

**ASSESSMENT SUMMARY SHEET FOR UKAB MEETING ON 23 MAY 2012**

<b>Total</b>	<b>Risk A</b>	<b>Risk B</b>	<b>Risk C</b>	<b>Risk D</b>	<b>Risk E</b>
<b>16</b>	<b>1</b>	<b>3</b>	<b>10</b>	<b>0</b>	<b>2</b>

<b>No</b>	<b>Reporting</b>	<b>Reported</b>	<b>Airspace</b>	<b>Cause</b>	<b>Risk</b>
2012012	PA28-151 (CIV)	C182 (CIV)	G (Blackbushe ATZ)	The C182 pilot did not integrate into the established cct pattern and flew into conflict with the PA28, which he did not see.	C
2012018	DA42 Twin Star (CIV)	PA44 (CIV)	G (ATZ)	The PA44 pilot did not comply with the ADC's instruction to position as No2 and flew into conflict with the DA42 on final, which he had not seen.	B
2012022	PA28 (A) (CIV)	PA28 (B) (CIV)	G (Wellesbourne ATZ)	Unable to make RT contact with Wellesbourne, the pilot of PA28 (B) did not conform with the cct pattern established by other ac and landed into conflict with PA28 (A).	C
2012024	MD902 (CIV)	TL2000 (CIV)	G (VoY AIAA)	Effectively a non-sighting by the TL2000 pilot and a late sighting by the MD902 pilot.	A
2012025	Jodel D105 (CIV)	PA28 (CIV)	G (London FIR)	Effectively a non-sighting by the PA28 pilot and a late sighting by the Jodel pilot.	B
2012028	CZAW ML (CIV)	R44 (CIV)	G (Scottish FIR)	A non-sighting by the R44 pilot and a late sighting by the CZAW pilot.	B

2012029	EMB170 (CAT)	FK50 (CAT)	G (LTMA/LFIR)	The FK50 crew did not follow their assigned heading and were slow to respond to avoiding action, resulting in their flying into conflict with the EMB170.	C
2012030	Grob Vigilant (MIL)	Grob Tutor TMk1 (MIL)	G (Oxford AIAA)	The Tutor pilot flew close enough to cause the Vigilant crew concern.	C
2012031	Tornado GR4 pr (MIL)	F15E (Foreign MIL)	G (London FIR)	A late sighting by the F15E crew and late avoiding action by the F15E and No 3 GR4 crew.	C
2012032	Hawk TMk2 (A) (MIL)	Hawk TMk2 (B) (MIL)	G (London FIR)	Hawk (A) was instructed to descend through the level of Hawk (B) without confirmation that Hawk (A) pilot was visual with Hawk (B).	C
2012035	Paraglider (CIV)	PA28 (CIV)	G (London FIR)	A conflict in Class G airspace resolved by the pilots of both ac.	C
2012036	Grob Tutor (MIL)	Agusta A109S (CIV)	G (Benson MATZ)	A conflict resolved by ATC.	E
2012037	MD902 (CIV)	DA40 (CIV)	G (London FIR)	Late sightings by the pilots in both ac.	C
2012038	Paramotor (CIV)	EC120 (CIV)	G (London FIR)	A non-sighting by the EC120 pilot.	C

2012042	AS355 (A) (CIV)	HS125 (CIV)	G (London FIR)	Gloster APP allocated an acceptance level which did not ensure that deconfliction minima were achieved.	C
2012046	A319 (CAT)	Hot Air Balloon (CAT)	G/D (London FIR/Newcastle CTA)	Sighting Report.	E

## AIRPROX REPORT No 2012012

Date/Time: 8 February 2012 1242Z

Position: 5119N 00053W (1¼nm final  
RW07RHC @ Blackbushe -  
elev 325ft)

Airspace: Blackbushe ATZ (Class: G)

Reporting Ac      Reported Ac

Type: PA28-151      C182

Operator: Civ Trg      Civ Pte

Alt/FL: 550ft↓      ↓800ft  
QFE (1028hPa)      QFE (1028hPa)

Weather: VMC CLBC      VMC CLBC

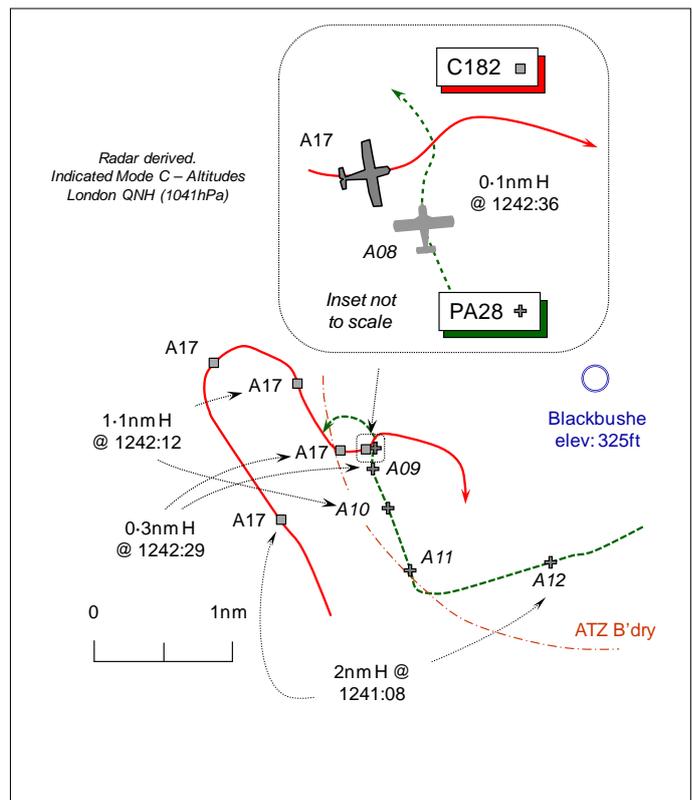
Visibility: 3-4nm      6-7nm

Reported Separation:

300ft V/300m H      NK

Recorded Separation:

Contacts merged with 900ft V



## PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE PIPER PA28-151 PILOT**, a flying instructor, reports he was instructing a low-hours student in the cct to RW07 RH cct at Blackbushe. They were in communication with the A/D FISO, C/S Blackbushe INFORMATION, on 122.300MHz whilst flying the student's fourth cct. Descending from 800ft to 550ft QFE (1028hPa) at 75kt his student, the PF, had just started to turn from R base onto final (340° - 070°) when he heard the pilot of another ac transmit on the RT what he believed at the time to be a call at LH base-leg for RW25. Thinking the pilot was landing on the reciprocal RW, he looked towards the area of base-leg for RW25, but then caught a glimpse of another aeroplane – the C182 - above him and to his L, in a L turn onto final for RW07. He took control from his student, applied full power and whilst remaining level at 500ft QFE turned towards the dead side - to the N of the RW centre-line. The C182 passed 300ft above him with a 'high' Risk of collision. He then made a somewhat heated radio call to Blackbushe INFORMATION before carrying out an orbit to the L and re-establishing his aeroplane on final approach to RW07, from which he landed.

Subsequently, he went up to the Tower to discuss the events with the FISO and advised that he would be filing an Airprox. His aeroplane is white with blue/black stripes; a squawk of A7010 [operating in a A/D traffic pattern] was selected with Mode C.

**THE CESSNA C182 PILOT** reports he was inbound to Blackbushe from Lee-on-Solent, VFR at 90kt and was in communication with Blackbushe INFORMATION on 122.300MHz; a squawk of A7000 was selected with Modes C and S on. The cloudbase was about 1700ft with poor visibility.

He was intending to pass to the E of Farnborough to join downwind for RW07RH at Blackbushe. However, he was asked by Farnborough ATC to pass to the W of Farnborough to allow traffic to depart from their airfield, which he complied with. This placed him in a position for a straight-in approach to RW07 at Blackbushe, giving way to cct traffic in the RH cct. After looking to his R, he saw no traffic downwind and declared that he was on final for RW07 at 800ft QFE. Some time later there was an outburst on the radio so he abandoned the approach and departed to the W to reposition and join downwind, from which he landed without issue. The PA28 was not seen.

Once on the ground he attempted to clarify the situation as he had no idea what had happened. Upon speaking with the Control Tower by phone, he believed he was told, incorrectly, that when he called final, there were two ac downwind; however, they were in a LH cct when the declared cct is RH for RW07. As he was on final looking to the R for traffic on a RH cct he did not see the traffic approaching from the L on a LH cct. Clearly, he did not see the PA28 but he was looking for ac approaching downwind from the R, not the L.

His aeroplane is white with blue stripes; the HISL, navigation and landing lights were on.

**THE BLACKBUSHE FLIGHT INFORMATION SERVICE OFFICER (FISO)** reports that two PA28s were flying ccts to RW07RH. The C182 pilot called for joining instructions and was advised that RW07RH was in use with 2 fixed-wing ac in the Blackbushe cct and given the QFE of 1028hPa. The C182 pilot read back the QFE and runway, he thought. [UKAB Note (1): However, the C182 pilot said RW05 not RW07.] The pilot's next call was for L base for RW05 (sic). He asked the C182 pilot his position and acknowledged his read back but he still could not see the aeroplane; the forward visibility looking to the W of the Tower was unofficially 10km+ but picking out a white ac against a grey sky is difficult. The C182 was seen just before the pilot made his final call so when the C182 pilot called final he advised him that there was one ac ahead on short final - depth perception putting the C182 behind the PA28. Apparently, the traffic ahead was not seen by the C182 pilot, but before the intentions of the C182 pilot could be clarified the PA28 pilot enquired what the C182 was doing. The PA28 pilot elected to orbit L to remain clear and the C182 pilot went around at cct height.

**ATSI** reports that the Airprox was reported to have occurred 1.7nm WSW of Blackbushe. The Blackbushe Aerodrome Traffic Zone (Class G airspace), comprises a circle radius 2nm centred on the RW07/25, except that part of the ATZ located S of the M3 motorway, from the surface to 2000ft above the aerodrome elevation of 325ft.

The PA28 was operating VFR in the RH cct for RW07 and was in receipt of a BS from Blackbushe INFORMATION on 122.300MHz. The C182 was operating on a VFR flight from Lee-on-Solent to Blackbushe and was also in receipt of a BS from Blackbushe INFORMATION on frequency 122.300MHz.

The Farnborough METARs:

1220Z 04012KT 9999 OVC016 M01/M03 Q1040=  
1250Z 05011KT 9999 -SN OVC016 M00/M03 Q1040=

At 1241:00, the PA28 pilot operating in the RH cct for RW07 reported downwind for a touch and go and was instructed to report final. At 1241:08, the radar replay shows that the C182 was 2.5nm WSW of Blackbushe crossing the extended approach track for RW07RH S to N. The pilot of the C182 called Blackbushe INFORMATION and requested joining instructions. The FISO advised the pilot of the C182 that there were two fixed wing ac in the cct and that RW07 was in use, right hand.

[UKAB Note (2): The C182 pilot readback the QFE (1028hPa) “..and runway 0-5 in use [C182 C/S]”, but the FISO did not query the incorrect readback of the RW at this point.

The C182 flew through the extended approach track for RW07RH and made a 180° R turn to position on L base. At 1242:12, the C182 pilot reported “*joining on left base for 05*”. The FISO advised the pilot of the C182 that “..we’re 0-7 with a left hand circuit in use can you just say again your position”, mistakenly stating that the circuit was LH. The pilot of the C182 replied that he was “*to the left of the..05 runway*”. At 1242:12 the C182 was on left base with the PA28 on right base. At 1242:29 the C182 turned onto final for RW07 from left base indicating 1700ft as the PA28 turned onto final from right base at 900ft. The two ac were 0.3nm apart. As the two ac established on final their tracks converged; the C182 at 1700ft and the PA28 at 800ft.

The written report from the FISO stated that he was not visual with the C182 until just before the pilot called on final. When the C182 pilot reported final the FISO advised that there was cct traffic ahead

short final (the C182 appeared to the FISO to be behind the PA28). The pilot of the PA28 made a transmission expressing extreme concern at the proximity of the C182 and advised INFORMATION that he was orbiting at the upwind end of the runway. The report from the pilot of the C182 stated that he was unaware of the presence of the PA28 until the transmission from the pilot.

As both flights were VFR in Class G airspace, the pilots of both ac were ultimately responsible for collision avoidance.

The Manual of Flight Information Services, CAP410 Part B, Chapter 1, Page 1, Paragraph 7.4 states:

‘Joining circuit

Landing direction and traffic information on known traffic flying within the ATZ and the immediate surrounding local area is normally passed when the aircraft is still some distance away from the ATZ. This enables the pilot to determine if it is safe to proceed with the flight as planned and to intelligently position the aircraft in relation to other aircraft in the circuit pattern. FISOs are not to instruct pilots to join the circuit at a particular position. Furthermore, FISOs may not allocate a landing order, e.g. ‘Report final number 3’. The pilot must be told that there are two aircraft ahead in the circuit and it is up to the pilot to position himself accordingly.’

The FISO advised the pilot of the C182 that there were two fixed wing ac in the RH cct for RW07 and expected that the C182 pilot would position appropriately in the RH cct. Although the FISO subsequently misstated the cct direction as left-hand, the C182 pilot had already positioned on L base at that time so it is unlikely that this contributed to the Airprox. The Airprox occurred on final approach to Blackbushe, within the ATZ, when the pilots of both ac established on final at the same time from opposite base-legs, 900ft apart. The pilot of the C182 was advised by the Blackbushe FISO that there were two fixed wing ac in the RH cct. The pilot of the C182 did not conform to the established traffic pattern and positioned on L base.

As both ac were in Class G airspace, the pilots of both ac were ultimately responsible for collision avoidance. The pilot of the PA28 was concerned about the position of the C182 and took action to avoid it. The pilot of the C182 was unaware of the presence of the PA28 until the Airprox had occurred.

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

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

When the C182 pilot called Blackbushe INFORMATION he asked for joining instructions; however, FISOs are not permitted to issue ‘instructions’ to pilots in the air and the FISO passed the essential information needed - that there were two fixed wing ac already in the cct and that RW07 was in use, with a right hand pattern. Nevertheless, the GA Member opined that the C182 pilot did not assimilate this from the FISO’s transmission, nor scan for and locate the ac reported to be in the cct, instead joining from the opposite direction contrary to the Rules of the Air. The Board discussed whether the FISO had ‘painted’ a correct and satisfactory picture of the cct for the C182 pilot and whether the FISO should have added that the two ac already established in the pattern were ‘ahead’ in the cct. Controller Members who also undertake FISO duties opined that the difference between offering sufficient succinct information to be helpful to the pilot and not making it sound like an instruction can sometimes be difficult. In these circumstances, it would have been reasonable for the FISO to add that the two ac in the cct were ahead of the C182. Nevertheless, Members concluded the information provided was sufficient and it should have been evident to the C182 pilot that he would be joining an established RH traffic pattern with 2 other ac already circuiting, which he had to acquire visually and fit in with appropriately.

Sound pre-flight planning should have acquainted the C182 pilot with the RW layout and cct directions that he might expect to encounter when he arrived at Blackbushe. Therefore, it was unclear to Members why he had joined on a L base-leg and turned onto final without sighting the other two ac beforehand unless this was a delaying manoeuvre to give him time to spot the two PA28s. Despite the C182's indicated altitude this was evidently not a conventional overhead join nor in conformity with the established RH cct pattern. The C182 pilot's written report had made reference to flying a straight-in approach to RW07 and giving way to traffic in the RH cct, attempting to look R into the downwind for them. It was evident from the RT transcript and the recorded radar data that he had indeed crossed the extended centre-line and positioned for a L base-leg outside the ATZ. Nevertheless, as he could not see the PA28s beforehand, he could have asked the FISO where the other ac were, which would have assisted him with his responsibility to fit in with the traffic already in the pattern.

The Board noted that it was after the C182 pilot reported "*joining on left base for 05*" at 1242:12, that the FISO reaffirmed the RW in use as RW07, but mistakenly advised the C182 pilot that it was "*..with a left hand circuit..*". The radar recording at this point shows the C182 already in a left-base position, well above the normal cct height. Therefore, the Board agreed that despite his error, the FISO's incorrect cct direction was not contributory to the Airprox. The Board was briefed that at this point the second PA28 was turning downwind with the subject PA28 on a R base-leg, 1.2nm directly ahead of the C182. The C182 pilot reports that the PA28 was not seen at all, perhaps because he was so high that the PA28 was obscured under the ac's nose making it increasingly more difficult to see as they flew closer together. A CAT pilot Member affirmed that the C182 pilot should have been searching for the two ac already in the cct before he attempted to join, whereas another Member suggested that he might have become confused between RW07 and RW25 which is a LH cct, and muddled this into an erroneous "*..05..*". It was suggested by a military pilot Member that the C182 pilot might not have spotted the PA28 because of the wide cct flown taking it just outside the ATZ boundary at the turn onto base-leg. However, at civilian A/Ds long downwind patterns are commonplace and it was only the student PF's 4<sup>th</sup> cct! Taking all these factors into account the Board concluded that this Airprox had resulted because the C182 pilot did not integrate into the established cct pattern and flew into conflict with the PA28, which he did not see.

Turning to the inherent Risk, it was evident that the FISO had spotted the C182 and advised the pilot about the PA28 ahead on final moments before the PA28 pilot himself spotted the other aeroplane above him. It was fortunate that the PA28 was a low-wing ac, which facilitated sighting the C182 above. Members then discussed the options available to the PA28 pilot after he spotted the C182 above him. His L turn into the deadside was contrary to the Rules of the Air, but the subsequent orbit ensured that his PA28 cleared away from beneath the C182 quickly and ensured that he did not turn into the second PA28 following as No2 in the pattern; in practice the No2 was unlikely to have caught him up at that stage if he flew the same wide pattern as that evinced by the radar recording. Nevertheless, the consensus amongst the Members was that an orbit on final was not ideal and a go-around at the cct height of 800ft QFE would have been preferable. Although he might have perceived the C182 was descending following its pilot's "*..turning finals*" call, the PA28 pilot's estimate of 300ft vertical separation was evidently less than it actually was at the time, given the significant height separation of 900ft unverified Mode C shown on the radar recording. The Board concluded therefore that the PA28 pilot's sighting of the C182 and subsequent avoiding action had forestalled a closer encounter and effectively removed any Risk of a collision.

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

Cause: The C182 pilot did not integrate into the established cct pattern and flew into conflict with the PA28, which he did not see.

Degree of Risk: C.

## AIRPROX REPORT No 2012018

Date/Time: 20 Feb 2012 1602Z

Position: 5205N 00036W (1nm FIN APP  
RW21 Cranfield - elev 358ft)

Airspace: ATZ (Class: G)

Reporting Ac Reported Ac

Type: DA42 Twin Star PA44

Operator: Civ Club Civ Trg

Alt/FL: 400ft↓ 800ft  
agl QNH

Weather: VMC NR VMC NSC

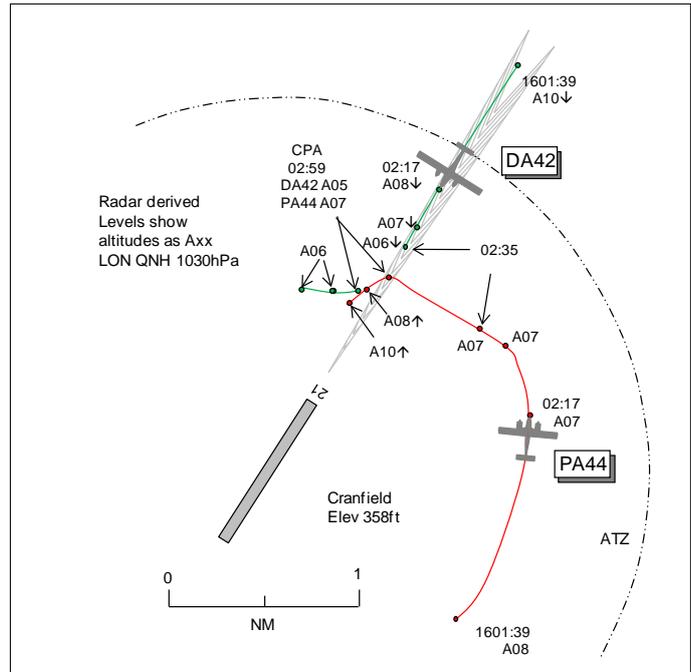
Visibility: >10km 10nm

Reported Separation:

<100ft V/<100m H 200ft V/0.4nm H

Recorded Separation:

200ft V/0.2nm H



## PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE DA42 PILOT** reports flying a short engineering test flight (1 visual cct) from Cranfield, VFR and in receipt of an ACS from Cranfield Tower on 122.85MHz, squawking 7000 with Modes S and C. The visibility was >10km in VMC and the ac was coloured white with wing-tip strobes switched on. On short final RW21 heading 213° descending through 400ft agl at 85kt he heard another flight being advised that they were No 2 to a DA42 (his ac) on final. His onboard EFIS/TAS audible warning alerted him to the presence of other traffic in close proximity but it gave no relative position. Traffic was immediately observed in his 10 o'clock range 100m about 100ft above and descending on base leg. He initiated avoiding action by applying power and commencing a level turn R turn and advised ATC that he was breaking-off the approach owing to an ac on a conflicting course. ATC instructed the other flight to go-around and he was instructed to re-establish on final. He assessed the risk as high.

