

**ASSESSMENT SUMMARY SHEET FOR UKAB MEETING ON 18 May 2011**

Total: 14	Risk A: 1	Risk B: 2	Risk C: 10	Risk D: 0	Risk E: 1
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<u>No</u>	<u>Reporting</u>	<u>Reported</u>	<u>Airspace</u>	<u>Cause</u>	<u>Risk</u>
2010144	R22B (CIV)	AW109 (MIL)	G	A conflict in Class G airspace.	C
2010149	A319 (CAT)	C182 (CIV)	D	In the absence of TI the C182 pilot flew close enough to cause the A319 crew concern.	C
2010150	PA34 (CIV)	PA28 (CIV)	G	A controller perceived conflict.	C
2010156	A319 (CAT)	C152 (CIV)	D	The C152 pilot did not comply with the ATC instruction to route via the runway 04 threshold, and flew into conflict with the A319.	C
2010163	Tornado GR4 (MIL)	SAAB Gripen x 2 (MIL)	G	Visual circuits were permitted in unsuitable weather conditions.	A
2010167	EC155B (CIV)	PA31 (CIV)	G	Effectively a non-sighting by the EC155B crew and a late sighting by the PA31 pilot.	B
2010172	C404 (CIV)	M20J (CIV)	G	A conflict in Class G airspace resolved by the C404 pilot.	C
2010175	Grob 115 D2 (CIV)	Typhoon FGR4 x 2 (MIL)	G	Sighting Report.	C
2011001	A319 (CAT)	BH06 (CIV)	A	Following an inaccurate broadcast from Air North, the A319 crew was concerned by the proximity of the BH06.	C
2011004	PA34 (CIV)	Grob Tutor T Mk1 (MIL)	G	A controller perceived conflict.	E

2011005	Grob Tutor T Mk1 (MIL)	C172 (CIV)	G	The C172 flew close enough to cause the Tutor pilots concern.	C
2011006	Chinook (MIL)	Apache (MIL)	G	A non-sighting by the Apache crew and a late sighting by the Chinook crew.  Safety recommendation: The MoD is recommended to consider fitting CWS to its helicopters.	B
2011010	Puma (MIL)	C172 (CIV)	G	A late sighting by the Puma crew.	C
2011021	Tipsy Belfair (CIV)	Kite (N/K)	G	A conflict in Class G airspace with an untraced kite.	C

- end -

## AIRPROX REPORT No 2010144

Date/Time: 26 Sep 2010 1019Z (Sunday)

Position: 5252N 00005W (170°  
Coningsby 14nm)

Airspace: London FIR (Class: G)

Reporter: Waddington ATC

1st Ac 2nd Ac

Type: AW109 R22B

Operator: HQ Air (Ops) Civ Pte

Alt/FL: 500ft 550ft  
RPS (1008mb) agl

Weather: NR VMC

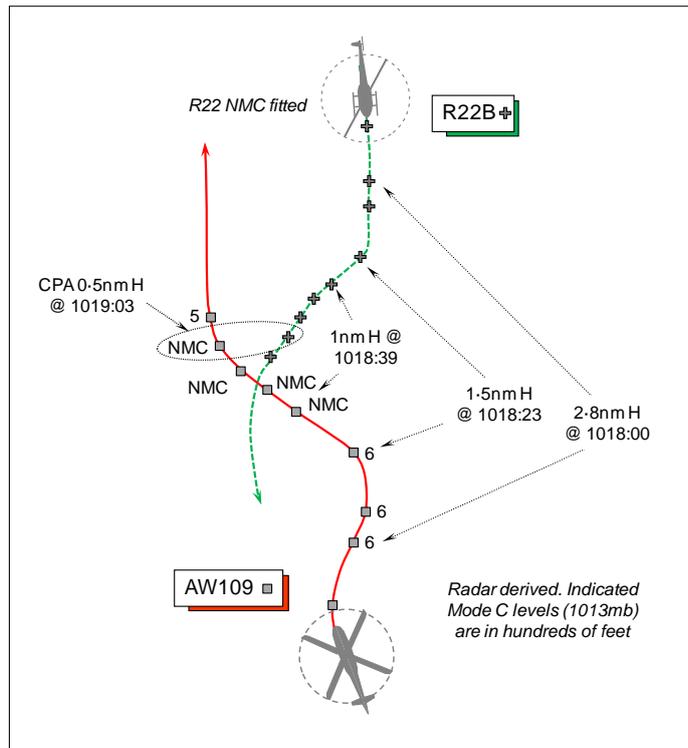
Visibility: 5km 1500m

Reported Separation:

NR Not seen

Recorded Separation:

0.5nm Min H



## CONTROLLER REPORTED

### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE WADDINGTON ZONE CONTROLLER (ZONE)** and the ATCO I/C reports that the R22B was under a BS routing to Humberside, but due to poor weather conditions the transit was aborted and the helicopter diverted to Fenland. As the R22B turned southbound a northbound ac was seen S of the R22B displaying a Coningsby squawk. Coningsby APP telephoned requesting TI and was told the R22B was at 700ft routing to Fenland. Coningsby APP stated that their ac – the AW109 - was at 500ft. ZONE passed TI on the AW109 to the R22B pilot twice and on the second transmission the pilot advised he was unlikely to see the other ac and was turning R to avoid it, so she believed the confliction would be resolved. At this point Coningsby APP turned the AW109 to the L into direct confliction with the R22B. The two ac returns were seen to merge. Coningsby APP advised that the AW109 pilot saw the R22B pass down his right hand side, but the R22B pilot did not see the AW109. She stated that with deteriorating weather conditions she was reluctant to give an avoiding action vector to an ac that was flying well below the Sector Safe Height. The Risk was assessed as 'high (A)'.

**THE AGUSTA 109 (AW109) HELICOPTER PILOT** submitted his report about 8 weeks after the Airprox and so his recollection of the incident was 'a little hazy'. Flying VFR from Northolt to Coningsby, he was in receipt of a TS from Coningsby APP. The assigned squawk [A1740] was selected with Modes C and S on; TCAS I is fitted.

To the S of Coningsby the weather deteriorated due to drizzle and low cloud, but they were able to remain VFR easily at between 500-1000ft msd. About 10-15nm S of Coningsby heading 350° at about 1000ft RPS [BARNSELY 1008mb] a contact was displayed on his TCAS I equipment, but he could not recall if the other ac's altitude was shown. However, he does recall turning away from the contact to increase the distance just in case, as the other ac was not in RT contact with Coningsby APP. At no time did he see the R22B, he thought, so he was unable to estimate the minimum separation but he did not consider there had been a Risk of a collision.

UKAB Note (1): APP advised the AW109 pilot at 1018:42, "... he's just turned right against you as well he's just right 3 o'clock half a mile crossing right left", which was acknowledged "roger that [AW109 C/S]". Eleven secs later the AW109 pilot reported "...we're visual with that".

UKAB Note (2): The Coningsby weather was transmitted by APP to the AW109 pilot at 1014:55 as CC GREEN with 3700m NSW, BKN at 800ft.

**THE R22B HELICOPTER PILOT** reports he had planned to fly solo under VFR from Cambridge to Humberside and the weather conditions on the day were forecast as:

Waddington TAF: 2606/2624 35015KT 9999 SCT045 PROB40 TEMPO 2606/2610 SHRA  
SCT020 BECMG 2610/2613 RA BKN020 TEMPO 2613/2624 7000 RA BKN012

Northbound passing Fenland on a direct track the weather started to reduce from a cloud base of 1000ft and slant visibility estimated to be 5km in haze and fine drizzle. On leaving Fenlands frequency, he established RT contact with Waddington ZONE on 127.35MHz and requested a BS; a squawk of A3601 was assigned, but Mode C is not fitted. Radio reception was poor, readability '3', he believes because of the low transit height. About 10nm S of Coningsby, he requested the local weather at Waddington. At a position 8nm S of Coningsby, he informed ZONE that the visibility had reduced to limits and he had elected to divert to a small helipad, 6nm NE of Boston at his home address. Within a very short space of time he decided the visibility was no better heading E and he informed the controller that he would be diverting to Fenland Aerodrome, which he had over-flown earlier and where he knew the weather was above minima. His workload was high due to the extremely poor visibility, checking the map for obstacles and power-lines on the reverse track and setting the Fenland frequency as the next frequency on the comms box, with the additional factor of poor reception with Waddington. Heading 170°, about 15nm S of Coningsby flying at 550ft agl and 90kt, ZONE then informed him of a helicopter 'on an intercept course', indicating the same level. He advised ZONE that he did not have visual contact with the other helicopter and was unlikely to do so because of the poor weather conditions. He asked for 'avoiding action instructions', but cannot remember the exact reply from Waddington. However, he does remember sensing the urgency in the tone of the controller's voice and understood that there was a real collision risk, but part of the message from ZONE was unreadable. Advising the controller that he was making an immediate turn to the R, he banked the helicopter to the R by about 20° into an avoiding action turn and rolled out on a heading of about SW. Shortly afterwards, ZONE asked if he had seen the other helicopter to which he replied 'negative'. He estimated his ac's height at the time of the incident as between 500-600ft agl. The Risk was not assessed.

**THE CONINGSBY APPROACH (APP) CONTROLLER** provided a comprehensive account stating that he was 1 of 2 controllers on duty during a weekend day shift tasked with providing a radar service in the event of a priority move. The Watchman primary ASR was out of service with ongoing serviceability issues so he was operating with SSR only.

During his shift, as part of a Station event, an AW109 from Northolt was inbound to Coningsby. The AW109 pilot free-called APP to the S of Coningsby heading N at 1000ft, but he could not recall the ATS provided. [UKAB Note (3): It was a TS with reduced TI SSR only.] The AW109 was identified, passed the Coningsby A/D information and asked to report visual with the aerodrome. He observed an ac contact – the R22B - displaying a Waddington squawk to the R of the AW109's 12 o'clock flying slowly southbound, so he asked Waddington ZONE for TI and ascertained that the traffic would pass close to the AW109. He passed TI to the AW109 pilot on the R22B contact more than once as the ac were closing. The conflicting traffic was still to the R of the AW109's nose so he suggested a turn to the NW [L] to avoid the contacts merging. Avoiding action was not given; however, the AW109 pilot took his suggested turn, but by that stage the AW109 pilot had already commenced a turn to the R, which had taken him through the R22B's 12 o'clock. Unfortunately, operating SSR only, the associated data update rate was slow. As the AW109 turned back onto a NW'ly heading the R22B commenced a turn to the R and the contacts merged. He continued to call the conflicting traffic throughout and the AW109 pilot reported visual with a helicopter, he thought passing about 200ft above his ac with no horizontal separation. Waddington ZONE called on the landline asking if the AW109 pilot had seen the R22B and why the AW109 had turned L when the 'Rules of the Air' require ac approaching head-on, or nearly so, to turn to the R to avoid each other. The landline was poor quality and he did not wish to dwell so took no further action.

**HQ 1GP BM SM** reports that the AW109 crew was in receipt of a TS from Coningsby APP and the R22B pilot in receipt of a BS from Waddington ZONE; Waddington ATC was unable to provide an RT tape transcript for the ZONE frequency.

The Coningsby SSR update rate is 8rpm, which equates to one sweep every 7½sec. The Waddington ASR update rate is 15rpm, which equates to one sweep every 4sec.

This Airprox occurred at a weekend when the respective ATSU's were operating at reduced manning. This is not considered a contributing factor to the Airprox as both controllers reported having a low workload and neither mention a lack of ability to control the situation due to workplace stresses.

ZONE reports passing TI to the R22B, although the flight was under a BS. This is a clear indication of a controller passing information under the duty of care principle. That TI was passed is corroborated by the R22B pilot and he acted on it by taking a turn to the R in accordance with the Rules of the Air.

APP had correctly identified the AW109 and placed the flight under a TS; although the original service request was unreadable, the pilot accepted the ATS offered by the controller, who correctly reduced the TS whilst operating SSR only with the Watchman ASR out of service. APP correctly applied the TS and advised the AW109 pilot that they were operating below the terrain sector safe height.

At 1016:54 Coningsby APP passed TI to the AW109 pilot about the R22B stating, *"traffic just right of your 12 o'clock, 5 miles, opposite direction, last known at 7 hundred feet."* APP liaised with Waddington ZONE at 1017:15, *"Coningsby request traffic information please, er Fosdyke Bridge southbound 3-6-0-1"*; ZONE replied, *"700 feet on the BARNSELEY"* and it was ascertained that ZONE's traffic was a helicopter. APP advised *"well I've got a helicopter just right of his 12 o'clock"* and ZONE responded at 1017:26, *"yeah I'm just about to call it"*. After APP added that the R22 was at 500ft, the call was terminated without any further course of action reached or implied. TI was passed to the R22B pilot about the AW109; APP updated the TI to the AW109 pilot at 1017:31, *"...previously reported traffic's now just right of your 12 o'clock, 4 miles, opposite direction 7 hundred feet a helicopter"*. From the Coningsby APP transcript it is clear that the pilot of the AW109 was concerned about the presence of the R22B and stated at 1017:44 – the start of the diagram - his intentions, *"roger we're ??? [inaudible word] we're just ??? [inaudible word] our conflicting track at the moment, we are going to turn right 20 degrees ?? [inaudible word]"*. At this point, the R22B is slightly right of the 12 o'clock of the AW109 at a range of 3-7nm. At 1017:51 APP advised the AW109 pilot, *"suggest a left turn onto about 320 degrees"* which is co-incident with the AW109's right turn appearing on radar. The turn back to 320° becomes evident after 1018:00. At this point the R22B is 2-8nm N of the AW109. Given the information presented to APP, with the associated slower update rate of the SSR compared to the Watchman ASR and the geometry between the ac at the time that the L turn was suggested, this was a reasonable solution to the problem. However, by offering a turn to the L the controller had not followed the Rules of the Air nor assimilated the possibility that the R22B pilot would turn R.

At 1018:23, the R turn by the R22B is evident on the radar recording with 1-5nm lateral separation. Shortly afterwards, ZONE contacted APP, who answered the landline call at 1018:28. ZONE asked *"can you turn..can you insist that yours turns right?"*; APP replied *"he's already on it isn't he, look"*. At this point (1018:37) lateral separation of about 1nm exists, with the R22B NNE of the AW109 tracking SW. At 1018:42, APP advised the AW109 pilot, *"I've just been speaking to Waddington and they've turned right against you as well and er, he's just in your 3 o'clock, half a mile, crossing right left."* Given the distance between the R22B and AW109 at this point, there is little that could have been achieved from this liaison call. Although the AW109 pilot's written report states that he did not see the R22B, he reported to APP on the RT at 1018:53, *"..we're visual with that"*.

In considering the respective update rates of the radars involved, it is clear that the faster update rate of the Waddington primary ASR will have provided ZONE with better SA. Unfortunately, due to the absence of an RT transcript for Waddington ZONE, it is impossible to establish ZONE's response to the R22B pilot when he asked for deconfliction advice. The pilot states that he sensed the urgency in

ZONE's voice "*and understood that there was a real collision risk*" although they could not remember what ZONE said and that part of the message was unreadable. However, this had prompted the R22B pilot to turn to the R, probably based on the last TI, which may have been passed before the AW109's L turn was evident. What is clear is that there was a significant difference in the data update rates of the radars available to the controllers involved and that the Coningsby controller considered it to be a factor.

The weather which both flights were subject to, and the pilots' interpretation of flight rules, enabled a situation where neither pilot was able to effect appropriate avoiding action in accordance with their obligations under the respective ATSS provided. Unfortunately, whilst done with the best of intentions based upon the radar information available to the controller at the time, in trying to provide a pragmatic resolution to the conflict, the APP controller's advice compromised the Rules of the Air, which served to decrease the separation when combined with the R22B's un-anticipated R turn.

This Airprox highlights that pilots should ask for an ATS appropriate to the prevailing met conditions and fully understand the limitations of the service being provided.

**HQ AIR (OPS)** comments that this incident highlights some good awareness of collision risks from all those involved and the issue described by HQ 1 Gp BM SM above unfortunately led to the miss distance being considerably less than it would otherwise been. The R22B pilot's use of the TI he received was entirely correct. Had the AW109 pilot continued his initial avoiding turn the issue would have been resolved. Whilst in this case the APP controller's advice reduced the miss distance, it was given with the best of intent and was followed by the AW109 pilot. He would have assumed it was based on better situational awareness than he had at the time and may have agreed with a TCAS I contact (acknowledging the azimuth accuracy limitations of TCAS). Furthermore, whilst it is possible to question the application of the Rules of the Air in this case, the controller was actually presented with a visual picture where a left turn should have generated maximum separation and avoided a turn through the other ac's extended flightpath. The Rules of the Air are simplistic and they do not define 'head-to-head' or provide such an additional stipulation. It is noted that the collision avoidance rules for Air Combat Training do provide this clarification. Even with the coincident turn by the R22B, the collision course had been broken and the subsequent TI provided by APP allowed the AW109 pilot to sight the R22B.

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

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

In Class G airspace 'see and avoid' prevails, but it can only cater for situations where the other ac is seen in time to take appropriate action. It was evident that this Airprox had resulted from an unfortunate chain of circumstances where the weather had played a significant part and was somewhat worse than that forecast. The AW109 pilot had wisely obtained a 'reduced' TS from Coningsby APP and the controller had provided a good level of TI about the approaching R22 from a range of 5nm. Importantly the controller had also liaised with Waddington ZONE whom he had identified as providing a service to the R22B pilot. With the benefit of the information from ZONE, APP then provided an update about the R22B, which he perceived to be to the right of the AW109's 12 o'clock and the pilot responded that he was going to turn 20° to the R. It was after the R turn had been initiated that APP then advised "*suggest a left turn..*" onto 320°, but this was without any prior notification to ZONE. Controller Members recognised the limitations of operating with SSR only and the slower data update had undoubtedly hampered the controller's appreciation of the situation and might have delayed detection of the R22B's R turn. Members agreed with the Command's view that with the benefit of TCAS 1 the AW109 pilot had the better SA; it was unfortunate, but understandable, that he chose to accept the controller's suggestion and turn L, probably in the belief that the controller had a better view of the geometry of the situation. The conflict would have been resolved if he had continued to the R. Members agreed that the controller had proffered this advice with the best of intentions albeit that it was not in accord with the Rules of the Air and, all things being

equal, compliance with 'the Rules' when offering avoiding action advice is plainly preferable. Nevertheless, there are situations where the opposite will apply and it was unfortunate that the controller's suggestion was based on limited data that was perhaps not giving him the true perspective.

Whilst diverting to Fenland, although only operating under a BS from ZONE, the R22B pilot benefited from a warning about the AW109 from the controller, but without an RT transcript it was not feasible to examine exactly what information was provided by ZONE. The R22B pilot reports that he had asked for 'avoiding actions instructions'; whilst a warning and advice on a suggested course of action might be proffered, at these heights, below the sector safe height and at the limits of radar coverage where only limited data might be available, controllers were unlikely to proffer an instruction.

The Board debated whether these ac could have been seen any earlier, as the pilots' recollections of the prevailing visibility varied somewhat. The R22B pilot had subsequently turned R in compliance with 'the Rules', based on the warning provided, although he had not sighted the AW109 at all. Despite his memory lapse, it was plain that the AW109 pilot had seen the small R22B, which are notoriously difficult to spot even in ideal conditions. However, the R22B was passing abeam about 0.5nm away to starboard when the AW109 pilot saw it, which the Board concluded was not unreasonable in the prevailing circumstances. Therefore, the Members agreed unanimously that the Cause of this Airprox was a conflict in Class G airspace. However, there was sufficient horizontal separation evinced by the radar recording to convince the Board that no Risk of a collision had existed.

### **PART C: ASSESSMENT OF CAUSE AND RISK**

Cause: A conflict in Class G airspace.

Degree of Risk: C.

