, slow moving, no height information further traffic, north-east, 5 miles, tracking south, no moving, no height information*”. The DIR could then be heard ‘off-mic’ correcting himself having described the second traffic as “*no moving*” rather than “*slow moving*”.

Although the DIR instructor described the air picture as busy, the TS was not reduced for high traffic density. The unit's investigation determined that the DIR instructor had considered whether to reduce TI due to traffic density; however, with only one ac on frequency, and thus being able to give that ac undivided attention, he felt that all relevant traffic to the Typhoon would be called. He had also decided that if another ac came on frequency, TI would be reduced as the division of attention would require this.

The next transmission from DIR to the Typhoon occurred at 1314:40, advising them of “*traffic north-west, one mile, your speed's keeping you clear, further traffic 12 o'clock, one mile, manoeuvring, no height information*” which was acknowledged. At 1315:02, the Typhoon crew advised DIR that they were “*visual, loads of paragliders*”, later reporting 4 ac in the Typhoon's 10-11 o'clock position at a visually assessed range of 3000ft laterally [approx 0.5nm] and 200ft below, which was acknowledged.

The Typhoon IRE reported that the Airprox occurred on the LIN TACAN 058R/10.3d, heading 043°, which would suggest that they were turning inbound to the IAF. Although the IRE was unavailable at the time of writing, the OCU student believed that they had commenced the L turn at the time of the Airprox. However, the turn was not observable on the radar replay until 1315:19, which could suggest a discrepancy between the radar replay timings and those of the RT transcript. Unfortunately, LIN ATC were unable to determine whether a discrepancy existed.

These factors notwithstanding, although the radar replay was unable to substantiate the unit's investigation, they determined that the TI passed at 1314:40 was an update to that passed at 1313:40, rather than further TI on new traffic. Whilst 'good practice' would normally suggest that the trainee DIR prefix the TI with the phrase "previously reported traffic", this is not a requirement within CAP 413. Moreover, based on the approximate speed of the Typhoon, the separation reported by the Typhoon IRE at the point of first sighting and the time elapsed between the updated TI and the report of that sighting, the lateral separation existing at 1314:40 was approx 2nm, rather than 1nm as reported by the trainee DIR.

On the basis of the available evidence, from an ATM perspective, DIR provided the Typhoon with timely TI on the conflicting ac and updated that TI when they considered that it continued to constitute a definite hazard.

The Typhoon unit questioned whether LIN should be avoided as a practice diversion (PD) airfield when local gliding activity was promulgated. When 'significant amounts of glider activity are planned or observed' in the vicinity of LIN, the Duty Senior Supervisor may invoke the 'Glider Ops Departure and Recovery Procedure' which details specific actions for aircrew and ATC. Following this Airprox, LIN SATCO reviewed local training procedures and decided that all aircrews booking a PD would now be notified whether 'Glider Ops' had been instigated.

HQ Air Command commented that the Typhoon crew did not declare an Airprox at the time but otherwise took appropriate action to remove the collision risk by terminating their hold and advising their other element to do the same. The change of procedure to ensure all PDs are notified of busy gliding periods should also help to reduce the likelihood of conflict in future.

Summary

A Typhoon and a paraglider came into close proximity 10nm NE of RAF Linton-on-Ouse (LIN) at 1315 on 25 Jun 13. The Typhoon was operating under IFR on an Instrument Rating Test in the LIN TACAN hold at FL50, in receipt of a TS from LIN DIR; the paraglider was operating under IFR and was not detected by NATS Ltd radars.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

Board members first considered the actions of the pilots concerned and their associated responsibilities for collision avoidance. It was agreed that they were both entitled airspace users, that they had equal responsibility for collision avoidance, and that the paraglider had right of way due to it coming under the definition of a glider¹. It was also noted that there is no discrimination between VFR and IFR flight with respect to right of way under Section 4 (General Flight Rules) of the Rules of the Air 2007; therefore the rules therein, including Rule 9 (Converging), apply whether the aircraft are operating under VFR or IFR.

Some pilot members questioned the legality of a paraglider pilot flying IMC and therefore, by definition, under IFR. The CAA Flight Operations advisor stated that the requirement to hold an instrument rating for IFR flight was a licensing requirement, that a paraglider pilot is not required to be licensed, and therefore that the requirement to hold an instrument rating did not apply. Notwithstanding this, parts of Section 6 (Instrument Flight Rules) of the Rules of the Air 2007 did apply; because paragliders cannot be considered to be in level flight, paragraph 34 (Quadrantal rule

¹ ANO 2009, Part 33, Paragraph 255 (interpretation): A paraglider comes under the definition of a 'glider': a non-power-driven, heavier-than-air aircraft, deriving its lift in flight chiefly from aerodynamic reactions on surfaces which remain fixed under given conditions of flight.

and semi-circular rule) did not. On this occasion he remained outside CAS and hence paragraphs 32(2)² (Instrument Flight Rules) and 33³ (Minimum height) only were relevant.

The Board noted that the Typhoon pilot had received TI that correlated with the paragliders, and had sensibly curtailed his holding pattern on making visual contact with them; although he saw the paragliders at close range, separation was such that no avoiding action was required. The Board commended him for his decision to advise the following Typhoon pilot to cancel his planned instrument approach, and welcomed the comments from the Typhoon unit and Air Command regarding the use of Linton-on-Ouse as a Practice Diversion during busy gliding periods. The Glider member opined that safety of flight could have been improved by the use of the CANP scheme by the paraglider pilots, as recommended on the British Hang Gliding and Paragliding Association website⁴.

Turning to the cause and risk, the Board opined that although they were on conflicting flight paths, the Typhoon and paraglider pilots saw each other as soon as the prevailing conditions allowed, and that, as a result, separation was such that safety margins were not significantly reduced below the normal.