**THE PA44 PILOT** reports flying dual training sortie from Cranfield, VFR and in receipt of an ATS from Cranfield on 122.85MHz, squawking 7000 with Modes S and C. The visibility was 10nm with no significant cloud in VMC and the ac was coloured white/blue with strobe and landing lights switched on. After going around into a low-level cct he was told he was No 2 to a DA42 on base leg. He looked but did not see any ac when he turned base due in part to the other ac being very low. He also expected to be No 1 by this point and ATC did not say anything until very late. Heading 290° at 100kt and 800ft QNH he had just spotted the DA42 ahead about 0.5nm away on low final and had just started a go-around when ATC finally asked whether he was visual. He estimated separation as 200ft vertical and 0.4nm horizontal at the CPA and he assessed the risk as medium. In summary, he thought the DA42 had carried out a wide and low cct, ATC had given a very late warning and his instructional workload was medium to high when he made a poor assumption that he had become No 1.

**THE CRANFIELD ADC** reports he was taking over from the previous controller as the PA44 was just going around from an NDB approach into a low-level cct and the DA42 was late downwind in the cct to land after an engineering flight check. As the PA44 flight went around it was passed TI on the DA42 and was told by the off-going controller that it was No 2. When the PA44 flight called downwind the DA42 traffic was re-iterated by the off-going controller and the DA42 was about to turn onto final. Both he and the off-going controller had sight of both ac. The off-going controller cleared

the DA42 flight to land and he, the on-coming controller took over the control position. The DA42 pilot then called, "taking avoiding action on the (incorrect PA44 operator c/s)" and the ac broke R. He acknowledged the transmission, double checked the position of both ac and then instructed the PA44 flight to go-around to increase the separation before again passing TI to its pilot. The DA42 then orbited on final and made a normal landing while the PA44 flew another cct and landed.

**ATSI** reports that the Airprox occurred 1.3nm to the NE of Cranfield in the Cranfield ATZ (Class G airspace), which comprises a circle radius 2nm centred on the longest RW (03/21), from the surface to 2000ft above aerodrome level.

The DA42 Twinstar was operating VFR on an engineering test flight which required one visual LH cct.

The PA44 was operating VFR in the LH cct following a go-around from an NDB approach.

CAA ATSI had access to recordings of RT from Cranfield Tower and area radar recordings together with written reports from both pilots and the Cranfield ADC.

The Cranfield METARs are provided for 1550 and 1620 UTC:

METAR EGTC 201550Z 23019KT 9999 FEW035 07/M01 Q1028= and EGTC 201620Z 23015G25KT 9999 FEW045 06/M00 Q1028=

At 1557:10 UTC the PA44 pilot reported at 4 DME and was cleared for a low approach and go-around RW21.

At 1558:20 the DA42 pilot reported, "...downwind simulated asymmetric" and was told by ADC, "...number two following a P A forty-four inside four miles on the N D B approach".

At 1600:00 the pilot of the PA44 reported going around and the ADC enquired, "(PA44 c/s) is this to circle ????? minima". The PA44 pilot replied, "Affirm with er two further low levels to follow if possible" and was told, "...you are number two following a D A forty-two er mid-point left base". The PA44 pilot acknowledged "Number two (PA44 c/s)".

At 1601:00 the DA42 flight was cleared to land. The pilot of the PA44 reported, "...turning downwind low for two one" and was told again, "...number two following a D A forty-two final". The PA44 pilot read back "Number two (PA44 c/s)". The report from the ADC stated that a handover took place when the PA44 was late downwind and that at the time of the handover both controllers had both ac in sight.

At 1602:17 the DA42 was on final 1.8nm NE of the airfield at 800ft while the PA44 was S of the DA42 by 1.3nm at 700ft.

At 1602:35 the PA44 at altitude 700ft had turned base inside the track of the DA42, which was indicating 600ft and was in its 10 o'clock position range of 0.6nm. The DA42 then fades from radar.

[UKAB Note (1): Just after 1602:40 the DA42 pilot asked, "Er confirm the (erroneous company name)'s visual with us" and Tower replied, "Say that again". The DA42 pilot replied, at 1602:50, "...is breaking off the (erroneous company name)'s heading straight for us". The ADC asked the pilot of the PA44, "...are you visual with the Twinstar you were told you were number two to" to which the PA44 pilot replied, "...we are now". The CPA occurs at 1629:59 as the DA42 reappears on radar 1nm NNE of the ARP, just to the W of the FAT turning through a WSW'ly heading indicating altitude 500ft with the PA44 0.2nm to its NE turning L onto the FAT, 200ft above. Thereafter the ac diverge, the DA42 tracking W at altitude 600ft and the PA44 tracking SSW and climbing, in accordance with the ATC 'go-around' instruction.]

The written report from the pilot of the PA44 acknowledged the instruction to position No 2 to the DA42 but stated that he did not see any traffic when he turned base and that he expected to be No 1 by that point.

The radar replay shows that the PA44 flew a much smaller cct than the DA42. In addition, the DA42 was simulated asymmetric and the surface wind was reported as 23018G28kt when the DA42 was given landing clearance. The DA42 had a GS of 77kt on final compared to the 119kt GS of the PA44 on the downwind leg.

The Cranfield ADC instructed the PA44 flight to go around to increase the separation between the ac. Both ac subsequently landed without further incident.

As both flights were in Class G airspace, VFR, the pilots of both ac were ultimately responsible for collision avoidance.

The pilot of the PA44 was told twice to position No 2 to the DA42. When the pilot turned base he could not see the DA42 but continued to final in the belief that he had become No 1. The smaller cct flown by the pilot of the PA44 in combination with the difference in GS may have led to the PA44 pilot's perception that the DA42 was further ahead than was in fact the case.

Having instructed the PA44 to position No 2 to the DA42 the Cranfield ADC had an expectation that the pilot of the PA44 would position appropriately behind it.

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

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

The PA44 pilot was told twice by the ADC that he was No 2 to the DA42, which he acknowledged, and on both occasions was given accurate TI on its position in the visual cct; in between these 2 transmissions the ADC cleared the DA42 to land. The PA44 pilot appeared to have become task focussed on flying a low-level cct (usually a cct close-in to the RW) and had turned onto base leg without visually acquiring the DA42, having made an assumption that he had become No 1. The DA42's slow GS in the strong SW'ly wind may have caught out the PA44 pilot who may have thought the DA42 would have been much closer to the threshold by the time he had reached his turn onto final. It was only after the DA42 pilot asked the ADC whether the PA44 pilot was visual with his ac, and the ADC then asked this of the PA44 pilot, that the PA44 pilot reported visual contact just as he was commencing a go-around. Although these had been late sightings, the Board agreed that the root cause of the Airprox was that the PA44 pilot did not comply with the ADC's instruction to position as No 2 and flew into conflict with the DA42 on final which he had not seen.

Controller Members thought that the ADC had done all that was required of him and that it would have been difficult for him to assess exactly where the PA44 was in relation to the DA42 without an ATM. He had a justifiable expectation that the PA44 would position behind the DA42, as instructed, and was undoubtedly surprised when the 2 ac came into close proximity on final approach. Having ensured the PA44 pilot was visual with the DA42 the ADC instructed the PA44 flight to go-around to resolve the conflict and increase separation. The DA42 pilot, being concerned about the PA44's conflicting flightpath, had pre-empted the ADC's and PA44 pilot's actions and had initiated avoiding action by turning R, although this could have been constrained owing to the pilot's need to transition the ac from simulated asymmetric landing configuration into a go-around. The radar recording shows the ac separated by 200ft and 0.2nm at the CPA on short final. Taking all of these elements into account, the Board concluded that the actions taken by all parties were enough to remove the actual risk of collision but the ac had passed with safety margins reduced below those normally expected such safety had been compromised during this encounter.

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

Cause: The PA44 pilot did not comply with the ADC's instruction to position as No 2 and flew into conflict with the DA42 on final, which he had not seen.

Degree of Risk: B.

## AIRPROX REPORT No 2012022

Date/Time: 26 Feb 2012 1205Z (Sunday)

Position: 5212N 00137W  
(Wellesbourne Short  
Final RW18 - elev 158ft)

Airspace: Wellesbourne ATZ (Class: G)

Reporting Ac      Reported Ac

Type: PA28                      PA28

Operator: Civ Trg              Civ Pte

Alt/FL: 100ft                      10ft  
NK                                      NK

Weather: VMC CAVOK          VMC CLBC

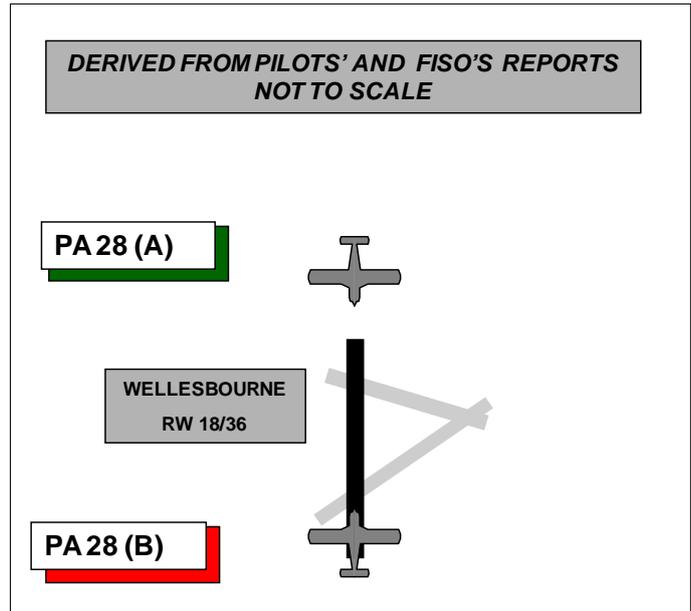
Visibility: >10km              1km

Reported Separation:

100ft V/50m H      4m V/920m H

Recorded Separation:

NK



## PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**PA28 (A) PILOT** reports that he was flying as an instructor and was performing a currency check on a PPL holder in a white and green ac with strobes switched on and in receipt of a BS, he thought, from Wellesbourne and squawking 7000 with Mode C but Mode S was not fitted.

While on short final for RW18 at 70kt and about 100ft, he noticed another ac above the horizon and around 1000m ahead, which he believed had just departed [on RW36]. As the ac was descending, he believed it must have been carrying out a practice engine failure after takeoff. A few moments later he saw the other ac descend below a tree line ahead and as he could still see it he realised it must be coming towards him. He took control from the HP and immediately initiated a go-around, somewhat in disbelief; the other ac continued to land on RW36.

He first saw the ac when they were at a height of around 150ft and the other ac was at a similar height; he initiated the go-around at about 50ft. He then positioned on the deadside of the RW18 cct and when they were abeam the other PA28 it was no more than 100ft in height and possibly closer than 50ft horizontally.

He reported the incident immediately to Wellesbourne Information.

The biggest factor from his perspective was that the last thing he expected to see was an ac approaching head-on at such a late stage of landing. His student, a PPL holder, was a little unsure as to why the pilot had taken control as he did not see the other ac until it was pointed out, almost as they passed abeam it.

He assessed the risk of collision as being extremely high.

**PA28 (B) PILOT** reports flying in a red white and blue ac on a VFR private flight from Gloucester to Wellesbourne, squawking with Mode C but Mode S was not fitted. While inbound to Wellesbourne

heading 360° at 65 kt, he was not able to contact them on 124.025, which he later learnt was because you need to pull the radio control out in order to get the 02. He inadvertently called on frequency 124.05 [he thought see ATSI report] believing it to be Wellesbourne Information but the agency replied "Contact East Midlands Radar". He asked why he was being asked to do this when he was positive of his location but there was no response to any further requests from him although he could hear the controller referring other ac to the same East Midlands frequency.

Having failed to establish contact with Wellesbourne he endeavoured to make his presence known by circling O/H at 2000ft while at the same time trying to discern the pattern direction. He circled for one minute, but during this time there were no departures or arrivals, so he concluded that they must have seen him and held ac on the ground and therefore he considered it fairly safe to land. As he approached touch-down, another ac appeared at the opposite end of the RW but it immediately aborted.

He landed in the shortest distance possible taking a quarter of the RW and vacated immediately at the first exit.

The Windssock indicated calm.

**ATSI** reports that an Airprox was reported by the pilot of PA28 (A) in the Wellesbourne Mountford ATZ (Class G airspace), which is a circle of radius 2nm centred on RW18/36 from the surface up to 2000ft above aerodrome level (159ft); he was approaching to land on RW18 when another PA28(B) was observed to land on RW36.

The reporting PA28, (A) was operating VFR, flying training circuits in the RH cct for RW18 at Wellesbourne Mountford and was in receipt of a FIS from Wellesbourne Mountford TWR on frequency 124.025 MHz. The reported PA28, (B) was operating on a VFR flight from Gloucester to Wellesbourne Mountford.

CAA ATSI had access to recordings of RTF from East Midlands TWR, area radar recordings, with written reports from the pilots of both Cherokees and the Wellesbourne Mountford FISO.

The UK Aeronautical Information Publication pages AD2-EGBW-1-1 to AD2-EGBW-1-5 (21 Oct 10) state that Wellesbourne Mountford is PPR, that the aerodrome is not available to ac unable to communicate by radio and that pilots are requested to contact Wellesbourne at least 10min before ETA Wellesbourne.

The Coventry METARs are provided for 1150 and 1220 UTC:

METAR EGBE 261150Z VRB03KT 9999 FEW016 10/06 Q1029=  
METAR EGBE 261220Z 23004KT 190V270 9999 SCT020 10/06 Q1028=

At 1150:00 East Midlands TWR received a very faint call from the pilot of the PA28(B) on frequency 124.0 MHz addressed to "Wellesbourne Information"; the controller gave a very clear station ident of 'East Midlands TWR' and requested the callsign of the ac. The pilot of the PA28 (B) passed his flight details to the controller and requested a handover to Wellesbourne. The East Midlands TWR controller instructed the PA28 (B) to contact East Midlands Radar. The instruction was readback and no further calls were received from the pilot of the PA28 (B) by TWR. No calls were received by East Midlands Radar from the pilot of the PA28 (B).

At 1200:13 radar recordings show the PA28 (B) 2.1nm SW of Wellesbourne Mountford and two other ac making approaches to the airfield, one on final and one downwind for RW18.

Radar recordings show the PA28 (B) make an overhead join at Wellesbourne Mountford while one ac is on final approach to land and another ac getting airborne from RW18. PA28 (B) subsequently made an approach to RW36 and landed.

The report from the pilot of the PA28 (A) states that he saw PA28 (B) at approximately 150ft while on short final for RW18 and he initiated a go-around at approximately 50ft.

The report from the FISO at Wellesbourne Mountford states that the PA28 (A) was about to touch down when the PA28 (B) landed on RW 36. The FISO was unaware of the presence of the PA28 (B) prior to it landing as no radio contact had been made.

The report from the pilot of PA28 (B) states that he could not select the frequency 124.025 MHz due to being unable to operate the radio correctly. The pilot contacted frequency 124.0 MHz (East Midlands TWR) believing it to be Wellesbourne Information. When the pilot called on 124.0 MHz the controller clearly gave the station ident as "East Midlands TWR". When the pilot was instructed to contact East Midlands Radar he readback both the instruction and the frequency correctly. The pilot's report states that he queried the instruction to contact East Midlands radar as he "was positive of his location", but received no response; however, no further calls were received either by East Midlands TWR or East Midlands Radar from the pilot of PA28 (B). Having failed to establish contact with Wellesbourne he circled overhead at 2000ft to make his presence known and to observe the traffic pattern. The pilot's report states that there were no arrivals or departures during that time so he made the decision to land. As the pilot of PA28 (B) approached touchdown he observed another ac at the opposite end of the RW which immediately aborted the approach.

Both ac were operating VFR in class G airspace. CAP 774, Chapter 1, Paragraph 2 states:

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

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

The pilot of PA28 (B) attempted to contact Wellesbourne at 1150, approximately 10min before arriving in the overhead but due to being unable to operate the radio correctly, contacted East Midlands TWR. It is unclear why the pilot believed that Wellesbourne Information would be available on 124.050 MHz when he was unable to select the correct frequency of 124.025 MHz. It is unfortunate, that being aware that he was unable to select the correct frequency to contact Wellesbourne, the pilot did not seek assistance from the station he had established contact with, East Midlands TWR. The pilot continued to Wellesbourne Mountford and orbited overhead in order to make his presence known; however, this was unsuccessful as the FISO and the ac in the RH cct were unaware of the PA28 (B)'s presence until it landed. The pilot of PA28 (B) states in his report that whilst he was orbiting overhead Wellesbourne there were no arrivals or departures but radar recordings show one ac departing and one landing during the time PA28 (B) was overhead the airfield.

The pilot of PA28 (B) did not make contact with Wellesbourne Mountford and landed against the established traffic pattern.

The FISO at Wellesbourne Mountford was unaware of the presence of PA28 (B) and was therefore unable to provide assistance in the form of TI.

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

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

The Secretariat was asked whether the pilot of PA28 (B) was a student pilot on a qualifying Cross-Country; although this was not known at the time of the Board Meeting, it was subsequently determined that he was a recently qualified PPL holder, not a student.

The GA Board Member observed that the pilot of PA28 (B) had most likely been nervous and not properly briefed on the radio controller. Although his planned course of action for the approach to Wellesbourne had been correct, this was thrown into disarray when a key element, namely permission to approach and airfield information on the RT, was not available and his back-up plan was rushed and ill-considered. There was enough information available to the pilot (namely 2-way communication with East Midlands TWR) to indicate that his radio (in use) was not unserviceable. That being the case, D&D on 121.5 would have answered any call for assistance and would have been able to contact Wellesbourne (or any other airfield) by land line and relay information or instructions, albeit fairly slowly, thus most likely requiring an orbit in the overhead at a height providing good separation from traffic joining or in the circuit. Another Member pointed out that as far as he was aware, PA28s normally have two radios thus offering another possible solution. A third Member opined that all these factors were symptomatic of inadequate preparation for the flight or insufficient instruction on the ac fit.

Members observed that Wellesbourne has no local RT failure procedures and in the situation faced by PA28 (B) pilot, strict adherence to the UK RT fail procedures (civil) promulgated in the AIP, may not have resolved the situation, merely moved the problem to another location. Therefore Members understood his decision to land at Wellesbourne, despite the 'mandatory RT' requirement; they agreed unanimously, however, that the pilot should have been more patient in attempting to determine visually and subsequently confirm the RW in use and circuit direction, particularly since there is no 'signals area' at Wellesbourne. Although self-generated, the pilot was in a genuine emergency situation and landing at Wellesbourne was agreed to be the safest course of action.