## AIRPROX REPORT No 2010149

Date/Time: 4 Oct 2010 1640Z

Position: 5559N 00315W  
(4nm Final RW24  
Edinburgh - elev 136ft)

Airspace: Edinburgh CTZ (Class: D)

Reporting Ac      Reported Ac

Type: A319                      C182

Operator: CAT                      Civ Pte

Alt/FL: 1200ft                      1800ft  
(QNH 990mb)                      (QNH NR)

Weather: VMC NR                      VMC CLBC

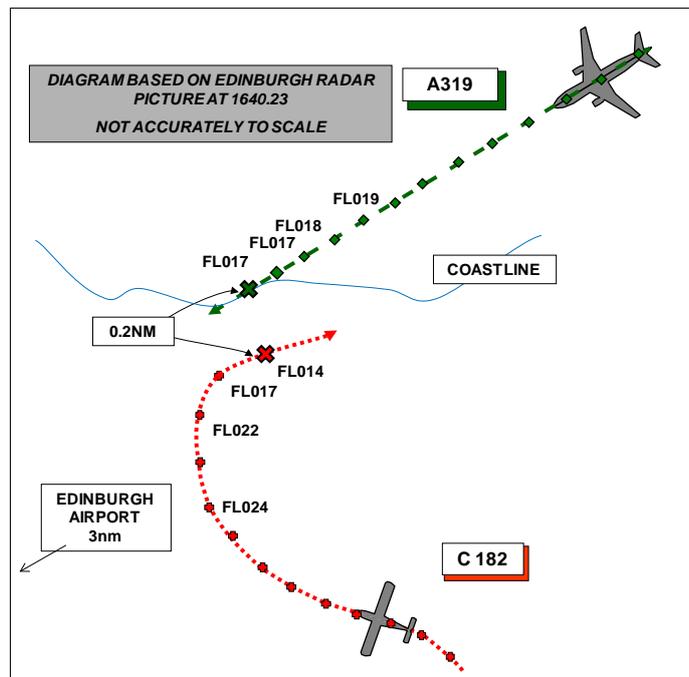
Visibility: 50km                      >20km

Reported Separation:

300ft V/900m H      NR V/1km H

Recorded Separation:

~300ft V/0.2nm H



## PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE A319 PILOT** reports flying a CAT flight into Edinburgh under IFR and in receipt of an Approach Control Service (ACS) from them. While descending on an ILS approach to RW24, passing about 1200ft, with the ac fully configured and stable on a heading of 235° at 140kt, ATC informed him that they might see traffic ahead on TCAS, to the S of the approach path. The other ac was identified on TCAS as proximate traffic, 100ft above at a range of about 3nm, and the captain identified it visually as a C182 that was apparently orbiting in a holding pattern waiting for them to pass. However, without notice the C182 suddenly performed an extremely rapid descending RH turn and started heading straight towards them. TCAS then enunciated the C182 as 'traffic', followed straight away by an RA 'monitor vertical speed'. The FO [handling pilot] disconnected the autopilot in accordance with company SOPs and followed the TCAS RA command.

The Captain continued to monitor the C182 visually as it flew past and below them on the LH side at close range. After the TCAS 'clear of conflict' they continued their approach and landing. He assessed the risk as being very high.

**THE C182 PILOT** reports that he was flying a VFR private flight inbound to Edinburgh at 100kt, in receipt of an ACS from them, squawking with Modes C and S and his ac was fitted with an ACAS [TCAS 1 equivalent]. He requested and was given clearance to enter zone VFR to Arthur's Seat [a VRP in the SE of the city] below 2000ft QNH so he continued into the zone in good VFR with a brisk SW'ly wind and as he approached Arthur's Seat at about 1800ft he was experiencing considerable turbulence. He reported at Arthur's Seat and was instructed to continue on course but he became very concerned by flying over the City at relatively low level, which he was told in training was a 'no no'. The RT was busy with other ac and he was then instructed to hold to the S of the approach paths so he then entered a LH orbit over the centre of the city. The orbit reinforced that he was over the city so he decided that his next orbit would be to the right placing him within gliding range of the shoreline on the S of the river Forth to the E of the airport.

As he entered the right turn he briefly saw an airliner about 1km away in his 11 o'clock, slightly higher than him, so he immediately took avoiding action by steepening the right turn and descending out of its flight path; a TA was activated after he turned away. There were various comments on the RT and he was subsequently cleared to land.

With hindsight he thought that his turn to the right coupled with the strong southerly wind might have caused his ac drift towards the approach path. However, he believes that his action to continue the right turn away from the airliner prevented a conflict and therefore there was no risk of collision.

**THE AIR CONTROLLER** reported that RAD informed him of a C182 inbound to land from Musselburgh [a VRP 11nm E of Edinburgh Airport] and said to “*watch him*” as the pilot seemed unsure on RT. The pilot checked in and on reaching and reporting at the Braid Hills [Arthur’s Seat] he instructed the pilot to route to the Southern airfield boundary and to remain S of RW24. This was not read back correctly so he repeated the instruction to hold S of RW24 and this was acknowledged.

He had traffic to depart and could see on the ATM that two IFR ac were inbound to the airfield. Given the prior warning from RAD and his initial exchanges with the C182 pilot, he decided to sequence the IFR inbounds to land before bringing in the C182. He could see that the C182 was approaching the airfield, so he again instructed the pilot to remain to the S of RW24; this was acknowledged and the ac commenced a LH orbit.

The A319 was by then on final for RW24, the C182 was established in the orbit and at that point he had the C182 visual and on the ATM continuing the LH orbit away from the approach. It was his intention to tell the A319 pilot about the VFR traffic holding to the S when he checked in and he also intended to land another IFR inbound before the C182 and had organised a suitable gap in the IFR traffic with RAD to facilitate this. He did not pass TI to the C182 as it was still in the LH orbit, away from the approach, and was not going to be fitted into the landing pattern until after the subsequent IFR inbound had landed.

The A319 was approaching 4nm final when the C182 inexplicably turned right towards it and the A319 pilot checked in with him. He knew the C182 was above the A319 which left no option to send the A319 around. He asked the C182 pilot if he was visual with the A319 but the A319 pilot responded that he was visual with the RW24 traffic; he instructed the A319 to continue and passed essential TI as he believed that the C182 would pass just in front but above it. When the A319 pilot reported that the C182 was behind them, he cleared him to land. The A319 pilot informed him that it had been really close and that he would be filing an Airprox.

**NATS Ltd** provided a timely and comprehensive investigation report. The investigation is largely the same as that in the ATSI report below and, for brevity, has not been included. The report also made 4 internal recommendations, which have been implemented, and identified 3 ATC lessons, namely:

1. The benefit of keeping unfamiliar GA pilots in a standard visual circuit pattern.
2. The use of an intermediate VRP to hold off until a suitable gap in the inbound IFR traffic allows the GA traffic to make an approach to land.
3. The suitability of the existing VRPs for the operation at Edinburgh Airport.

**ATSI** reports that when conducting the investigation they had access to radar recordings provided by NATS Prestwick Centre and Edinburgh Airport, together with RTF recordings and controllers’ reports. The Airprox occurred 3.5nm to NE of Edinburgh Airport on final approach to RW24 at an alt of 1100ft, outside the ATZ but within the Edinburgh CTR, which is CAS extending from the surface to 6000ft amsl.

Edinburgh TWR was operating with split positions. The ADC (AIR) was an experienced controller who had been in the operational position for 1hr 10min prior to the incident and he reported that workload as light; RW24 was the runway in use.

The A319 was on an IFR flight inbound to Edinburgh and was being vectored left hand for the ILS RW24 while the C182 was operating on a VFR flight also inbound to Edinburgh and was approaching from the E.

The AIP entry for Edinburgh Airport AD 2-EGPH-1-11 24 Sept 09, VFR flights, paragraph 8, states:

- ' a) VFR flight in the Control Zone will be given routing instructions and/or altitude restrictions in order to integrate VFR flights with other traffic.
- b) Pilots should anticipate routing via the Visual Reference Points detailed in paragraph 10 or the routes detailed in paragraph 11.
- c) Pilots of VFR flights are reminded of the requirement to remain VMC at all times and to comply with the relevant parts of the Low Flying Rules, and must advise ATC if at any time they are unable to comply with the instructions issued.'

Musselburgh and Arthur's Seat are published VRPs and lie 11NM and 7.5NM respectively to the E of Edinburgh Airport.

The METAR was: 041620Z 19015KT 9999 SCT035 16/08 Q0991=.

Edinburgh RAD gave the C182 pilot clearance to enter the CTR, VFR, and join for RW24 routing via Musselburgh and Arthur's Seat, not above 2000ft QNH; RAD suggested AIR to monitor the pilot, as he seemed unsure on the RT.

At 1633:39 the C182 pilot called TWR, *"This is (C182)c/s at Musselburgh I'm heading towards Arthur's Seat"* and the AIR replied, *"(C182)c/s Edinburgh Tower Good Afternoon report at Arthur's Seat please"*.

AIR reported that he was monitoring the A319 on the ATM, and planned either to make the C182 No1, or alternatively to hold it to the S, depending on the range that the A319 turned onto the ILS.

At 1635:20 the C182 reported at Arthur's Seat and AIR instructed the pilot, *"(C182)c/s thank you report approaching the southern airfield boundary remain south of Runway 24 please"* and the pilot replied, *"Report southern area of L- boundary erm (C182)c/s say again er erm positioning for runway two four (C182)c/s"*. AIR reported that the pilot seemed unsure and gave an incomplete readback so he decided to emphasise the clearance and instructed the C182 pilot, *"Yes remain south of Runway two four please"*; the pilot responded, *"Remain south of Runway two four (C182)c/s"*.

The controller was asked if he considered that TI to the C182 would have been appropriate; he stated that there was no cct traffic at that time to affect the C182 and the A319 was still some distance away.

As the A319 closed on final approach, AIR informed RAD that the C182 would hold to the S; at 1637:33 AIR instructed the C182 pilot, *"(C182)c/s if you hold to the south of Runway two four please"* and the pilot replied, *"Holding to the south of Runway two four (C182)c/s"*. The radar recordings show the C182 position to be 3nm E, tracking towards the airfield at an alt of 1600ft, with the A319 on left base 10nm ENE of the airfield.

AIR noted both visually and on the ATM, that the C182 entered a left hand orbit. At 1638:43, the radar recording showed the C182 in a left hand orbit 2.75nm E of the airfield, indicating an alt of 1800ft and the A319 established on final approach at 7nm; RAD had informed the A319 crew about the C182 holding to the S. At 1639:28 the radar recording showed the C182 taking up a N'y track indicating an alt of 1900ft. AIR reported that he saw this, but shortly afterwards he was reassured when he saw the C182 commence a left turn, still at 1800ft, as though it was continuing in the left-hand orbit. At the same time, 1639:37, the A319 pilot contacted AIR, *"Tower (A319)c/s with you descending on the ILS"*; immediately after this call AIR reported that he saw the C182 make a sharp right turn towards the final approach. The radar recording shows the C182 turn right at 1639:57 indicating an alt of 1700ft.

The controller reported that he immediately recognised that the ac were in conflict and at 1639:58 transmitted to the C182 pilot, “(C182)c/s just confirm you’re visual with the er traffic on two four”, but at 1640:05, the A319 pilot reported, “(A319)c/s is visual with the er traffic on two four”. The radar recording shows the A319 at 3.5nm on the final approach, indicating an alt of 1200ft, with the C182 in its 11 o’clock position at 1.2nm crossing from left to right, indicating 1700ft. AIR responded to the A319’s call, “(A319)c/s roger there is VFR traffic I believe just about to cross you left to right are you visual with that”. At 1640:14 the radar recording showed the C182 descending and passing 1600ft, in a right turn towards the A319, indicating 1100ft. At 1640:19, the A319 pilot replied, “Er Yeah it’s erm a bit close”.

At that point radar the recording shows both ac indicating an alt of 1100ft, 0.5nm apart with the C182 then continuing its right turn and descending to 700ft. AIR reported seeing the C182 make a rapid descent and right turn and pass down the left hand side of the A319 and was concerned regarding the safety of the C182.

The A319 was instructed to continue its approach and the pilot commented that the C182 had approached them very quickly. The C182 made an apology and repositioned onto final approach. Both ac landed without further incident.

The controller was asked to consider anything that might prevent a future occurrence; he indicated that once he had decided to hold the C182, TI to the pilot would have been appropriate regarding the IFR ac inbound with the reason for the delay. He also added that, if the C182 pilot was unable to comply with an instruction to remain S of RW24, he should have advised ATC.

The controller also reported that the airport was well served with VRP’s except to the S, where a suitable VRP would enhance the arrival and holding of VFR traffic.

Following the Airprox the ATSU has recommended a review of current procedures for inbound VFR flights and a review of VRPs. The ATSU reported that a suitable VRP had been identified and an appropriate application, for the approval of the VRP was being processed with DAP.

The C182 pilot did not comply with the AIR controller’s instruction to report approaching the Southern airfield boundary and to remain S of RW24. The AIR controller, aware of the requirement to monitor the C182 pilot, decided after the incomplete read back, to emphasise the requirement to remain S of RW24 on two further occasions. The C182 pilot subsequently turned towards final approach without advising the controller.

When the AIR controller decided to hold the C182 because of the A319 on final approach, the controller did not provide the C182 pilot with appropriate TI, which would have aided the pilot’s situational awareness regarding the A319. Therefore, the absence of appropriate TI is considered to be a contributory factor. The Manual of Air Traffic Services (MATS) Part1, Section 2, Chapter 1, Page 1, Paragraph 2.1, states:

‘Aerodrome Control is responsible for issuing information and instructions to aircraft under its control to achieve a safe, orderly and expeditious flow of air traffic and to assist pilots in preventing collisions between:

- a) aircraft flying in, and in the vicinity of, the ATZ;
- b) aircraft taking-off and landing.’

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

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

The Board was briefed regarding the wind conditions and a pilot Member familiar with operating from Edinburgh informed the Board that significant turbulence downwind of the Pentland Hills and over the city was not an uncommon feature and would have been uncomfortable for the C182 pilot.

Although Members generally considered the Controller's sequencing plan sound in the circumstances, some familiar with Edinburgh procedures opined that instructing the C182 to join downwind or base for RW24 would have been more expeditious and might have allowed the ac to join and land, without the need to hold, before the instrument traffic (which had priority); that, however, was a matter of judgement and they agreed that the controller was better placed than them to make the decision.

Both pilot and controller Members observed that, although the controller believed his instructions to be clear and unambiguous, the C182 pilot had not understood or implemented them as intended. The controller noted the pilot's unclear and incorrect readback and reiterated the instruction, but he did not repeat the instruction to track to the Southern Aerodrome boundary. The Board noted the potential for misunderstandings in an instruction to remain south of a runway that was not oriented east-west; several controller and pilot Members said they would interpret the instruction to remain "*south of runway 24 please*" as an instruction to remain S of the RW24 approach path, particularly when approaching the airfield from the E. Therefore the Board considered it to be an imprecise instruction that could be understood either way and Members agreed that an instruction to proceed to/hold at a precise location, direction and alt would have been clearer and less open to interpretation. It was also observed that in such circumstances in Class D airspace ATC is required by MATS Pt 1 (Sect 3.2) to provide TI to the VFR ac on the IFR ac; it is considered good practice to inform the pilot of his number in the landing sequence. The first indication to the C182 pilot that there was another aircraft approaching would have been when the A319 pilot called on TWR frequency at 1639:37, just as the C182 pilot was changing the direction of his orbit; even then, the A319 pilot called, "*Tower (A319) c/s with you descending on the ILS*", which would not have indicated the precise position of the A319 to the C182 pilot. Shortly after this TWR observed the C182 tightening its turn as the pilot most likely first saw the airliner. Members could not determine, however, why the C182 descended through the airliner's alt rather than remaining level above it.

In the event the C182 pilot did not comply strictly with the controller's instructions and Members agreed that he had not understood them fully. Further, the pilot was uncomfortable with holding over the city at an alt where he considered that he would not have been able to glide clear of the built-up area in the event of an engine failure. Up to the time the pilot decided to reverse the direction of his holding turn Members agreed that, although not strictly in accordance with his instructions, and despite the lack of an explicit instruction to maintain the left hand orbit, it was reasonable for the Controller to assume the C182 would continue its left hand orbit and that this would result in safe separation clear to the S of the approach path. Only when the C182 pilot, for understandable reasons changed to a right-hand orbit, without calling it and in the absence of any prior warning about the A319, did the separation erode. The controller noted this quickly, and attempted to ensure that the C182 was taking visual separation; however at that stage the A319 reported visual with the C182. The C182 pilot saw the A319 in his 11 o'clock and increased his rate of turn and descent ensuring that there was no risk of collision.

Although Members noted and welcomed the NATS review of VRPs, it was pointed out that the prime purpose of VRPs is for routing instructions to VFR Zone traffic and their suitability for holding VFR inbounds could not be ensured as they are frequently too far away from the airfield.

Pilot Members discussed the soundness of disconnecting the Autopilot in the event of a 'passive' TCAS RA; it emerged that different airlines have different SOPs. The CAA FOI Advisor advised that the CAA directs that operators should have a SOP, not what the SOP should be; the CAA requires operators to give the issue due consideration and write their SOPs accordingly.

Post Meeting Note: The airline concerned informed the UKAB that their TCAS procedures are in line with those recommended by the ac manufacturer. As the Board agreed at the Meeting, the pilot's actions were, as far as could be determined, totally in accord with the airline's SOPs.

**PART C: ASSESSMENT OF CAUSE AND RISK**

Cause: In the absence of TI, the C182 pilot flew close enough to cause the A319 crew concern.

Degree of Risk: C.

## AIRPROX REPORT No 2010150

Date/Time: 7 Oct 2010 0956Z

Position: 5153N 00220W (6nm W of Gloucester - elev 101ft)

Airspace: London FIR (Class: G)

Reporter: Gloucester ATC

1st Ac 2nd Ac

Type: PA34 PA28

Operator: Civ Trg Civ Pte

Alt/FL: 2000ft 2000ft  
QNH (1018mb) QNH (1018mb)

Weather: IMC In Cloud VMC CLBC

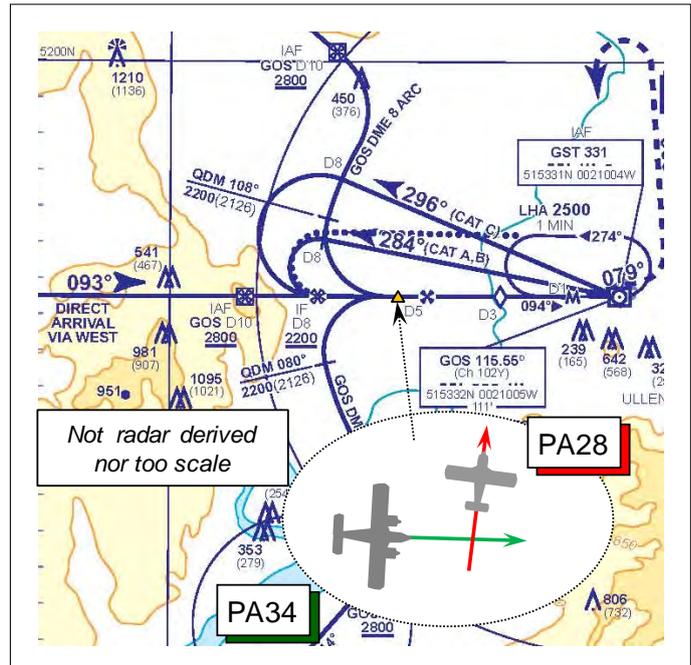
Visibility: Nil 10nm

Reported Separation:

2-500ft V/1/2-1 H Not seen

Recorded Separation:

Not recorded



## **CONTROLLER REPORTED**

### **PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

**THE GLOUCESTERSHIRE AIRPORT APPROACH CONTROLLER (APP)** reports that at 0950 the PA34 crew reported outbound for an NDB/DME approach to RW09. The PA28 pilot reported on frequency 10nm SW of the Airport, routing northbound, level at 1900ft QNH at 0954. As the PA28 approached the FAT to RW09 he passed TI to the pilots of both ac about each other. The PA34 was completing the base turn and reported IMC. However, he believed from radar returns at 0956 that the 2 ac were converging. When asked, the PA34 pilot reported he was still flying in IMC and asked for the range of the PA28. APP reported that the PA28 was believed to be 12 o'clock at 1nm, but below the PA34's level, flying VFR in VMC. A later conversation with the PA34 pilot revealed the PA28 was at a similar level.

The 0950UTC METAR: 16007KT 9999 FEW012 15/11 Q1018=

**THE PIPER PA34-200-T (PA34) PILOT**, a flying instructor, reports he was conducting a dual IFR training flight at Gloucestershire Airport under a PS from GLOSTER APP on 128.55MHz. A squawk of A7000 was selected with Mode C; neither Mode S nor TCAS are fitted.

Whilst executing an NDB approach to RW09, he was advised by APP of VFR traffic crossing their inbound track from S to N at a similar altitude. He advised ATC twice that they were still in cloud, and requested the position of the traffic - a PA28. IMC in cloud, descending through 2000ft QNH (1018mb) at 100kt, heading 093° approaching 6nm DME on a bearing of 273° from Gloucestershire Airport during final descent, they 'popped' out of cloud into a gap and saw the PA28 passing from R - L about 1/2 - 1nm away at 10 o'clock, slightly high, flying away from them after it had crossed ahead with a 'high' Risk of collision. He telephoned ATC on landing back at base to discuss how similar events could be avoided in future. He thought it advisable to give avoiding action advice to VFR traffic to keep them clear of the NDB approach lane.