The Board agreed that the safety barriers pertinent to this Airprox were 'ATC rules and procedures', 'controller action', 'aircrew rules and procedures', 'visual sighting', 'aircrew action' and 'SA gained from RT'. The Board concluded that all the pertinent barriers had been effective, so the Airprox was allocated a score of 2 on the Event Risk Classification Matrix.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict in the Linton-on-Ouse RW03RH TACAN hold.

Degree of Risk: C.

ERC Score: 2.

² Rules of the Air 2007 Section 6 Paragraph 32 - (2): For flights outside controlled airspace rules 33 and 34 shall be the Instrument Flight Rules.

³ Rules of the Air 2007 Section 6 Paragraph 33 - (1) Subject to paragraphs (2) and (3), an aircraft shall not fly at a height of less than 1,000 feet above the highest obstacle within a distance of 5 nautical miles of the aircraft unless (a) it is necessary for the aircraft to do so in order to take off or land; (b) the aircraft flies on a route notified for the purposes of this rule; (c) the aircraft has been otherwise authorised by the competent authority in relation to the area over which the aircraft is flying; or (d) the aircraft flies at an altitude not exceeding 3,000 feet above mean sea level and remains clear of cloud and with the surface in sight and in a flight visibility of at least 800 metres. (2) The aircraft shall comply with rule 5. (3) Paragraph (1) shall not apply to a helicopter that is air-taxiing or conducting manoeuvres in accordance with rule 6(i).

⁴ <http://www.bhpa.co.uk/documents/safety/canp/>

AIRPROX REPORT No 2013054

Date/Time: 23 Jun 2013 1255Z (Sunday)

Position: 5642N 00433W
(N FINDO)

Airspace: UAR (Class: C)

Reporting Ac Reported Ac

Type: B747(1) B747(2)

Operator: CAT CAT

Alt/FL: FL340 FL340

Weather: IMC VMC

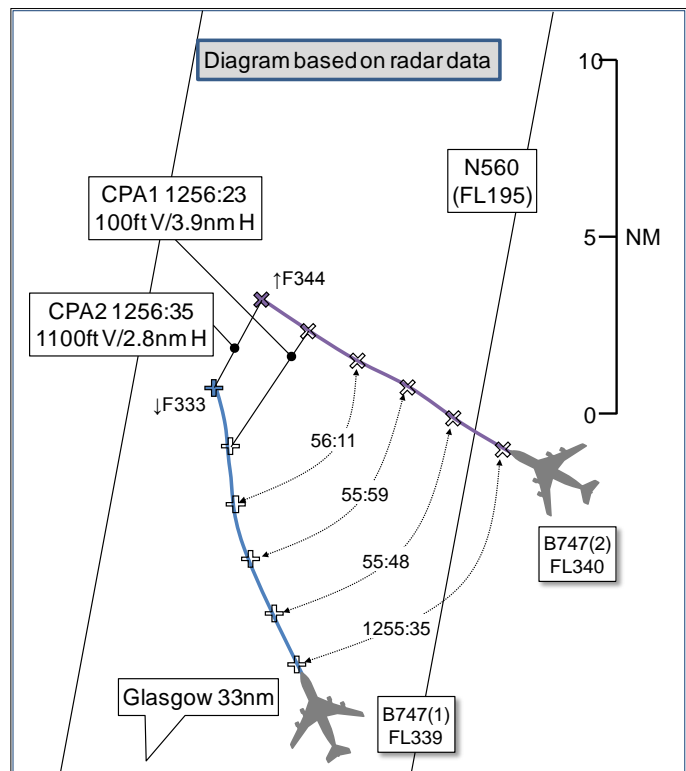
Visibility: 10km 40km

Reported Separation:

400ft V/200m H 600ft V/0.5nm H

Recorded Separation:

100ft V/3.9 nm H
1100ft V/2.8nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE B747(1) PILOT reports en-route at FL340, M.85, direct to ATSIX. He received ATC instructions for an immediate R turn, he thought, for traffic avoidance. Turn was commenced immediately and traffic observed at same level converging about 2nm distant on RH side. This ac was also given turn instruction but to the L, on to heading 270°, he thought. This combination further reduced separation and the anticipated TCAS RA occurred. A/P was disconnected and TCAS command (descent) followed. Other ac observed to follow turn instruction and then climb. ATC were advised of RA event and gave other traffic further vectors to ensure separation. FL330 was maintained, as instructed, following event.

He perceived the severity of the incident as 'High'.

THE B747(2) PILOT reports at M.847 in VMC at FL340, squawking Modes S and C. He was under the control of Scottish Centre. The initial heading advised by Scottish, he thought, was an immediate L turn heading 270°. The other ac was turned R heading 050°, he thought. He started the turn and, after confirmation of the heading, he was advised to turn R immediately heading 050°. He received an RA without TA in the turn, climbing to FL345. After clear of conflict A/P was re-engaged, V/S 500fpm to descend to FL340. Speed increased to the amber band and no level off at FL340. A/P had to be disconnected again to resume FL340. During this phase of flight there were no TA or RA alerts. He did not sight the other aircraft.

He perceived the severity of the incident as 'Medium'.

THE PRESTWICK CENTRE (PC) MONTROSE T AND P CONTROLLER reports that sector traffic was moderate but it did not seem too busy. At approximately 1250, he noticed that the two ac were coming into conflict with each other. At that time, the STCA started to activate. He gave an avoiding action L turn to the B747(1) heading 270° and B747(2) a R turn heading 050°. He observed that the B747(1) did not appear to be taking the turn. The pilot of the B747(2) queried whether he had been given a turn and he reissued it. At this point a P Controller asked if any of the ac had been given descent. He replied that no descent had been issued. He promptly instructed the B747(1) to descend. At this point the B747(2) reported a TCAS RA climb.