In the event however, Members agreed that since PA28 (A) reacted quickly and appropriately by going around and PA28 (B) landed and vacated the RW expeditiously, there was no risk that the ac would have collided.

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

Cause: Unable to make RT contact with Wellesbourne, the pilot of PA28 (B) did not conform to the circuit pattern established by other ac and landed into conflict with PA28 (A).

Degree of Risk: C.



4 o'clock range 50-100ft as it was passing behind his ac. No avoiding action was taken and he assessed the risk as low.

**THE CHURCH FENTON APP CONTROLLER** reports working 6-7 ac under a BS including the MD902 and 1 flight under a TS. The MD902 pilot reported that an Airprox would be filed on an ac that passed within 500ft and approx 100m. The MD902 was tracking 330° towards Selby when the other ac passed E'bound. The MD902 pilot reported the traffic as a light ac with 2 POB.

**THE LINTON ON OUSE USMO** reports a Supervisor is not rostered on Saturdays at Linton-On-Ouse in support of Church Fenton flying operations. The controller concerned was rostered with another to provide radar cover for Tutor ac with both controllers rotating the radar position. The MD902 pilot, who had been on frequency for some time under a BS, informed the controller that an Airprox had occurred. The Church Fenton APP position at weekends is demanding with the primary task of supporting 4 Tutor ac requiring a TS and providing a VHF service to multiple GA traffic flying in the local area and recovering to Sherburn-In-Elmet, one of the busiest GA airfields in the country. The controller's workload was high with ac on frequency and he did not see any radar contact in the area of the MD902. After the Airprox he did notice an intermittent 7000 squawk within 3nm of the MD902 but the flight was not on frequency. The radar coverage in that area is not good as the PSR and SSR heads are at Linton-On-Ouse so ac below 1500ft in that area may not show on radar and it may account for the intermittent 7000 squawk.

**BM SM** reports that this Airprox occurred 20-5nm SSE of Linton on Ouse, in the vicinity of Drax power station, between an MD902 in receipt of a BS from Church Fenton APP and a TL2000; both ac were operating VFR.

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

The Church Fenton METAR shows EGXG 251150Z AUTO 28009KT 9999 BKN035/// 09/01 Q1025=

APP described their workload as high, providing ATS to 7 or 8 ac at the time of the Airprox: 6/7 BS and 1 TS. At weekends, APP's primary task is to provide ATS to Church Fenton-based Tutor ac and to Sherburn-in-Elmet inbounds and outbounds.

[UKAB Note (2): The radar recording at 1159:09 shows the MD902 1nm SE of Drax Power Station tracking S at FL040 with the TL2000 5nm to its W tracking SE at FL030. The MD902 then commences a R turn, initially steadying on a track of 280° as the TL2000 commences a L turn onto a NE'ly track. By 1200:29 the TL2000, indicating FL029, is 2.1nm WSW of the MD902 which is turning onto a NNW'ly track indicating FL041. Both ac maintain these tracks, on a constant relative bearing, until immediately prior to the CPA.]

At 1200:53 the MD902 begins descending and at this point the TL2000 was 1.2nm W of the MD902, indicating FL029. At 1201:09 the SSR Mode C of the TL2000 and MD902 indicated 400ft vertical separation existed. At this point, the TL2000 was 0.9nm W of the MD902 in its 10 o'clock. The MD902 pilot reports gaining a TCAS TA on an ac "500ft below and ahead of the ac" and correlated that with a "light fixed wing ac...ahead at approx 0.5-0.75m and below." The only other ac that was "ahead" of the MD902 was 3.2nm NW, AC3, in the MD902's 12 o'clock, showing NMC.

The MD902 pilot reported that having correlated the TCAS contact with the "light fixed wing ac" they "stopped (the) RoD and re-assessed the contact which was passing clear." They then "saw a light sports ac out of the corner of (their) eye moving rapidly across (their) view L-R." The pilot then reversed the gentle R turn, executing a "hard L max rate turn" to avoid the TL2000, passing behind it. Based upon their report, the TL2000 pilot's first sighting of the MD902 was at around the CPA, as it passed through their 4 o'clock, 50-100ft behind.

[UKAB Note (3): The radar recording at 1201:25 shows the MD902 level at FL031 0.3nm E of the TL2000 which is maintaining FL030. The CPA occurs on the next sweep at 1201:33 when the radar returns merge, the MD902 having turned L onto a NW'ly heading with 100ft vertical separation.]

From the point that the confliction became evident between the MD902 and TL2000 at 1200:45 and the CPA at 1201:33, there was a constant exchange of RT between APP and a number of ac inbound to Sherburn-in-Elmet. The MD902 pilot's report states that "ATC was busy with GA so (they) visually cleared (their) flight path ahead and below." This suggests that the MD902 pilot was aware that there was a reduced likelihood that APP would be able to warn them of a definite collision risk.

Whilst Linton-on-Ouse suggest that the base of radar cover may have played a part in APP's ability to detect the confliction, this is unlikely given that the Airprox occurred at 3000ft, 20.5nm S of Linton. That said, BM SM contends that, given their workload, APP would have been unable to pass a traffic warning to the MD902 about the TL2000 and that there are no ATM aspects to this Airprox that warrant further analysis.

## **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 circumstances and conditions where both pilots should have been able to see each other in good time, Members wondered whether anything better could have been achieved; in particular, could a radar service have been obtained by either the TL2000 or MD902 flights? The area of the Airprox, within the Vale of York AIAA, is covered by Linton-on-Ouse, a LARS unit; however, this service is available on weekdays only. Church Fenton Approach is not a LARS position and it is tasked to provide services to station-based Tutors and Sherburn-in-Elmet GA traffic. It was unlikely that anything other than a BS could have been obtained from Doncaster Approach as it is not a LARS unit. The MD902 flight had obtained a BS from Church Fenton APP. However, the position was busy with its primary task so it was not surprising that the MD902 pilot could not call on the frequency to update his change in flightpath or that the developing confliction between the subject ac went unnoticed by the APP. Without any ATC assistance available, within this Class G airspace, it was solely down to both pilots for maintaining their own separation from other traffic through see and avoid. The MD902 pilot's SA was enhanced by ACAS equipment but it appeared that the pilot did not assimilate the information generated by TCAS correctly. The TCAS TA received on traffic 500ft below was thought by Members to almost certainly be the TL2000, which carried Mode C, but it seems that AC3 crossing ahead from R to L was acquired visually and erroneously correlated to the TCAS contact. With the known inaccuracies in azimuth, particularly at close ranges, Members agreed that it was imperative for pilots to use the relative height element of the TCAS system, which is known to be accurate, for effecting some vertical separation from the TCAS traffic until it has been positively established that the TCAS contact is definitely the ac seen visually. As it was, the MD902 pilot, having initially stopped the descent, was satisfied that the ac seen was not in conflict and had recommenced the descent. However, the TL2000 was still on a conflicting flightpath converging from the L, which the MD902 pilot then spotted in the 8-9 o'clock position 100m away, a late sighting and part cause of the Airprox. The Board recognised that the MD902 pilot's view from the RH seat, across cockpit, was undoubtedly degraded; however a pilot's lookout scan should take this into account and mitigate any risk by moving ones head or the ac's nose to clear the area concerned. A similar situation existed for the TL200 pilot, seated on the L, looking across to the front R quarter towards the converging helicopter. For his part, the TL2000 pilot had, after passing clear of Burn G/S, turned L towards Full Sutton but did not see the approaching helicopter until it was in his 4 o'clock passing 50-100ft behind, effectively a non-sighting and the other part cause of the Airprox.

Although the MD902 had right of way under the RoA Regulations, these rules only work if pilots see each other's ac in order to comply with them. The radar recording shows that from 1min prior to the

CPA, there was ample opportunity for both crews to visually acquire each other's ac. It was only at the very last moment that the MD902 pilot caught glimpse of the TL2000 as it closed rapidly from the L. Although a max rate L turn was executed, Members believed that this had been actioned too late to ensure an adequate safety margin leaving the Board in no doubt that an actual risk of collision existed during this encounter.

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

Cause: Effectively a non-sighting by the TL2000 pilot and a late sighting by the MD902 pilot.

Degree of Risk: A.

## AIRPROX REPORT No 2012025

Date/Time: 26 Feb 2012 1359Z (Sunday)

Position: 5115N 00113W  
(3nm N Popham - elev  
550ft)

Airspace: Lon FIR (Class: G)

Reporting Ac Reporting Ac

Type: Jodel D105 PA28

Operator: Civ Pte Civ Pte

Alt/FL: 2200ft 2200ft  
QNH (1029hPa) QNH (1027hPa)

Weather: VMC CLBC VMC

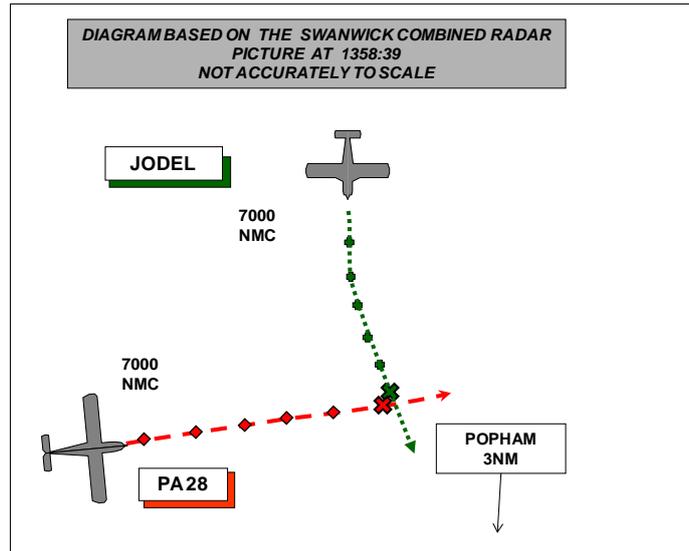
Visibility: 10nm NK

Reported Separation:

10ft V/0m H 200ft V/0m H

Recorded Separation:

NR V/<0.1nm H



## **BOTH PILOTS FILED**

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

**THE JODEL D105 PILOT** reports flying solo in a white ac with black stripes and no lighting, on a VFR private flight. He was in a level cruise, about 5nm N and inbound to Popham, heading 180° at 90kt in receipt of an A/G service and was squawking 7000 with Mode C but TCAS was not fitted when he suddenly became aware of blue and white single-engine low-wing ac, about 100m away in his 2 o'clock and about the same level. At the time he thought it was at the same height but with hindsight he thought it may have been slightly above him. He immediately dived and saw the ac pass directly above him and then continue straight and level. He thought that the other pilot did not see his ac, assessed the risk to be high and reported the incident on landing.

**THE PA28 PILOT** reports flying a blue, white and gold ac on a private flight to Maypole Farm (Kent). When just to the W of Basingstoke he was in the process of changing frequency from Thruxton to Farnborough requesting a BS when he had an Airprox with a Robin or Jodel ac. He had no warning of any ac in close proximity on his PCAS and no indication from ATC of any ac in close proximity.

They were approaching the Farnborough Zone with the intention of following the railway to the N of Farnborough in order to keep clear of their airspace and he was keeping a constant lookout ahead (out-of-sun) and to both sides of the ac through a more or less 180° arc in near perfect flying conditions.

It was a relatively busy afternoon and there was the possibility of gliding activity in the area, of which ATC had warned him, and he thought was NOTAMed, in addition to other ac. The first time he saw the other ac was when it appeared below in close proximity from a NW'ly direction – probably separated by around 300ft laterally and 200ft below and coming from their rear at an angle of around 140°.

Given the angle from the rear from which the ac came, the only way he could have spotted it earlier would have been for him to have turned and actually been 'looking at an angle to the rear'. From the angle the other ac came however, they should have been visible [to its pilot] from a considerable

distance, particularly given the visibility on the day and avoidance action could and should have been taken by the other pilot.

His initial reaction, apart from anger and alarm, was that he would file an Airprox report himself but pressure of work initially prevented him from doing so.

Also he thought that the other ac had most likely not been using a transponder as there was no warning of him on his PCAS and he considered that identifying the other ac would be difficult so there was no urgency to making his report.

It was a close encounter and one which he considers could and should have been avoided had the other pilot been keeping a good look out.

**ATSI** reports that the Airprox occurred at 1358:40, in Class G airspace, 2.7nm N of Popham Airfield, between a Jodel DR105A (DR105) on a VFR flight from Hinton in the Hedges to Popham (EGPO), and a Piper PA-28R-200 Cherokee Arrow (PA28) on a VFR flight from Thruxton (EGHO) to Maypole (EGHB).

CAA ATSI had access to Farnborough RT and area radar recordings together with written reports from both pilots and the FPS for the PA28 provided by Farnborough. Both ac were equipped with Mode S.

The Farnborough Weather was:

METAR EGLF 261350Z 240/5KT 210V360 9999 FEW029 11/05 Q1028=

At 1355:50, radar recording shows the distance between the two ac was 8.6nm on converging headings. The DR105 is shown, 7.1nm N of Popham, squawking 7000 without Mode C level reporting, tracking S. The DR105 pilot's report indicated that he was in communication with Popham (A/G) but not in receipt of an air traffic service.

The PA28 is shown 7nm WNW of Popham, squawking 7000 without Mode C level reporting, tracking E. The PA28 pilot's written report indicated that the pilot was in the process of changing frequency from Thruxton (A/G) to Farnborough and therefore not in receipt of an Air Traffic Service at the time.

The two ac continued on their respective tracks and at 1358:40, radar recording shows them in close proximity. The PA28 is shown in the DR105's 1 o'clock at a range of 0.1nm, crossing from right to left. The written reports from the pilots indicated that both ac were at an altitude of 2200ft.

[UKAB Note 1: The incident took place between sweeps on Swanwick combined radar recording, immediately after the sweep at 1358:39 (shown above). The horizontal separation is projected as being 0 at about 1358:43; neither ac is displaying Mode C information but both show elementary Mode S].

At 1359:50, after the Airprox had occurred, the PA28 pilot contacted Farnborough LARS W and reported approaching Basingstoke at an alt of 2200ft but he did not mention the close proximity of another ac. Farnborough allocated a squawk of 0431 and agreed a BS. At that point the DR105 is shown overhead Popham and 4.5nm SW of the PA28.

Neither of the two ac was in receipt of an Air Traffic Service. CAP 774, UK Flight Information Services, Chapter 1, Page 1, Paragraph 2, states:

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

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

The Airprox occurred when the DR105 and PA28 ac came into close proximity within Class G airspace. Neither ac was in receipt of an Air Traffic Control Service. Pilots operating in Class G airspace are ultimately responsible for collision avoidance.

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

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

Members noted that this incident took place in a busy area of Class G airspace to the N of Popham where 'see and avoid' is the principal method of collision avoidance. Members discussed whether the PA28 pilot had routed too close to Popham but it was agreed that 3nm is reasonable, particularly if the risks are mitigated by the use of a radar service; in this case however, the pilot was attempting to establish a BS which would not have provided him with traffic information. A Member observed that the pilot may have been 'heads-in' selecting a new frequency, in which case his lookout would have been curtailed. Since the Jodel was squawking (albeit the radar recording showed, without Mode C), Members were surprised that the PA28 pilot's PCAS did not provide him with any warning of the presence of the Jodel.

It was curious that both ac reported squawking with Mode C but neither showed on the radar recording; Members agreed however, that this had not been a factor in the incident.

The Jodel pilot did see the PA28, albeit at a distance of 100m and although he dived his ac immediately, due to the short distance (time) this had probably only had a limited effect. The PA28 pilot reported first seeing the Jodel almost below, therefore too late to take avoiding action. The radar recording verified that the ac were in a 90° crossing situation with relatively low groundspeeds and, barring the constraints of the respective ac wings and canopies, they should have been visible to each other's pilot for some time. Both pilots had an equal responsibility to see and avoid other aircraft and, under the Rules of the Air the Jodel, having the PA28 on its right, should have given way to it; in the event however, the pilot did not see it so he was unable to react.

Since the separation was small, the PA28 pilot did not see the Jodel until after the CPA and the Jodel's avoidance had limited effect avoidance, the Board agreed that normally accepted safety margins had been eroded.

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

Cause: Effectively a non-sighting by the PA28 pilot and a late sighting by the Jodel pilot.

Degree of Risk: B.

## AIRPROX REPORT No 2012028

Date/Time: 1 Mar 2012 1722Z

Position: 5541N 00405W (~1nm  
E of Strathaven Microlight  
Site - elev 847ft)

Airspace: Scottish FIR (Class: G)

Reporting Ac Reported Ac

Type: CZAW ML R44

Operator: Civ Pte Civ Pte

Alt/FL: 400ft↓ NR  
aal NR

Weather: VMC CLBC NR NR

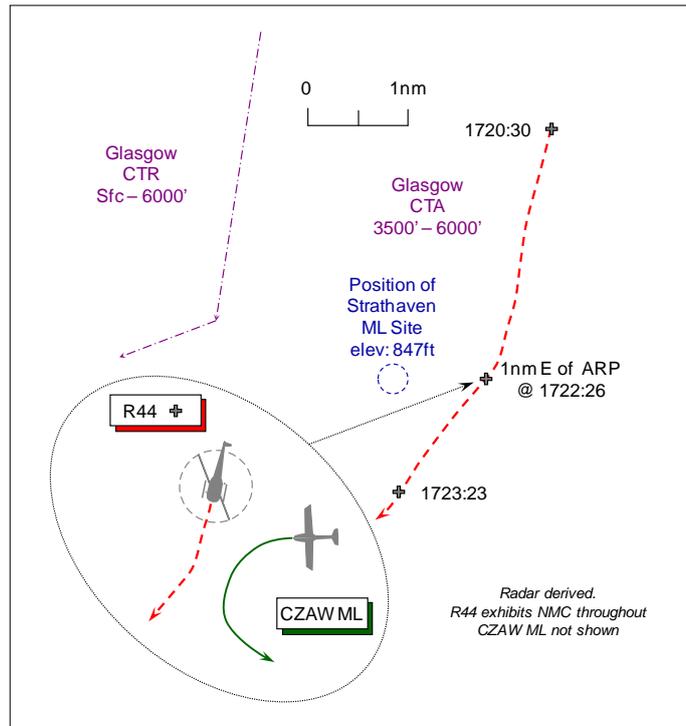
Visibility: 3-5km NR

Reported Separation:

50ft V/50m H NR

Recorded Separation:

Not recorded



## PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE CZAW SPORTCRUISER MICROLIGHT (CZAW ML) PILOT** reports he was inbound to Strathaven ML Site as the first of three ac on a delivery flight from England and listening out on the SAFETY COM frequency of 135.475MHz.

The weather had necessitated a routeing via Kirkbride N to the W Linton area, then W to Strathaven. The weather was clear to the N and E as far as the M74 – some 5nm E of Strathaven – with a cloud base of 2000-2500ft and an inflight visibility of >20km. To the W, the visibility was 3-5km worsening towards the airfield; however, it was improving.

On final, heading 270° at 65kt about 700m E of the threshold to RW27 descending through 400ft aal – about 1250ft ALT – he spotted a helicopter heading S in his 1 o'clock about 100-150ft away crossing from R – L, 50ft above his ML. To avoid the rotor wash from the helicopter – a blue R44 – he immediately turned L where the ground is lower into a LH orbit as the helicopter passed 50m away and 50ft above his ML with a 'high' Risk of collision.

The ML has a red and white colour-scheme and the tail strobe and landing light were both on. A squawk of A7000 was selected with Modes C and S on, he thought.

**THE ROBINSON R44 PILOT** reports that he was in transit from Cumbernauld to a private HLS at Palgowan under VFR. He was in communication with Glasgow ATC and the assigned squawk was selected. The ML flown by the reporting pilot was not seen.