His ac has a white and blue livery; the white HISL and tail-fin anti-collision beacon were on.

**THE PIPER CHEROKEE WARRIOR II (PA28) PILOT** reports he had departed from Compton Abbas under VFR for Manchester/Barton, routing via Bath, Cosford and Ashcroft at 100kt. A BS was provided by Bristol and Filton ATC and approaching a position 10nm SW of Gloucestershire Airport he requested a BS from GLOSTER APP on 128.55MHz, which was agreed. He informed GLOSTER APP of his route on a heading of 007° and was asked to report abeam Worcester - he was not asked to select a squawk. The flight proceeded uneventfully in a level cruise at 2000ft QNH (1018mb) some 300ft below cloud with an in-flight visibility of 10nm until approaching Worcester, when cloud 'limited VMC' so he elected to divert back to Gloucestershire Airport to review weather conditions before attempting to continue onward to his destination. He informed the controller of his intentions, retraced his outbound track and was told to expect a straight in approach for RW18 at Gloucestershire, which he completed to an uneventful landing.

The PA34 was not seen nor was he aware of any separation issues until he was contacted by Compton Abbas Ops. His aeroplane has a cream colour-scheme and the HISLs were on.

UKAB Note (1): This Clee Hill Radar was out of service on this day; consequently, this Airprox occurred outwith the available recorded radar coverage.

**ATSI** reports that the Airprox occurred at 0956:50 UTC, in Class G airspace, 6nm to the W of Gloucestershire Airport. The PA34 was an IFR training flight, from Filton inbound to Gloucestershire Airport for the procedural NDB/DME approach to RW09, which requires a letdown to the W of Gloucestershire Airport.

Gloucestershire ATC is equipped with a primary radar system (MARIS 900), without SSR. The radar is utilised to expedite the procedural environment, without surveillance capability and the provision of a radar service is subject to manning levels and the availability of appropriately qualified staff. The UK AIP entry for Gloucestershire at AD 2-EGBJ-1-6 (8 Apr 10), Paragraph 2.18, states:

'Radar services (Primary only) within 25 NM below FL80, availability subject to manning. Use of 'Radar' suffix denotes availability only. Provision of a specific radar service is not implied.'

The GLOSTER APP controller was qualified to operate radar, but at the time of the Airprox, the controller was providing an Approach Control Procedural service.

The PA34 crew first called Gloster APP at 0934:33, inbound IFR at FL50 and a PS was agreed. The PA34 crew was cleared to the GST NDB with no delay for the NDB/DME approach to RW09 with information 'Golf'. The PA34 crew requested one hold before commencing the NDB procedure.

At 0945:02, the PA34 crew reported outbound in the hold at FL50 and APP responded, "[PA34 C/S] *roger cleared NDB DME approach runway 0-9 QNH 1-0-1-8 report beacon outbound.*" The pilot gave a correct readback.

At 0949:32 the PA34 pilot reported beacon outbound and APP instructed the pilot, "*....report base turn complete.*" The UK AIP at AD 2-EGBJ-8-3, states for the extended holding pattern:

'Extend the outbound leg [274°] of NDB(L) GST holding pattern descending to 2200. At GOS DME 8 turn left to intercept FAT...'

At 0951:38 the limited radar data available shows the PA34, 3nm NW of Gloucestershire Airport outbound on the procedure, displaying a squawk of A7000 and indicating FL41 Mode C. The ac's radar return then fades from coverage.

At 0953:32, the PA28 pilot established communication with Gloster APP and reported, "*..[PA28 C/S] is a PA28 from..Compton Abbas..to Manchester Barton routing via Cosford..our..present position is..to the..southwest of Gloucester..and our heading is to the west of..your zone..so we are at present..1 thousand 9 hundred feet 1-0-1-7..Basic Service if possible please.*" APP agreed a BS on the QNH (1018mb) and instructed the PA28 pilot to report at Worcester, which was acknowledged

correctly. At 0954:49, APP passed TI to the PA28 pilot, “[PA28 C/S] *traffic similar..level will be a PA 34 making a..approach to runway 0-9 that traffic not yet established inbound on the final approach track.*” The PA28 pilot responded, “..[PA28 C/S] *is looking for traffic.*”

Then at 0955:12, APP passed TI to the PA34 pilot, “..*traffic..south of the extended centreline routeing northbound is a Cherokee will be similar level on your er base turn complete.*” The PA34 pilot replied, “..*roger [PA34 C/S]..is India Mike Charlie this time*”, which APP acknowledged, “*roger.*” At 0955:33 the PA34 pilot requested, “..*the range of the traffic.*” APP replied, “[PA34 C/S] *procedural traffic [sic] I believe the traffic’s northbound just passing through the extended centreline*”, which the PA34 pilot acknowledged, “*roger.*” The PA34 pilot reported base turn complete at 0956:05 and the controller believed from displayed radar returns that the two ac were converging. APP asked the PA34 pilot, “*Are you still IMC*” and at the request of the pilot, APP repeated the message. The PA34 pilot replied, “..*affirm and I just needed a range from..from Golf Sierra Tango for the traffic would appreciate it.*”

The controller, using radar information, responded, “*Roger I believe the traffic’s..1 mile in your 12 o’clock but if you’re I-M-C he’s V F R below.*” At 0956:49 the PA34 pilot reported, “[PA34 C/S]..*we’ve just passed him..less than half a mile.*” The PA34 then continued the approach without further incident.

The PA34 crew was in receipt of a PS and was passed TI regarding the PA28 operating VFR. The Manual of Air Traffic Services (MATS) Part 1, Section 1, Chapter 11, Page 10, states:

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

A Procedural Service does not require information derived from an ATS surveillance system. Therefore, due to the ability for autonomous flight in Class F/G airspace, pilots in receipt of a Procedural Service should be aware of the high likelihood of encountering conflicting traffic without warnings being provided by ATC.’

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

The controller believed, from the radar information available, that the two ac were converging and having confirmed that the PA34 was IMC, then passed a warning regarding the believed position of the PA28, again using radar derived information.

The PA28 was in receipt of a BS and had been passed TI on the PA34. The MATS Part 1, Section 1, Chapter 11, Page 4, Paragraph 3.1.1, states:

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

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

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

Only rudimentary radar equipment is available to Gloucestershire controllers, but the controller had used it to provide TI to the PA34 crew. Whilst noting that the installed primary radar is not ideal compared to more sophisticated equipments, controller Members were surprised that the controller had not made more use of it, which the ATSI report had explained was used merely to expedite the procedural environment and was without a true surveillance capability. Basically, the radar was used here to enhance the controller's situational awareness whilst providing a PS rather than being able to offer a full surveillance based DS.

Evidently the PA34 crew was operating IFR, in cloud, whilst turning inbound on the procedure until they flew into a gap and saw the PA28. APP was only required to ensure deconfliction minima against other IFR flights participating in the PS and in this case the PA28 pilot was operating VFR under a BS. However, APP had perceived the potential for a conflict with the PA28 and wisely passed TI to the PA28 pilot whose pilot was operating in VMC clear beneath cloud. Some controller Members thought that an opportunity was lost here and the controller could have done more by asking the PA28 pilot to route clear of the FAT. The CAA ATS Policy Advisor commented that this situation was covered in the MATS Pt 1, which at Part 1, Section 1, Chapter 11, Page 12, states:

'Controllers may, subject to workload, initiate agreements (as defined in Service Principles) with pilots of aircraft under a Basic Service to restrict their flight profile in order to co-ordinate them with aircraft in receipt of a Procedural Service. However, controllers shall limit the occasions on which they make such agreements to those where it is clear that a confliction exists, and only when controller workload permits.'

Notwithstanding the facility to do so, there was no compunction on the controller to restrict the PA28 pilot's flight profile as he was reasonably expecting him to fulfil his responsibilities whilst operating VFR to 'see and avoid' other ac. Members pointed out that pilots executing IFR approach procedures in Class G airspace under a PS must remain alert to the potential of encountering and avoiding in accordance with the rules of the air conflicting ac about which neither TI nor deconfliction advice has been provided because the controller did not know about the other ac. In this occurrence, with the PA28 approaching from beneath cloud on the PA34 pilot's starboard side, it was the latter who was nominally required to 'give way'. However, the Rules can only work if pilots can spot the other ac in time to take action and with the PA34 legitimately descending in cloud in accordance with the procedure this was unlikely. One controller Member wondered why the PA34 pilot continued to descend and suggested the pilot might not have understood the limitations of the PS with regard to separation from other VFR traffic. However, it was plain from the PA34 instructor's remarks that he was well aware not only of his responsibilities but what the controller might potentially do in this situation.

The IFR approach 'feather' is clearly marked on NATS/CAA VFR charts and experienced pilot Members thought it unwise to plan a route through an IFR approach at an altitude where a conflict was likely to occur with ac flying IFR procedures in cloud. That said, this was Class G airspace and the PA28 pilot was legitimately entitled to fly where he did maintaining VMC; moreover, he had sensibly called APP and obtained a BS.

The available radar recording had not shown this Airprox and without radar, with Mode C data to judge the relative altitudes, it was not feasible to examine the exact geometry of this occurrence. Nevertheless, Members recognised that when descending through 2000ft QNH the PA34 pilot saw the PA28 after it had crossed through his 12 o'clock and that there was no need to take any avoiding action.

The controller who initiated the Airprox report did not provide an estimate of the separation from his radar display. Flying VFR, some 300ft below cloud with 10nm in-flight visibility, the PA28 pilot had received TI about the PA34 and was looking out for it. However, he did not see it and would have been unable to do so whilst the twin was in cloud. The only measure available to the Members, therefore, was that reported by the PA34 pilot, who estimated that the PA28 had passed about ½ - 1nm away, 200-500ft above his ac. In the Board's view this was not close enough to the PA34 to cause concern. The PA28 was flying clear of cloud and each pilot was proceeding with due regard for one another. Members concluded, therefore, that this was a controller perceived conflict and agreed unanimously that in the circumstances reported here there was no Risk of a collision.

**PART C: ASSESSMENT OF CAUSE AND RISK**

Cause: A controller perceived conflict.

Degree of Risk: C.

## AIRPROX REPORT No 2010156

Date/Time: 12 Oct 2010 1254Z

Position: 5154N 00016E (1.75nm  
NE Stansted - elev 348ft)

Airspace: ATZ (Class: D)

Reporting Ac Reported Ac

Type: A319 C152

Operator: CAT Civ Club

Alt/FL: 1500ft↑ 1300ft  
(QNH 1021mb) (QNH 1022mb)

Weather: VMC CLBC VMC CLBC

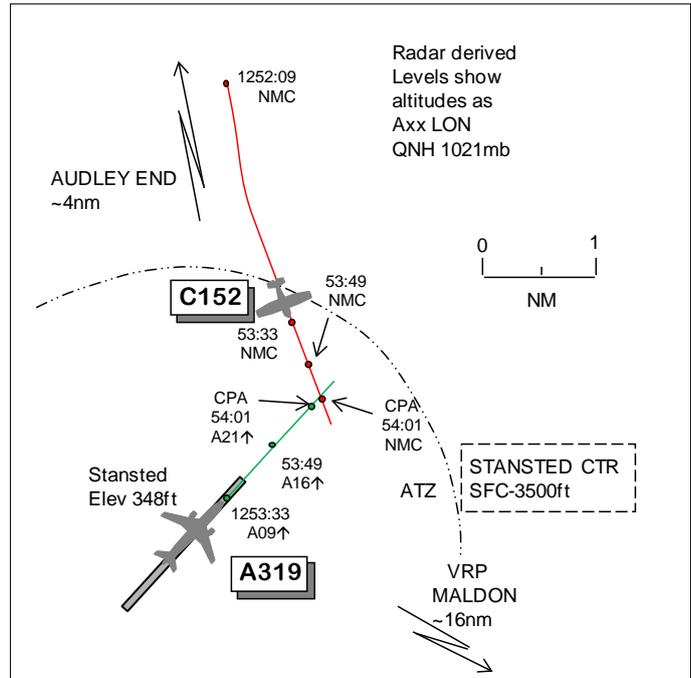
Visibility: >10km 10km

Reported Separation:

700ft V/Nil H NR

Recorded Separation:

<0.1nm H



### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE A319 PILOT** reports outbound from Stansted, IFR and in receipt of an Aerodrome Control Service from Stansted Tower on 123.8MHz, squawking 7707 with Modes S and C. Upon lining up on RW04 they were advised of light ac traffic (the subject C152) transiting the CTR not above 1500ft with a clearance to remain N of the RW and cross the RW04 threshold; however, it did not comply with this clearance. They had TCAS contact with the C152 whilst on the ground and were cleared for take-off. The C152 ac was Mode A transponder equipped so was not giving altitude readings. Heading 040° at 140kt they visually acquired the C152 shortly after take-off and it became apparent that the flight was not conforming to its clearance as it was tracking to cross the climb-out path at a distance of 1.5nm to the NE of RW22 threshold, level at 1500ft QNH. They received a TCAS TA which he was certain would have been an RA had the C152 been squawking Mode C. As they climbed through 1500ft he estimated lateral separation was 1nm. The C152 proceeded on its track below them and seconds later they passed O/H it with lateral separation of virtually zero and vertical separation of about 700-800ft. ATC's only intervention was to ask the C152 pilot if she preferred RW22 threshold for transit. Since he was able to maintain visual contact and considered collision unlikely they remained on the SID; no avoiding action was taken but safety was compromised. This separation was by luck, not design, so if the flight had been heavier or had used an intersection departure, separation would have been significantly less and it could have been very dangerous.

**THE C152 PILOT** reports en-route from Duxford to Henlow, VFR and in communication with Stansted Tower on 123.8MHz, squawking an assigned code with NMC. The visibility was 10km flying 1000ft below cloud in VMC and the ac was coloured white/purple; no lighting was mentioned. Routing from Duxford via VRP Audley End [7nm N Stansted] and then VRP Maldon [19nm SE Stansted] she had been cleared to transit N of RW04 threshold at Stansted not above 1500ft on 1022mb. She accidentally approached the wrong end of the RW (22 threshold) at 1300ft and when she realised it was too late to change course. An A319 was on the RW as she approached and it began to take-off so she remained on heading 130° at 90kt and 1300ft and the A319 climbed well above. There was little noise and she felt no wake turbulence. She stated that she was a low-hours PPL pilot and this was her first zone transit. She apologised for this mistake and has taken action to address it with the Flying Club CFI.

**THE C152 FLYING CLUB CFI** reports that following this incident the pilot immediately notified him and the event was gone through to ensure she recognised and understood her mistake. Following on from this he has made several dual instructional training flights with the pilot including a VFR zone transit O/H an international airport to ensure she is fully aware of her mistake and to reinforce the correct procedures. Also included was more RT instruction for transit clearances and emphasis on understanding and querying if necessary.

**THE STANSTED AIR CONTROLLER** reports accepting the subject C152 VFR not above altitude 1500ft from Audley End and intending to route it via the RW04 threshold and then to the SE. The flight was transferred to the AIR frequency when the ac was 2nm S of Audley End and she instructed it to route towards the 04 threshold and to remain N of the RW. In the same transmission she gave TI on the A319 which was about to take-off, but had not yet been given take-off clearance, on a CPT 2S departure. She then passed TI on the C152 to the A319 flight, which was acknowledged, and she then issued take-off clearance. She was not visual with the C152 owing to reflections of the sun but from the ATM she could see the ac routeing towards the RW22 threshold. At this point she asked the C152 pilot if she was visual with the A319 and if she would prefer to route via the RW22 threshold. AIR became visual with the C152 just as it was routeing beneath the A319 and crossing the RW22 threshold. The A319 crew reported that it was close to confliction.

**ATSI** reports that the Airprox occurred at 1254:01, 1.8nm to the NE of Stansted Airport, within the Stansted Aerodrome Traffic Zone (ATZ), Class D airspace, which has a radius 2.5nm and extends from the surface to 2000ft above aerodrome level.

VFR ac inbound or intending to transit the Stansted CTR or CTA are required to contact LTC Essex Radar 5min before the CTR/CTA boundary.

The A319 was an IFR flight departing from Stansted following a CPT 2S SID to Alicante and the C152 was a VFR flight from Henlow to Duxford. The radar recording shows the C152 displaying an SSR code without Mode C reporting.

The initial part of the CPT 2S SID is promulgated as 'Climb straight ahead. At I-SED D2 (BKY VOR R119) turn left onto BKY VOR R102 by BKY D7 to BKY VOR. Crossing BKY VOR R102 D5 at 3000 or above.'

The Stansted Air controller (Tower) reported being well rested prior to the start of shift at 1230. The controller had been on duty for 20min before the incident, reporting workload as light, in good Wx with very sunny conditions. All equipment was reported as serviceable and RW04 was the notified RW in use.

Audley End is situated 7nm N of Stansted Airport and Maldon VRP is situated 18nm to the SE of Stansted Airport and are shown on the UK AIP Stansted CTR and CTA chart, AD 2-EGSS-4-1 (22 Oct 09).

METAR EGSS 121250Z 01009KT 9999 SCT023 14/09 Q1021=

At 1247:50 the C152 flight contacted Radar, requesting a zone transit, *"(C152)c/s a Cessna one five two from Duxford to Henlow via V R P Maldon at two thousand feet over Audley End request zone transit."* Radar issued a squawk 0201 and asked the pilot to confirm the requested routeing was via VRP Maldon. The C152 pilot confirmed this routeing and Radar then identified the C152 at Audley End, passing the QNH 1021mb. The C152 pilot requested a BS and Radar responded, *"Roger Basic Service you have report when you have Stansted Airfield in sight do you er do you wish to transit via the zero four threshold confirm."* The pilot replied, *"Affirm (C152)c/s."*

At 1249:55 Radar passed the C152 flight a clearance to transit the Stansted CTR, *"(C152)c/s roger you are clear to transit the Stansted Control Zone not above altitude one thousand five hundred feet V F R initially to remain one mile to the north of Stansted Airfield report visual with Stansted."* The C152 pilot responded, *"Not above one thousand five hundred feet er at Stansted er one nautical mile"*

*and (C152)c/s.*” It was not clear if the C152 pilot fully understood the clearance to remain 1nm N of Stansted airfield and Radar did not challenge the incomplete read back.

At 1250:00 Radar advised Tower about the C152 at Audley End, squawking 0201, requesting a transit of the ATZ via the 04 threshold. Tower acknowledged the details and agreed for the transfer of control once the C152 pilot reported visual with the airport.

At 1250:42, Essex Radar advised the C152 flight, *“(C152)c/s now inside controlled airspace radar control service Q N H one zero two one.”* The pilot replied *“Affirm radar one zero two one (C152)c/s.”* Radar then passed full details of the C152 to the Tower giving c/s, not above 1500ft, VFR outbound from Duxford and routeing to the SE of Stansted. Radar did not advise the Tower controller that the C152 flight had been instructed to remain 1nm N of Stansted airfield. The C152 pilot reported visual with Stansted and was then transferred to the Tower (1251:20).

Meanwhile at 1251:00, Tower instructed the A319 flight to line up, *“(A319)c/s Stansted Tower via hotel one line up runway zero four”* and the A319 crew responded: *“Via hotel one line up and wait runway zero four (A319)c/s.”* Radar recording showed the C152 position to be 6.2nm N of the airfield.

At 1251:42, the C152 flight called Tower, *“Stansted tower good afternoon (C152)c/s is with you from Essex Radar.”* Tower replied, *“(C152)c/s Stansted Tower good afternoon you can route towards the zero four threshold remaining to the north of the runway traffic about to depart is a (A319 operator) three one nine will be routeing to the west.”* The C152 pilot replied, *“Zero four stay north of the runway er copy traffic (C152)c/s.”* No RW in use had been stated and it was not clear if the C152 pilot fully understood the TI regarding the A319 departing to the W. Immediately after this at 1252:10, the Tower controller passed TI to the A319 crew, *“(A319)c/s traffic is a Cessna one five two currently two miles to the east of climb-out it will be routeing towards the zero four threshold it’s not above altitude one thousand five hundred feet V F R.”* The A319 crew replied, *“Copy the traffic (A319)c/s.”* Later, when discussed, the Tower controller accepted that the TI passed was incorrect and should have been passed as N of the climb-out. The controller had not acquired the C152 visually but the ac was displayed on the ATM. The radar recording showed the C152 was 4nm NNE of the airfield. The Tower controller had an expectation that the C152 would remain N of the airfield routeing to the 04 threshold. At 1252:25, the A319 flight was cleared for take-off RW04 with the surface wind 030/10 knots, which was read back correctly.