THE RELIEF PC MONTROSE P CONTROLLER reports that on arriving for work he was sent on a break and almost immediately a P was requested urgently for Montrose. He plugged in and saw STCA flashing west of FINDO, 2 ac at FL340. Avoiding action had been issued. He started trying to offer assistance and gain the picture. After a few minutes another controller arrived to relieve T. Instead, he suggested taking over the T position himself as he had more of the picture. He then handed over the P picture as best he could. The B747(1) was instructed to maintain FL330. The B747(2) was returning to FL340. Ac were released on their own navigation. He noticed that the B747(2)'s Mode C was indicating FL337 descending. Avoiding action was issued and the pilot was requested to confirm climbing. The B747(2) showed FL336 on mode C before climbing back to FL340. Mode S indicated FL340 all the time. At all times the sector was moderate to busy with numerous conflicts around Nevis, with FL340, FL350 and FL360 all having conflicts and ac reporting weather.

[UKAB Note(1): The minimum separation for ac operating in Class C airspace of the UAR is 5nm H or 1000ft V.]

ATSI reports that the Airprox was reported in Class C airspace, in the vicinity of FINDO, by B747(1) at FL340 following receipt of a TCAS RA against a B747(2), also at FL340.

B747(1) was operating under IFR, and was in receipt of a RCS from PC Montrose Sector [126.925MHz]. B747(2) was operating under IFR and was in receipt of a RCS from PC Montrose Sector on the same frequency.

The Montrose Sector was operating combined T and P with ATCO(1) as operational controller at the time of the Airprox. ATCO(2) provided some P assistance at the time of the Airprox before relieving ATCO(1) from position. ATCO(1) described the traffic loading at the time as moderate.

CAA ATSI had access to written reports from the pilots of both ac, area radar recordings, RTF recording and transcript of the Montrose Sector frequency, together with the PC unit report. CAA ATSI also interviewed ATCO(1) and ATCO (2) on the Montrose sector.

At 1250:40, the B747(2) pilot requested climb from FL320 to FL340 from ATCO(1). The controller replied standby and that he would call him back. The controller reported being aware that he was unable to give the B747(2) pilot a climb at that time due to other traffic and instead dealt with other issues. ATCO(1) then co-ordinated climb for the B747(2) to FL340 with the next sector and at 1251:45 ATCO(1) instructed the B747(2) pilot to climb to FL340. The B747(1) had 20.1nm to run to the Montrose sector boundary (see Figure 1 below).

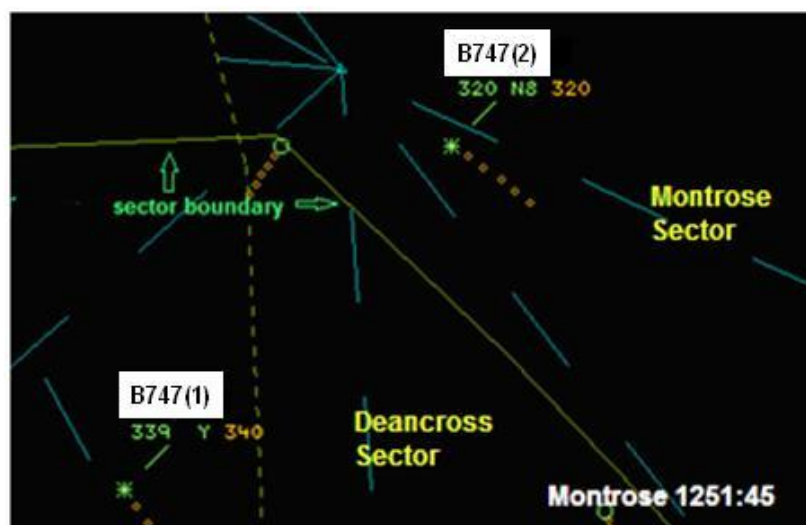


Figure 1.

At 1252:00, the B747(1) pilot contacted the Montrose sector maintaining FL340 (indicating FL339). The two ac were 24.3nm apart on converging tracks (see Figure 2 below). ATCO(1) reported that his usual method of working was to put the electronic strips of conflicting traffic together and suitably highlighted. On this occasion ATCO(1) had not done this.

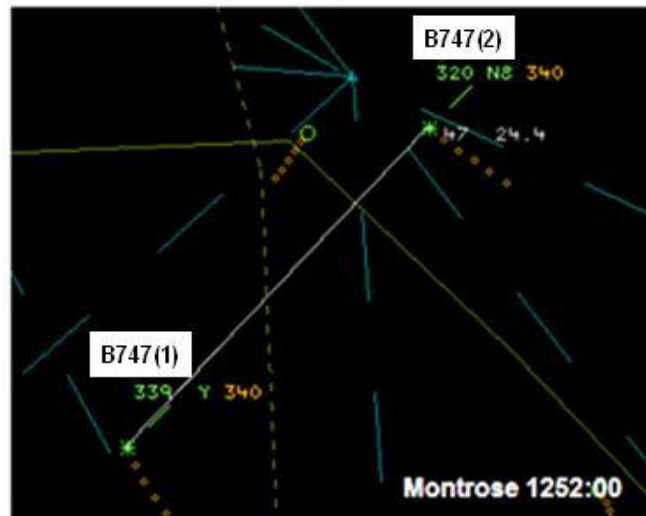


Figure 2.

At 1255:22, low-level STCA was triggered as the two ac were 9.8nm apart (see Figure 3). Just prior to this ATCO(1) had realised that the two ac were in conflict; however, he was unable to issue instructions due to another ac transmitting on the frequency. At the end of this transmission ATCO(1) transmitted, *“avoiding action [B747(1) C/S] turn left immediately heading two seven zero degrees, traffic in your right one o’clock.”* The B747(1) pilot read back, *“two seven zero [B747(1) C/S]”*. Avoiding action was then passed to the B747(2) pilot, *“[B747(2) C/S] avoiding action turn right immediately heading zero five zero degrees traffic in your left eleven o’clock”*. The B747(2) pilot replied using his C/S digits only.