**THE CZAW SPORTCRUISER MICROLIGHT OPERATOR** comments that the same helicopter flew directly over the centre of the airfield earlier that afternoon heading for Cumbernauld at a height of about 500ft agl. Due to weather, there was no traffic at the airfield at that time, so there was no risk of an Airprox. No call was made on the SAFETY COM frequency.

This is the third Airprox involving a helicopter at Strathaven in about 12 months.

UKAB Note (1): The ML Operator also expressed his concern that little appears to be possible at unlicensed aerodromes to provide a measure of protection to cct traffic against ac transiting close to the site. An unlicensed A/D operator could develop a case for the establishment of an ATZ for consideration, subject to the provision of an Aerodrome Flight Information Service (FISO) (see DAP comment below).

**ATSI** reports that the R44 departed Cumbernauld for a VFR flight to Palgowan, Dumfries and Galloway.

The R44 pilot called Glasgow APP on 119.1MHz at 1712:14, flight details were given and a BS agreed. The R44 pilot stated that he would route via Strathaven. APP requested the R44 pilot report if a level above 2000ft was required, a squawk of A2602 assigned and the ac identified by the controller as it routed S, 14nm E of Glasgow Airport. The R44 pilot confirmed that no Mode C altitude reporting was available.

At 1720:30 the recorded radar data shows the R44 southbound about 3nm NNE of the notified position of Strathaven ML site. The CZAW ML pilot reported that, whilst on final approach to RW27, the R44 was observed in the ML pilot's 1 o'clock position, range 100 – 150ft and 50ft above.

The radar data shows the R44 passing 1nm E of Strathaven at 1722:26 on a SW'ly track and thence 1.1nm S of the ML site at 1723:23. There was no recorded radar data to indicate any other ac in the vicinity of Strathaven as the R44 passed by.

At 1723:40 the R44 was instructed to squawk A7000 and transferred to Prestwick TOWER.

The Glasgow 1720Z METAR: 08004KT 040V110 9999 SCT025 BKN031 11/10 Q1023=

Given the lack of recorded radar data for this Airprox [showing both ac] no ATSI Analysis or Conclusion will be given.

Further to the two Airprox at Strathaven in 2011 (2011011 and 2011063) ATSI made the following recommendation:

The CAA [Aeronautical Information Management Regulation] should determine whether or not the entry for the Strathaven Microlight Site in the UK AIP should be amended to include details of the vertical limits of activity at the site.

Therefore:

- (a) On 9 February 2012 the UK AIP ENR entry for Strathaven was updated to include more detailed information on activity at the site.
- (b) The Scotland VFR 1:500,000 chart is due to be updated in June 2012 to depict Strathaven as an area of 'Intense Microlight Activity'.
- (c) Other activities are also being progressed with wider applicability to ML flying in the UK in general and ATSI are aware that the operator at Strathaven and the local ATC unit have entered into a dialogue following recent events.

UKAB Note (2): The U.S. Naval Observatory archive astronomical data gives Sunset at Strathaven as 1752UTC and the end of Civil Twilight as 1829UTC.

**DAP** comments that any aerodrome operator may apply for an ATZ to be allocated to provide a degree of protection for ac operating in the immediate vicinity of the aerodrome; ATZ dimensions are set out at Article 258 of the ANO 2009. However, notwithstanding the ANO amendment to allow flying training at unlicensed aerodromes, the level of Air Traffic Control (ATC), Aerodrome Flight Information Service (AFIS) or Air Ground Station that an aerodrome requires to support an ATZ remains unchanged (RoA 2007 Rule 45).

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

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

The Board recognised that although the R44 pilot was in receipt of a BS from Glasgow APP and had advised the controller he was transiting via Strathaven, APP would have no knowledge of specific cct activity at the site nor any responsibility to question the helicopter pilot's VFR routing or dictate to him how close he flew to the ML site, which was entirely a matter of airmanship. The R44's assigned squawk was evident on the radar recording as the helicopter transited 1nm E of Strathaven and therefore slightly further E than reported by the CZAW pilot. No Mode C was shown by the R44 so it was not possible to determine the helicopter's altitude at that point; however, the R44 pilot's brief report makes it clear that he did not see the CZAW ML as he flew past. The Board noted the difficulties associated with the ML site's geographic location; Strathaven's elevation of 847ft beneath the Glasgow CTA base of 3500ft, coupled with the Glasgow CTR to the NW, the relatively large town and windfarm to the E with the Edinburgh CTR further E, means it is situated in a potential choke-point for VFR traffic in transit between the CTRs. The HQ Air Ops fast-jet pilot Member commented that this was also a common transit route for jets. Notwithstanding the previous Airprox reported in the vicinity of Strathaven, the consensus amongst the Members was that it was not unreasonable for transit traffic to be encountered 1nm E of a ML site, but it was incumbent on transit pilots to maintain a careful visual scan for site activity and circuiting ac. The CZAW ML, despite its size and slow speed was there to be seen and the R44 pilot plainly had a responsibility to see and avoid other ac in Class G airspace. The Board agreed, therefore, that part of the Cause was a non-sighting of the CZAW ML by the R44 pilot.

The concern expressed by the Strathaven Operator about the apparent lack of protection afforded to unlicensed A/D cct traffic against other ac transiting close to the site was noted. The Chairman postulated a theory that because Strathaven is marked as a ML Site and not as an A/D on charts, it did not achieve the requisite impact and is not accorded the same level of significance by other airspace users; however, removal of ML designation would entail removal of the location from AIP ENR 5.5 (Aerial Sporting and Recreational Activities). Whereas Rule 12 to the RoFA was generally applicable, in a practical sense pilots might view the intensity and nature of operations differently if it was shown as an A/D and might therefore accord it a wider berth if they could. The Board discussed the expanded information on Strathaven's activity recently promulgated in the UK AIP and the chart amendment about to be implemented. The former had little time to take effect before the Airprox occurred, but the Board noted the imminent inclusion of the 'intense microlight activity' warning at the next update to the CAA VFR 1:500,000 chart, which should prove beneficial. It was up to the ML Site Operator to ensure that operations from this location were well-known to other operators and GA Members recognised the importance of good liaison locally. The topic of an ATZ was raised but the CAA Policy and Standards Advisor observed that many busy locations operate safely without an ATZ; he cited Popham as a busy GA A/D and one of many small aviation facilities across the country that operate successfully with only an A/G Station. The DAP Advisor emphasised the requirements for establishing an ATZ around Strathaven include the Operator providing the appropriate level of control/communication commensurate with Rule 45 of the RoA. The use of SAFETY COM did not fulfil such criteria and the Board recognised the importance of compliance with the provisions of Rule 45 to the RoFA to enhance safety and the implications of the provision of the various levels of control/communication. Members agreed that an ATZ might not be the answer here, but closer liaison with Glasgow ATC would be helpful. The main point was that an ATZ should not be seen as a 'brick-wall' that was impenetrable by other airspace users; the provision of the minimum levels of communication was essential to ensure the safety of those operating within it and those that desired to transit that airspace.

The CZAW ML was not shown on the radar recording, which was surprising to some Members because the pilot reported that he was also squawking the conspicuity code of A7000 with both Modes C & S on. Members could only conclude that the CZAW ML was not shown because it was

slightly lower than the R44 and therefore beneath coverage, or possibly that the pilot had inadvertently not switched it on. Members emphasised the importance of selecting SSR with Mode C whenever airborne and the benefits that accrue from the enhanced electronic conspicuity provided to ATC radar units and TCAS-equipped ac.

The R44 helicopter's small size can make it difficult to see; a virtually head-on aspect with little crossing motion to draw attention to it would increase this difficulty. Despite this the CZAW ML pilot saw the R44, albeit only a mere 100-150ft away. Under the RoA the CZAW ML was equally responsible for seeing an avoiding other ac, but here he was also responsible for 'giving-way' to ac on his right. This he did successfully albeit somewhat later than ideal. The Board agreed, therefore, that a late sighting by the CZAW ML pilot was the other part of the Cause.

The absence of recorded radar data on the CZAW ML did not allow the actual separation between the two ac to be gauged independently. Nevertheless, the CZAW pilot reports that after he saw the R44 he immediately turned L before the helicopter passed 50m away and 50ft above his ML. A controller Member commented that the approaching Sunset – 30min after the Airprox - might have made sighting difficult and perceived that an actual Risk of collision had existed here as the R44 pilot evidently remained unsighted on the ML, however, this was a solitary view. Others opined that although the CZAW pilot had spotted the R44 at a late stage, he had seen the helicopter in time to ensure that he was able to take effective avoiding action against it, thereby ameliorating any Risk. However, the majority view prevailed that whilst the CZAW pilot's robust manoeuvre had removed the actual risk of a collision, at these close quarters the safety of the two ac involved had indeed been compromised.

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

Cause: A non-sighting by the R44 pilot and a late sighting by the CZAW ML pilot.

Degree of Risk: B.

## AIRPROX REPORT No 2012029

Date/Time: 5 Mar 2012 1821Z (Night)

Position: 5131N 00014E (6.5nm E  
London/City - elev 19ft)

Airspace: LFIR/LTMA (Class: A/G)

Reporter: London/City ADC

1st Ac 2nd Ac

Type: EMB170 FK50

Operator: CAT CAT

Alt/FL: 3000ft 3000ft  
QNH QNH

Weather: VMC CLBC VMC CLBC

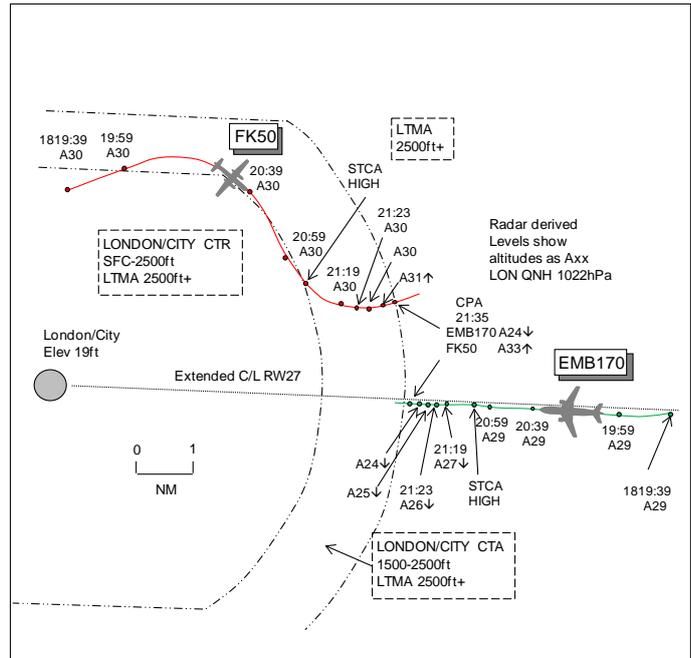
Visibility: 10km >10km

Reported Separation:

700ft V/5nm H Nil V/3nm H

Recorded Separation:

900ft V/1.8nm H



## **CONTROLLER REPORTED**

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

**THE LONDON/CITY ADC** reports that the EMB170 flight established RT contact at about 9nm on approach RW27. When the ac reached approximately 7nm from touchdown Thames Radar called on the priority phone line and told him to descend the EMB170 flight immediately to 2000ft, which he did. While doing so he observed and passed TI on the FK50 which was N of the final approach, tracking S at the same altitude as the EMB170. Having received the read back he then instructed the EMB170 crew that this was an avoiding action descent. The EMB170 was then seen to descend and he was aware of Thames Radar issuing a turn for avoiding action to the FK50. He thought the ac were about 4nm apart when he issued the descent instruction.

**THE THAMES RADAR CONTROLLER** reports that the sector was split and a Coordinator was in place. He had just plugged-in and almost immediately there was a go-around by the FK50 owing to crosswinds at London/City. There was traffic on the RW27 ILS at about 7DME (the EMB170) which had already been transferred to Tower. He noticed the FK50 appear to turn past what he thought it should have been tracking owing to the strong N'y wind so he issued a further turn to the L of 060°. The FK50 then kept turning R, pointing at the EMB170 on the ILS which was also at 3000ft. He then issued an avoiding action turn to the L but the ac didn't seem to be turning L. He rang the Tower on the priority line and told them to expedite the EMB170 down to 2000ft. At this point STCA was flashing red [high severity alert] and the FK50 was in the L turn so he passed TI to its crew on the EMB170 on the ILS and then climbed the FK50 to 4000ft. He queried with the FK50 crew if they had navigational problems before he turned the flight R onto the LOC.

**THE EMB170 PILOT** reports inbound to London/City, IFR and in communication with City Tower on 118.075MHz, squawking 7407 with Modes S and C. The visibility was 10km flying below cloud in VMC and the ac's nav, strobe, taxi, landing and tail logo lights were all switched on. About 6-8nm E of London/City during their approach to RW27 while level at 3000ft, heading 295° at 160kt and established on the ILS LOC prior to GP capture, they were given immediate descent to 2000ft. A later transmission was given as "avoiding action" which was received while they were in the descent. They saw a high-wing twin-engine ac in their 0130 position with strobe, nav and landing lights on

about 7nm away estimating it passed about 700ft above and 5nm clear on their R. During this encounter a TCAS TA was received and he assessed the risk as low. This was their 2nd approach after a wind-shear go-around.

**THE FK50 PILOT** reports inbound to London/City, IFR and in receipt of a RCS from Thames Radar on 132.7MHz squawking with Modes S and C. The visibility was >10km flying 2000ft below cloud in VMC and the ac's strobe, nav and landing lights were all switched on. Following a go-around from RW27 they were following vectors from Thames Radar for a new intercept for a 2<sup>nd</sup> approach into London/City. The go-around was called out and made by the FO, PF, owing to windy conditions (up to 15kt) and changing wind direction (from NW to NE) during the 1<sup>st</sup> approach. The Capt, PNF, contacted ATC to confirm the go-around and was given vectors which he confirmed, a heading of 060° [levelling at altitude 3000ft QNH at 180kt]. The Capt then communicated with the cabin crew about the go-around while ATC communication was with the FO. The FO initially turned towards a different direction, heading 080°, which they believed was given by ATC. They were flying on this heading for <1min before ATC asked what heading they were on. As the Capt, now back in RT communication with ATC, answered ATC told them to fly heading 060°, which they did. It only took a couple of seconds to pick up the heading. ATC then told them to climb to 4000ft in order to avoid flying close to other traffic, which they could see both on TCAS and visually; a TCAS TA was then received. The separation at the CPA was estimated as 3nm at the same level. Once level at 4000ft and heading 060° the controller asked them if their heading was indeed 060° which it was, according to their indications. Before transfer to Tower ATC told them that a report would be filed concerning their late turn. He assessed the risk as medium to low.

After landing the crew discussed the incident and thought that maybe a mis-communication about the initial radar vector, before they turned back onto heading 060°, was part of the reported late turn. At that particular time the workload of the FO became more intense which might have played a part in this mis-communication. However, as soon as the wrong heading was acknowledged by the crew it was corrected immediately following the ATC instructions, both navigation and communication wise.

UKAB Note (1): The Secretariat contacted the FK50 Capt to ascertain whether the ac turning through its assigned heading had been due to equipment failure or human factors. The Capt confirmed that the FO was flying the ac at the time and talking to ATC whilst the Capt was talking to the cabin crew. There was a mis-communication between the crew as the Capt confirmed the given vector but the FO understood a different heading; however, this was not assimilated by the crew at the time. As soon as the FO realised the situation the ac was turned away onto the given heading.

UKAB Note (2): Sunset was 1749Z.

UKAB Note (3): Met Office archive data shows the 3000ft wind as between 350° and 020° 45-50kt.

**ATSI** reports that the Airprox occurred in the London TMA (Class A) airspace, 6.5nm E of London City Airport, between an EMB170 and a FK50.

The EMB170 was on an IFR flight from Edinburgh to London City and was in receipt of an Aerodrome Control Service from London City Tower on frequency 118.075MHz.

The FK50 was on an IFR flight from Rotterdam to London City and was in receipt of a RCS from Thames Radar on frequency 132.7MHz.

ATSI had access to radar recordings of the incident and RT from the London City Tower and Thames Radar frequencies.

The London City METARs are provided for 1750 and 1820 UTC:

EGLC 051750Z 33016KT 300V360 9999 -RA SCT030 BKN045 08/M01 Q1021= and EGLC 051820Z 32014G24KT 9999 BKN040 08/M01 Q1021=

At 1814:40 UTC the EMB170 flight was instructed by Thames Radar to turn R heading 075° to reposition downwind following a go-around from RW27 due to the strong winds.

At 1815:40 the FK50 crew reported to London City Tower that they were going around.

At 1817:40 the EMB170 flight, which was maintaining 3000ft, was instructed by Thames Radar to turn onto a heading of 145° to reposition on to R base for RW27.

At 1818:00 the FK50 flight contacted Thames Radar in the missed approach procedure and requested another approach. Thames Radar instructed the FK50 crew to fly radar heading 060° and climb to maintain 3000ft.

At 1819:40, as the EMB170 was establishing on the ILS, the FK50 flight was instructed to, "...turn right heading zero eight zero degrees" to position downwind RH. The crew read back "Zero eight zero (FK50 c/s)".

At 1820:00 the EMB170 crew was instructed to contact London City Tower on 118-075MHz.

At 1820:40 the EMB170 was on a 9nm final at 2900ft and the FK50 was N of the final approach track, tracking SE, having turned through the heading of 080°. Thames Radar instructed the FK50 crew to turn L immediately heading 060°. The controller immediately restated the instruction "(FK50 c/s) avoiding action start a left turn now start a left turn now (FK50 c/s)". The pilot of the FK50 replied, "Turning left (FK50 c/s) followed immediately with, "And turning to zero six zero (FK50 c/s)".

The Thames Radar controller telephoned the London City Tower controller and instructed them to descend the EMB170 to 2000ft. The London City Tower controller instructed the EMB170 flight to descend immediately to 2000ft and gave TI on the FK50. The EMB170 crew read back the instruction and the London City Tower controller then upgraded the instruction to avoiding action.

By 1820:59 the FK50 had turned further to the R and was tracking approximately 160°, at 3000ft, on a conflicting course with the EMB170 which was at 2900ft. The 2 ac were 4.6nm apart. The Thames radar controller again instructed the FK50 flight, "(FK50 c/s) avoiding action turn left immediately" which was read back as "Turn left immediately (FK50 c/s)".

The Thames radar controller then instructed the FK50 crew to, "...climb to altitude four thousand feet traffic one o'clock same level two miles". This transmission was not acknowledged so Thames Radar transmitted at 1821:20, "(FK50 c/s) traffic one one o'clock two miles same level climb to altitude four thousand feet". The FK50 crew replied, "Four thousand feet (FK50 c/s)". At this time the FK50 was in the L turn at 3000ft, 2.3nm from the EMB170 at 2600ft. At the CPA, 1821:35, the FK50 passed down the RHS of the EMB170 at a range of 1.8nm climbing through 3300ft while the EMB170 was descending through 2400ft.

Following the incident the Thames Radar controller checked the track of the FK50 against the heading reported by the crew and the two appeared to correlate. No Mode S heading information was available from the FK50.

No report from the crew of the FK50 has been received by ATSI therefore it is unknown why the crew turned significantly through the heading of 080° instructed by the Thames Radar controller.

The Thames Radar controller issued a heading of 080° to the crew of the FK50 which was read back correctly but not followed. The FK50 turned through the heading issued by the controller and flew into conflict with the EMB170. An avoiding action L turn was issued to the FK50 flight at 1820:40 but the FK50 continued to turn R until 1821:00.

Both the Thames Radar controller and the London City Tower controller took prompt, appropriate action to resolve the situation.