At 1253:01 as the A319 was rolling, a vehicle, c/s Ranger 1, requested permission to enter the RW to check on a surface repair. At 1253:15 the Tower gave the vehicle a conditional clearance: *“Ranger one roger after the departing (A319 operator) enter runway zero four at Papa Romeo.”* This was acknowledged correctly by Ranger 1. Radar recording showed the C152 was 2.5nm NNE of the airfield. At 1253:27, as the A319 became airborne, the radar recording showed the C152 tracking 170° without Mode C, 1.4nm N of the RW extended centreline and 2nm NNE of the airfield. The controller continued to believe that the C152 would turn and route N abeam the airfield. Tower asked the C152 flight, *“(C152)c/s confirm you’re visual with the departing traffic.”* The pilot responded: *“Affirm visual (C152)c/s.”*

The Tower controller reported that it had been difficult to obtain an early visual sighting of the C152, which was being monitored on the ATM. The controller believed that the C152 would turn downwind N of the airfield and indicated that locally based helicopter pilots, familiar with procedures, often route downwind, quite close to the airfield. However, fixed-wing ac transiting the ATZ are less frequent and the controller felt this may have been an important factor that influenced the expectation, even at a late stage, that the C152 would remain N.

At 1253:33, the radar recording showed the A319 appear at the end of RW04, passing altitude 900ft, with the C152 in the A319’s 11 o’clock position at 1.6nm, crossing L to R. The Tower controller then acquired visual contact with the C152 and considered that the C152 might be able to route behind the A319. Consequently at 1253:48 the Tower controller transmitted, *“And (C152)c/s er would you prefer to cross at the two two threshold or the zero four.”* The C152 pilot replied, *“Two two (C152)c/s.”*

At 1254:01, the A319 crew reported: *"Yeah that was a bit late he er I think he'd already chosen the two two and was er almost a conflict on our departure there actually (A319)c/s."* This was acknowledged by the Tower controller and the A319 was transferred to Stansted Director.

[UKAB Note (1): The CPA occurs at 1254:01; the C152 is now in the A319's 1230 position range 0.1nm, the A319 now climbing through altitude 2100ft.]

The controller, asked to consider any action that could in future prevent such an incident, believed that instructing the C152 flight to carry out an orbit would have prevented the incident. It was only after the incident that it became apparent that the C152 pilot was mistakenly routing to the wrong threshold. In addition the controller felt that the establishment of intermediate VRPs for fixed wing ac routing N and S of the airfield, would enhance procedures, but accepted that this might be difficult to achieve, owing to the lack of geographical features.

As a result of the Airprox the ATSU have recommended that difficult VFR/IFR scenarios be introduced into the annual Training in Unusual Circumstances and Emergency (TRUCE).

The ATSU have recommended that CAA review MATS Part1 guidance with a view to ensuring that the relevant Section 3 (Approach Services), Chapter 4 (Integration of VFR/IFR flights in Class D airspace) entry is re-iterated in Sections 1 (Air Traffic Services) or Section 2 (Aerodrome Services) as required, particularly for the benefit of single-rated controllers.

As a result of the Airprox NATS Swanwick LTC, have reviewed procedures for the integration of VFR/IFR, resulting in the issue of a MATS Part 2, Supplementary Instruction SI133/10 LTC, effective from 02/12/10. This outlines the procedures that should be employed for the coordination of low-level flights into or through the London City, Stansted, Luton and Gatwick CTR/CTAs.

Both the Radar and Tower controllers had instructed the C152 pilot to remain N of the airfield and route towards RW04 threshold. The pilot was inexperienced and had accidentally routed to cross RW22 threshold. This was considered to be the primary causal factor which, in the absence of any corrective action, allowed the C152 pilot to continue into conflict with the departing A319. A number of breached safety barriers allowed the pilot's mistaken assumption and misunderstanding to continue unchecked; these are listed below.

The coordination between Radar and Tower regarding the clearance to transit was not clear. The pilot's incomplete read backs went unchallenged. ATSI 183 (05 May 10) refers to 'effective monitoring of pilot read backs and RT discipline' and paragraph 1.1 states:

'There have been several serious incidents recently to which a major contributory factor was the controller not identifying and correcting mistakes made by pilots during read backs of an ATC clearance or instruction.'

More accurate TI would have aided the situational awareness of both the C152 and A319 pilots. MATS Pt1, Appendix E, Page 2, paragraph 1.1, states:

'...the information and instructions transmitted are of vital importance in assisting in the safe and expeditious operation of aircraft. However, the use of non-standard procedures and phraseology can cause misunderstanding....'

The C152 reached a point when the possibility of a conflict would have been apparent to the Tower controller. CAA ATSI considered that at this point, the Tower controller did not provide appropriate instructions to assist the pilots in avoiding the conflict and this was considered to be a contributory factor; therefore the controller must bear partial responsibility for the Airprox occurring. MATS Part1, Section 2, Chapter 1, Page 1, Paragraph 2.1, states:

'Aerodrome Control is responsible for issuing information and instructions to aircraft under its control to achieve a safe, orderly and expeditious flow of air traffic and to assist pilots in preventing collisions between:

- a) aircraft flying in, and in the vicinity of, the ATZ;
- b) aircraft taking-off and landing."

The opportunity to issue appropriate instructions and resolve the situation was missed. Once the A319 became airborne it was too late.

CAA ATSI recommends that the CAA should consider a review of the MATS Part 1, Section 3, Chapter 4, guidance (Integration of IFR/VFR traffic in Class D airspace), with a view to re-iterating guidance within sections 1 or 2 as required, particularly for the benefit of single-rated ATCOs. MATS Part 1, Forward, Page 1, paragraph 1.1, states:

'Operational controllers are expected to have a detailed knowledge of Sections 1 and 5, together with the same degree of knowledge of those Sections appropriate to their licence....'

CAA ATSI recommends that Stansted ATSU review coordination procedures and the phraseology used for zone transit clearances, with a view to ensuring that, when required, they reflect any appropriate clearance limit imposed.

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

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

Members agreed with the ATSI viewpoint that the root cause of this Airprox was that the C152 pilot did not comply with the ATC instruction to route via the RW04 threshold and flew into conflict with the A319. The initial plan instigated by Essex and subsequently transferred to Tower had been good; however, it was poorly executed. Although Essex Radar did not tell Tower that the C152 flight had been instructed to remain 1nm N of Stansted, the subsequent instruction issued by Tower to route towards the RW04 threshold remaining N of the RW, after the pilot's initial call on frequency, superseded the previous Essex clearance. Members believed that the timeline of events showed that when the A319 flight was cleared for take-off, the situation was safe. Although the TI given to the A319 flight had been erroneous with respect to the C152's position relative to the climb-out, the crew had seen the C152 on TCAS and were aware of its intended flightpath. Tower did not advise the C152 pilot which RW was in use and the information that the A319 was departing to the west could have contributed to the pilot becoming confused; however, the C152 pilot subsequently saw the A319 on the RW before it took off, thereby removing any ambiguity. There appeared to be no reason for Tower to doubt that the C152 pilot would not comply with the clearance; the controller was anticipating the ac to turn downwind when close to the aerodrome. However, Members expressed concern because Tower was attempting to provide reduced separation in the vicinity of the aerodrome, which was dependant on the controller seeing both ac visually and continuously. Although the C152 could not be seen visually from the VCR, the ac's track was there to be 'seen' from the ATM and the information displayed should have alerted the controller to the fact that the C152 was routing to pass to the E of RW22 threshold. This was an opportunity to challenge the intentions of the C152 pilot; however, Tower only asked the C152 pilot for confirmation that she was visual with the A319 and received a reply of "affirm...". By now the C152 was entering the ATZ NNE of Stansted but still tracking SSE'ly towards the climbout. Members believed that Tower could and should have clarified the situation to ensure that the C152 pilot was going to act in accordance with her 'mental model' by asking the pilot if she was going to turn downwind and/or by issuing a positive instruction to alleviate the situation. As it was, after Tower visually acquired the C152, she believed that the C152 would be able to pass behind the A319, which was already above the C152's altitude

and climbing, and offered the C152 pilot routing via the RW22 threshold. . Members agreed that Tower could have done better but her actions had not been a causal factor in the incident.

Turning to risk, the C152 pilot had, for whatever reason, not assimilated the ATC clearances issued and, after sighting the departing A319, elected to continue on track in the belief that it was too late to take action. Fortunately the A319 crew had good SA and had located the C152 on TCAS prior to departure. Immediately after take-off the crew visually acquired the C152 and quickly realised that it was in potential conflict, reinforced by a TCAS TA. They monitored the C152's flightpath and continued on the SID after assessing that collision was unlikely. Members agreed with the A319 crew's assessment that this had had the potential for being a much more serious incident. Nevertheless, the visual sightings by both crews and actions taken by the A319 crew combined with the geometry that pertained were enough to persuade the Board that any risk of collision had been quickly and effectively removed.

### **PART C: ASSESSMENT OF CAUSE AND RISK**

Cause: The C152 pilot did not comply with the ATC instruction to route via the RW04 threshold and flew into conflict with the A319.

Degree of Risk: C.

## AIRPROX REPORT No 2010163

Date/Time: 13 Oct 2010 1036Z

Position: 5750N 00313W (3nm  
Final Approach RW23 at  
Lossiemouth - elev 41ft)

Airspace: MATZ (Class: G)

Reporting Ac Reported Ac

Type: Tornado GR4 SAAB Gripen x2

Operator: HQ Air (Ops) Foreign Mil

Alt/FL: 900ft 800ft  
QFE (1022mb) QFE (1022mb)

Weather: IMC IBCL VMC In rain

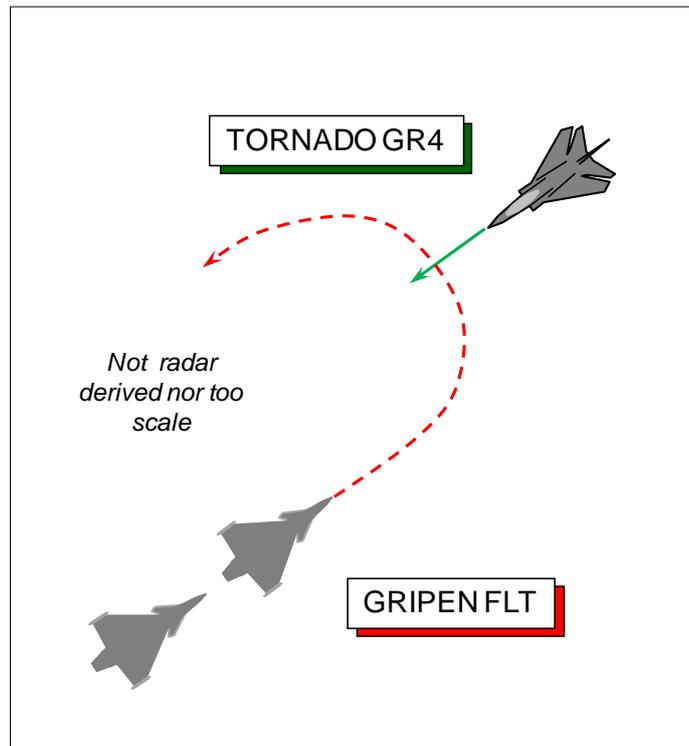
Visibility: 8km >10km

Reported Separation:

Nil V/200m H Not seen

Recorded Separation:

Not recorded



### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE TORNADO GR4 PILOT** reports flying an SRA at Lossiemouth having declared Fuel Priority (FP) and, he thought, under a 'radar control' service from Lossiemouth TALKDOWN under IFR. Although the recovery state was Radar to Visual, the weather conditions at base were poor with a cloud base of about 800ft.

Heading 224° at 200kt, they were descending wings level on the procedure through 900ft QFE (1000mb), in IMC, when they entered a break in the clouds about 4nm from the threshold of RW23. Simultaneously, both crew members saw a grey Gripen ac pass from L to R across their nose about 200m ahead at the same height in a banked turn away from them. As they descended below the cloud base the Gripen was seen on their starboard side maintaining height, in formation with a second Gripen that had not previously been seen by either crew member. Minimum horizontal separation was 200m, but as their Tornado descended the Gripen remained level, thereby resolving the confliction before avoiding action could be taken. They reported the close proximity of the Gripen ac to TALKDOWN and continued with the SRA, landing without further incident. At no stage were the positions of the Gripen ac passed to them by ATC. Their Ground Mapping Radar was being used to locate the RW threshold, so the Gripen was not detected before being sighted. He assessed the Risk as 'high'.

Their ac has a grey colour-scheme; the HISLs, anti collision beacons and landing lights were all on. The assigned squawk was selected with Mode C; TCAS is not fitted.

**THE SAAB JAS39 GRIPEN PILOT**, the wingman of the flight of two Gripen ac, reports they were on recovery to Lossiemouth after a local sortie and received the Weather State information as Colour Code WHITE [Vis >5km; Cloud SCT > 1500ft QFE] and that the recovery state was Radar to Visual.

When descending inbound they were visual with the water beneath at 1000ft QFE and were 'cleared' lower to get visual with the aerodrome. As they reached a height of about 800ft they called visual with the aerodrome and joined the cct at 200kt behind a 4-ship Gripen formation ahead. Whilst turning onto Final for RW23, under a BS, TOWER instructed the flight to 'go-around and climb to 1000ft'. The flight leader acknowledged the go-around, climbed and joined the new cct at 1000ft,

where they were flying in and out of cloud that made ac separation within the flight difficult so they joined a new cct at 800ft QFE in VMC for landing. They did not have enough fuel for an ILS/TALKDOWN after their go-around and therefore stayed visual with the aerodrome.

From their point of view, ATC should have known that a go-around and climb to cct height of 1000ft meant flying in IMC. It also appears that there was not enough spacing between the traffic inbound with TALKDOWN and the Gripen flight, as there were a total of 6 ac in the circuit. They did not see the Tornado GR4 flown by the reporting pilot.

His ac has a grey colour-scheme but the HISL was on. The assigned squawk was selected with Mode C 'on'.

**THE LOSSIEMOUTH SRA CONTROLLER (TALKDOWN)** was called to the ACR to carry out a SRA for the GR4 when traffic levels were quite high with a flurry of recoveries, mainly Radar to Visual from the N. Although the GR4 was FP and the crew's intentions were to land, the 2 formations of Gripens were vectored in to join the visual cct ahead of the GR4 as they were faster. The subject Gripen flight seemed to struggle to become visual with the aerodrome and he remembered looking at the Met cloud-base, which was given as SCT at 1200ft. He carried out the SRA for the GR4 and at the 4nm point was given a 'call by 2'. There were 2 primary contacts (SSR was selected off for the SRA) that looked like visual cct traffic, but as he was not given any TI on them he presumed they would not be a factor - either going around above the GR4, or extending behind it. At 3½nm from touchdown he realised the primary contacts were now crossing L - R against his GR4 SRA traffic. He called the contacts to the GR4 crew as, 'traffic was crossing now on the right possible visual circuit traffic', or words to that effect. The GR4 crew called visual so he continued the approach, obtaining and passing the final clearance – 'cleared to land, 4 on, 2 in' - at 2½nm from touchdown.

**THE LOSSIEMOUTH AERODROME CONTROLLER (ADC)** reports that a formation of 4 Gripens joined the visual cct at 1500ft QFE 1nm from the aerodrome due to cloud. Upon asking for descent to cct height they were instructed to do so, they then asked for 500ft. After it was established that this was necessary due to low cloud, further descent was approved on the Break. The subject flight of two Gripens then called to join and he gained visual contact as they were commencing their Break. At this time an 8 mile call was received from TALKDOWN for the GR4 to land - FP. The formation of four called Final gear-down individually and were given clearance to land with 'one on' and subsequently 'in turn'. The subject Gripen flight was instructed to go-around at cct height because radar traffic – the GR4 - was approaching 6miles, and given the position of the radar traffic. He thought, it was the flight leader [but actually the wingman] that then made a comment about climbing to 1500ft and it was eventually ascertained that the ac would be climbing to 1500ft and the wingman remaining at 1000ft as they had lost visual contact with each other [this is not reflected on the RT transcript]. The weather had deteriorated significantly at this stage, taking all of them by surprise. A 4 mile call was received for the GR4 to land and a 'call by 2' was issued. The formation of four landed and the GR4 was cleared to land '4 on - 2 in'. When visual contact was regained with the Gripen flight [after the Airprox] the GR4 was just overflying the RW23 ring road on short Final and the 2 Gripens appeared overhead. The Gripen flight then broke Downwind and upon receiving the Final gear down call was cleared to Land with one on and land in turn respectively. Once all ac were on the ground the SUPERVISOR (SUP) was informed that the visual cct had become unfit, the Duty Aircrew Officer (DAO) agreed and the visual cct was closed.

The Weather was reported to be 200/08kt; 15km in light drizzle; OVC cloud at 2200ft.

**THE LOSSIEMOUTH ATC SUPERVISOR (SUP)** reports that the Lossiemouth Weather State Colour Code was WHITE and on consultation with the DAO the recovery state was promulgated as Radar to Visual. There were multiple recoveries into both Lossiemouth & Kinloss with all control positions working extremely hard. The Gripen ac were on frequency, N of Lossiemouth, requesting a Radar to Visual approach. As with all foreign aircrew the APP controller was at maximum capacity ascertaining their exact requirements as well as vectoring the GR4 for an SRA - FP - to land. APP managed to vector the 6 Gripen ac so that they were visual with the aerodrome and switched them to

TOWER. He then received a call from the ADC to say that the Gripen's had lost visual contact with the aerodrome and were carrying out a low-level cct to land. He told the ADC to inform the DAO that he was changing the recovery state to Mandatory GCA and that the visual cct was closed. The Gripen formation landed, but the flight of 2 was sent around to allow the FP GR4 to land.

**HQ 1GP BM SM** reports with RT transcripts that this Airprox occurred between a Tornado GR4 recovering to Lossiemouth via an SRA that had declared a fuel priority to land and a flight of 2 Gripen jets. The declared recovery state at the time was Radar to Visual. The Airprox occurred beneath recorded radar coverage.

At 1031:25, the ADC and APP were conversing on landline about a formation of 4 Gripen ac that was positioning for a Visual join ahead of the subject Gripen flight; APP advised, *"I'm going to keep these..Gripen's coming"*, the ADC replying that the runway lights were required because, *"it's getting a bit scooshy out there."* This is believed to mean that the visibility [and/or cloudbase] was considered to be dropping.

At 1032:28 the first Gripen formation of four ac joined the visual cct at 1000ft. At 1032:53 they were still the only ac in the visual cct and reported they were unable to maintain 1000ft due to cloud, which they assessed as having a base of 600ft. On the tape transcript there is a live mic input when the ADC states, *"not fit they're looking for 500ft"*; however, it is not possible to determine who the ADC is speaking to [but possibly the DAO].

At 1033:18, the subject Gripen flight requested a join from the ADC, which was granted, with correct cct information being passed on the four Gripen ac downwind in the cct. At 1033:36, the subject Gripen flight reported on the Break for RW23 [LHC]. It is clear from the ADC's live mic retort *"where the...oh there they are"* that the Gripen flight could not initially be seen from the Control Tower and another indication of the degradation of conditions in the visual cct. At 1034:07, the first formation of four Gripen ac was given clearance to land 'in turn'.

At 1034:34, TALKDOWN made an on channel intercom broadcast to alert TOWER to the GR4 passing 8nm from touchdown that was to land *"fuel priority"*. The ADC said to an unknown individual on a live mic at 1034:50, *"not just now...give it 10 minutes Tornado is not gonna get in fuel priority with 6 aircraft landing."* Given that the GR4 crew had declared fuel priority, the ADC correctly accorded them priority ahead of the subject Gripen flight, instructing the Gripen flight leader at 1035:15 to, *"..go around circuit height 1 thousand feet"* that was followed by the same instruction to his wingman both of which were read back. At 1035:23, a transmission was made by the ADC to the Gripen flight leader and wingman that radar traffic, the GR4, was now passing 6nm. At 1035:29, another comment from the ADC on the open mic was captured that highlights the pressure that the controller was under, saying, *"right how many we got on the ground? Is that the third or fourth aircraft?"* This is believed to be the ADC trying to ascertain how many of the first Gripen formation had now touched down. The intercom broadcast from TALKDOWN to the ADC *"4 miles 1 thousand feet [C/S] land fuel priority"* was made at 1035:55, seeking the GR4's clearance to land. However, due to the uncertainty of the traffic situation the ADC responded, *"..call by two"*, delaying the decision on the final clearance.