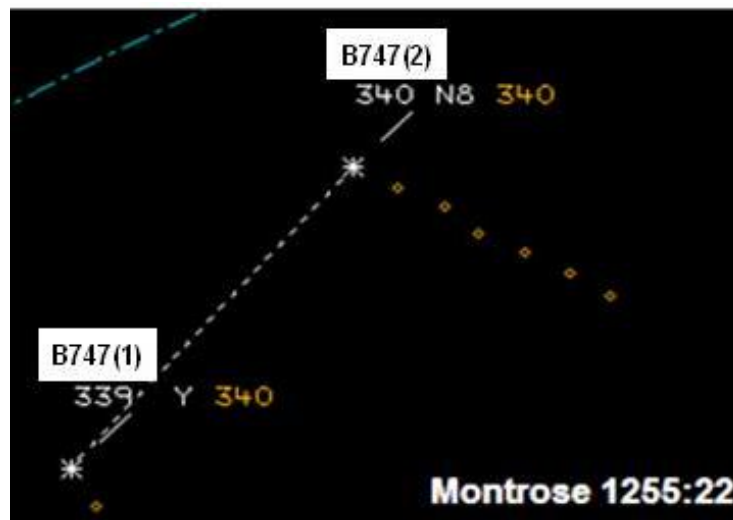


Figure 3.

At 1256:00, the two ac were 6.6nm apart still on converging headings (see Figure 4, with the headings previously given by ATCO(1) superimposed in red). The B747(2) pilot transmitted, *“and just to confirm did you give us a heading for [B747(2) C/S]”*. ATCO(1) replied, *“[B747(2) C/S] affirm avoiding action turn right immediately heading zero five zero degrees.”* The B747(2) pilot read back *“zero five zero right turn [B747(2) C/S].”*

At 1256:12, ATCO(1) transmitted to the B747(1) pilot, *“[B747(1) C/S] avoiding action turn left immediately heading two six zero degrees traffic in your right one o’clock”*. The B747(1) pilot replied

“two six zero with traffic in sight [B747(1) C/S]”. ATCO(1) was aware that he had not received a full readback but was concerned that the crew’s workload was high and did not want to distract them further.

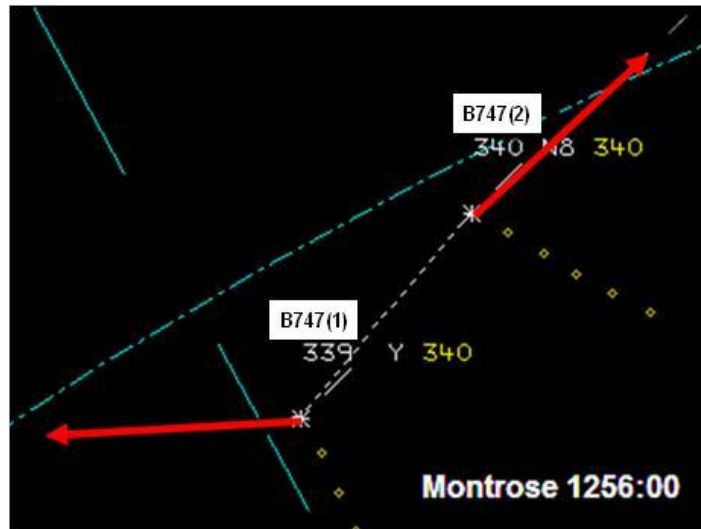


Figure 4.

ATCO(1) stated at interview that he was reluctant to give climb or descent to either ac due to his training, which discouraged it due to the possibility of giving instructions in conflict with TCAS. At 1256:17, high-level STCA alerted as separation was lost: the distance between the B747s had reduced to 4.9nm with both ac at FL340 on converging tracks (see Figure 5). The B747(1) appeared to have turned slightly R. By this time ATCO(2) had arrived on the sector to provide assistance to ATCO(1) and suggested that ATCO(1) give vertical instructions. At 1256:20, ATCO(1) instructed the B747(1) pilot to “descend now immediately”.

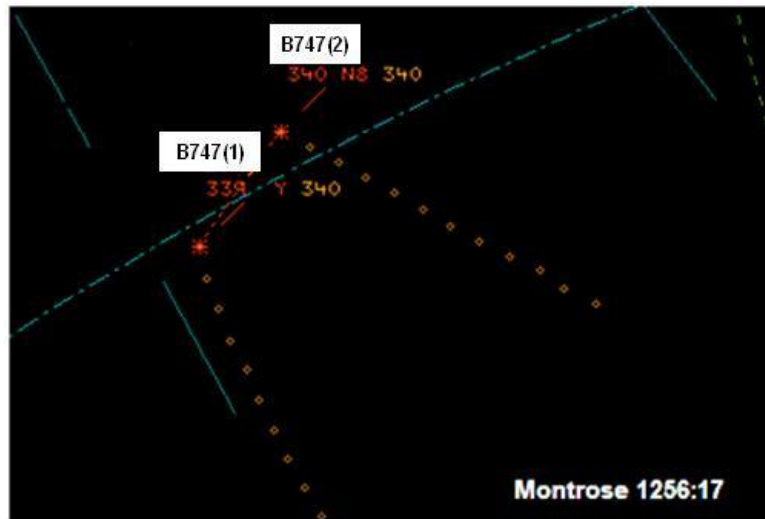


Figure 5.

The B747(2) pilot reported “resolution advisory in the climb”. This was acknowledged by ATCO(1). Separation between the two ac reduced to 3.5nm/300ft.