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

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

A CAT pilot Member said that although missed approaches are relatively rare events, pilots routinely enter/select the relevant procedures in the ac FMS to minimise the cockpit workload in the event of a go-around. Both pilot and controller Members confirmed that it was rare for the published missed approach at London/City to be flown, with flights being issued with vectors, after the initial part of the procedure, to ensure that ac do not turn back into conflict with other departing flights or with inbound traffic. It was clear that, for whatever reason, the FK50 crew did not follow their assigned heading after being instructed to turn from 060° onto 080°, a part cause of the Airprox. The Capt reported being 'off air' for a period while the ac was under radar vectors. However pilot Members agreed that during unusual situations, priorities should be established on the flightdeck to ensure that disruptions to SOPs are kept to a minimum. The cabin crew should have been aware, from the flight profile flown, that the ac had gone-around and would have been responsible for informing the pax of the situation; the Capt normally updates the pax later on. Although the crew reported the heading of 080° was confirmed internally, there appeared to be a missing cross-check in the cockpit to ensure the heading was flown. Moreover, from correlating the RT transcript and radar recording, Members agreed that the FK50 crew, although acknowledging the avoiding action issued by Thames Radar, were slow to respond to the instructions given, which resulted in the ac flying into conflict with the EMB170, the other part cause of the Airprox.

Although Thames Radar had done well in recognising the developing conflict early, before STCA activated, he was undoubtedly concerned that the FK50 flight was not turning away from the EMB170's projected flightpath as quickly as he expected. He had then telephoned London/City and told the ADC to descend the EMB170 flight, which was actioned immediately, the ADC showing good SA in passing TI to its crew on the FK50 and upgrading the descent instruction to avoiding action. Eventually both the EMB170's descent and the turn/climb of the FK50 took effect which resulted in the ac passing each other separated by 900ft and 1.8nm. Both crews had also seen the developing situation on their TCAS equipment and acquired each other's ac visually while following ATC instructions. Taking all of these elements into account, when combined, the Board was able to conclude that any risk of collision had been effectively removed.

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

Cause: The FK50 crew did not follow their assigned heading and were slow to respond to avoiding action, resulting in their flying into conflict with the EMB170.

Degree of Risk: C.

## AIRPROX REPORT No 2012030

Date/Time: 10 Mar 2012 1359Z (Saturday)

Position: 5138N 00122W  
(3nm SW Abingdon)

Airspace: Lon FIR (Class: G)

Reporting Ac Reported Ac

Type: Grob Vigilant Grob Tutor TMk1

Operator: HQ Air (Trg) HQ Air (Trg)

Alt/FL: 1700ft 2500ft  
QFE QNH

Weather: VMC CLBC VMC CLBC

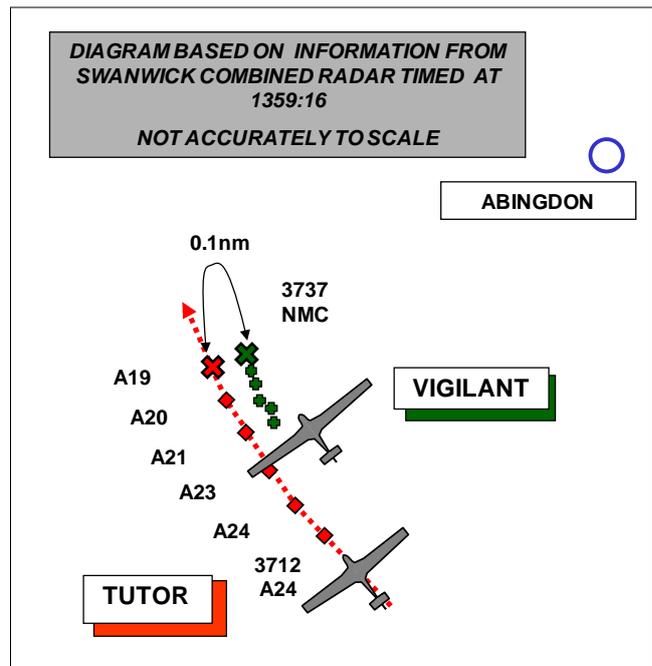
Visibility: 40km 30km

Reported Separation:

0ft V/100m H 0ft V/ 0.25nm H

Recorded Separation:

NR V/0.1nm H



## PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE GROB VIGILANT PILOT** reports flying a white and orange ac squawking 3737 with no Modes C or S available on a local instructor training sortie from Abingdon; he was listening out on Benson DIR frequency but no TCAS was fitted. While in a low workload situation, flying straight and level at 1700ft on the local QFE, heading 280° at 60kt, an unknown white Tutor ac appeared from the rear sector about 100m away on their port side on a parallel track, at the same alt, in a rapid overtake. Shortly afterwards, when about 200m ahead of them, the Tutor commenced a port wingover manoeuvre, climbing more than 300ft above its initial level, and it then departed to the S. Another Vigilant in the vicinity reported that a Tutor ac was also seen in the same vicinity and time conducting aerobatic manoeuvres. The Airprox was immediately reported to the Duty Instructor, who then informed RAF Benson ATC.

No avoiding action was possible and he assessed the risk as being Medium.

**THE GROB TUTOR TMK1 PILOT** reports he is an experienced civil and military pilot detached from the AEF at RAF Cranwell to RAF Benson. He conducted an area familiarisation flight at RAF Benson in Nov 2011, has flown there regularly since and was aware that gliders from Abingdon operate in the same area.

On the day of the incident he flew cadet Air Experience sorties in the Tutor in 'the Vale' from 2000-5000ft amsl while under a TS from Brize Norton in accordance SOPs. On return from the sortie concerned he was informed by the AEF Cdr that he had been involved in an Airprox with a glider flown by an examiner. The description of the event given was similar to part of one of the sorties he had flown where he overtook a glider while pointing it out to his cadet for training purposes; he therefore concluded that that must have been the incident reported and the timing and location passed confirmed this. He reported that if this was the incident, he had had full situational awareness of the glider and that there had been no risk of collision.

It appeared to him that the detail of the event had been poorly described by the glider pilot and it was his initial impression the glider pilot had low SA at the time. Later, he was informed that it was alleged that he had been conducting low level aerobatics. He was not aware of any RT report having been made.

Part of the ground training that the cadets receive prior to flying is to be responsible for looking out for other ac and for reporting them to the pilot. On the sortie in question, he was initially working at about 4500ft doing general handling and teaching the cadet, who was on his first flight, the effects of controls. He was working above a scattered cloud layer (3000-3500ft) but was over a large hole in the layer and was in sight of the surface. As part of his lookout routine he saw a Vigilant at about 3nm away working the same area, but below the cloud layer; he tried to point it out to the cadet but the cadet did not see it. Occasionally he was directly above the glider and it appeared to be flying on a N-S racetrack to the SSW of Abingdon or the NW of Didcot power station and was working in a similar area above him. He correlated the ac with his TAS which occasionally showed a 'solid white diamond' with no alt readout. He had previously been taught that is was how Vigilants manifested themselves on the TAS display because they were not fitted with Mode C. During this time Brize Radar called a contact with "no height information", which correlated with the Vigilant; he replied that he was visual and there was a "glider down there". He used the opportunity to explain to the cadet that ops in VFR airspace are deconflicted by the use of lookout, TAS and a TS, but the cadet could still not see the glider. He decided to exercise the cadet's ground training by flying towards the glider until he could see it and practise reporting it to him by using the clock code. He started in the glider's 7 o'clock at about a mile and 2000ft above. As the glider was heading roughly N at the time, he thought that it might be on recovery to Abingdon, so he was careful to assess his alt and distance from the Abingdon ATZ and resolved to break off the manoeuvre early if he perceived a risk of penetration of the ATZ. He accelerated his ac to about 140kt by descending in order to expedite the exercise and remain to the S of the ATZ.

He overtook the Vigilant about 300m to its L, on a parallel heading, and co-altitude, and proceeded to overtake it until he was in its 10 o'clock position; finally the cadet saw it and was able to report it.

At no stage did he have a crossing flight path and at no stage did he lose visual contact with it. He expected that the glider, being occupied by military pilots, would also not perceive a risk of collision during the pass; he would not have done this had it been a civil ac. In any case, he took care to keep adequate separation in order not to alarm the other crew by his proximity, and ensure that there was no risk of collision should the glider unexpectedly manoeuvre. He had also kept sufficient energy to escape upwards should the glider manoeuvre unexpectedly but it appeared to take no avoiding action.

As soon as the training objective had been met, he climbed and turned left away from the glider in order to increase separation and reposition for further training; he made a positive break away manoeuvre as one would when leaving formation in order to indicate to the Vigilant that he was leaving, although he was unsure whether the pilot had seen him.

**BM SAFETY MANAGEMENT** reports that the incident took place 2.7nm SSW of Abingdon, between a Vigilant and a Tutor, both operating VFR; the Vigilant pilot reported that they were in receipt of a "listening watch" from Benson DIR and the Tutor was in receipt of a TS from Brize Radar (RAD).

All heights/altitudes quoted are based upon SSR Mode C from the radar replay unless otherwise stated. RAD's report was submitted approximately 7 weeks after the incident.

While the Vigilant pilot reported being in receipt of a "listening watch" from Benson DIR, this was not the case. The Vigilant's operating unit was found to be utilising the VHF attributed to Benson DIR as a "quiet" freq whilst operating off circuit. Benson ATC does not monitor the freq at the weekend and was not aware that the Vigilant's unit utilised their freq.

HQ 22 (Trg) Gp Order 2307 for EFT states that:

“Aircraft Commanders **should** make all practicable use of RT and Air Traffic Services when operating in Class G airspace” and that “except where sortie profile and/or instructional content make it impracticable, [instructional and SCT] sorties **should** be conducted under a Traffic Service or higher.”

RAF Benson is unable to provide a surveillance-based ATS to stn-based Tutor ac at the weekends due to manning constraints; consequently, Brize provides a LARS to RAF Benson AEF/UAS Tutor movements at weekends. Given the time that elapsed between the Airprox and RAD filing their report, and that nothing untoward was mentioned on freq at the time, RADs recollection of the incident was understandably vague; however, analysis of the tape transcript has shown that at the time of the Airprox they had at least 7 ac on freq, including 5 ac in receipt of a TS and they were attempting to sequence 2 para-dropping ac against a BZN inbound.

At 1348:47 the Tutor freecalled LARS was identified and placed under a TS. The incident sequence commenced at approximately 1353:53 when RAD passed TI to the Tutor on traffic, “*similar type er twelve o'clock, three miles, manoeuvring, indicating two thousand five hundred feet above*”. Based on the radar replay, the subject of this TI is an unrelated Tutor 3.9nm SW of the incident Tutor, in its left 11 o'clock. The Vigilant was 3.1nm W of the incident Tutor in its 12 o'clock and was not displaying SSR Mode C; RAF Vigilant ac are not equipped with Mode C capable transponders.

From 1353:53 until the CPA at 1359:16, the Tutor and Vigilant continued to manoeuvre within 1.2nm of each laterally. This accords with the Tutor pilot's report, stating that they became visual with the Vigilant 'at about 3 miles, working the same area as him but below the cloud layer'.

RAD passed TI to the Tutor on the Vigilant at 1357:53, stating “*pop up traffic, east-south-east, half a mile, slow moving, no height information*”. The radar replay showed the Vigilant to be ½nm WSW of the Tutor, tracking NNW, with the Tutor in a right turn, descending through 3600ft. The Tutor pilot reported that they correlated this TI with a contact on his TCAS and with the Vigilant that they had previously sighted, replying to RAD that they were, “*visual with Vigilant now*”. Notwithstanding the controller's use of the term 'pop-up traffic', given the altitude of the Vigilant and that it had maintained a constant track, it is unlikely that the ac had not previously 'painted' on radar and more likely that his scan had not previously detected the Vigilant.

At 1358:41 the Tutor, descending through 2900ft, rolled out on a WNW'ly track 0.8nm SE of the Vigilant. At 1358:52 the Tutor, descending through 2600ft, turned onto a NW'ly track, 0.6nm SE of the Vigilant. At 1359, having passed through the Vigilant's 6 o'clock and descending through 2400ft, the Tutor turned onto a NNW'ly track that paralleled that of the Vigilant; lateral separation was 0.4nm.

The CPA occurred at 1359:16 as the Tutor, indicating 2000ft, passed 0.1nm W of the Vigilant; the Vigilant pilot reported that the Tutor was co-altitude with him at the CPA.

The Tutor pilot reported that they manoeuvred their ac deliberately to teach their AEF cadet about lookout and that they maintained visual contact with what they believed to be adequate separation from the Vigilant throughout.

From the Vigilant pilot's perspective, notwithstanding their responsibility within Class G airspace to 'see and avoid', given the geometry of the incident they were unlikely to have been able to see the Tutor much earlier than they did. Notwithstanding the timing of the TI to the Tutor on the Vigilant, the Tutor pilot was visual with the Vigilant throughout the incident sequence and reported as such 1min 15sec prior to the CPA. Moreover, the Tutor pilot reported that having seen the Vigilant, his flight profile was considered and deliberate. On that basis, while the issues concerning the ATS provision by RAD are worthy of consideration, they were neither causal nor contributory to this Airprox (but have been addressed separately with SATCO Brize Norton).

**HQ AIR (TRG)** comments that while the Tutor pilot justifies in detail his logic for his actions, it was not necessary to get so close to the Vigilant in order to achieve his stated aims and such actions

have since been discouraged but not prohibited by HQ 22 Gp and 3 EFTS. HQ Air agrees that in this case there was no risk of collision because of the relative energy states and aircraft performances, but does not condone the unplanned and unroofed closing on any other ac.

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

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

The Board agreed that although the Tutor pilot had displayed questionable airmanship, they concurred the HQ Air comment above, also agreeing that there had been no risk of collision. Without condoning the deliberate closure of one ac on another without the pilot's knowledge or acquiescence, the Board observed that had the Tutor pilot overtaken on the right iaw the rules of the air (and afforded the cadet a better view of the Vigilant) or waggled his wings indicating that he had seen it, then perhaps the Vigilant crew would not have filed. Further, although the Tutor pilot reported that he left sufficient room for the Vigilant to manoeuvre, one Member disputed this based on the radar showing the ac as being separated by only 180m; in his opinion this was insufficient room for anything other than a gentle turn.

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

Cause: The Tutor pilot flew close enough to the Vigilant to cause its crew concern.

Degree of Risk: C.

## AIRPROX REPORT No 2012031

Date/Time: 12 Mar 2012 1423Z

Position: 5257N 00044E (20nm  
NNE Marham)

Airspace: London FIR (Class: G)

Reporting Ac Reported Ac

Type: Tornado GR4 pr F-15E

Operator: HQ Air (Ops) USAFE-UK

Alt/FL: ↓FL100 FL100

Weather: VMC CLOC VMC CLOC

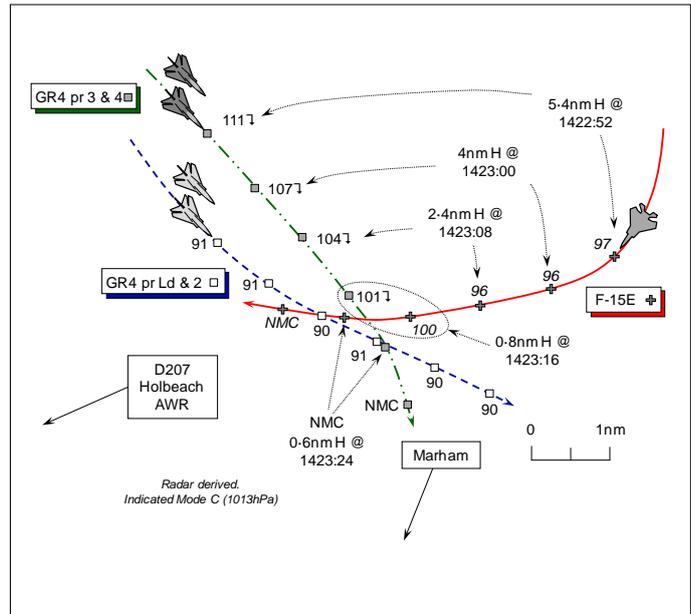
Visibility: 30km Unlimited

Reported Separation:

Nil V/ ~200ft H <500ft msd

Recorded Separation:

100ft V



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

**THE TORNADO GR4 PILOT** reports he was flying as the No3 and leader of the rear section of a 4-ship GR4 formation on recovery to Marham from the N on a stepped descent at FL100 in VMC. Nos 3 and 4 were in loose arrow trailing the Ldr and No2 by about 2nm, to facilitate a formation split for pairs GCAs. They were in receipt of a TS from London MILITARY and the assigned squawk was selected with Mode C.

About 30nm N of Marham, heading 140° at 350kt, London MILITARY called manoeuvring traffic 5nm to the E at FL100 and he became 'tally' with a single F-15E 5nm away. The aspect of the F-15E was initially difficult to judge, but after a few seconds it became clear that it was turning R through W towards his rear pair. No immediate collision risk was apparent so no avoiding action was taken, but the closure rate quickly increased and a call was made by the No4 that the traffic was closing from the L. The crew of No4 initiated a break to the L and the F-15E passed down their RH side, whilst he, flying No3, initiated a roll inverted and pulled. The F-15E crossed from L – R at a minimum distance of about 200ft from his pair with a 'medium' Risk of collision. It was unknown at the time whether the F-15E crew were visual with his pair, but it appeared that they took avoiding action at a similar time.

**THE F-15E PILOT** reports that the planned mission was a 2-ship close air support sortie to Holbeach Range in support of air-to-ground operations school training. The F-15E flight lead 'ground aborted' his ac for a mechanical reason and the No2 subsequently departed as a single-ship. There was a broken/overcast layer from 500 to 2000ft agl but clear above with unlimited visibility. Departing initially under a DS with Lakenheath DEPARTURES, once VMC above he climbed to FL100 and proceeded to the Wash hold point under VFR. Radar service was terminated and a squawk of A7000 selected with Mode C. Upon reaching the Wash hold at FL100, he turned onto a heading of 105° outbound and switched to the Holbeach Range ICF. After reviewing the ac's armament status and weapons delivery programs prior to range entry, they switched to the Holbeach RANGE PRIMARY and initiated a level R turn back towards Holbeach Range onto about 285° at 350kt. Clearance to join the range was issued, and he was passed the altimeter setting and advised to squawk A7002 [Danger Areas – General]. As he completed the 180° turn inbound, he visually acquired two GR4s off the L side of the nose, slightly low. For deconfliction, he checked the ac to the R [offset the ac's flightpath R] and initiated a slight climb. As the initial pair of GR4s passed on the left side, the Weapons System Operator (WSO) spotted another pair of GR4s on the nose and level with the horizon. About 2sec later – he quoted a time of 1423:28, but probably moments before

this - the pilot visually acquired the trailing pair of GR4s and to avoid them immediately pulled straight back on the control stick forcing an abrupt pitch-up into an aggressive climb straight ahead. The trailing GR4s themselves initiated an aggressive manoeuvre away and down. He called out 'the merge' on Holbeach RANGE PRIMARY, who reported they were not aware of any outbound traffic. After the Airprox he continued inbound to Holbeach Range and completed the mission uneventfully.

Based on visual estimations, it appears that the ac passed within 500ft of each other and he assessed the Risk as 'Medium'. After landing, the Airprox was reported to the Squadron Operations Supervisor with details of the event. His ac has a dark grey colour-scheme; the position lights and anti-collision lights were on.

**THE LATCC (MIL) LJAO NE TACTICAL CONTROLLER (LJAO NE)** reports she was screening a trainee controller on E/NE. A formation of GR4s was recovering to Marham from the N under a TS, and the leader requested a split into 2 pairs for recovery about 30nm N of Marham. At the time, there was an ac executing general handling to the NE of Marham – the F-15. At that point it was no factor but the trainee elected to provide TI to the GR4 formation. Her trainee then split the formation vertically, instructing the first pair (Ldr & 2) to descend to FL90, and the second pair (Nos3 & 4) to descend to FL100. The trainee then called Marham to effect a radar hand-over of both pairs. During the handover, the previously called traffic that was general handling - the F-15E - turned onto W at FL100 and was heading towards the two pairs. The trainee interrupted the handover and called the traffic [the F-15] to both pairs. The handover was then completed and both GR4 pairs instructed to contact Marham APP.