At 1036:05, the transcript reveals the ADC asked, *"where's [Gripen flight lead C/S]"*. At this point the weather conditions meant that the ADC was unable to see where the cct traffic was. However, he should have still been able to utilise the Highbrite ATM to facilitate the integration of the Gripen flight and the inbound IFR GR4. Indeed, the fact that the ADC updated the position of the GR4 at 6nm to the Gripen flight indicates that he was utilising the ATM, but this Command has been unable to establish whether the ADC was able to see the Gripen flight on the Highbrite display. At this point (1036:20) the Gripen flight wingman reported *"I-M-C climbing to 1 thousand 5 hundred feet"*. However, the ADC responded to the Gripen flight giving both ac permission to descend, *"roger you may descend to 5 hundred feet for cloud"*, as the first Gripen formation had previously done so, to maintain VMC. This transmission was not acknowledged by either pilot, nor was the formation's intentions questioned by the ADC. Whilst it is impossible to determine whether the Gripen wingman

climbed to 1500ft QFE, what is clear is that both ac of the flight turned across the approach lane and at least one of them was at or about 1000ft QFE.

[UKAB Note (2): The TALKDOWN transcript reflects that at 1036:13 the GR4 is *“on centreline 3 miles 7 hundred and 50 feet approaching minimum descent point”*. (The RW23 SRA Missed Approach Point is at 1nm and the MDH 500ft.) The next transmission was at 1036:23, *“on centreline contact...on your right hand side ??? [inaudible word] traffic..2 and a half miles”*.]

Based upon the reported events, the CPA occurred when the GR4 was approaching 3nm from touchdown, with the GR4 crew gaining visual contact with both Gripens at about 2½nm from touchdown as they broke through the cloud-base.

It was a reasonable assumption for the TALKDOWN controller to report that the two primary radar contacts that had been seen were visual cct traffic. However, when he perceived that the Gripen flight posed a threat to the GR4, the TI passed to the crew was not in a useable format for them to assimilate. This would explain the GR4 pilot's statement that 'at no stage were the positions of the Gripen aircraft passed'. Furthermore, the console layout in the ACR meant that the SRA controller was on the far RHD side of the room, but unable to improve his SA by viewing the PAR or DIR's display and would have been reliant on the Supervisor [or ADC] for information on the Gripen flight.

At 1036:29, a 2½nm call was made by TALKDOWN and a clearance followed from the ADC immediately, *“clear to land four on, two in”*. The associated broadcast on the TOWER frequency was made by the ADC to visual cct traffic at 1036:36, *“Tornado 4 miles [sic] 2 miles land”* that was followed by an inaudible transmission. It is possible that the ADC was uncomfortable with the situation as at 1036:43, he immediately instructed the Gripen flight leader to *“report finals, gear down radar traffic now at 2 miles to land”* with a further warning about the GR4. At 1036:48, the Gripen flight leader stated that they were *“over threshold, 1 thousand feet VMC, now will..go around for another approach.”* However, based upon the GR4 pilot's report, it appears that this was after the CPA with the Gripen flight almost certainly when they were Deadside and tallies with the point where the GR4 gained visual contact.

It appears that the ADC was unable to assimilate the impact of the deteriorating weather on the Gripen flight's ability to execute the Go-around safely, believing that the instruction to Go-around 'made' the situation safe. Furthermore, this last transmission by the Gripen pilot indicates that they had again crossed through the approach lane for the airfield without communicating their intention to do so.

This Airprox is the epitome of a Swiss cheese barrier erosion. Supervision of the situation by both the SUP and the DAO was not robust enough to take into account the decreasing weather conditions. This meant that ac in the visual cct were unable to gain visual contact with the GR4 on instrument approach. Furthermore, the unsuitable weather conditions made it impossible for the ADC to manage the cct by visual scan alone and provide relevant information in order for the cct traffic to take appropriate action to sequence themselves against IFR traffic. That said, whilst there is evidence that information was derived from the Highbrite ATM display, its full potential was not exploited to aid integration calling into question whether the Gripens 'painted' on the Highbrite. Finally, the Gripen pilots although aware of the inbound radar traffic, appear to have turned across the approach lane without first ensuring that they were visual with the radar traffic, thereby removing the final barrier to the occurrence.

When the ADC stated *“it's not fit”* after the four-ship Gripen formation leader reported needing to get below the cloud at 600ft, the ADC had an opportunity to send the subject Gripen flight back to radar. However, it is not clear whether the ADC considered this or whether it had been discounted. The SUP was in a position to realise the potential for difficulties and insist that the Gripen flight was instructed to depart the cct and return to APP. The SUP was aware that the GR4 was fuel priority and that this would shape the way that the ADC planned the integration of the visual cct with instrument traffic. Nevertheless, it is clear from the reports and RT tape transcripts that the ATC

team were under considerable pressure to attempt to recover all of the ac as expeditiously as possible, in rapidly deteriorating weather conditions.

HQ 1Gp BM SM Spt recommends that the Unit review:

- a. The safety implications of vis cct conditions and procedures for dispersing the visual cct if weather conditions are not deemed suitable.
- b. The briefing of visiting aircrew.

UKAB Note (4): The UK MIL AIP at AD2 EGQS AD2.21 Noise Abatement procedures notes:

1. a. RW23. Visual circuit is flown outside Lossiemouth town. If it is necessary for the aircraft to go around this should be done from the end of the downwind leg provided that visual contact has been established with any aircraft carrying out instrument approaches.

UKAB Note (5): Met office archive data gives the Lossiemouth METARS as:

0950Z 25008KT 9999 FEW015 OVC022 10/08 Q1022 WHT NOSIG  
1050Z 30010KT 9999-DZ SCT010 OVC022 10/09 Q1023 GRN TEMPO FEW010 BKN020 WHT

Another source gives the following special:

1016Z 28008KT 9999-DZ SCT012 OVC022 10/08 Q1023 GRN TEMPO FEW012 BKN022 WHT=

**HQ AIR (OPS)** concurs with HQ 1 Gp BM SM in that supervision of the situation by both the SUP and the DAO was not robust enough to take into account the decreasing weather conditions. It is disappointing that the information regarding the actual cloud base (<1000ft) was available to the ADC at 1032 that he then, at 1035, directed a formation to go around at 1000ft thereby guaranteeing that they would be unable to visually separate from the fuel priority radar traffic. Additionally, if recovering flights are caught out by unexpected deteriorations in weather and do not have the endurance to reposition for an instrument approach they should be directed to divert.

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

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

HQ 1Gp BM SM had likened the circumstances surrounding this Airprox to one of a 'Swiss cheese barrier erosion', where all the holes had aligned thereby allowing the Airprox to develop unchecked. Although the outcome was not engineered, fortuitously the end result was not catastrophic. There were many facets to this Airprox, which the Board debated extensively. However, the absence of a radar recording illustrating the geometry and the timings of what actually occurred had hampered full understanding of all that transpired. The key factors considered by the Board were as follows:

- ATC were working hard to facilitate Radar-Visual recoveries in marginal weather. The ADC was extremely busy after the Gripen flight arrived in the visual cct area, with 6 ac either in or joining the cct, all having difficulty maintaining VMC and being forced below normal cct height, with the added complication of the GR4's IFR arrival.
- This rapid and unexpected deterioration in the weather, not apparently forecast, could have been acted upon earlier by any one of the supervisory team in the tower to forestall the outcome. About 2 min before the flight called to join, the ADC and APP had realised the visibility was dropping. This was an opportunity to discuss the situation with the SUP and DAO, either of whom could have initiated IFR recoveries. It seems likely that such a change would have resulted in some of the ac having to divert, and it is possible that this consequence was a factor in the controllers' and supervisors' minds. In the event, it appeared that the ADC did not appreciate just how poor the conditions had become until the

4-ship of Gripens requested to fly at 500ft in the cct to remain visual. Having realised that the cct was “unfit”, there was an opportunity to initiate IFR recoveries, and to divert the subject Gripen flight at that point if they had declared that they had insufficient fuel for a PAR recovery at Lossiemouth. However, with just 30 secs between the ADC’s agreement to 500ft ccts for the 4-ship and the pair’s break into the cct, it was a fleeting opportunity.

- The RN Member voiced concern at the absence of any dedicated ATC supervisor in the VCR. Recognising that the radar supervisor’s rightful place was overseeing the watch within the ACR, at RN Air Stations a Duty Air Traffic Control Officer is established to supervise the control of aerodrome traffic, monitor the weather and manage the operation of the aerodrome in close consultation with the officer-in-charge of flying and the ATC Supervisor.
- When the Gripen flight joined, the ADC was having difficulty keeping track of them visually. Subsequently, when TALKDOWN advised of the FP GR4 at 8nm to Land, the ADC elected to initiate the go-around, crucially instructing the Gripen flight to fly at the nominal cct height of 1000ft thereby instructing them to fly in cloud. Given the difficulties experienced in the cct by the 4-ship formation earlier, the ADC should have realised that this was unwise; this was the precursor to the flight split and the wingman climbing to 1500ft.
- The HQ Air Ops fast-jet Member noted that other crews might have refused, or at least queried this instruction, and elected to cct at a lower height.
- From the pilots’ reports and METARs the in-flight visibility beneath cloud remained entirely satisfactory; it would have been preferable to have held the Gripen flight ‘VMC below’ on a low-level cct, making greater use of the Highbrite ATM and passing copious TI, until they had either sighted the GR4 after it broke cloud or it had been seen to pass abeam, sending them back to radar on a long downwind to do so if necessary.
- ADC advised the Gripen flight that the GR4 was at 6nm, before they crossed through the approach ahead of it, but it seems the Gripen flight pilots either did not assimilate the information, were concentrating on maintaining their separation from each other while IMC, or perceived that the height specified of 1000ft would facilitate separation against the GR4 when they crossed the RW centreline into the deadside.
- As it was, the No2 Gripen pilot did well to find his leader once more after his ascent to 1500ft, but this seemed to happen as the GR4 broke through cloud just as the Airprox occurred.
- The GR4 pilot had little impact on the outcome; when advised of the traffic by TALKDOWN he could do no more than search for it visually and remain predictable by maintaining his course and ROD.
- TALKDOWN, who was providing a TS, was denied accurate height information from the Gripens’ Mode C by operating with SSR suppressed, hence he was unable to include that crucial element within his TI, which was not transmitted clearly. It was unfortunate that the SRA console was displaced away from the PAR which would also have provided accurate height information on the Gripen flight.
- None of this was visible to the ADC from the Control Tower except on the ATM. The GR4 was not seen by the Gripen pilots before one of them crossed ahead belly up to the GR4, 200m ahead at the closest point the GR4 pilot reports. Considering all of the factors, the Board concluded unanimously that earlier intervention could have forestalled the Airprox and that the root Cause was that visual circuits were permitted in unsuitable weather conditions.
- What separation that existed was purely fortuitous; the Members agreed unanimously that an actual Risk of collision had existed.

### **PART C: ASSESSMENT OF CAUSE AND RISK**

Cause: Visual circuits were permitted in unsuitable weather conditions.

Degree of Risk: A.

## AIRPROX REPORT No 2010167

Date/Time: 3 Nov 2010 1716Z NIGHT

Position: 5117N 00034W (4nm S Fairoaks)

Airspace: LFIR (Class: G)

Reporting Ac Reporting Ac

Type: EC155B PA31

Operator: Civ Pte Civ Pte

Alt/FL: 1100ft 1200ft  
(QNH 1013mb) (QNH)

Weather: VMC CLBC VMC CLBC

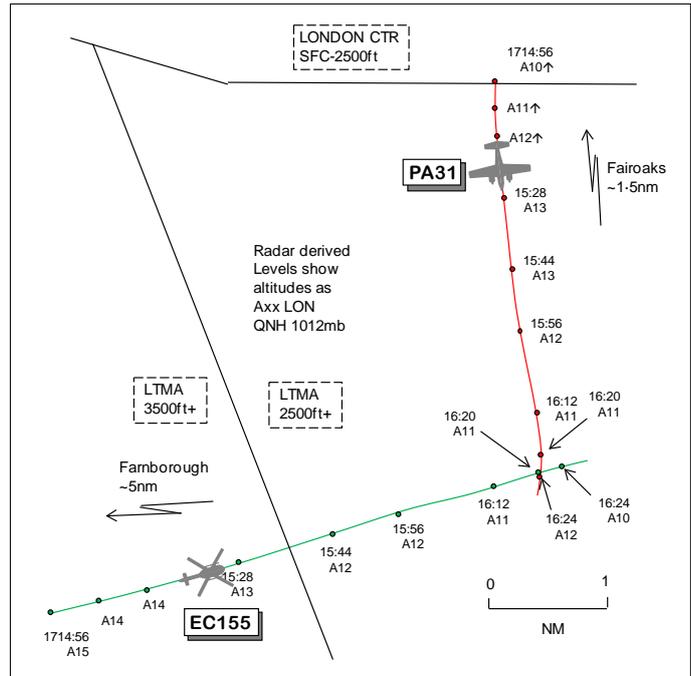
Visibility: >20nm 10km

Reported Separation:

<100ft V/close H 100ft V/200ft H

Recorded Separation:

<100ft V/<0.1nm H



**BOTH PILOTS FILED**

### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE EC155B PILOT** reports departing Farnborough en-route to London Heliport, IFR and in receipt of a BS from Farnborough Approach on 134.35MHz, squawking 0421 with Modes S and C; TCAS 1 was fitted. The visibility was >20nm flying 300ft below cloud in VMC and the ac was coloured silver with nav and anti-collision lights switched on. After departure the ac was levelled at 1300ft QNH 1013mb having climbed to and then descended from 2000ft to remain below cloud. The crew had pre-emptively downgraded to a BS from a TS knowing that they would be below the 1500ft limit for ATC to provide a TS in that area. Heading 070° at 155kt about 8-9nm on the 250R OCK Farnborough advised of traffic “your N” at “similar altitude”. ACAS showed a contact in their 11 o'clock range, 5nm moving erratically but ‘trending’ to pass behind their ac, indicating between the same altitude and 200ft above. Both crew members were aware that ACAS is not reliable in the horizontal plane, iaw the equipment manufacturers warnings for this unit, and treated this information cautiously; a TA was received at range 4nm. A transmission was heard from another flight joining the frequency on departure from Fairoaks with a similar c/s to theirs, its pilot reporting he was “visual with traffic on my R”. They did not have this traffic in sight and elected to maintain their course as they did not know its exact position and did not want to risk possibly increasing a conflict by turning when its position was not known. The co-pilot, PF, began a descent to 1000ft as he perceived that the other ac was climbing above them; both pilots were actively looking for the other ac. It was then spotted by them both simultaneously in their 1030 position very slightly above, <100ft, in what appeared to be a fairly steep RH turn before it passed down their LHS and then behind them. No manoeuvring was felt necessary as the other ac was already clearing down their LHS side when they saw it. Neither pilot felt they could accurately gauge the distance of its lights in the dark however, the co-pilot saw the outline of the other ac as well as its lights and both pilots were left with the impression that the ac had been ‘close’. Shortly afterwards the other ac’s pilot made a transmission reporting he had “...just missed that one”. On leaving the frequency 2min later the EC155B pilot informed Farnborough of his intention to file an Airprox; the pilot of the other ac acknowledged his call and asked the controller to “keep the tapes”. He made a final transmission that “...it’s not a blame thing, it’s a safety thing” which both Farnborough and the other pilot acknowledged. He assessed the risk as high.

**THE PA31 PILOT** reports outbound from Fairoaks to Alderney and establishing contact with Farnborough on 125.25MHz after leaving the Fairoaks frequency, squawking 0457 with Modes S and C. The visibility was 10km flying 200ft below cloud in VMC and the ac was coloured blue with 3 point HISLs and nav lights all switched on. About 3nm S of Fairoaks heading 190° at 150kt and level at 1200ft QNH he had been unable to call Farnborough owing to other traffic including the pilot of the other reporting ac being told about the position of his ac. He first saw the traffic in his 2 o'clock range 0.5nm at the same level; he then assessed that he was above it but he found it difficult to acquire and track the ac to assess its heading/direction. He took avoiding action by turning R and climbing, the helicopter passing 100ft below and 200ft clear on his LHS. The helicopter appeared to maintain a steady heading and its pilot was in contact with him during and after the conflict. He assessed the risk as low.

**THE FARNBOROUGH APPROACH CONTROLLER** reports working as an OJTI with a trainee on Approach and LARS W bandboxed. The EC155 departed Farnborough for London Heliport and was given a TS. The pilot requested own navigation to OCK, which was approved, before the pilot requested a downgrade to a BS as the flight descended below 1500ft, which was then provided. The PA31 became airborne from Fairoaks and at this time the EC155 was about 3nm to its SW tracking E'bound whilst the PA31 was tracking S. The trainee passed generic TI to the EC155 flight under the BS. As the PA31 pilot made his initial call, he instructed his trainee to call the traffic; however, the PA31 pilot called visual with the EC155 in his 1 o'clock before he was able to pass generic TI to him on the helicopter. As he was visual, the mentor told his trainee to issue the flight with a squawk, pressure and service. The PA31 pilot requested a TS but as it was maintaining 1100ft a BS was given. A couple of minutes later the EC155 pilot stated that he would be putting in some paperwork and also stated that it was not to apportion blame and that it was a 'safety thing'.

**ATSI** reports that the Airprox occurred at 1716:20, in Class G airspace, 4-6nm to the SW of OCK VOR, between a Eurocopter EC155B (EC155) and a Piper PA31 Navajo (PA31).

The EC155 was on a IFR flight from Farnborough to London Heliport and in receipt of a BS from Farnborough Approach Radar.

The PA31 was an IFR flight from Fairoaks to Alderney and was in the process of establishing contact with Farnborough LARS(W) as the Airprox occurred. The PA31 was displaying a squawk 0457, which is allocated to Fairoaks departures leaving the cct and intending to call Farnborough LARS.

The Farnborough controller was providing a combined Approach and LARS(W) service on frequencies 134.350MHz and 125.250MHz, with controller training in progress.

METAR EGLF 031650Z 22014KT 9999 BKN016 15/13 Q1013=

The EC155 departed from Farnborough with an allocated squawk 0421. At 1711:17, the pilot contacted Radar and reported, *"...(EC155)c/s following noise er then heading two two zero climbing altitude two thousand four hundred feet."* Radar instructed the EC155 pilot to squawk Ident and the EC155 pilot reported passing an altitude of 1100ft on QNH 1013. Radar then instructed the EC155 flight to resume own navigation OCK and asked the pilot to confirm the transponder was switched on. The pilot apologised and the transponder was switched on.

At 1713:20 Radar approved a request from the EC155 pilot for a descent to 1500ft and the pilot requested a TS outside CAS. At 1713:37, Radar advised, *"(EC155)c/s identified Traffic Service and it's descent to altitude one thousand five hundred feet taking your own terrain clearance."* The pilot responded, *"My terrain descend altitude one thousand five hundred feet (EC155)c/s"*.

Just over 1min later at 1714:56 the EC155 pilot advised, *"...we're happy to downgrade to a Basic Service and er operate not above one thousand five hundred feet."* Radar responded, *"(EC155)c/s roger radar service terminated Basic Service."*

At 1715:42 the PA31 flight made initial contact with Radar, *"Farnborough (PA31)c/s."* Radar responded by asking the PA31 pilot to standby. Radar then passed a warning to the EC155 flight regarding traffic in potential conflict, *"...(EC155)c/s there's er traffic north of you two miles southbound similar level."* The pilot replied, *"Looking (EC155)c/s."*

At 1715:56 Radar instructed the PA31 flight, *"...pass your full callsign and message."* The PA31 pilot replied, *"(PA31)c/s out of er Fairoaks a P A thirtyone Navajo maintaining not above one thousand one hundred this time and er requesting traffic squawking zero four five seven contact one aircraft my right one o'clock level."* Radar responded, *"(PA31)c/s roger squawk zero four three zero Q N H one zero one three."* The controller's written report indicated, that because the PA31 had reported visual with the EC155, no TI was considered necessary.

At 1716:20, the radar recording shows the 2 ac, 0.1nm apart, and converging. The EC155 was tracking ENE and the PA31 was tracking SSE. Both ac were indicating an altitude of 1100ft. The PA31 was in the EC155's 10 o'clock position, at a range of 0.1nm and crossing from L to R.

At this point the PA31 pilot replied *"Yeah just missed that one er er say again please for (PA31)c/s."* Radar repeated the message and the PA31 pilot acknowledged correctly, *"one zero one three er thanks er zero four three zero squawk for (PA31)c/s."*

[UKAB Note (1): The next radar sweep at 1716:24 shows the ac having passed. The PA31 is now tracking 190° indicating altitude 1200ft, having turned R 20° and climbed 100ft, in the EC155's 6 o'clock range 0.2nm, the EC155 now indicating altitude 1000ft, having descended 100ft. The CPA is estimated to be <100ft and <0.1nm.]