At 1256:37, vertical separation between the two ac was regained as B747(1) was at FL332 and B747(2) was climbing through FL344. The lateral distance was 2.8nm with the tracks of the two ac not appearing to have changed significantly (see Figure 6).

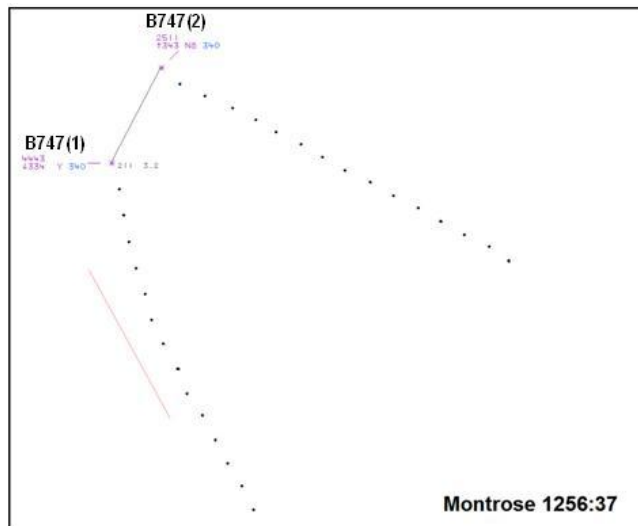


Figure 6.

The B747(1) pilot reported at FL330, and that they would be resuming FL340 in about 10nm. ATCO(1) instructed the B747(1) pilot to maintain FL330. The B747(1) pilot requested to resume the N'y heading and ATCO(1) approved this. The B747(1) pilot then advised ATCO(1) that he had received a TCAS RA before the instruction to descend.

At 1257:20, the two ac tracks crossed as the B747(1) turned onto a N'y track, passing 1.6nm behind the B748. The B747(1) was indicating FL334 with Mode S Selected Flight Level (SFL) showing FL330 and the B747(2) was indicating FL345 with SFL showing FL340.

ATCO(1) was relieved by ATCO(2), the P, who instructed the B747(2) crew to resume own navigation for ERAKA.

Although not directly relevant to this Airprox, at 1258:20, separation was again lost when B747(2)'s Mode C indicated FL338 descending and STCA activated. ATCO(2) asked the B747(2) to confirm if it was descending. B747(2) replied that they were "*getting back to flight level three four zero.*" ATCO(2) asked the crew to confirm that they were climbing to FL340. The B747(2) replied "*that's affirmative*".

At 1259:09, the Mode C indication of the B747(2) was FL335. The horizontal distance between the two ac was 2.6nm and the vertical distance was 600ft. ATCO(2) advised the crew of the B747(2) that "*we have you descending flight level three three zero*" and re-issued avoiding action, turning the B747(2) L onto a heading of 300°.

At 1259:20, B747(1) was given an avoiding action L turn on to 270°. This instruction had the potential to reduce the distance between the two ac and was queried by the B747(1) pilot. It was then cancelled by the controller as separation was regained at 1259:32, when the B747(2) levelled at FL340 and the track of the B747(1) had not changed. At interview ATCO(2) could provide no explanation for the turn given to the B747(1) except that it was the avoiding action turn issued by the previous controller and the previous incident was still on his mind.

The written report from the captain of B747(1) recollected that they received an ATC instruction for an 'immediate turn right for traffic avoidance'. The crew commenced the turn and traffic was observed at the same level converging at approximately 2nm on their RH side. They heard the other traffic be given avoiding action to the L (onto 270° they thought). The subsequent TCAS RA was followed. Following the incident the B747(1) captain contacted the B747(2) captain who confirmed that they were instructed to turn L.

The written report from the B747(2) captain stated that they were instructed to turn immediate L heading 270° and believed the other ac was to turn R heading 050°. They started the turn and then were instructed to turn immediately heading 050°. They received a TCAS RA and climbed to FL345.

Following the Airprox, PC conducted a simulation of the event where both ac acted on the avoiding action given by ATCO(1) at 1255. Rate one turns were used and the resulting minimum lateral separation was 7.2nm.

ATSI commented that ATCO(1) climbed the B747(2) to FL340, the level occupied by the B747(1) which was not yet on frequency. It is possible that as the Mode C of the B747(1) consistently displayed FL339 it did not alert ATCO(1) to the conflicting level of B747(1).

Summary

Both ac were operating in Class C airspace of the UAR, under the control of the PC Montrose sector. At the time of the incident the sector was operating bandboxed P and T positions. The B747(2) pilot was instructed to climb to FL340, the same level as B747(1). Avoiding action turns were issued by the controller but were not followed by either crew. Both ac received TCAS RAs. Separation was reduced below the minimum required (5nm/1000ft).

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The Board first discussed the ATC aspects of the incident. At the time of the Airprox both ac were operating in Class C airspace under the control of the Prestwick Centre Montrose Sector before entering Oceanic airspace. The B747(2), cruising at FL320, requested a climb to its Oceanic level of FL340 and, after appropriate co-ordination, the ac was instructed to climb to FL340. Controller members agreed that this clearance resulted in a potential confliction with B747(1), which was on a converging track, at FL340, at a range of approximately 25nm. Although a controller Member commented that it is not unusual in certain circumstances for controllers to climb ac to the same level prior to issuing further instructions, it was apparent to the Board that in doing so in this instance, the ac were placed on conflicting tracks with little distance to go before they merged. However, the Board agreed that, on subsequently identifying the potential conflict, the Montrose controller took timely action in issuing appropriate avoiding instructions to both ac. Had the pilots complied with these instructions, simulation indicated that separation would not have been lost.