**THE LATCC (MIL) SUPERVISOR (SUP)** reports that he received a call from a GR4 pilot who was part of a 4-ship formation on recovery to Marham that had experienced an Airprox. He noted the details and requested a radar replay of the event to investigate the circumstances. On reviewing the incident the following was observed.

The Tornado was recovering to Marham from the North in the descent to FL100 under a TS. Approximately 35nm NW of Marham they requested to split into 2 pairs for recovery. The LJAO controller instructed the second pair – [C/S] No3 - to squawk for identification. Meanwhile TI on an ac transponding A7000 and indicating FL100 Mode C was passed to both pairs of GR4s and acknowledged by the crews. At the time when the TI was initially passed the conflicting ac – the F-15E - did not pose a significant threat. The controller then instructed the leading pair to descend to FL90 to execute the split, before initiating a handover to Marham APP. During the handover the conflicting F-15E had turned and was closing on the formation, so it was called again to both pairs of GR4s. Shortly afterward the F-15's contact was observed merging with the rear pair and then indicated a descent to FL78, but this did not appear to be noticed by the LJAO controller. Neither of the two GR4 pairs reported an Airprox at the time on the LJAO frequency before they were transferred to Marham APP.

**THE HOLBEACH RANGE SAFETY OFFICER** reports that an F-15E was inbound to Holbeach Range on RANGE PRIMARY. The crew was given a joining clearance, then called a 'merge' with a formation of Tornados GR4s at 1425 before they entered the Range. At no point did the F-15E pilot report an Airprox.

**BM SAFETY MANAGEMENT** reports that this Airprox occurred about 10nm S of airway Y70, between the trailing pair of a 4-ship formation of GR4s recovering to Marham under IFR in receipt of a TS from LJAO NE, and an F-15E operating VFR in the Holbeach AWR hold, in communication with Holbeach Range.

All heights/altitudes quoted are based upon SSR Mode C from the radar replay unless otherwise stated. Unusually, the investigation was able to utilise HUD recordings from the No3 GR4.

As the Holbeach AWR controllers do not have access to a surveillance radar, they had no way of affecting the outcome of this Airprox; consequently, this investigation has focussed on the ATS provided to the GR4 formation.

Analysis of the LATCC (Mil) and Marham tape transcripts showed that they were 11 and 3-secs slow respectively. Timings have been amended to reflect the radar replay timings.

LJAO NE report that they were mentoring a trainee at the time of the Airprox. Unfortunately, they did not submit a DASOR for the occurrence until almost 6-weeks after the event; consequently, their recall of events and the level of detail contained within the report has suffered.

The GR4 formation was operating as 2-pairs in a "loose trail," with the subject pair trailing the leading pair by 1.2nm, routeing S to Marham. At 1417:30 the GR4 formation was placed under a RCS having entered Y70. The trailing pair of the formation exited CAS at 1421:09; LJAO NE omitted to amend the type of ATS from a RCS. Prior to entering Y70, the formation had been in receipt of a TS and reported that they were in receipt of a TS at the time of the Airprox. Moreover, LJAO NE's subsequent actions suggest that their mental perception was that the formation was operating under a TS.

The incident sequence commenced at 1420:59, as the lead pair of the 4-ship of GR4s left CAS. LJAO NE passed TI to the GR4 formation Ldr on the F-15E stating "*traffic 12 o'clock..8 miles, crossing right-left, flight level 1-0-0.*" This TI was acknowledged by the 4-ship formation leader. At this point the GR4 formation was descending to FL100; the F-15E was 9.3nm SE, squawking A7000, indicating FL101, in a right hand turn passing through NE.

At 1421:12, LJAO NE amended the lead GR4 pair's descent instruction to descend to FL90 and then, at 1421:44, re-confirmed with the subject trailing GR4 pair the instruction to descend to FL100. At 1421:27, LJAO NE transmitted a request to unrelated traffic to restrict their manoeuvring for coordination with civil traffic outbound from Norwich.

At 1422:04, LJAO NE commenced a radar handover of the lead GR4 pair with Marham, however, it is clear from the subsequent landline conversation, that LJAO NE believed that they were handing over both pairs of the formation. During the handover, at 1422:39, Marham APP pointed out the F-15E traffic to LJAO NE as, "*traffic left..11 o'clock, 5 miles, crossing left-right, flight level 1 hundred, non-squawker.*" At this point, the F-15E was 6.5nm E of the lead GR4 pair, indicating FL98, in a right hand turn passing through SW. LJAO NE replied that, "*that traffic has been called*" however Marham APP asked, "*to both flights has it?*" LJAO NE then passed TI on the F-15E to the subject GR4 pair at 1422:53 stating, "*traffic east 5 miles manoeuvring indicating flight level 1 hundred.*" The leader of the subject GR4 pair replied 5sec later that, "[No3 GR4 pair C/S] *flight is looking, [No3 GR4 pair C/S] flight is levelling flight level 1-0-0.*" At this point, the subject GR4 pair was descending through FL107, with the F-15E 4.3nm ESE indicating FL96, continuing the right hand turn through WSW. LJAO NE informed Marham APP that the, "*traffic had been called and he [the subject No3 GR4 pair] is levelling flight level 1 hundred.*" Marham APP replied at 1423:05, "*okay, [GR4 formation C/S] are you handing him over as well?*" LJAO NE then repeated the previously passed handover details and was involved in the handover until 1425:12. No further TI was passed by LJAO NE to the GR4 formation.

Following receipt of the TI, the crew of the subject No3 GR4 pair can be heard on the HUD tape discussing the TI on the intercom and had visually acquired and identified the F-15E. The GR4 crew reported that 'there was no immediate collision apparent...but the closure rate quickly increased.' At this point at 1423:11, as the subject GR4 pair descended through FL104, one crew member said, "*he's coming right for us.*" The F-15E was 2.4nm ESE, indicating FL096, turning through W. None of the GR4 crews reported to LJAO NE that they were visual with the F-15.

At 1423:16, the F-15's SSR code changed to A7002 and the ac had climbed to FL100. The subject GR4 pair was 0.8nm WNW of the F-15E at FL101. Based upon the F-15E pilot's report, it is likely that the climb to FL100 accords with the 'check right and slight climb' that they referred to in their

report having gained tally on the lead GR4 pair. The next sweep of the radar at 1423:24 displays the F-15E with no Mode C and it is likely that this was as a result of the 'abrupt climb' that was initiated having sighted the trailing GR4 pair. This suggests that the F-15E initiated the climb at about the CPA, which accords with the GR4 pilot's report. The CPA occurred, in between sweeps, at about 1423:20 with the incident GR4 pilot reporting 200ft lateral separation.

From the F-15E crew's perspective, they appear to have visually acquired the lead pair of GR4s relatively late (approximately 0.8nm lateral separation) and acquired the subject trailing pair very late. From the GR4 formation's perspective, they were able to utilise the generally accurate TI at 1422:53 to visually acquire the F-15E reasonably early. An aggravating factor in the timeliness of the GR4 formation's avoiding action was the high closure speed of the 3 ac, which resulted in reduced safety margins.

From an ATM perspective, the handover between LJAO NE and Marham APP had become protracted and, arguably, this distraction led to LJAO NE not providing a further update to the TI to the GR4 formation. However, they had previously provided TI at 1420:59 and 1422:53, which the GR4 pair had utilised to become visual with the F-15. Notwithstanding that LJAO NE was unaware that the GR4 formation was visual with the F-15E, the lack of a further update between 1422:53 and 1423:20 was consequently neither causal nor contributory to this Airprox. Moreover, given the closing speeds of the ac, any additional update to the TI would have occurred very close to the time of the CPA and would therefore arguably have been of nugatory value. That said, given LJAO NE's response at 1422:50 that, "*that traffic [the F-15] has been called*" it appears reasonable to argue that they had not planned on providing updated TI, despite the changed geometry between 1420:59 and 1422:53. On that basis, it may have been the intervention by Marham APP that caused the updated TI to be passed at 1422:53, facilitating the subject GR4 pair's visual acquisition of the F-15.

**THE GR4 PILOT'S UNIT** commented that following the Airprox a meeting was convened to follow-up initial information exchange of the incident. The aim of the meeting was to identify 'quick wins' that could be implemented locally which might reduce the risk of a similar incident occurring.

It is recommended that the following is briefed locally to provide 'quick win' risk reduction:

F-15E ac utilise a hold based on CGY 105/27-32 2000'-8000' (above airspace previously designated as PMR 225B). Ac squawking A7000 in this hold are likely to be preparing to enter PMR 225 or D207 and switching RT between LATCC (Mil)/Lakenheath and Holbeach AWR Control. Aircrew and controllers are to be aware that traffic in this hold may not be under a radar service and crews are likely to be task focussed on pre-range entry procedures.

F-15E ac regularly use Wash ATA (N) and ATA(S) for BCM prior to recovery to Lakenheath. These areas represent areas of high intensity activity as they lie on the recovery track from the North for Marham RW24 and climb out North from RW06. Additionally, AARA 8 also lies within this airspace. Aircrew and Controllers are to be aware that there is regular activity in ATA (N) and ATA(S) and that radar contacts may be engaged in high energy manoeuvres below airway Y70.

It is recommended that 1 Gp STAR task relevant agencies to investigate the following:

Current weapon release profiles for both GR4 and F-15E require ac to operate outside the protection of D207 and D307. This currently results in ac conducting high energy manoeuvres in Class G airspace without an ATS. This puts GA traffic at risk as they transit close to D207 and D307. It also conflicts with regular routings of both GR4 and F-15E traffic transiting N/S to and from respective airfields. It is recommended that dimensions of D207 and D307 are re-examined and changed to better reflect weapon profiles for Holbeach and Donna Nook AWR. Consideration of RAF Marham IFR patterns (including TACAN hold) must be included. Initial discussions suggest a staggered 10nm upper radius would provide protection.

Confirmation is required whether London Mil can provide and operate a discreet frequency for ac positioning or operating in D207 and or D307, that will allow them to monitor a Traffic Service for factor traffic. F-15E ac are able to utilise up to 3 radio frequencies simultaneously which will allow them to use AWR, in-house tactical and LATCC (Mil) frequencies. GR4 are unable to utilise more than 2 frequencies simultaneously. Investigation and analysis is required to establish if formation range profiles can be managed using the AWR frequencies for in-house tactical and Range Control aspects whilst maintaining a listening watch on a LATCC (Mil) discreet frequency.

**HQ AIR (OPS)** comments that the incident occurred in Class G airspace in the vicinity of the Wash Air Weapons Range Danger Areas. TI from the LATCC (Mil) controller allowed the GR4 crews to gain visual with the F-15E in good time, although they did not initially react which probably caused the Airprox to be more severe than if they had taken earlier action.

Of further note, Marham Ops Sqn initiated an investigation into this incident; the report has been made available to the UKAB. The report gives details of extra deconfliction measures that have been put in place since this incident which should reduce the likelihood of re-occurrence. HQ Air supports the recommendations made in the report.

**USAFE-UK** comments that Lakenheath ac routinely hold prior to using Wainfleet on CGY 105/27-32 or, in the event of an adverse sea state, over land to the S of that position. Notwithstanding the TI that LATCC (Mil) passed to the GR4s, the decision to keep the second element of the GR4 formation at FL100 in the vicinity of unknown traffic orbiting at the same level is surprising.

USAFE-UK supports the recommendations made as a result of the meeting between Marham and Lakenheath.

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

Information available included reports from the pilots of the No3 GR4 and F-15E, transcripts of the relevant RT frequencies, radar video and HUD recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

Whilst the reporting No3 GR4 pilot was plainly part of a 4-ship formation the Board considered this Airprox to be between the Nos 3 and 4, ie the rear pair, and the F-15.

For their part, the F-15E crew were operating VFR in an unofficial hold in Class G airspace without the benefit of a ground-based radar service, but equipped with a capable AI radar. However, having been cleared to enter D207 and preparing for air-to-surface weapon events, they were probably focussed on their pre-range entry procedures and may not have been operating their AI radar in an air-to-air mode. The F-15E crew were plainly relying on the principle of 'see and avoid' to fulfil their responsibilities to remain clear of other traffic but the Board noted that the F-15E crew changed their SSR code to A7002, which was displayed on the radar sweep recorded immediately before the Airprox occurred. This was barely moments before the contacts merged and perhaps indicative of at least one of the crew being heads-in at a critical moment. The F-15E pilot's comprehensive account reveals that his attention had been captured by the leading pair of GR4s as they crossed ahead and cleared to port and the HQ Air (Trg) Member perceived that he had concentrated on avoiding the leading GR4 pair whilst at that point oblivious to the greater threat posed by the trailing pair. Noting that the F-15E crew were responsible under the RoA to 'give way' to the GR4s to their R, it was apparent from the pilot's laudably frank report that he had gained visual contact with the trailing GR4 pair approaching from his starboard side at a late stage, moments after his WSO had spotted them and so had immediately pulled straight back forcing an abrupt climb to avoid them. The Board considered that this was an occasion when the WSO should have directed the pilot into avoiding action rather than providing information. Nevertheless, the Board agreed that this late sighting by the F-15E crew was part of the Cause.

The LJAO trainee first passed TI on the F15E to the GR4 formation as, *“traffic 12 o’clock..8 miles, crossing right-left, flight level 1-0-0”*, whilst the F-15E crossed ahead, in a right hand turn passing through NE and on the northern half of its orbit as it turned out. Whilst some thought the controller could have been more descriptive in his TI - perhaps emphasising that the unknown ac was in a R turn could have been more helpful – it did generally paint a satisfactory picture and no update was requested. The Board discussed the apparent lack of appreciation by LJAO NE that the F-15E was holding waiting to enter D207. Controller Members recognised that the F-15E was an unknown unpredictable contact squawking the general conspicuity code of A7000 and operating in Class G airspace. Without local knowledge, it was not until the F-15E crew selected A7002 [Danger Areas General] moments before the Airprox occurred that LJAO NE might have perceived that this was traffic about to enter D207. Had the LJAO controllers known that the A7000 squawk was an aircraft holding before range entry they might have appreciated that it would remain at FL100 and avoid using this level for the GR4s. As it was, when the GR4 formation was split into two pairs, the trainee controller elected to stop-off the rear pair at FL100 – the same level indicated by the F-15. At that stage LJAO NE should have detected that the F-15E was in a RH turn but the direction it would subsequently take back toward the formation would not have been clear. With the clarity of hindsight, it might have been appropriate to have continued the descent to FL80 and FL90 respectively, but the LATCC (Mil) Area controller Member emphasised the general demarcation between area control and terminal ATC of FL100. LJAO NE would have been keen to hand-off the GR4s to Marham as quickly as possible as they descended into the realms of terminal ATC airspace where Marham would have a much better grasp of the traffic at these levels. Conversely, Marham ATC was undoubtedly making sure that LJAO NE had called all the relevant traffic in the area before they accepted control of the two pairs, but the handover was far more protracted than the norm, increasing the controllers’ workload and lasting over 3min. BM SM noted that the updated TI was passed at the request of Marham ATC. This TI on the F-15E to the subject GR4 pair was passed about 28sec before the merge, *“traffic east 5 miles manoeuvring indicating flight level 1 hundred”*; the range given was undoubtedly accurate at 5.4nm but in one pilot’s view the phrase *“manoeuvring”* did not help the two GR4 crew’s appreciate what the F-15E was doing and did not ‘paint’ a complete ‘picture’, which is important. Nevertheless, it should be remembered that area radar controllers are usually viewing a 120nm range display with a data update rate of 6-8secs and a wide traffic split across the country, therefore it can be difficult to determine what is happening at close quarters. The Board accepted that under the TS being provided to the No3 & 4 GR4 pair, LJAO NE had fulfilled their responsibilities to call in TI on other observed traffic and it did ensure that the GR4 crews were looking in the right direction enabling them to spot the F-15E at a range of 5nm, the No3 pilot reports.

Pilot Members pointed out the high closure-rate, with the interval from the No3 pilot’s acknowledgement of the TI to the merge little more than 25sec. The radar recording did not show clearly the relative juxtaposition of the GR4 and F-15E at close quarters, with no Mode C shown for several sweeps afterwards because of the robust avoiding action undertaken by all concerned, however, the Board had the added benefit of the HUD recording helpfully provided by the No3 GR4 pilot. This was viewed by the Board and provided graphic evidence of this encounter; the recorded RT/intercom reveals that both the No4 and No3 crew had seen the F-15E, but in the Board’s view they had not immediately assimilated the ‘threat’ or how close it was. The No3 GR4 pilot had commented on this aspect himself stating that no immediate collision risk was apparent so no avoiding action was taken until the relative aspect and geometry became clear. When the No4 crew recognised the F-15E was heading towards them they broke away. Recognising the No4 would be looking towards his leader in formation, fast-jet pilot Members were surprised that a crewmember was not instructed to ‘padlock’ the F-15E, thereby ensuring that it was monitored continuously. Following the No3 pilot’s realisation the F-15E was heading straight towards them at close quarters, the HUD recording revealed that the conflict was ‘broken’ by the No3 jinking L before breaking R and down away from the F-15E as the latter climbed straight ahead. However, the HUD recording showed the F-15E pilot’s climb was only taking effect as it crossed through the No3 GR4’s nose and it was the No3 GR4’s L turn that was most effective at close quarters. Debating these points at length the Board finally concluded that the other part of the Cause was late avoiding action by the F-15E crew and the No3 GR4 crew. Whilst the HUD recording only showed the F-15E for a very short period as it crossed ahead and above, it was of great assistance to the Members in their assessment of the inherent Risk where the Board was fairly evenly divided. Some Members perceived that at

close quarters at these speeds the safety of the three ac involved had not been assured and listening to the RT and intercom on the HUD recording in isolation certainly supported this view. The Board debated whether earlier avoiding action could have been taken and noted the HQ Air (Ops) comment that the No3 and No4 GR4 crews did not initially react which probably caused the Airprox to be more severe than if they had taken earlier action. However, the HQ Air (Trg) fast-jet Member emphasised that the GR4 crews had seen the F-15E and taken effective avoiding action, the No4 breaking away before the No3 turned L to 'break' the conflict. Other civilian pilot Members accepted this view and by a majority vote it was narrowly concluded that the No3 GR4 pilot's avoiding action had effectively removed the actual Risk of a collision.

The Board was encouraged by the proactive stance of the crews' Units in calling a meeting to discuss the Airprox and their desire to quickly learn from this occurrence. The HQ Air (Ops) Member reported that a meeting had been convened to follow-up the recommendations made to HQ 1 Gp STAR including an examination of the dimensions of the AWRs. However, it was important to stress that look-out was the lesson here, not further segregation of airspace in a benign training environment that does not reflect current scenarios in operational situations.

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

Cause: A late sighting by the F-15E crew and late avoiding action by the F-15E and No 3 GR4 crews.

Degree of Risk: C.