At 1717:10, Radar advised, *"(PA31)c/s it's a Basic Service only at your current level and say again your full callsign and destination."* The PA31 pilot confirmed the full c/s and destination.

At 1717:24, the EC155 pilot reported approaching OCK and advised of an intention to file a report.

The EC155 helicopter was in receipt of a BS. The PA31 flight called Farnborough Radar immediately prior to the Airprox and was instructed to standby whilst Radar passed a warning to the EC155 regarding an ac (the PA31) that was in close proximity. The Manual of Air Traffic Services Part 1, Section 1, Chapter 11, Page 4, Paragraph 3.1.1, states:

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

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

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

As this incident occurred in Class G airspace, there was equal responsibility on both crews to maintain their own separation from other ac through 'see and avoid'. Owing to the prevailing WX conditions, both crews elected to fly just below a uniform but low cloudbase in VMC. As it was night Members agreed that both crews would have found visual acquisition of each other's lights in the incident area difficult owing to the background lighting from the built-up areas and the 'blooming' effect from below the low cloudbase reflecting back the cultural lighting. The radar recording shows both ac approaching each other on a line of constant bearing, making both ac appear stationary in the windscreen and adding to the difficulty of seeing an ac that has no relative movement to trigger visual acquisition. The PA31 pilot became aware of the EC155B when he heard TI being passed on

his ac to the EC155B crew whilst he was awaiting Farnborough to call him back after he was told to 'standby' after his initial call on frequency. However, he only saw the helicopter at about 0.5nm, which Members agreed was a late sighting and a part cause of the Airprox. The EC155B crew were aware of the PA31 from TCAS and from the traffic warning given by Farnborough. However, they only saw it as it passed down their LHS, as it was taking avoiding action, effectively a non-sighting and the second part of the cause.

Under the Rules of the Air Regulations the EC155B had right-of-way. However, this always assumes that both pilots have seen each other and can discharge their responsibilities accordingly. In this Airprox the late sighting by the PA31 pilot and his stated difficulty in assessing the helicopter's flightpath resulted in late avoiding action and the ac passing closer than intended. This left the Board in no doubt that safety had been compromised.

### **PART C: ASSESSMENT OF CAUSE AND RISK**

Cause: Effectively a non-sighting by the EC155B crew and a late sighting by the PA31 pilot.

Degree of Risk: B.

## AIRPROX REPORT No 2010172

Date/Time: 24 Oct 2010 0930Z (Sunday)

Position: 5140N 00001W (10nm NNW London/City)

Airspace: LFIR (Class: G)

Reporting Ac Reported Ac

Type: C404 M20J

Operator: Civ Comm Civ Pte

Alt/FL: 2400ft NR  
(QNH 1016mb) (QNH)

Weather: VMC CAVOK NR

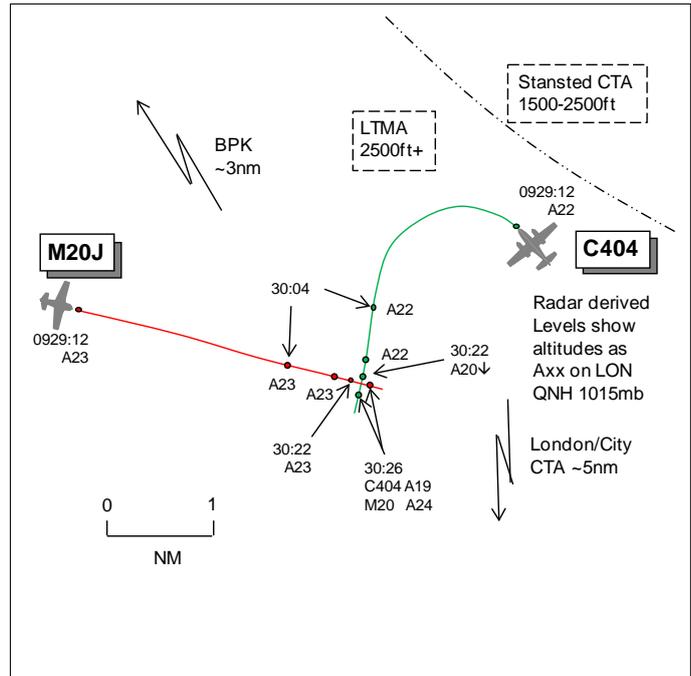
Visibility: >40km NR

Reported Separation:

300ft V/0-50m H NR

Recorded Separation:

400ft V/Nil H



## PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE C404 PILOT** reports conducting a solo-pilot survey flight from Blackpool, VFR and in receipt of a TS from Thames Radar on 132.7MHz, squawking an assigned code with Modes S and C. The visibility was >40km in VMC and the ac was coloured blue/white with anti-collision and nav lights switched on. The Airprox occurred just after turning L to establish on the first survey line heading 180° at 120kt and 2400ft QNH 1016mb. He was outside CAS, below the LTMA base level of 2500ft altitude, although cleared into the London/City CTR as the survey line continued to O/H London/City. The traffic was first spotted in his 2 o'clock range 500-700m at what appeared to be the same altitude and on an E'ly heading and converging. He descended by 200-300ft immediately and the other ac, a single engine low-wing Piper/Socata type, passed O/H by that vertical distance with little to no horizontal separation. A warning of the traffic was given by Thames 5-10sec after their tracks had crossed and he believed the other ac was not on the Thames frequency. The flight conditions were perfect: a gin-clear day with excellent visibility and no cloud. He did not believe the other pilot saw his ac as there was no avoiding action seen and he assessed the risk as high. He apologised for the very late filing of the Airprox. It was reported to his company at the time of the incident and was picked up at a later company SMS meeting that he had not filed an Airprox to the UKAB.

**THE M20J PILOT** report was contacted by RAC Mil and a CA1094 was sent for completion. Two follow-up e-mails did not elicit a response. Despite numerous follow-up telephone calls, voice mails and e-mails from the UKAB Secretariat requesting the completion of the Airprox Report Form prior to the Board meeting, no report was received.

**ATSI** reports that the Airprox occurred at 0930:23, in Class G airspace, 10.6nm to the NNW of London City Airport.

The Airprox was reported by the pilot of a Cessna 404 Titan (C404), operating VFR and conducting an ordnance survey flight in accordance with non-standard flight (NSF) notification 051/2010.

The second ac was displaying a squawk 5031, a code assigned to Farnborough LARS. The Farnborough archived fpss showed that the other ac was most likely a Mooney 20J (M20J), operating on a VFR flight from Denham to Le Touquet and in receipt of a BS from Farnborough LARS. However no report was available from the pilot of the M20J.

The Airprox report was filed some time after the event and was received by CAA ATSI and UKAB on 26 Nov 2010. Because of the late reporting of the Airprox, the Farnborough RT and radar recordings were not available. Farnborough ATC were not aware of the Airprox and no report was available from any of the controllers concerned. In addition the C404 pilot's written report erroneously indicated that the Airprox occurred at approximately 1030 UTC and this resulted in a further delay in obtaining the correct period of radar replay.

CAA ATSI had access to the Thames Radar RT and Radar recordings provided by NATS Swanwick together with the C404 pilot's written report. The RT and radar recording show the incident occurred at 0930:23.

METAR EGLL 240920Z 35006KT 310V040 CAVOK 07/03 Q1015 NOSIG=

At 0923:15, the C404 flight established contact with Thames Radar and requested a TS. A squawk of 7032 was allocated together with the London QNH 1015. Thames Radar advised, "*(C404)c/s you're under a limited Traffic Service due to poor radar coverage and traffic loading.*" The C404 pilot replied, "*er limited traffic that's copied (C404)c/s.*" The radar recording showed the C404's position to be 15.8nm to the NW of London City Airport. It was noted that the Thames controller used the term 'limited' TS, when the correct phraseology should have been 'reduced' TS.

The Thames Radar controller established that the C404 pilot wanted to conduct survey work to the N and W of London City, following N-S lines at an altitude of 2400ft.

Thames Radar passed TI on 2 unknown contacts at 0925 UTC and 0928 UTC.

At 0928:29 the C404 reported in a L turn to pick up the first N-S line and Thames Radar responded, "*Understood the erm clearance limit is the southern most lake of the Lee Valley in the City Zone.*" The C404 pilot replied, "*Er clearance to the southern most er of the Lee Valley (C404)c/s.*"

At 0929 Thames Radar passed TI on another unknown contact.

At 0929:14 radar recording showed the C404 at an altitude of 2200ft, in the L turn passing through a heading of 340° as the ac positioned onto the initial N-S survey line. The M20J is shown 4.1nm WSW of the C404, tracking E and indicating an altitude of 2300ft.

At 0930:04 radar recording showed the C404 rolling out on a S'y heading at an altitude of 2200ft and the M20J in the C404's 2 o'clock position, at a range of 1nm and crossing from R to L, indicating an altitude of 2300ft. An additional primary contact was also shown to be 1nm E of the C404.

At 0930:20, Thames radar passed late TI to the C404 flight regarding the M20J, "*(C404)c/s there is further Farnborough traffic now going over the top of you two point three unverified.*" The C404 pilot replied, "*Affirm we just heard him.*"

[UKAB Note (1): At 0930:22, the radar recording shows the C404 tracking S'y descending through altitude 2000ft with the M20J in its 2 o'clock range 0.1nm at 2300ft, 300ft above. The CPA occurs before the next sweep 4sec later at 0930:26 when radar recording shows the 2 ac having passed and now diverging at range of 0.1nm, the C404 now level at 1900ft and the M20J at 2400ft. At the CPA, 0930:24, it is estimated the ac passed with no lateral separation and 400ft vertical separation.]

It was not possible to determine if the Thames Radar controller had observed the M20J prior to giving a late warning. The Thames Radar controller had restricted the TS because of poor radar coverage and traffic loading.

The M20J flight was in receipt of a BS from Farnborough LARS. The Manual of Air Traffic Services (MATS) Part 1, Section 1, Chapter 11, Page 4, Paragraph 3.1.1, states:

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

The C404 was in receipt of a Reduced TS due to 'poor coverage and traffic loading.' MATS Part 1, Section 1, Chapter 11, states:

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

'There may be circumstances that prevent controllers from passing timely traffic information and/or deconfliction advice, e.g. high workload, areas of high traffic density, unknown aircraft conducting high energy manoeuvres, or when traffic is not displayed to the controller or is obscured by surveillance clutter. Controllers shall inform the pilot of reductions in traffic information along with the reason and the probable duration; however, it may not always be possible to provide these warnings in a timely fashion.'

'In high workload situations, which may not always be apparent from RTF loading, it may not be possible for controllers to always provide timely traffic information and/or deconfliction advice. High workload situations may not necessarily be linked to high traffic density. High traffic density can cause difficulty interpreting ATS surveillance system data and may affect RTF loading or controller workload to the extent that the controller is unable to pass timely traffic information and/or deconfliction advice on all traffic.'

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available included a report from the C404 pilot, transcripts of the Thames Radar RT frequencies, radar video recordings, a report from the Thames air traffic controller involved and reports from the appropriate ATC authorities.

It was unfortunate that the Board were not able to assess the Farnborough ATSU aspect of the incident owing to the late filing of the incident. Also, Members were disappointed that the M20J pilot had not completed a report form, denying Members of his viewpoint of the incident. Irrespective of the ATS being provided, the incident occurred within the Class G airspace where both pilots were responsible for maintaining their own separation from other traffic through see and avoid. The C404 flight had just turned L and established onto his initial survey line about 20sec prior to the CPA, and during this manoeuvre the pilot was responsible for clearing the area into which he was turning. That said, the C404 is known to have blind-spots owing to the wing/engine configuration and the pilot's view would have been degraded during the later stages of the turn as the ac was belly-up to the approaching M20J until rolling out on his required track. It was about this time the C404 pilot saw the M20J approaching in his 2 o'clock at the same level and immediately commenced a descent to avoid it, passing clear beneath it by about 200-300ft. An experienced pilot Member, familiar with this type of operation, informed the Board that the pilot would have almost certainly have been concentrating on his instrumentation to ensure exact positioning of the ac on the survey line and this would have almost certainly reduced his look-out scan. The Board noted that the ac was being flown 'single pilot', and Members agreed that it would have been better to have an additional person in the cockpit to augment the lookout. In response to Member's questions about the options for carrying a dedicated lookout rather than a second qualified pilot in order to save on costs, the CAA Flt Ops Advisor briefed the Board that for AOC flights certified for single pilot operations, such persons can only be passengers and may not undertake any of the pilot's duties (handling the controls, operating aircraft equipment or completing flight documentation). Such passengers should not be permitted to

contribute in any way to the operation of the ac. The Thames controller had limited the TS owing to poor radar coverage and traffic loading; the airspace is a transit area beneath the LTMA and between London/City and Stansted CAS and frequently busy owing to flights generated by adjacent GA airfields. Thames issued TI to the C404 flight on other unknown ac in the area but only informed the pilot about the M20J as the ac were passing each other. It was not known whether the M20J pilot had seen the C404 approaching from his L; the ac was flying into sun and the Mooney is known to have a narrow 'letterbox' type windscreen. Although the M20J had right-of-way, the Rules of the Air Regulations rely on both pilots seeing each other and discharging their responsibilities accordingly. In this occurrence Members agreed that the C404 pilot had discharged his responsibilities and his actions had quickly and effectively resolved this conflict in Class G airspace.

**PART C: ASSESSMENT OF CAUSE AND RISK**

Cause: A conflict in Class G airspace resolved by the C404 pilot.

Degree of Risk: C.

## AIRPROX REPORT No 2010175

Date/Time: 14 Dec 2010 1008Z

Position: 5626N 00300W (1nm SE Dundee A/D - elev 17ft)

Airspace: ATZ/Scottish FIR (*Class: G*)

Reporting Ac      Reported Ac  
Type: Grob 115 D2      Typhoon FGR4pr

Operator: Civ Trg      HQ Air (Ops)

Alt/FL: 1000ft      2000ft  
QNH (1036mb)      SAS/QFE

Weather: VMC CLBC      VMC CLBC

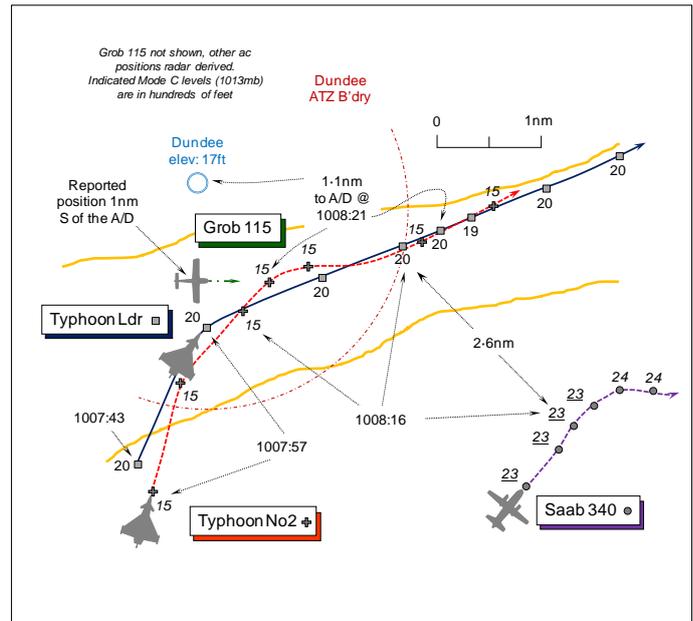
Visibility: 25km      10km

Reported Separation:

300-500ft V      NR

Recorded Separation:

Not Recorded



## PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE GROB 115 D2 HERON PILOT (G115)**, a flying instructor, reports that he was conducting a local VFR training flight in the cct at Dundee; his student was the PF. He was in receipt of an Aerodrome Control Service from Dundee TOWER on 122.9MHz and squawking A7010 with Mode C; Mode S is not fitted.

Whilst Downwind L for RW27, 1nm S of the aerodrome heading 095° at 100kt, flying level at 1000ft Dundee QNH (1036mb), 2 Typhoon jets were observed in his 4 o'clock high position, he estimated 300-500ft above his aeroplane. Both Typhoons were observed in a RHD turn 1nm away tracking NE before heading E down the River Tay. No avoiding action was taken as there was no Risk of a collision. Dundee TOWER reported sighting the 2 fast-jets in close proximity to the Dundee ATZ, but had no previous notification from Leuchars ATC of their overflight. He reported the Airprox to ATC by telephone after landing.

His aeroplane is white with blue stripes; the landing light and HISLs were on.

**THE TYPHOON FGR Mk4 LEAD PILOT** reports he was leading a pair of Typhoons departing from Leuchars IFR and cleared to take-off and depart on a SID1, which stipulates a climb on RW track to 2000ft QFE, then R onto a track of 070° climbing to FL150. He was in receipt of a TS from Leuchars DEPARTURES (DEPS) who had applied a climb-out restriction of 2000ft QFE against an SF340 at 3000ft QFE. Departing in accordance with the published SID1, on rolling-out to track 070° he saw the SF340 in his 2 o'clock at a distance of 1nm. However, he had incorrectly reset his altimeter to 1013mb during the initial climb out. Whilst he believed he was flying straight and level at 2000ft QFE, he had in fact levelled above his assigned height at 2000ft (1013mb), which equated to 2660ft QFE (1035mb). When he saw the SF340 he assessed that there was no risk and overtook it with divergent headings before being cleared to climb further. He did not report sighting the Grob G115 flown by the reporting pilot.

The assigned squawk was selected with Modes C and S on. His ac has a grey colour-scheme and the white HISLs were on.

**THE NO 2 TYPHOON FGR Mk4 PILOT** reports he was flying as the No 2 of the formation, departing on a SID1 under IFR in VMC on a radar assisted trail departure to 2000ft QFE (1035mb) in accordance with their departure clearance. The formation was in receipt of a TS from DEPS. His ac was climbed to and maintained 2000ft QFE (1035mb) due to transit traffic – the SF340. Their ground track resulted in an over flight of Dundee ATZ at 2000ft QFE (1035mb), whilst following his formation leader in a 1nm radar trail; he did not see any other ac during the departure.

The assigned squawk was selected with Modes C and S on. His ac has a grey colour-scheme and the white HISLs were on.

**THE SAAB 340 (SF340) PILOT** did not file an Airprox report but helpfully provided an occurrence report. The SF340 was inbound to Dundee from Birmingham under IFR and was flying level at 3000ft Leuchars QFE under a TS from Leuchars ATC. About 7nm S of Dundee he observed a contact on TCAS in the vicinity of Leuchars indicating on the ground. They gained visual contact with two ac accelerating along the main runway and taking-off in their direction, which were subsequently identified as a pair of Typhoons climbing fast. As they flew N of the extended RW centreline at Leuchars with the Typhoons passing behind them TCAS RAs of Descend, Monitor Vertical Speed and Climb sounded in quick succession with the red TCAS icons coinciding with the Typhoons' positions. The A/P was disengaged ready to manoeuvre but due to the quick change of the RAs enunciated and visual contact with the traffic the RA was not followed beyond the initial descent of about 200ft. Leuchars ATC was informed of the TCAS RA and he was advised that the Typhoons had been co-ordinated to climb to a height of 2000ft on climb-out. He surmised that the Typhoons' very high initial ROC and speed triggered the 'closure rate envelope in the TCAS logic. He assessed that there was no actual risk due to the traffic co-ordination; the closest proximity was about 1nm horizontally and approximately 1000ft below as the traffic passed from R-L astern at about 90° to their track. Visual contact was maintained until the traffic passed out of sight astern.

**THE DUNDEE COMBINED AERODROME AND APPROACH CONTROLLER (TOWER)** reports that Leuchars ATC had co-ordinated the arrival of the SF340 for a visual LHD Base–leg join for RW27 at Dundee, whereupon he advised Leuchars of the three G155 ac in the cct. To allow the SF340 to join, the three G115 crews were instructed to orbit in the Downwind leg. Two Typhoon ac then appeared to enter the Dundee ATZ without prior notification from the S and route to the NE passing overhead one of the G115s. The reporting G115 pilot advised the Typhoon was at 1200ft. The incident was discussed with Leuchars ATC.

**THE LEUCHARS DEPARTURES CONTROLLER (DEPS)** reports that the 2 Typhoons were prenoted for a SID1 departure with a climbout restriction in force of 2000ft Leuchars QFE (1035mb) for the SF340 inbound to Dundee. As the Typhoon formation departed, he identified them, placed them under a TS and re-stated the climbout restriction. The SF340 was inbound for a visual L Base-leg join to RW27 at Dundee, descending to 3000ft Leuchars QFE (1035mb) and crossing the climbout when the Typhoons departed. As the Typhoons climbed out he called the lead jet to the SF340 crew and stated that the Typhoon pair was climbing to 2000ft on a climbout restriction. Very shortly afterwards the SF340 pilot advised him of a TCAS RA against the Typhoon pair.