The Board then turned its attention to the pilots' actions following the issue of the avoiding instructions. It was apparent that both crews had taken each others' instructions, and the Board found it hard to determine why this had occurred; unfortunately no Human Factor report was available from either crew. The Board was surprised that all four pilots had misheard or misinterpreted the avoiding action instructions despite at least one of the crews reading them back correctly. One airline pilot Member wondered if there could have been callsign confusion; this was discounted because they were not similar, nor could they have been confused with heading information - ATSI confirmed that the transmissions were clear on the RT recording. Having discounted this, the Board considered other potential causes of confusion. It was possible that the crews may have been distracted because this would have been about the time that they would have been receiving their Oceanic clearances on data-link. Another possibility mooted by an airline-pilot Member was that, having settled into their trans-Atlantic routine, it was unusual for pilots to be issued with avoiding action instructions at that altitude and location. Expecting only routine information to be transmitted at that time, they may have been perplexed by the avoiding action information and instinctively responded without properly assimilating it. He also noted that, during simulation training, avoiding action was only practiced as a result of a TCAS alerts, and not as a result of ATC instructions; this was an important consideration as to their potential familiarity with receiving, assimilating and actioning such RT instructions in a timely manner.

The next question that concerned the Board was the action of the B747(1) pilot ,who had turned his ac towards the B747(2). From the information available, it was unclear whether the B747(1) pilot had had B747(2) in sight before or after he turned. Irrespective, a controller Member was disappointed that, contrary to requirements, the B747(1) pilot did not advise ATC that he was reacting to a TCAS RA once it had activated; he considered that the absence of this important information would affect controllers' actions in such situations.

In considering the cause of the Airprox, the Board agreed that there were two issues involved; namely the actions of both the controller and the pilots. There was a prolonged discussion as to whether the controller's actions were part of the cause or were a contributory factor. Bearing in mind that his subsequent recovery actions, if taken, would have resolved the conflict, it was decided that they were a contributory factor. The Board considered that the pilots' actions, by flying each other's avoiding action ATC instructions, caused the Airprox. As to the risk, because B747(1) had B747(2) in sight as it was turning towards it, and both ac reacted to TCAS RAs thereby establishing standard vertical separation by a horizontal distance of 2.8nm, the Board opined that there was no risk of a collision.

PART C: ASSESSMENT OF CAUSE AND RISK

<u>Cause:</u>	The pilots of ac on converging tracks flew into conflict because, although they acknowledged timely avoiding action, they did not follow it.
<u>Contributory Factor(s):</u>	The Montrose T & P climbed the ac to the same level.
<u>Degree of risk:</u>	C.
<u>ERC Score:</u>	102.

AIRPROX REPORT No 2013060

Date/Time: 30 Jun 2013 2138Z (Sunday) (Night)

Position: 5109N 00012W
(London/Gatwick
- elevation 203ft)

Airspace: Gatwick CTR/ATZ (Class: D)

Reporting Ac **Reported Ac**

Type: A319 MD902

Operator: CAT Civ Comm

Alt/FL: 400ft agl 1200ft
 QNH (1019hPa) QNH (1019hPa)

Weather: VMC CAVOK VMC CAVOK

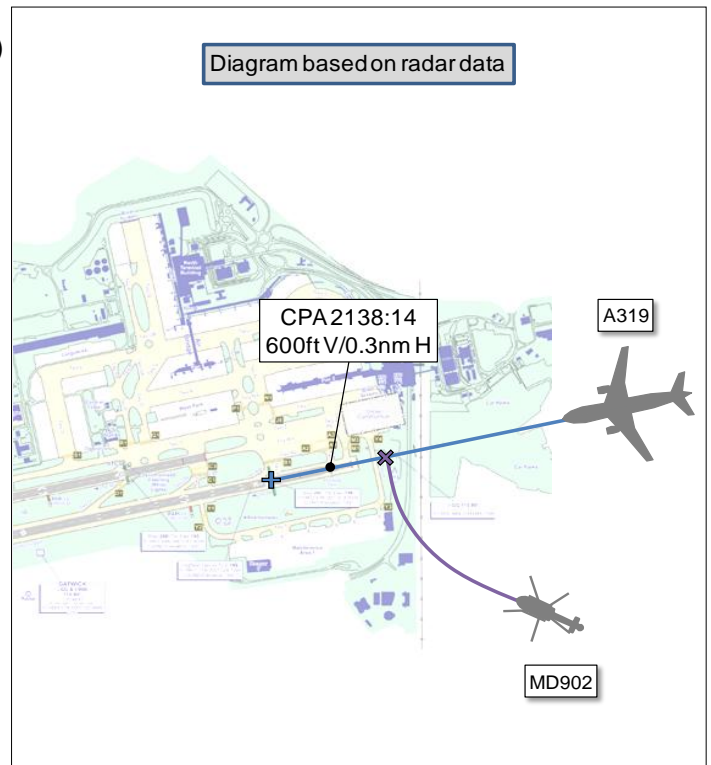
Visibility: NK >10km

Reported Separation:

 500ft V/0m H 1200ft V/200m H

Recorded Separation:

 600ft V/0.3nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE A319 PILOT reports being inbound to RW 26L at Gatwick on an IFR flight from Venice; beacon, strobes and landing lights were illuminated, SSR Modes S and C were selected. When checking into Gatwick TWR, he was informed of a helicopter 1nm S of the airport staying clear. As he came close to the RW threshold he noticed that the helicopter was crossing above his ac. As he passed 400ft agl the helicopter changed to amber on TCAS, without any audio alert. The helicopter indicated 500ft above as he passed 400ft Radalt. He was not informed that the helicopter was going to cross above his ac, and expressed concern that if he had had to go around from 600-400ft, he would have been only 500ft below the helicopter in more or less conflict. This would have made a go around from around 500ft impossible.

He perceived the severity of the incident as 'Low'.