## AIRPROX REPORT No 2012032

Date/Time: 6 Mar 2012 1750Z

Position: 5322N 00431W (7nm  
finals RW19 at Valley -  
elev 36ft)

Airspace: Valley AIAA/FIR (Class: G)

Reporting Ac      Reported Ac

Type: Hawk T Mk2      Hawk T Mk2

Operator: HQ Air (Trg)      HQ Air (Trg)

Alt/FL:      ↓1600ft      2000ft  
                 QFE (1018hPa)      QFE (1018hPa)

Weather: IMC In Cloud      IMC In Cloud

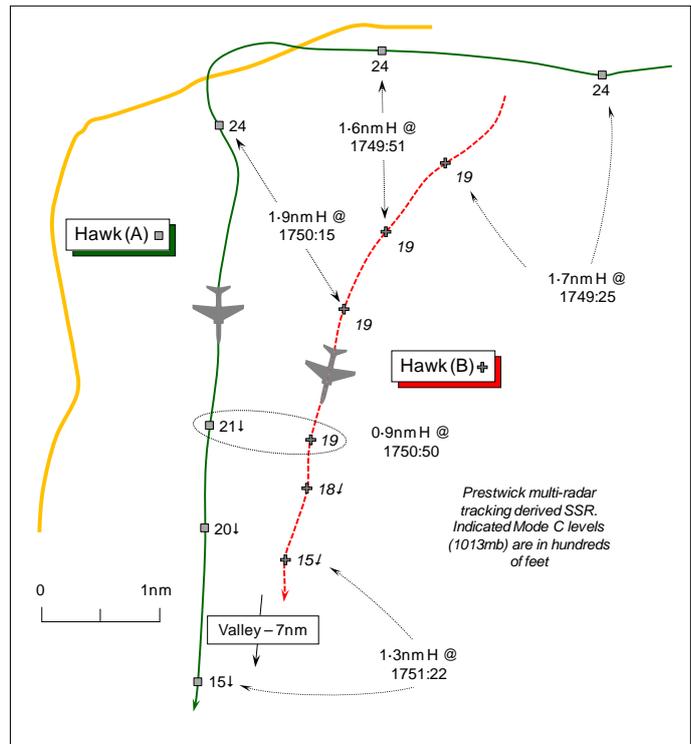
Visibility: 100m      50m

Reported Separation:

100ft V/0.9nm H      NK V/0.9nm H

Recorded Separation:

200ft V @ 0.9nm Min H  
Nil V @ 1.3nm H



## PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE PILOT OF HAWK T Mk2 (A)** reports that on completion of a local radar training sortie in the Valley Aerial Tactics Area (East) operating as a pair, individual recoveries were initiated as RW19 was in use. The flight lead ac – Hawk (B) - was vectored ahead for a radar to PAR and was placed under a DS. As the PIC, but PNF, he elected to perform a radar-to-initials recovery, which was flown under a TS from DIR, who vectored them behind the lead ac at 2500ft QFE onto the live side of the extended centre line of RW19. A further descent was then issued by DIR to 1600ft QFE. Hawk (B) on PAR ahead had been called to them and they had the ac displayed on their TCAS, but neither a TA nor RA was received. Heading 190° further descent would have resulted in them descending through Hawk (B)'s height within 1nm so the PF elected to stop the descent at 2200ft until they had passed the instrument traffic on TCAS. Once they had passed Hawk (B), the descent was recommenced and the A/D acquired visually at 1500ft QFE, from which the ac was repositioned onto the dead side and a visual run-in and break flown followed by a cct to land. Minimum separation was 0.9nm [AMPA replay facility] and the Risk assessed as 'medium'.

The assigned squawk was selected with Modes C and S on; the ac is coloured black with white HISLs on and navigation lights set to bright flash.

**THE PILOT OF HAWK T Mk2 (B)**, a QFI, reports that on completion of a 1v1 radar sortie the Hawk pair recovered individually to Valley. Hawk (B) recovered first and elected to perform a PAR recovery, whereas Hawk (A) who was further from Valley elected to recover via a radar-to-initial approach. Flying level at 2000ft QFE (1018hPa), in cloud heading 190° at 160kt, after being handed over to TALKDOWN under a DS, he observed a contact that he assumed was Hawk (A) closing on TCAS from his 7o'clock position 500ft above his ac; TCAS was set to TA. The contact – Hawk (A) - then proceeded to pass behind his ac before turning onto a parallel track at a range estimated on TCAS to be less than half a mile. The track was then seen on TCAS to descend to an indicated 100ft above his ac overtaking to starboard. Approaching the point of descent, alarmed by the apparent extremely close proximity of Hawk (A) whilst passing and that ac's position on the live side, he called Hawk (A) on the Squadron common frequency to their flight conditions, as he in Hawk (B) was still IMC. The pilot of Hawk (A) replied that they were also still IMC and level at 2000ft - the same height as Hawk (B). Consequently, he in Hawk (B) executed a 'flinch' descent to 1800ft QFE

in an attempt to provide a last chance vertical separation as TCAS still showed Hawk (A) at +01 – 100ft above his ac. At no point did the crew of Hawk (A) or (B) become visual with each other. He assessed the Risk as 'medium'.

The assigned squawk was selected with Modes C and S on; the ac is coloured black with white HISLs, navigation and formation lights on.

Post flight analysis using the Hawk T2 AMPA replay and debrief facilities shows the vertical separation was around 100ft and 0.9nm laterally as Hawk (A) overtook Hawk (B) on its RH side. Both ac were IMC at the time and Hawk (A) had been instructed by DIR to descend from 2500ft to 1600ft, which took it through Hawk (B)'s level. The combination of TCAS in both ac warning of traffic and Hawk (B)'s call to Hawk (A) on Squadron Common meant that Hawk (A)'s crew also became aware of the apparent lack of separation and they decided to stop their decent and call their level to Hawk (B). This was the point that he in Hawk (B) elected to take a flinch descent to 1800ft. Had Hawk (A) continued the descent, no vertical separation would have existed as Hawk (A) would have descended to 1600ft - through Hawk (B)'s height - within 1nm whilst both crews were IMC.

**THE VALLEY APPROACH CONTROLLER (APP)** reports he was the initial point of contact for ac recovering to Valley. The Hawk pair free-called APP from VATA East separately; the first ac - Hawk (B) - requested a PAR, the second crew - Hawk (A) - called for a radar-to-initials approach 10-15nm SE of Hawk (B). Both ac were vectored to the N and descended to the Terrain Safe Level (TSL). He advised the crew of Hawk (A) they would be sequenced No4 in the pattern (this was due to their position and DIRECTOR already having 2 ac in the Radar Training Circuit (RTC). The pilot of Hawk (A) questioned this statement and confirmed that he was being fed for a radar-to-initials, but was told he was still No4 for sequencing. Both tracks were handed-over to DIR under TS.

**VALLEY DIRECTOR (DIR)** reports he was working the 2 Hawk ac under a TS, he thought, in an SSR only environment for individual approaches. The crew of Hawk (B) elected to approach via a PAR to RW19RH and was established on a base-leg from the E at 2000ft QFE. The crew of Hawk (A), also approaching from the E, elected for a radar-to-initial approach as the recovery state had recently changed from Instrument Recoveries Mandatory (IRM) to 'Carry Fuel for Radar' (CFFR). He provided a vector and a decent to 2500ft for Hawk (A) and called the PAR traffic - Hawk (B) - in the standard format; no 'visual' response was indicated by the pilot. Hawk (B) was vectored to 8nm from touchdown and handed to TALKDOWN L of centreline. In order to vector Hawk (A) to gain visual contact with the A/D, he elected to take the ac down the RH side (live side) of Hawk (B) on PAR as the cct was clear and Hawk (B) was L of the RW19 centreline on the PAR. Hawk (A) requested a further descent, which he denied due to the PAR traffic. He vectored Hawk (A) to the rear of Hawk (B) calling the traffic as standard for a second time; Hawk (A) was vectored inbound descending to 1600ft once he was satisfied no risk of collision existed. The faster 'radar to initial' Hawk (A) passed the PAR traffic on the latter's right hand side and he descended Hawk (A) to 1000ft; at 5nm the crew of Hawk (A) reported visual with the A/D and switched to TOWER.

**THE VALLEY TALKDOWN CONTROLLER (TD)** reports he was carrying out a PAR to RW19RH for Hawk (B). He had called PAR contact on the ac to DIR on the intercom at around the 8nm point and the crew instructed to contact him on Stud 7. Hawk (B) came on frequency at approximately 7nm; after a correct QFE read back he carried out the PAR in a normal manner. During the approach he observed a radar contact crossing from L to R behind Hawk (B). He was informed this ac was to join the visual cct and pass down the RH side of Hawk (B), so he informed the crew about the visual joiner to pass down their RH side. The joining ac – Hawk (A) - passed down the right hand side of Hawk (B) at about 5nm from touchdown and was showing at 2000ft with Hawk (B) started in descent on a 3° glidepath. He judged the traffic to be sufficiently separated against Hawk (B) at all times so continued the approach normally. The rest of the approach continued as normal, although the pilot of Hawk (B) asked if he had priority over cct and joining traffic at about 2 miles, after he had already been given a clearance to land.

**THE VALLEY ATC SUPERVISOR (SUP)** reports that the majority of station flying was complete, with just 4 Hawk T2 ac left to recover. Weather conditions were poor and the recovery restriction in place was CFFR. Having monitored the most recent recoveries, he suggested to the Duty Authorising Officer (DAO) that they implement IRM. The DAO agreed and IRM was implemented. Shortly afterwards the weather improved slightly and the DAO reverted to CFFR, so he returned to the ACR to monitor the situation. The crew of Hawk (A) called approach for a PAR recovery, was passed the CFFR and elected to recover radar-to-initial. He advised the controller to tell Hawk (A) that he was No4 in the pattern and would be sequenced accordingly. At this point he left the ACR to monitor the situation from the VCR and was only made aware of the close proximity of the 2 Hawk ac the following day when the Airprox was reported to ATC.

UKAB Note (2):

The Valley 1750UTC METAR: 19028KT 9999 -RA FEW017 OVC022 07/06 Q1019 WHT TEMPO 7000 RA SCT014 GRN=

The Valley 1850UTC METAR: 18027KT 9999 -RA OVC018 07/05 Q1018 WHT BECMG BKN014 GRN=

**BM SAFETY MANAGEMENT** reports that this Airprox occurred between 2 Hawks; Hawk (A) on a radar-to-initial recovery in receipt of a TS from Valley DIR and Hawk (B) on a PAR recovery whose crew had requested a DS from Valley DIR and TD. Both ac were operating IFR in IMC and in receipt of an ATS that was reduced as Valley were operating 'SSR only' without primary ASR.

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

The weather was reported by the Hawk pair as OVC at 1200ft with drizzle and both crews were flying in IMC throughout the incident sequence. The recovery state at Valley that afternoon had been changeable, alternating between VFR and IFR, with the DAO changing to a VFR recovery state immediately prior to the start of the incident sequence. The Valley FOB states that 'the minimum weather for the execution of visual circuits is 5km visibility and a 1000ft main cloud base. The normal visual circuit height is 1000ft QFE.' Valley was operating to RW19RH throughout the incident sequence.

DIR reports their workload at the time of the Airprox as medium to low, with low task difficulty, having been on console for 60mins. Their taskload history during that time was medium to high, controlling an IFR recovery wave in mainly IMC, with low to moderate task difficulty. Although the crew of Hawk (B) requested and was provided with a DS by DIR on initial contact, DIR stated in their report that they believed that Hawk (B) was under a TS and treated the ac as such during the remainder of the incident sequence. Subsequent to completing their DASOR, DIR has stated that they could not recall why they might have forgotten that Hawk (B) had requested a DS.

[UKAB Note (3): The crew of Hawk (B) contacted DIR at 1744:23, who responded, "*..identified descending 3 thousand feet Traffic Service*". The crew of Hawk (B) then countered, "*3 thousand feet and request Deconfliction Service [Hawk (B) C/S]*", which DIR agreed at 1744.35, [Hawk (B) C/S] *Deconfliction Service*"; this was then read back by the crew.]

At 1745:00, as the crew of Hawk (A) contacted DIR following a handover from APP. At this point, Hawk (A) was 9.6nm ESE of Hawk (B), tracking N'ly at 6000ft QFE; Hawk (B) was heading 360° at 3000ft QFE. The SUP has stated that he went to the VCR immediately prior to Hawk (A) contacting DIR and remained there throughout the incident sequence.

At 1745:11 the crew of Hawk (B) was instructed to descend to 2000ft QFE, reporting level at 1745:47. At 1745:19, Hawk (A) was instructed to descend to 3000ft QFE. At 1745:49, Hawk (B) was instructed to turn onto 270°. At 1746:04 Hawk (A) was instructed to turn onto 310°, at which point,

Hawk (A) was 9.4nm SE of Hawk (B), descending through 4200ft. At 1746:30, Hawk (A) was turned onto 270° and, at 1747:15, Hawk (B) was turned onto 220°.

At 1747:27, DIR passed TI to Hawk (A) on Hawk (B) stating, “*traffic right 1 o’clock, 5 miles [radar replay shows 7.9nm], similar heading, 2 thousand feet in the radar pattern*”, which was acknowledged by the crew of Hawk (A). Although this was after the point at which Hawk (B) had been turned onto 220°, it was an accurate representation as Hawk (B) did not commence the turn until 1747:28. At 1747:43, DIR instructed Hawk (A) to descend to 2500ft, with the ac reporting level at 1748:01. Shortly after, at 1748:09, DIR updated the TI to Hawk (A) on Hawk (B) stating, “*previously called traffic now 12 o’clock, 4 miles, crossing right-left, 2 thousand feet*”, which was acknowledged. Given the visual cct direction, that the visual circuit was known to be clear and that Hawk (B) was positioned to the E of the RW19 centre-line, DIR’s intention was to position Hawk (A) to the W of the centre-line, on the live side of the visual circuit.

At 1749:25, the crew of Hawk (A) requested, “*further descent when able*” which was acknowledged by DIR who stated, “*roger, standby in 3 miles.*” DIR reported that they delayed the descent to Hawk (A) due to the proximity of Hawk (B); at this point, Hawk (A) was 1.7nm NE of Hawk (B) with 500ft vertical separation indicated between the ac. This tallies with the report of Hawk (B) who stated that they ‘observed a contact, assumed to be [Hawk (A)], closing on TCAS from the 7 o’clock position 500ft above.’ It is reasonable to argue that Hawk (B) would have been displayed on Hawk (A)’s TCAS display.

At 1749:51, DIR instructed Hawk (A) to turn L onto 190°; Hawk (A) was 1.6nm N of Hawk (B). The turn onto 190° would have seen Hawk (A) parallel the centre-line 0.9nm to the W, with approximately 1.4nm lateral separation between the 2 ac; however, Hawk (A) initially turned to track approximately 170°, closing the displacement to 0.4nm W of the centre-line, before turning onto 190°. Subsequent to completing their report, DIR has stated that due to the update rate of the SSR at Valley, this ‘overturn’ by Hawk (A) was not visible on their surveillance display.

At 1750:15, content that ‘no risk of collision existed’, DIR instructed the crew of Hawk (A) to descend to 1600ft QFE; Hawk (A) was 1.9nm NW of Hawk (B), who was maintaining 2000ft QFE. At 1750:30, approximately 0.5nm from Hawk (B)’s descent point on PAR and following liaison with DIR, TALKDOWN advised Hawk (B) that there was a, “*visual joiner [Hawk (A)] passing your right-hand side.*” Hawk (A) was 1.3nm NW of Hawk (B), indicating 600ft above, and approximately 0.6nm W of the centre-line.

The lateral CPA occurred at 1750:50, as Hawk (A) indicating 200ft above Hawk (B) passed 0.9nm W of the latter. After the CPA, Hawk (A) continued to slowly converge with the centreline but was accelerating ahead of Hawk (B). At 1750:59, Hawk (B) appears to have commenced a descent; however, it is unclear whether this was as a result of their “flinch descent” or having commenced descent on the PAR.

The purpose of a radar-to-initial approach is to rapidly recover fast-jet ac in marginal weather through radar vectoring to an initial point, thereby facilitating the pilot’s visual acquisition of the airfield such that they can continue VFR. Regulatory guidance for the conduct of radar-to-initial approaches may be found within RA3025 and MMATM Chapter 25 Para 6 which states that:

‘When positioning aircraft for this type of approach the...controller **should** consider:

- a. Reported cloud base, visibility and weather.
- b. Approach lighting aids available.
- c. Director’s patterns and conflicting traffic.
- d. Other aerodromes’ traffic patterns.
- e. Airspace restrictions.
- f. Terrain clearance.

Understandably, this does not provide detailed information on the separation standards to be applied between Radar-to-Initial traffic and other IFR traffic conducting instrument approaches. The RAF Valley FOB does not contain detailed guidance on the conduct of Radar-to-Initial approaches.

CAP 774 Chapter 3 Para 1 states that under a TS:

*'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.'*

CAP 774 Chapter 4 Para 7 guidance material states that under a DS:

*'When aircraft are in the initial stages of departure or on final approach, due to limited aircraft manoeuvrability...deconfliction minima do not apply...and avoiding action is instead aimed at preventing collision...The procedures regarding deconfliction advice to aircraft on...final approach are designed to cater for 'pop up' conflicts over which the controller has no advance warning due to the uncontrolled nature of Class G airspace. Controllers should attempt to co-ordinate and deconflict observed traffic prior to allowing the...final approach of an aircraft that is...receiving a Deconfliction Service.'*

RA 3024 and MMATM Chapter 24, Para 43 states that:

*'The PAR controller...will provide the pilot with the necessary information to avoid a collision rather than to maintain any specified separation distance.'*

Teaching at the CATCS states that within 10nm of the aerodrome, irrespective of the ATS provided to ac on an instrument approach, radar-to-initial traffic may be descended through the level of instrument traffic, if the pilot of the radar-to-initial traffic is visual with the instrument traffic. This descent is given without reference to the pilot of the ac conducting the instrument approach. However, it should be stressed that this is teaching at CATCS and does not represent Policy or Valley local orders.

Insofar as this Airprox is concerned, DIR incorrectly believed that Hawk (B) was in receipt of a TS, rather than a DS and issued an instruction to Hawk (A) to descend through Hawk (B)'s level. This suggests that either the FPS was not amended to reflect the fact that Hawk (B) requested a DS on handover from APP, or that the controller did not check the FPS prior to issuing the instruction and was relying on their memory. Unfortunately, it has not been possible to determine which of these hypotheses is correct. In the respect that DIR believed both ac to be in receipt of a TS, they correctly applied vertical deconfliction minima between Hawk (A) and Hawk (B) until the point where they determined that no collision risk existed and then permitted Hawk (A) to descend through Hawk (B)'s level. However, in accordance with CATCS teaching, DIR did not check that Hawk (A) was visual with Hawk (B) prior to issuing the instruction to descend. However, had both ac been under a TS, as DIR erroneously believed, then, in accordance with CAP 774, there was technically no requirement to deconflict the two ac, other than to avoid a collision. From TD's perspective, in accordance with CAP 774 and the MMATM, the controller correctly assessed that the respective tracks of Hawk (A) and Hawk (B) would not result in a risk of collision and continued the PAR.

An aggravating factor in this incident was the turn by Hawk (A) at 1749:51 that initially tracked 170°, thereby reducing the lateral separation between Hawk (A) and Hawk (B). Whilst neither causal nor contributory in this Airprox, it is worthy of note that Hawk (A) was in receipt of a TS in sustained IMC when a DS was available.

Whilst the Airprox itself is relatively un-complicated, it has raised questions over the interaction between ac executing a radar-to-initial approach - by implication a visual approach - and ac conducting instrument approaches. Specifically, the teaching at the CATCS and in wide use within military ATM that once the radar-to-initial ac becomes visual with the instrument traffic, radar-to-initial traffic may be given descent through the level of the instrument traffic, without reference to the pilot

of the instrument traffic and irrespective to that ac's type of ATS. This is suggestive of the operating assumption within Class D airspace that VFR traffic will avoid IFR traffic. Given the speed differential between instrument and radar-to-initial traffic, the application of deconfliction minima would be difficult to implement and would negate the purpose of a radar-to-initial approach to be more expeditious. Moreover, one interpretation of CAP 774 Chapter 4 Para 7 could suggest that once the ac on instrument approach had commenced their descent under a DS, then DIR and/or TD only need to ensure collision avoidance, rather than apply the more stringent deconfliction minima. Consequently, whilst the extant procedure is understandable and pragmatic, BM SM contends that it is reasonable to expect that this modus operandi should be explicitly stated, such that it is obvious to aircrew and ATM personnel alike.