As the lead Typhoon started to turn he believes he passed TI on the most easterly non-squawking ac to the N of the lead Typhoon, which was displayed inside the Dundee ATZ [perceived to be one of the Grob 115s]. He cannot recall what the Mode C indications of the individual ac were, only that the climbout restriction was reinforced to the Typhoon pilots on initial RT contact and that they were departing on a SID1.

**THE LEUCHARS ATC SUPERVISOR (SUP)** reports that whilst the climb-out restriction provided safe vertical separation between the Typhoons departing on the SID1 and the SF340, neither ac can achieve their respective objectives – for the Typhoons a climb and the SF340 crew a descent - until they have passed clear. This particular scenario is resolved by means of a SID2, which ensures that the ac do not meet laterally in the same airspace. This point was recognised by the DEPS controller, but too late to change his plan.

UKAB Note (1): The Leuchars RW27 SID2 stipulates a climb on RW track to 2000ft QFE, then L onto a track of 100° climbing to FL150.

**ATSI** reports that the Airprox occurred just after 1008UTC, in class G airspace. The Dundee ATZ comprises a circle of radius 2nm centred on the mid-point of RW27 and extending from the surface to 2000ft above the aerodrome elevation of 17ft.

The Dundee 0950UTC METAR: 29003kt 9999 BKN040 03/01 Q1036=

Dundee ATC was providing a combined Aerodrome and Approach control service without the aid of surveillance radar equipment. At the time of the Airprox, Dundee had three G115 ac in the visual LHD cct for RW27 and the reporting G115 crew had completed two ccts prior to the reported Airprox. The Dundee controller's written report indicates that Leuchars ATC had coordinated the arrival of the SF340 and had been advised of three light aircraft flying in the visual cct.

At 1007:05, less than 1min before the Airprox with the Grob, the SAC (Prestwick) radar recording shows the lead Typhoon ac, 5.5nm SSE of Dundee, squawking A0231, passing 0.75nm behind the inbound SF340 that was in receipt of a TS from Leuchars RADAR. The SF340 is shown tracking N at that point indicating FL24 [an altitude of about 3090ft Dundee QNH 1036mb]. The lead Typhoon indicating FL20 [2690ft Dundee QNH] was tracking W at that point some 400ft below the SF340. The SF340 pilot's written report indicates that a TCAS RA was received and an occurrence report was subsequently rendered. Although not a factor in the Airprox, the lead Typhoon pilot's written report indicates that the pilot had incorrectly set 1013mb for the initial climbout instead of the Leuchars QFE of 1035mb (a difference of 660ft at 30ft/mb). The lead Typhoon is observed turning R onto a northerly track towards Dundee Airport and the lead pilot's written report indicates that he was visual with the SF340 and overtook it on a diverging heading before being cleared to climb. At 1007:27, the radar recording shows the second Typhoon squawking A0233 and following the lead aircraft 1.75nm in trail indicating FL15 [about ALT 2190ft]. At 1007:35, the Grob reported downwind for RW27 and the Dundee controller instructed the Grob pilot to report before turning L base. At 1007:51, the radar recording shows the lead Typhoon 2nm S of Dundee airport, turning R to follow a track that passed 1.3nm to the SE of Dundee Airport.

At 1008:00 TOWER observed the two Typhoon ac and transmitted a warning, "*Dundee all stations just be advised two fast jets passing through the overhead.*" The Dundee controller's written report indicates that there was no prior notification of the two Typhoon ac that had appeared to enter the Dundee ATZ routeing from the S to the NE. However, the radar recording shows that both Typhoon ac passed above the Dundee ATZ to the SE of the aerodrome, the lead ac maintaining an altitude of 2690ft and the No2 Typhoon maintaining an altitude of 2190ft Dundee QNH (1036mb).

The Dundee TOWER controller decided to hold the three Grob G115 ac on the downwind leg in the cct anticipating the arrival of the SF340 on a wide L base-leg. At 1011:01, the SF340 crew called Dundee TOWER and reported orbiting 4nm SE of Dundee to lose altitude.

At 1011:45 TOWER asked the Grob G115 pilot, "*Do you know how close those Typhoons got?*" The G115 pilot replied, "*Well they went straight across us..probably about 2 hundred feet above.*" The Grob G115 pilot's written report indicated that the G115 was at 1000ft Dundee QNH. TOWER asked if the Grob pilot wished to file an Airprox, to which he responded, "*..negative I had them visual the whole time...*". TOWER acknowledged the G115 pilot, "*Copied and can you just confirm they were inside the ATZ at 12 hundred feet*", to which the G115 pilot replied, "*Affirm.*"

Leuchars RADAR was aware that the Dundee cct was active and the Typhoon pair was operating IFR with a climb restriction of 2000ft Leuchars QFE (1035mb). Co-ordination or the provision of TI about the two Typhoons from Leuchars would have aided the Dundee controller's SA and would have allowed the passing of timely TI by TOWER to ac operating within the ATZ.

The G115 was operating within the Dundee ATZ in receipt of an Aerodrome Control Service at 1000ft QNH (1036mb). The Dundee TOWER controller sighted the Typhoons as they passed above the Dundee ATZ at altitudes of about 2690ft and 2190ft respectively and passed an appropriate warning. The Manual of Air Traffic Services, Part 1, Section 1, Chapter 12, Page 3, Paragraph 2.1, states:

‘Aerodrome Control is responsible for issuing information and instructions to aircraft under its control to achieve a safe, orderly and expeditious flow of air traffic and to assist pilots in preventing collisions between:

- a) aircraft flying in, and in the vicinity of, the ATZ;
- b) aircraft taking-off and landing.’

**HQ 1GP BM SM** reports that the Typhoon FGR4 pair was in receipt of a TS from Leuchars DEPS whilst departing the aerodrome on a SID1 departure, with a climb-out restriction of 2000ft QFE (1035mb). The radar replay shows the Typhoons tracking approximately 1.3nm SE of Dundee, indicating 2000ft (SSR Mode C with a display QNH of 1037).

The SF340 was also in the vicinity and inbound to Dundee on an IFR flight from Birmingham. The SF340 was in receipt of a TS from Leuchars and the arrival had been co-ordinated with Dundee. Although there is no comment within DEP’s report about his workload, it is clear from the transcript that it was medium to high whilst controlling multiple units at varying ranges from the aerodrome, including the SF340.

At 1007:39, DEPS passed TI to the Typhoon pair, *“traffic north half a mile tracking east, no height information appears to be Dundee visual circuit traffic at 1 thousand feet.”* Although this was the first TI passed by DEPS to the Typhoons on this traffic, it is clear from the transcript that DEPS was busy in the period immediately before this transmission. The Grob G115 flown by the reporting pilot is not shown on the SAC radar recording [which does not replicate what was displayed to DEPS]. Furthermore, although the G115 pilot reports that his transponder was selected on with Mode C, it is not possible to determine whether traffic in the Dundee visual cct was painting continuously on DEPS’ radar display, which might have allowed the controller to pass TI earlier.

There were no military ATM related causal or contributory factors in this Airprox.

UKAB Note (2): At the closest point, the No2 passed 1.1nm SE of Dundee aerodrome and would have been the lowest and closest Typhoon to the reporting Grob pilot’s ac at the reported Airprox location 1nm S of the aerodrome. Given the tolerances applicable to Mode C of +/- 200ft, the vertical separation between the No2 and the G115 pilot’s reported altitude was not less than 1000ft.

**HQ AIR (OPS)** comments that this complex occurrence has been extensively investigated as a result of a well meaning but erroneous estimation of the Typhoon’s height by the G115 pilot. There was no infringement of the ATZ nor any risk of collision. The execution of a SID1 in this case was acknowledged as being less than ideal in that it delayed the execution of the climb/descent profiles for the Typhoons and the SF340. However, it was not unsafe and would have provided 1000ft clearance from the coordinated traffic and from normal circuit traffic at Dundee. The incorrect altimeter setting of the lead Typhoon was not in accordance with standard practice and this has also been acknowledged and debriefed. It resulted in a TCAS RA for the SF340 but both ac had each other in sight and felt there was no risk of collision.

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

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

The SF340 pilot had not reported an Airprox but it was evident that his ac's IFR transit had been instrumental in restricting the Typhoon pair's climb-out and thus a factor as to why the jets were lower than might normally be expected in the vicinity of Dundee. Whilst the SF340 pilot was aware that the Typhoon formation had been co-ordinated to climb to 2000ft QFE beneath his ac, he perceived at the time that it was the Typhoons' initial ROC and speed that had triggered the RAs. However, from the Typhoon leader's frank account, coupled with the recorded radar data, it was clear that the lead pilot had exceeded his assigned height, thereby reducing the vertical separation from the planned 1000ft to 400ft as the pair flew 0.75nm astern of the SF340. The HQ Air Ops Member observed that although the SF340 pilot was unaware of this at the time, in the prevailing good weather the Typhoon pilots were clearing their flight path visually and the higher lead pilot had subsequently acquired the airliner. The lead Typhoon pilot had set the QFE on his altimeter before take-off but had subsequently set 1013mb climbing through 1000ft. However, with the intervening stop at 2000ft issued by DEPS to remain beneath the SAAB, the leader had omitted to reset the QFE on his altimeter, hence, the 'height' bust. Unfortunately, neither the No2 Typhoon pilot nor the DEPS controller had commented on the RT to the lead pilot when this occurred. However, this was an acknowledged lapse by the lead pilot, which the Board noted had been addressed.

Ironically, by levelling his ac 660ft higher than his assigned height of 2000ft QFE (1035mb) – equating to about 2690ft Dundee QNH (1036mb) –the lead Typhoon pilot had inadvertently increased the separation from the Grob 115 flown by the reporting pilot who was downwind at 1000ft Dundee QNH. Some Members commented that it would have been helpful if DEPS had called Dundee when it became evident that the Typhoons would be kept low and were flying wide of the SID1 track close to the Dundee ATZ. However, DEPS might reasonably have expected the pair to be remaining over the S bank of the River Dee estuary whilst following the SID1 track and therefore normally clear to the S of the Dundee ATZ, as shown in the UK Mil AIP. Furthermore he was operating under a medium to high workload and he probably had little opportunity to liaise on the landline in the time available. It was contended that the lead Typhoon's wider ground track on departure might have been flown with the intentions of assisting DEPS by increasing the horizontal separation against the SF340 as soon as possible, thereby allowing the latter to descend whilst facilitating an earlier climb for the jets. Nevertheless, it was plain that a SID2 with a LHD turnout could also have accomplished this aim, as suggested within the SUP's comments.

The Grob 115 pilot's written account reports that the Typhoon pair had flown about 300-500ft above his aeroplane. However, when questioned over the RT by ATC some 3½min after the event it was evident that the Grob pilot had estimated that the Typhoons were only 200ft above his aeroplane and had entered the ATZ. Unless he had climbed significantly above the 1000ft QNH cct altitude reported, it was plain from comparison of his reported altitude and the recorded radar data that he had significantly underestimated the vertical separation that existed. Whilst it might not have been wise to fly this close to the 2017ft amsl upper limit of the Dundee ATZ without RT contact, it was evident to the Board that the Typhoon pair had not entered the ATZ without permission. The radar recording placed both the lead Typhoon and the No2 above the upper limit of the ATZ at altitudes of about 2690ft and 2190ft respectively with the lower of the pair in unregulated airspace in excess of 1000ft above the pattern altitude. Whilst the Board accepted that the Grob 115 pilot and the Dundee controller had filed their reports in good faith, they were plainly mistaken in their estimates of the altitude of the two Typhoons and the minimum separation that actually existed. In the Board's opinion, this was not an Airprox but a sighting of traffic flying above the ATZ boundary and the Members agreed unanimously with the reporting Grob 115 pilot's view that no Risk of a collision had existed whatsoever.

### **PART C: ASSESSMENT OF CAUSE AND RISK**

Cause: Sighting Report.

Degree of Risk: C.

## AIRPROX REPORT No 2011001

Date/Time: 4 Jan 2011 1549Z

Position: 5128N 00028W (O/H  
Heathrow - elev 83ft)

Airspace: ATZ (Class: A)

Reporting Ac Reported Ac

Type: A319 BH06 JetRanger

Operator: CAT Civ Comm

Alt/FL: 300ft↑ 800ft  
(QNH 1012mb) (QNH)

Weather: VMC NR VMC CLOC

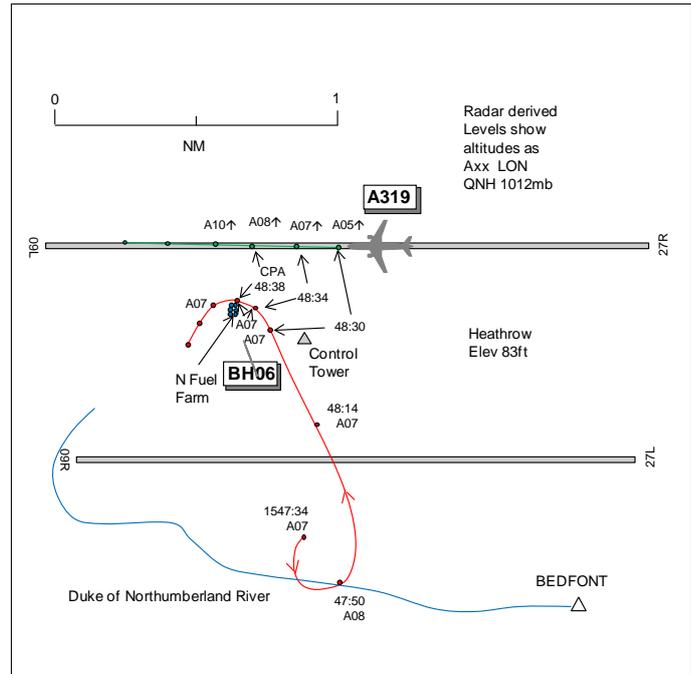
Visibility: NR >10km

Reported Separation:

300ft V/<300m H NR

Recorded Separation:

100ft V/0.2nm H



## PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

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

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

**THE HEATHROW AIR (N) DEPARTURES CONTROLLER** reports the pipeline inspection BH06 was warned in by the Tower Supervisor. He tracked the BH06 on the ATM and then subsequently visually as it operated S of RW27L. The BH06 was operating on the Arrivals frequency 118.5MHz

throughout and coordination took place with the Arrivals controller that the helicopter would cross RW27L and remain S of RW27R. The BH06 crossed RW27L at speed around the midpoint so with the A319 flight already cleared for take-off he gave the crew TI, informing them that the BH06 would be remaining S of RW27R. The BH06 was obscured from view above the VCR roof for a brief moment and when visual once again its position appeared to be very adjacent to RW27R and the departing A319 as it performed a high energy turn to the S. Its relative position to the A319 appeared very close and he asked the A319 crew if they were happy with the position of the helicopter. The A319 crew replied "it was a bit too close for comfort" and that they would be filing a report.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

The ATSU unit report indicated that:

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

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

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

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

again". The oncoming controller also commented that the black and white copy of the map was poor.

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

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

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

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

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

The ATSU written report indicated that both AIR S and N considered that the helicopter appeared to be fast as it disappeared O/H the Tower. There was no prior coordination between AIR S and AIR N regarding the management of departures, the passing of TI, the responsibility for applying visual separation or the wake turbulence requirements. The BH06 was next observed in a sharp L turn adjacent to the departing A319.

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

At 1548:38 radar recording showed the BH06 at the most N'ly point of the loop in a L turn passing through a W'ly heading, indicating altitude 700ft. The A319 was indicating altitude 800ft and was positioned 0.2nm (370m) N of the helicopter.

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

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

Supervisor

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

AIR S

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

#### AIR N

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

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

Irrespective of the supervisory issues leading up to this incident, it was clear both Air S and Air N had been unsure as to the specific task to hand. Air N had decided, from the information available, that departures from RW27R need not be suspended during the BH06's operation in the Heathrow central area. Air S had cleared the BH06 to cross RW27L and told its pilot to remain S of RW27R, which was acknowledged. At the same time Air N cleared the A319 for take-off. Air S then told Air N of the BH06's crossing which Air N acknowledged but as the A319 had already commenced its take-off roll, Air N elected to make a broadcast instead of specific TI to the A319 flight. However, it was unfortunate that Air N inaccurately stated that the helicopter would be remaining S of RW27L, not RW27R as intended. This had undoubtedly led to the A319 crew's surprise when, shortly after their take off, the BH06 appeared in their forward LH quarter with its intentions unknown. Members agreed that had the A319 crew been made aware of the BH06's intentions, it would have allayed

their concerns during a critical phase of their flight. The BH06 pilot had complied fully with the clearances issued and had sighted the A319 both prior to, and during, its departure. Although the BH06 was perceived by the A319 crew to be in conflict, the helicopter was always going to remain S of RW27R during its Fuel Farm inspection. Ironically it was the expeditious clearance issued by Air S that allowed the BH06 pilot to perform this manoeuvre in one continuous L turn and contributed much to the concern of the Air N and S controllers. The Board concluded that following the inaccurate broadcast by Air N, the A319 crew was concerned by the BH06's proximity but that the sightings by both crews and action taken by the BH06 pilot ensured that any risk of collision had been removed.

**PART C: ASSESSMENT OF CAUSE AND RISK**

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

Degree of Risk: C.

## AIRPROX REPORT No 2011004

Date/Time: 20 Jan 2011 1238Z

Position: 5138N 00115W (8.5nm N CPT)

Airspace: Oxford AIAA (Class: G)

Reporter: LTC SW

1st Ac PA34 2nd Ac Grob TutorTMk1

Operator: Civ Trg HQ AIR (TRG)

Alt/FL: FL50 4500ft↓  
(NR)

Weather: IMC IICL VMC CLAC

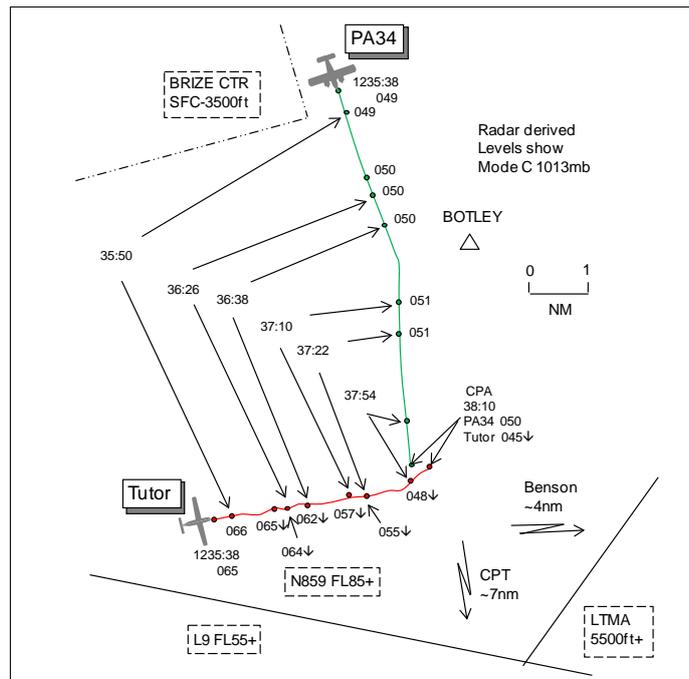
Visibility: 10km >10km

Reported Separation:

Not seen NR

Recorded Separation:

500ft V/0.3nm H



## PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE LTC SW CONTROLLER** reports that a “remain clear of controlled airspace” instruction had been given to Oxford ATC by the Coordinator for the PA34 requesting to join CAS at CPT and for the flight to call for join on his frequency 134.125MHz. The PA34 was observed on radar by him and the S Coordinator outside CAS approaching CPT before it called on frequency. Other traffic was also seen on a Benson squawk, 3611, outside CAS above FL50 and likely to conflict with the PA34. STCA low-severity (white) activated between the 2 ac and then the PA34 flight called reporting climbing to FL50 and requesting a TS. Identification and verification were carried out and a BS was provided; STCA high-severity (red) then activated. Following a read back of the service he gave TI to the PA34 flight on the other ac. Once passed, an airways joining clearance was issued. The frequency was fairly busy with other traffic and the PA34 was outside CAS below FL70 (unit terrain clearance level) on a BS. The controller was aware of the perils associated with flying outside CAS but in this situation he believed the safety of both ac had been compromised. He opined that a better and safer service could be provided in the area in conjunction with Brize and Benson. It was noteworthy that in the LTC SI 30/10 ‘Oxford Arrivals and Departures via Airways’ there is no mention of how Brize and Benson coordinate with each other regarding Oxford departures joining at CPT.