THE MD902 EXPLORER HELICOPTER PILOT reports being on a CAT-B, VFR, local flight from Redhill Airfield. Standard navigation, HISL, white strobes and 2xlanding lights were all illuminated, and SSR Modes S and C were selected; TCAS is not carried. He had been cleared by Gatwick TWR to operate over the M23 up to 1500ft, remaining S of the extended RW centreline. Subsequently, he requested to reposition to the north side of the centreline. He was initially routed NW to the Southern Maintenance Hangar, which is used as the standard holding point just to the S of the RW, near the 26L threshold. He was then asked if he was visual with an ac on short final. This was confirmed (he had seen it at >6nm at the start of its ILS) and he was then cleared to cross above and behind that traffic. Heading 360°, he crossed some 1000-1200ft above and about 150-200m behind it, he thought. No comments about the close proximity of other traffic were made on the frequency from either ATC or pilots during the time he had been operating.

He assessed the risk of collision as 'None'.

THE GATWICK TWR CONTROLLER reports that he was operating with RW 26L at the start of a night duty. The MD902 helicopter called him from Redhill and said it wanted to operate over the M23 motorway abeam Gatwick. He cleared the helicopter across the runway from the N Terminal, using standard procedures and the helicopter subsequently held to the S of the 1nm FAT by 1nm. The

helicopter later informed him that it would like to route towards the Southern Maintenance Hangar and then cross over to the northern side of the FAT. The A319, to which he had already passed TI about the helicopter, was 3nm from touchdown. He instructed the helicopter to cross the runway, after the landing A319, over the threshold, which was read back correctly. The helicopter was then observed to carry out the instruction as cleared.

Factual Background

The Gatwick weather was recorded as follows:

METAR EGKK 302120Z 23005KT CAVOK 16/14 Q1019

Official night on 30 June 2013 started at 2104; the incident occurred at approximately 2138.

MATS Part 1, Section 2, Chapter 1, Paragraph 1.4 states 'Aerodrome Control is responsible for issuing information and instructions to aircraft under its control to achieve a safe, orderly and expeditious flow of air traffic and to assist pilots in preventing collisions between: 1) Aircraft flying in, and in the vicinity of, the ATZ'.

MATS Part 1, Section 1, Chapter 5, Paragraph 5.3 states 'Separation standards are not prescribed for application by ATC between VFR and IFR flights in Class D airspace'.

MATS Part 1, Section 1, Chapter 4, Paragraph 4.101 describes CAT-B flights connected with the operator involved in this Airprox as: 'Normal operational priority. The operation will not wish to draw attention to itself. The pilot will expect controllers to suggest a new altitude or minor changes to the flight operating area in the event that the flight would cause a delay to other traffic'.

ATSI Analysis

Both ac were receiving an ACS from Gatwick TWR who were operating from the emergency VCR to allow for planned deep-cleaning of the Gatwick VCR. All equipment was reported as serviceable.

In response to a task in the area between Gatwick and Crawley, the MD902 departed from Redhill at 2128:10. Gatwick TWR cleared it initially to the N Terminal and, with landing traffic in sight at a 2.5nm final, it was cleared to cross RW 26L from N to S after the landing traffic. The MD902 was 1.5nm N of the centreline when the inbound landed and the MD902 crossed the threshold from N to S at 2130:46.

Having reported operating on the S-side, at 2131:03 the MD902 reported that his task was now on the centreline; however, he advised that the situation did not warrant CAT-A status, and that he would continue to monitor from the south-side as a CAT-B flight.

Radar showed the MD902 holding 1.3nm to the SE of the RW threshold (1nm south of the centreline). The next two inbound aircraft were passed traffic information about the MD902 holding to the S of Gatwick at low-level.

At 2134:01, the A319 was 10.1nm from touchdown. The LTC Gatwick Radar controller advised the A319 about the helicopter, "...about a mile south of the two mile final working the tower and for further updates contact them on one two four decimal two two five callsign only". The A319 pilot acknowledged, "One two four two [2134:40] two five (A319)c/s".

At 2134:50, the A319 contacted the TWR and was advised to continue approach with TI, "(A319)c/s traffic information, helicopter one mile south of Gatwick low level remaining south at this time". The A319 pilot replied, "Okay thank you".

At 2136:45, the A319 was 3.2nm from touchdown and the MD902 pilot reported, "...I'd like to er route back to the erm maintenance hangar then cross northside to hold just north of the Gatwick Link and have a look from the north". TWR responded, "(MD902)c/s after the landing three nineteen short final, cross runway two six left from south to north over the threshold". The MD902 pilot replied, "South to north at the threshold after the one short final (MD902)c/s".

At 2137:06 the A319, at 1.25nm, was given landing clearance and at the same time the MD902, 1.5nm SE of the threshold, started to track W and then NW towards the threshold. As the two ac converged the MD902 remained in the A319's half past ten position.

At 2137:58, the A319 was 0.5nm from touchdown at an altitude of 400ft, with the MD902 at a distance of 0.4nm at 1000ft (Figure 1).

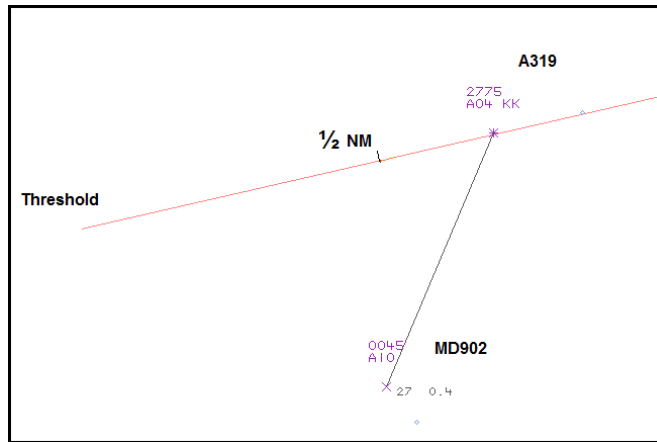


Figure 1 – MRT at 2137:58

The MD902, then started a R turn [2138:06] to position behind the landing A319, which was just crossing the airfield boundary at a range of 0.2nm from touchdown, see Figure 2 and also Figure 3, the corresponding image taken from the Gatwick SMR.