**THE PA34 PILOT** reports flying dual on a local sortie from Oxford, IFR and in receipt of a TS from Brize LARS on 124.275MHz and then a BS from London on 134.125MHz, squawking 6016 with Modes S and C. On a standard CPT departure Brize gave TI twice, he thought, about another ac which at first was below and climbing and then when closer was called at the same level. The visibility was 10km but the cloud was scattered to broken and at FL50 they were between layers in intermittent IMC. Heading 175° at 150kt, despite looking for the other ac, it was not visible and they waited to get a further update from Brize but were then handed over to London. It seemed Brize no longer considered the other ac’s proximity to be a factor and they continued en-route. No avoiding action was taken and they had not changed level but turned at Botly towards CPT.

**THE TUTOR PILOT** reports flying a dual training sortie from Benson and in receipt of a TS from Benson. He was on recovery for a radar to visual approach to Benson in VMC above broken cloud about 7nm NW of Benson when Approach alerted him to traffic on its way to CPT. He first saw the light twin-engine ac below in his 10 o’clock as he continued to descend, tracking perpendicular to it on a

heading of 060° at 120kt. He passed through its 12 o'clock at about the same level at what he deemed to be a safe distance. Descending through 4500ft the other ac passed behind and above, well before he entered IMC, and it continued to diverge as he completed his recovery. At no point was there any perceived risk and the other ac never deviated from its track.

**ATSI** reports that the Airprox occurred between a PA34 and a Tutor in Class G uncontrolled airspace N of CPT at FL50. The PA34 had departed Oxford on a training flight to Bournemouth and was in contact with LTC SW on 134.125MHz under a BS. LTC SW (OCK, WILLO and SW Deps sectors combined) was being operated by a tactical controller. There were no reported unserviceabilities and the controller was using Pease Pottage radar data on the situation display. ATSI assessed the RT loading on the LTC SW sector as high.

The PA34 departed Oxford having been instructed to remain clear of CAS and call for airways joining clearance on 134.125MHz. A UK Domestic Mode A code of 6016 was issued to the PA34 and displayed throughout its flight.

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

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

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

At 1232:50 the PA34 appeared on the LTC SW controller's situation display 1nm SW of Oxford at FL021. The Tutor was operating at FL064, 6.9nm W of Benson, on Mode A code 3611. The PA34 continued on a S track and climbed to FL050.

At 1236:39 a low-level STCA activated on the LTC SW controller's situation display. The 2 ac were 5.3nm apart on converging tracks, the PA34 maintaining FL50 and the Tutor at FL63. At 1237:08 the PA34 called LTC SW requesting a TS. The SW controller identified the PA34 and a BS was agreed at 1237:18.

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

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

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

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

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

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

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

[UKAB Note (1): The Tutor continues on a track of 060° and the CPA occurs at 1238:10, the PA34 maintaining FL50 on a S'ly track with the Tutor now in its 9 o'clock range 0.3nm and diverging indicating FL045, 500ft below. The ac were 8.4nm N of CPT.]

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

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

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

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

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

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

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

**THE BENSON APPROACH CONTROLLER** reports having been on the console for 2min when he saw the Tutor 3nm W of Didcot turn onto an E'ly heading. The flight was under a TS in the Vale operating between 4000ft and 7000ft on the Cotswold RPS of 1034mb. At this point he saw what he believed to be a CPT 'joiner' from Oxford to the SE of Abingdon heading S indicating FL50. He called this traffic to the Tutor pilot "(Tutor c/s) traffic North 3 miles heading S 1500ft below believed to be joining airways at CPT", which the pilot acknowledged. The Tutor continued E and he again called the traffic, "(Tutor c/s) previously called traffic North 3 miles tracking S 700ft below" which the pilot again acknowledged. He then answered a call from the ground controller and took a pre-note on a VFR departure. He then called the traffic again, "(Tutor c/s) previously called traffic N 1 mile tracking S same altitude" and the pilot called "visual". The Tutor was seen to descend below the other ac and turn NE for a short while before turning back to the SE. The Tutor pilot then called for an IFR recovery to initials so he was asked to set the Benson QFE 1029 and descend to height 2000ft, at which point the ac was heading SE. When the Tutor was 3nm SW of Benson the pilot reported visual with the airfield and he transferred to Tower on 127.15MHz.

**THE BRIZE LARS CONTROLLER** reports receiving a call from the relevant civil sector asking whether he had passed TI to an Oxford ac [the PA34], which had recently called on the London frequency, on a

Benson SSR code. He had released the PA34 to London about 10nm of CPT and, at the time, he had not seen any ac wearing a Benson code that he believed necessary to call. He was unaware of the time lapse between the PA34 flight leaving his frequency and calling London. He informed the Supervisor about the landline call. The London controller did not inform him of any Airprox.

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

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

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

At 1235:48, Brize LARS passed accurate TI to the PA34 on the Tutor stating, "*(PA34 c/s) traffic right one o clock, six miles, crossing right left at one thousand five hundred feet above and I have your airways instruction when you're ready to copy.*" The PA34 pilot replied, "*Roger and er standby (PA34 c/s)*". Almost immediately afterwards the PA34 pilot transmits, "*Pass your message (PA34 c/s)*" and Brize replies, "*(PA34 c/s) London Control instructs PA34 c/s to remain outside controlled airspace squawk six zero one six and onwards frequency one three four decimal one two five*". Brize LARS then, at 1236:25, told the PA34 pilot that his read back was correct and then instructed the PA34 flight to continue with London Control in accordance with their clearance, which is acknowledged immediately. At this point, the Tutor is approximately 5.3nm SW of the PA34, the Tutor indicating FL064 tracking E, having just commenced a descent at 1236:27. LARS stated in their report that at the point when they transferred the PA34 to TC SW, they, "*did not see any aircraft wearing a Benson SSR code that I believed necessary to call.*" This point is underlined by LARS' conversation with TC SW immediately after the incident when they stated that they "*didn't see anything relevant to call to him.*"

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

At 1237:11, Benson APP accurately updated the TI to the Tutor, which is descending through FL056, stating, "*(Tutor c/s) previously called traffic north, three miles, tracking south seven hundred feet below.*" A further accurate update was provided at 1237:46 with the Tutor approximately 1.5nm S of the PA34 indicating FL050. The Tutor pilot responded that they were visual with the PA34.

The CPA occurs at 1238:10 as the PA34 passes behind and above the Tutor, with 0.3nm lateral and 500ft vertical separation witnessed on the radar replay.

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

Given that Brize LARS provided TI to the PA34 on the Tutor at 1235:48, their later statement that they did not see anything at the point of transfer of control appears unusual. Unfortunately, given the passage of time since the occurrence it has proved impossible to explain this definitively; however, 2 possibilities exist. The first is that having passed TI to the PA34 flight on the Tutor, LARS considered that they had fulfilled their obligations within the terms of a TS and that they could therefore release the PA34 to TC SW. The second possibility is closely linked to the first, in that once LARS had provided TI to the PA34 on the Tutor their cognitive process may have discounted the Tutor such that they no longer perceived its presence when scanning the PA34's path to CPT. Given LARS' statement, this lends support to the latter hypothesis; however, there is no additional supporting HF evidence or assessment of taskload and/or workload provided by LARS that would lend weight such a hypothesis. What is clear is that LARS did not perceive there to be a confliction for the PA34 before CPT, despite the Tutor's presence only 5.3nm SW.

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

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

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

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

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

As 3 ATSU's were involved, there were 3 controllers with different viewpoints on the incident. Brize LARS had provided the IFR PA34 flight with a TS, as requested by its pilot, and passed TI on the Tutor when it was just over 5nm away. The airways clearance to remain outside CAS was then passed and the flight was transferred to London. At this time, the Tutor was 1500ft above the PA31 and just about to commence a descent. Members agreed that LARS had acted appropriately and had released the PA34 to London in good time for its pilot to obtain his joining clearance. Benson APP had passed timely and accurate TI on the PA34 3 times, the Tutor pilot reporting visual after the third call. For his part, LTC SW was understandably concerned as he was awaiting the PA34 flight to call on frequency when the STCA activated a low-severity alert. The PA34 pilot called requesting a TS and was provided with a BS, owing to the restriction imposed that LTC will not provide a TS nor DS below FL70. Controller Members sympathised with the LTC SW, faced with an unknown ac on a 90° closure angle which was apparently descending into confliction and without knowing its intentions. He elected to give a traffic warning to the PA34 flight. His 'mindset' was then further reinforced when STCA high-severity activated. However he was unaware that the VFR Tutor pilot had seen the PA34 and had elected to cross ahead, descending through its level, whilst maintaining visual separation against it; the PA34 pilot did not see the Tutor. Members agreed with the HQ Air Trg comments with respect to the suitability of the PA34 pilot accepting a TS from Brize whilst flying intermittently IMC and wondered whether a DS would have been a better service to be under until he had entered CAS. This was always subject to the ATSU being able to agree to the service provision and Members were acutely aware of the difficulties faced by controllers when endeavouring to provide a DS to an ac routeing to join CAS at a specific point with manoeuvring traffic ahead. A controller Member familiar with LTC operations informed the Board that an initial joining clearance would not be given until the flight called on frequency owing to the uncertainty of the departure time from Oxford and its time en-route. The airspace at CPT is complicated by Luton outbound flights climbing to FL70, the lowest available level, so invariably flights seeking to join are told to remain outside CAS until the controller is sure of traffic situation. With all parties discharging their responsibilities correctly, albeit in an isolated and uncoordinated manner, the Board believed that

LTC SW had, from the information presented, perceived a conflict between the IFR PA34 and VFR Tutor but there had been no erosion of normal safety standards or parameters.

**PART C: ASSESSMENT OF CAUSE AND RISK**

Cause: A controller perceived conflict.

Degree of Risk: E.

## **AIRPROX REPORT No 2011005**

Date/Time: 28 Jan 2011 1049Z

Position: 5310N 00100W  
(5nm NW Syerston)

Airspace: Lon FIR (Class: G)

Reporting Ac Reported Ac

Type: Grob Tutor T Mk1 C172

Operator: HQ AIR (Trg) Civ Pte

Alt/FL: 1500ft 2000ft  
(RPS 1022mb) (QNH)

Weather: VMC CLBC VMC CAVOK

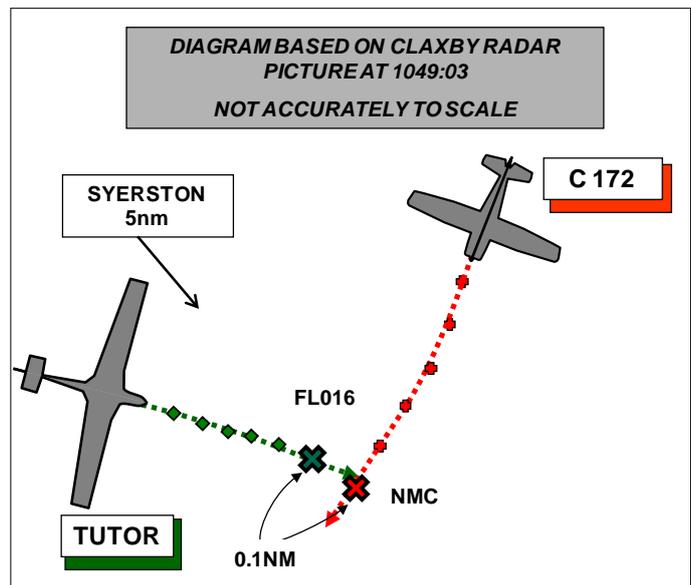
Visibility: 10km >10km

Reported Separation:

150ft V/250ft H 200ft V/20m H

Recorded Separation:

NR V (est 350ft) /0.1nm H



## **PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

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

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

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

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

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

The Cessna pilot called ZONE at 1016:24 and requested a BS; the controller assigned a squawk and applied BS. At 1018:01 the Tutor pilot also called ZONE requesting a BS; again a squawk was

issued and a BS applied. ZONE passed unrelated TI to both ac well before the incident indicating that when workload permitted, regardless of the service being provided, he was passing TI to BS ac in a busy portion of airspace. The controller continued to pass information to other ac, including TI and airfield information, until at 1048:05, when the Tutor reported complete and was instructed to squawk 7000. At 1048:28 the tape transcript shows that TI was passed to the C172 pilot on an ac at 12 o'clock half a mile crossing right to left indicating 1600ft. At that point on the radar recording shows the Tutor in the C172's 2 o'clock, indicating 1300 ft climbing; when the Tutor was passing 1600ft it was still in the C172's 2 o'clock. When the Tutor was about half a mile from the C172 in its 12-1 o'clock the C172 turns right towards it.

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

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

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

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

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

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

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

The Board noted that both ac were operating legitimately under VFR in Class G airspace under the 'see and avoid' principle and both were in receipt of BS where ATC is not obligated to provide TI. In the event however, Waddington Zone, having the capacity to do so, did provide TI to the C172 and this drew the pilot's attention to the Tutor as it climbed up from its PFL. Members observed that, although under no obligation to do so, it would have assisted the C172 pilot's visual acquisition of the Tutor if the controller had added that it was climbing. It was not clear to Members whether the C172 pilot had, as implied in his report, seen the Tutor before the TI was passed or whether his acquisition was a result of the TI; in any case the pilot considered there to be no risk of collision. The Tutor

student and subsequently the instructor were, on the other hand, concerned by the proximity of the C172 as it flew almost directly above them. Members also noted that under the Rules of the Air the Tutor had right of way and, although adequate vertical separation may have existed, a turn by the C172 pilot would have indicated to the Tutor pilots that the former had seen them and was relatively unconcerned.

**PART C: ASSESSMENT OF CAUSE AND RISK**

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

Risk:                        C.

## AIRPROX REPORT No 2011006

Date/Time: 24 Jan 2011 2047Z

Position: 5115N 00132W  
(2nm NW Andover)

Airspace: UKNLFS (Class: G)

Reporting Ac Reported Ac

Type: Chinook Apache

Operator: HQ JHC HQ JHC

Alt/FL: 800ft NR  
(RPS 1024mb) (NK)

Weather: VMC NR NK NR

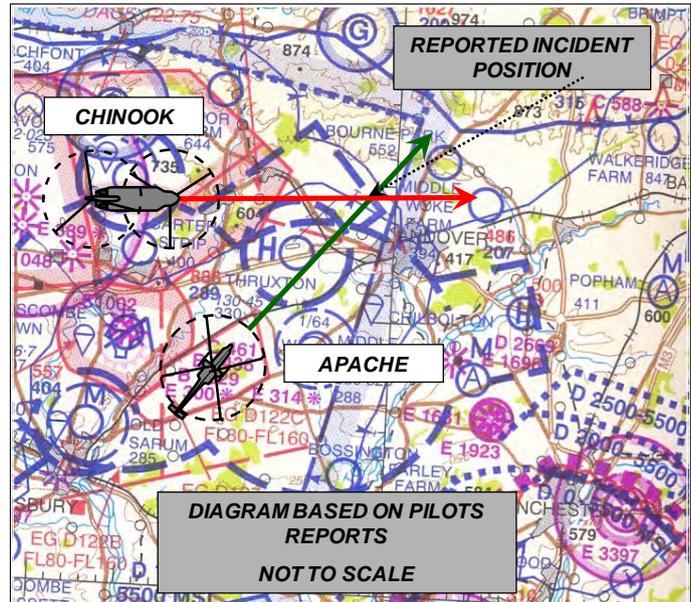
Visibility: 10km NR

Reported Separation:

100ft V/0ft H NR

Recorded Separation:

NR



## PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

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

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

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

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

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

**THE CHINOOK SQN CDR** commented that this incident was a very high risk Airprox. The Apache lights were not discernable against the urban lights of Andover, they had no relative motion because of the potential risk of collision, and they were obscured by the cockpit window strut. All of these frictions, which make picking up a potential mid-air risk difficult, have been highlighted in many previous Airprox incidents and will continue to do so in the future. Understanding of these factors

and the importance of head movement to achieve effective lookout are key facts to continue to educate our aircrew about; this ASIMS should be used as an illustration of the risk.

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

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

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

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

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

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

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

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

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

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

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

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

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

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

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

## **PART C: ASSESSMENT OF CAUSE AND RISK**

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

Degree of Risk: B.

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

## AIRPROX REPORT No 2011010

Date/Time: 8 Feb 2011 1048Z

Position: 5140N 00056W  
(6nm NE RAF Benson)

Airspace: Lon FIR (Class: G)

Reporting Ac Reported Ac

Type: Puma C172

Operator: HQ JHC Civ Trg

Alt/FL: 2000ft 2400ft  
(RPS 1013mb) (1023mb)

Weather: VMC CAVOK VMC CAVOK

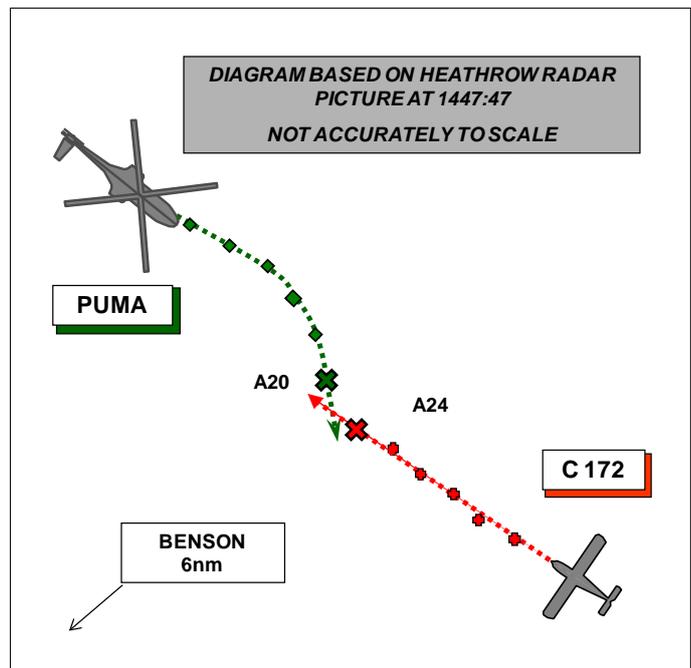
Visibility: 10km 40km

Reported Separation:

100-200ft V/NR H400ft V/0.5nm H

Recorded Separation:

400ft V/0 H



### PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

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

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

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

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

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

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

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

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

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

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

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

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

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

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

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

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

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

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

**PART C: ASSESSMENT OF CAUSE AND RISK**

Cause: A late sighting by the Puma crew.

Degree of Risk: C.

## **AIRPROX REPORT No 2011021**

Date/Time: 27 Mar 2011 1130Z (Sunday)

Position: 5206N 00050W  
(3nm N Milton Keynes)

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

Type: Topsy Belfair Kite

Operator: Civ Pte NK

Alt/FL: 1450ft NK  
(QNH 1014mb)

Weather: VMC HAZE NK

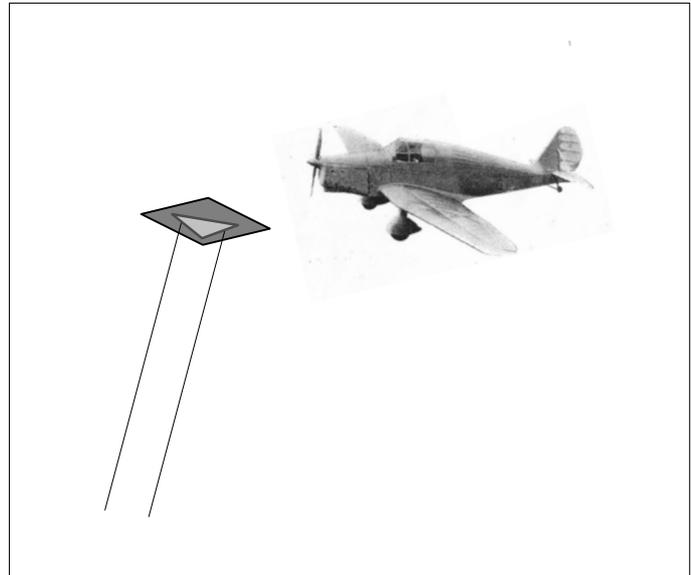
Visibility: 6km NK

Reported Separation:

50ft V/10m H NK

Recorded Separation:

NR



### **PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

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

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

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

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

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

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

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

## **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

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

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

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

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

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

## **PART C: ASSESSMENT OF CAUSE AND RISK**

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

Degree of Risk: C.