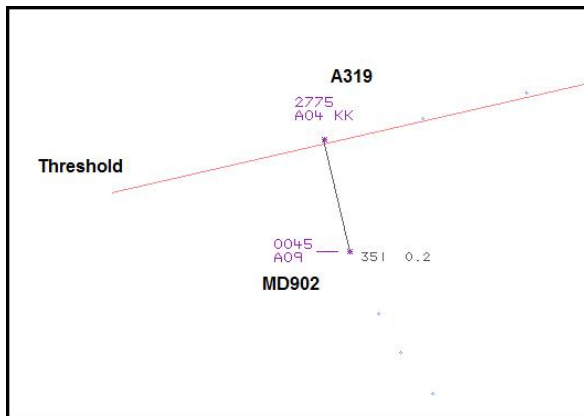


Figure 2 - MRT at 2138:06

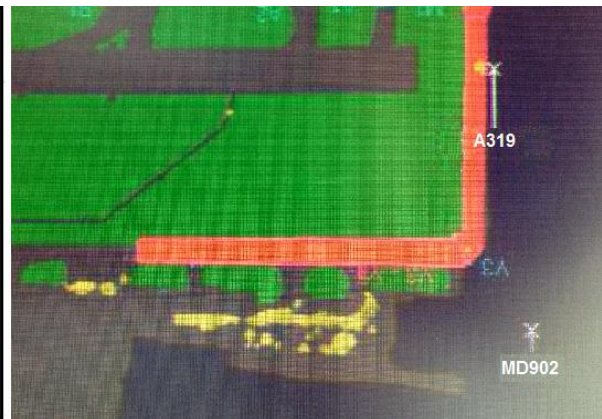


Figure 3 – Gatwick SMR #

At 2138:14 the MD902 passed 0.3NM behind the A319 as it approached the touchdown point on Runway 26L (Figure 4).

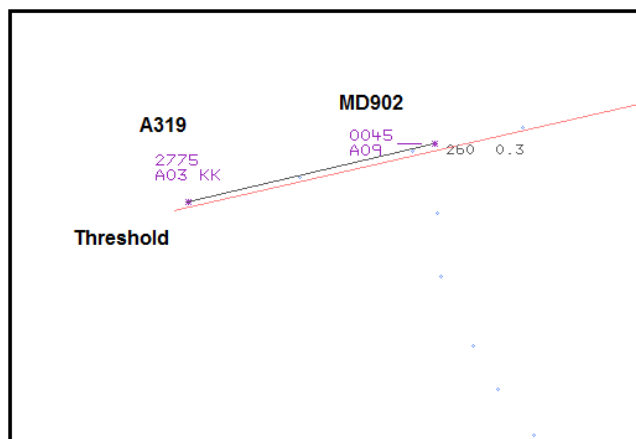


Figure 4 – MRT at 2138:14

Summary

The A319 was inbound to Gatwick IFR established on the ILS RW 26L. The pilot was informed about the MD902 operating S of the RW centreline. When the MD902, a CAT-B VFR flight, requested to cross to the N of the RW centreline it was cleared to cross at the RW26L threshold behind the A319. TWR did not update TI to the A319 about the helicopter crossing. Both ac were visual with each other. The A319 pilot, although perceiving the severity of the incident as low, reported being concerned with the helicopter crossing above if it had been necessary to carry out a go-around. Radar recordings show that the MD902 crossed 0.3nm behind the A319.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The Board first considered the aspects of the Airprox from the A319 pilot's perspective. He had been informed about the presence of the helicopter both by the radar and TWR controllers during his approach. As far as he was aware, the helicopter was remaining in its southerly position 1nm to the S as he carried out his ILS approach. He was, therefore, understandably surprised to observe it routing closer to his aircraft as he approached touchdown. Notwithstanding his surprise at seeing the helicopter in close proximity, he thought, Board members believed that his visual judgement under night conditions had perhaps given him a false impression of the helicopter being overhead relative to the A319. His subsequent filing of an Airprox was then based on what might have happened, had he carried out a missed approach..

Turning to the MD902 pilot's actions, in the Board's opinion, reinforced by the radar recordings, the pilot of the MD902 operated correctly, complying with ATC instructions to cross behind the A319.

In the ensuing discussion, Members agreed that the clearance issued by Gatwick TWR was appropriate in allowing the MD902 to cross behind the A319. The debate then turned to the ATC aspects and the lack of an update of TI to the A319 about the MD902's change of position. Most members agreed that, although this might have been helpful, it was not strictly necessary because the helicopter was always going to cross behind the A319; furthermore, the controller, rightly, would not have wished to clutter the frequency with RT during a critical stage of the A319's flight. The Board also commented that the A319 pilot could have heard the onward clearance issued to the MD902 pilot because he was on the frequency at the time; however, it was recognised that he was in a busy workload period of his approach.

The Board were unanimous in their opinion that the A319 pilot had filed an Airprox report appropriately; however, it was determined that normal procedures, safety standards and parameters pertained, resulting in the Airprox being classified as a sighting report with no risk of collision.

Considering the relevant safety barriers, the Board agreed that 'ATCO Rules and Procedures', 'Controller Action', 'Aircrew Rules and Procedures', 'Visual Sighting', 'Aircrew Action' and 'SA from ACAS' had all been relevant and effective. Although they considered that the further barrier 'SA from RT' had been reduced in effectiveness, overall, the safety barriers had been effective, which gave an Event Risk Classification score of 1.

PART C:ASSESSMENT OF CAUSE AND RISK

Cause: Sighting report.

Degree of Risk: E.

ERC Score: 1.