The Airprox was caused by DIR's instruction to Hawk (A) to descend through the level of Hawk (B), caused by their incorrect recollection of the type of ATS to be provided to the crew of Hawk (B). A contributory factor was that DIR had not confirmed that Hawk (A) was visual with Hawk (B) prior to issuing the descent.

## RECOMMENDATION

BM SM recommends that RAF ATM Force Cmd examine the findings of this investigation vis-a-vis the interaction between ac under a radar-to-initial approach and ac conducting instrument approaches.

## OUTCOMES

The Unit conducted a thorough investigation of this Airprox. Lessons learnt were disseminated to both controllers and aircrew, specifically relating to the conduct of radar-to-initial approaches and the advisability of sustained flight in IMC when a DS is available. Further work is being conducted to review the FOB in relation to radar-to-initial approaches and the weather minima pertaining to them.

**HQ AIR (TRG)** comments that whilst the controllers did their best to assist the pilots in their collision avoidance responsibilities, the lack of any explicit requirement to confirm that the overtaking pilot is visual and happy to descend through the other traffic's height allowed this situation to develop. As it was, both crews were very aware of each other's proximity through TCAS and were not sufficiently comfortable to follow the instruction. The lack of any clear responsibility of a controller with respect to collision avoidance under a TS, save the guidance in CAP 774 that they should not vector (or climb/descend?) ac into conflict, may have influenced the pilots' decision not to accept the descent when it was first offered. BM SM's point about operating IMC under a TS is valid. Whilst it can be entirely safe, for it to be so relies on high quality information from ATC about what traffic has and has not been coordinated. Given the need to achieve deconfliction minima, such combinations of approaches might not be compatible under a strictly applied DS. The review of the FOB is welcome and will need to address the particular recovery procedures in place at RAF Valley. Consideration of the compatibility of the various recovery states, weather conditions and ATS applied will be essential. The RAF ATM Force Cmd examination of the issues raised by this Airprox is also welcomed so that any problems identified can be addressed across the RAF, through the Regulator if required.

In summary, believing that no deconfliction minima applied the controller ensured that there was no actual risk of collision, but the crews were concerned by their proximity given that they were in IMC.

## **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.

Albeit that this was a 'reduced' radar service with Valley operating with SSR only, it was clear that this Airprox report had been submitted principally from the conflict that could have arisen if he had

descended in accord with DIR's instructions, coupled with DIR's misperception of the ATS required by the crew of Hawk (B). In this occurrence DIR had agreed a DS with the crew of Hawk (B) before handing the ac to TALKDOWN but then vectored Hawk (A) closer to Hawk (B) than DS minima require. The BM SM investigation also calls into question the responsibilities of controllers when vectoring traffic for recovery under a TS amongst instrument traffic under a DS and *inter-alia*, the applicable policy, procedures and training of controllers.

Irrespective of whether a TS or DS was provided, a Member opined that both crews had a reasonable expectation that they would not be vectored by ATC into close quarters with one another during the recovery. Whilst DIR might not know whether the crews were IMC, he should have asked the pilot of Hawk (A) if he was visual with Hawk (B) before issuing a descent instruction to 1600ft QFE through Hawk (B)'s height of 2000ft QFE, whilst still overhauling within close proximity of the latter. Although the crew of Hawk (A) had earlier requested further descent from 2500ft QFE "*..when able*", the controller recognised that at that point the ac were still potentially in conflict and delayed the descent accordingly. Here, DIR reports, he was applying a TS to both ac and not applying DS minima around Hawk (B). Whilst this might be perceived to be in accord with the guidance contained within CAP 774 Chapter 4 Para 7 where '*...deconfliction minima do not apply...and avoiding action is instead aimed at preventing collision...*', the CAA Policy and Standards Advisor opined that this was not applicable in the context of this Airprox and explained that this point is aimed at balancing traffic avoidance procedures on final approach against the terrain risk at low-level. Nevertheless, the BM SM Advisor emphasised that 500ft vertical separation should have been applied between Hawk (A) and Hawk (B) until the pilot of Hawk (A) had reported visual with Hawk (B) and the latter afforded a DS. The Naval Member perceived that the two ac should have been sequenced and separation maintained; he questioned the ATC Supervisory aspects as it seemed the SUP was 'out of the loop' at a critical point and the difficulties of one person supervising the controllers in both the VCR and ACR in difficult weather conditions was illustrated here. RN Air Stations employ a DATCO in the VCR who also co-ordinates between the O-i-C of Flying and the Radar Supervisor to ensure the recovery state is appropriate, whereas at RAF A/Ds, as here, the recovery state is decided by the DCF in consultation with the DAO.

Some Members were concerned that the crew of Hawk (A) continued to operate under a TS whilst flying IMC, in cloud. This had been addressed within the HQ Air (Trg) comments, who considered it to be entirely safe when high quality TI was available from ATC. Members accepted that a TS could be requested by crews operating IMC in cloud within the provisions of CAP774; whilst it might not be prohibited the guidance within CAP774 suggests it might not be appropriate when other radar services are available and some pilot Members considered it unwise. The HQ Air (Ops) Member opined that the pilot of Hawk (A) had stuck with a TS, perhaps perceiving that he would obtain visual contact with the A/D in relatively short order. Here the lesson for aircrew was to ask for a DS, and for controllers, wherever feasible, to ensure that you provide what is agreed.

The Board recognised that the Hawk ac involved were Mk2 types, which had the benefit of a TCAS fitment. Although provided with TI by ATC about each other, this Airprox illustrates the enhanced SA provided to both fast-jet crews by their TCAS equipment, which enabled them to rapidly appreciate that both ac were in close proximity. A quick call on the RT established that they were both flying in IMC, in cloud, with minimal in-flight visibility. It was clear that this additional knowledge convinced the pilot of Hawk (A) to sensibly delay his descent through Hawk (B)'s height of 2000ft QFE when instructed by DIR so to do. Whilst some Members opined that the pilot of Hawk (B) should have advised DIR that he was not complying with this instruction immediately, the Board agreed that this was a wise decision on the part of the pilot of Hawk (A) and had prevented a more serious situation from developing. Taking all these factors into account the Board concluded that this Airprox had resulted because the crew of Hawk (A) was instructed to descend through the level of Hawk (B) without confirmation that Hawk (A) pilot was visual with Hawk (B). As to the inherent Risk, it was clear that Hawk (A) pilot's decision not to follow DIR's instruction to descend had forestalled any potential for a conflict with Hawk (B) as he overhauled it 0.9nm away to port. Although he could not see it, TCAS plainly told the pilot of Hawk (A) exactly where Hawk (B) was in the vertical plane and, accelerating ahead of it, he descended through Hawk (B)'s level after the range had increased. This,

coupled with the pilot of Hawk (B)'s instinctive 'flinch' descent led the Board to conclude that no Risk of a collision had existed in the circumstances conscientiously reported here.

Having determined the Cause and Risk, it was evident from the BM SM investigation that there was an anomaly between the teaching at CATCS, current custom and practice 'in the field' and the regulatory aspects of the provision of a DS to instrument traffic when radar-to-visual recoveries were also being sequenced in the radar pattern for recovery in marginal weather conditions. It was apparent that student controllers at CATCS are being taught to descend radar-to-visual traffic through the level of instrument traffic under a DS if the pilot of the radar-to-visual traffic is in visual contact with the instrument traffic, irrespective of DS minima being provided to the ac on the instrument approach. This widely used but undefined procedure allowed DIR to overtake Hawk (B) if visual separation was effected by the crew of Hawk (A). A civilian controller Member opined that as this Airprox stemmed from a singular error by a controller, it might not warrant a recommendation from the Board to review the regulations and Valley were already conducting a review locally. Although the MAA Advisor suggested that the extant ATM Regulations and Acceptable Means of Compliance for individual radar-to-visual procedures were appropriate, the MAA shared HQ ATM Force's concern, expressed through the BM SM report, on the appropriate selection of ATS by aircrew and the local ATC policy on services provided to ac undertaking various recovery procedures in relation to the extant meteorological conditions. Whilst the MAA does not determine Policy, the Authority undertook to engage where a review of policy or change might be recommended by the UKAB. The CAA Policy and Standards Advisor agreed that the investigation of this Airprox had revealed an anomaly between the provisions of CAP774 UK Flight Information Services – the joint civil/military document defining ATSOCS co-sponsored by the CAA and MAA - wherein the requirements for a DS are specified for military and civilian controllers alike. The BM SM Advisor contended that there is no specific guidance to ATCOs or aircrew when vectoring traffic for a radar-to-initials recovery under a TS amongst instrument traffic under a DS. Moreover, any descent of radar-to-visual approaches through the level of ac conducting instrument approaches under a DS breaches the planned deconfliction minima, which CAP774 does not permit. Whilst this is a technicality, he opined that as long as this common but undefined procedure is followed correctly it is safe. The CAA Advisor agreed that CAP774 does not offer the scope to effect the foregoing. Although the Board might wish to make a Safety Recommendation if the Members considered it appropriate, with the agreement of the BM SM and MAA Advisors present, the CAA Policy and Standards Advisor undertook to liaise with the MAA to establish a suitable 'regulatory enabler' within CAP774 that would allow a defined military specific radar-to-visual procedure to be promulgated, without contravening the requirements of a DS. The Board agreed that this was a pragmatic way forward, thanked the CAA Policy and Standards Advisor for his pre-emptive action, and requested that he keep the Board closely apprised of progress on this topic.

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

Cause: Hawk (A) was instructed to descend through the level of Hawk (B) without confirmation that Hawk (A) pilot was visual with Hawk (B).

Degree of Risk: C.

Action: CAA AATSD will liaise with MAA to establish a suitable 'regulatory enabler' within CAP774 that will allow a defined military specific radar-to-visual procedure to be promulgated without contravening the requirements of a DS.

## AIRPROX REPORT No 2012035

Date/Time: 11 Mar 2012 1043Z (Sunday)

Position: 5058N 00052W (E Abm  
S. Harting - elev ~700ft)

Airspace: LFIR (Class: G)

Reporting Ac Reported Ac

Type: Paraglider PA28

Operator: Civ Pte Civ Club

Alt/FL: 1100ft 1800ft  
aal QNH

Weather: VMC CLBC VMC CLBC

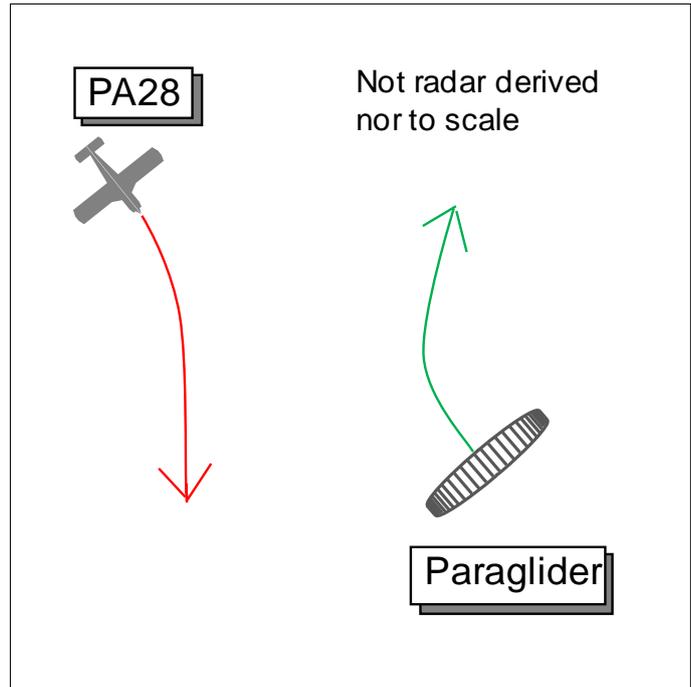
Visibility: 'Good' 5nm

Reported Separation:

Nil V/200yd H 500ft V/500m H

Recorded Separation:

NR



## PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE PARAGLIDER PILOT** reports flying a local sortie from Harting Down, just S of South Harting, [8nm NW Goodwood] VFR beneath a red/white/blue canopy. He had been unable to find his altimeter/vario so all times and heights were approximate. He took off at 1000 and started thermalling straight away and there were 3 other paragliders, he thought, already airborne. He thermalled up, flying all around the local area for something like 45min before the Airprox. As he had never flown to the cloudbase before he was quite surprised, and very pleased, to find himself flying through wispy bits of the base of what was a fairly over-developed and cloudy sky. He flew over another paraglider and asked the pilot his altitude and was told 1100ft above the take-off point. He turned towards Harting and was just 50ft under the cloud but in clear sight of the ground and Harting Down; in flight visibility was 'good'. The cloud was very thick in front of him and it was then he heard the sound of an aeroplane engine getting louder and louder. He did not move and waited for visual contact heading 310° at 25kt. Suddenly, out of what was quite thick cloud, a low-wing single-engine ac, possibly a Piper Cherokee type, appeared about 700ft away, flying straight at him. Both he and the other ac's pilot immediately turned sharply R in accordance with normal collision avoidance procedure, estimating they passed by 600ft (200yd). He assessed the risk as high.

He was in no doubt that if the other pilot had not been looking out carefully there was a high likelihood of a collision as the ac was at exactly the same altitude and it was just off to the L of his course. Another paraglider pilot on Harting Down took a photograph just after the Airprox and, using the printed picture and scaling from his parafoil dimension of 10m, he calculated separation was about 187m at the CPA. The photograph was attached to the CA1094.

**THE PA28 PILOT** reports en-route from Benson to Abbeville via the Goodwood O/H, VFR and in receipt of a BS from Farnborough, he thought, on 125.25MHz, squawking an assigned code with Modes S and C. The visibility was 5nm flying below cloud in VMC and the ac was coloured blue/white with nav lights switched on. Approximately 10nm NW of Goodwood heading 120° at 110kt and 1800ft QNH he encountered a lowering cloudbase so he made a decision to divert to Goodwood. Another ac appeared out of cloud so he turned L to avoid it. After he turned, he looked down and L and saw 3 paragliders so he took avoiding action by turning R estimating they passed 500ft below and 500m to his L assessing there was no risk of collision.

**ATSI** reports that the Airprox occurred at 1042:52Z, approximately 0.8nm SE of South Harting village, within Class G airspace, between a Paraglider and a PA28.

The Paraglider was operating VFR together with other paragliders, from the Harting Down paragliding site, which is situated just to the S of the reported Airprox position. Harting Down paragliding site is not promulgated in the UK AIP or shown on AIS Aeronautical charts. The Paraglider pilot reported operating in the area for approximately 45min prior to the Airprox and provided 2 photographs.

The PA28 was operating on a VFR flight from Benson to Abbeville but diverted to Goodwood due to the descending cloudbase. The PA28 pilot reported in receipt of a BS from Farnborough.

CAA ATSI had access to NATS area radar recordings together with written reports from both pilots. The registration of the PA28 was not determined until after 30 days and no RT recordings were available to ATSI.

The weather for Farnborough and Southampton is provided:  
METAR EGLF 111020Z 34008KT 300V360 9999 BKN015 10/07 Q1038=  
METAR EGHI 111020Z 34007KT 310V020 9999 SCT020 11/07 Q1038=

The exact time of the Airprox and the identity of the other ac were initially unclear. The written reports from both pilots indicated that the incident occurred at 1030 UTC. Radar recordings did not show any ac in the area at this time.

At 1031:35, radar shows the PA28, to be 14nm NW of South Harting, displaying a Farnborough LARS-W squawk 0433 and indicating an altitude of 1900ft.

At 1038:36, the PA28 is shown 1.7nm NNW of South Harting, commencing a RH orbit, indicating an altitude of 1800ft. The PA28 left the Farnborough frequency at 1039. Farnborough ATSU reported that no en-route frequency was annotated on the fps.

At 1040:22 the PA28 completed the orbit, setting course on a S'y heading. Radar shows that the ac had retained the Farnborough squawk 0433. It was not known if the PA28 had contacted Goodwood before the Airprox occurrence.

At 1041:04, the PA28 commenced a second RH orbit, 0.6nm NW of South Harting, indicating an altitude of 2000ft, before setting course again at 1042:28 on a track of 160°.

At 1042:35, the PA28 approached South Harting, indicating an altitude of 1800ft. Radar shows the PA28 commencing a L turn to track 120°. The PA28 pilot, in his written report, indicated sighting another ac and turning L to avoid it. The PA28 pilot then reported sighting 3 Paragliders and turning R.

At 1042:52, radar shows the PA28 turn R 40° at a position 0.8nm SE of South Harting village. At the same time the transponder code of the PA28 changed from 0433 to 7000.

The Paraglider pilot thought that there were 3 other Paragliders airborne and reported sighting a Cherokee type ac coming towards him already banking R. The Paraglider pilot also reported turning R.

Radar did not show any other contacts in the vicinity of South Harting. The PA28 continued to Goodwood, landing at 1051 UTC.

An analysis of the prominent features in the photograph provided by the Paraglider pilot, overlaid on a geographical mapping tool, showed that the position of the paraglider correlated with the radar fix of the PA28 at the reported Airprox position at a time of 1042:52.

The PA28 flight left the Farnborough frequency at 1039 prior to the Airprox, probably whilst the PA28 carried out the first RH orbit to the N of South Harting village.

It was not possible to establish the time the PA28 contacted Goodwood. However it was very unlikely that the FISO at Goodwood would have been able to provide information to the PA28 pilot about the paraglider activity.

The PA28 carried out a second orbit prior to setting course for Goodwood. The PA28 pilot then reported sighting another ac and turning L. This may have been the turn shown on radar at 1042:35 and shortly afterwards the PA28 made a R turn shown on radar at 1042:52, to avoid 3 paragliders.

CAP 774 Chapter 1, Page 1, Service Principles, states:

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

It is not mandatory for a pilot to be in receipt of an ATS; this generates an unknown traffic environment;

Controller/FISO workload cannot be predicted;

Pilots may make sudden manoeuvres, even when in receipt of an ATS.’

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

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

As this Airprox occurred in Class G airspace, both pilots were responsible for maintaining their own separation from other traffic through see and avoid. Members questioned the wisdom of flying VFR at the cloudbase as this can reduce the likelihood of pilots visually acquiring other ac early enough to assimilate the situation and then take the appropriate action, particularly if the cloudbase is in any way variable. This was borne out in this incident as the Paraglider pilot reported seeing the PA28, appear out of cloud 700ft away heading straight towards him, and turning R to avoid, estimating separation as 600ft (200yd). Meanwhile the PA28 pilot reported seeing another ac and turning L to avoid it and then seeing 3 paragliders to the L of his ac's nose and 500ft below, before turning R to avoid them by 500m. A GA pilot Member advised the Board that the paragliders were where they might be expected given the wind direction over the ridge. Since paragliders are hard to see, he emphasised the importance of anticipating where paragliders might be encountered during sortie planning. Given the Wx conditions at the time, Members thought that both pilots had seen each other as early enough as they could be expected to. Because of the disparate reporting distances, Members wondered whether the PA28 had seen the reporting Paraglider. This could not be resolved for sure although a photograph provided by the Paraglider pilot taken from the launch site looking N and viewed by Members, showed the PA28 tracking S'ly to pass W of the launch site and passing to the W of 3 paragliders, the W'ly Paraglider being that flown by the reporting pilot. Given that the Paraglider pilot reported seeing the PA28 turning R at the same time as he turned R, Members agreed that both pilots had taken appropriate action to resolve this conflict in Class G airspace and the combined actions had been effective in removing any risk of collision.

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

Cause: A conflict in Class G airspace resolved by the pilots of both ac.

Degree of Risk: C.

## **AIRPROX REPORT No 2012036**

**Date/Time:** 15 Mar 2012 1656Z

**Position:** 5148N 00104W (8nm final RW19 at Benson - elev 203ft)

**Airspace:** Benson MATZ (Class: G)

**Reporting Ac** **Reported Ac**

**Type:** Grob Tutor Agusta A109S

**Operator:** HQ Air (Trg) Civ Exec

**Alt/FL:** 1900ft 2500ft  
QFE (1015hPa) QNH (1021hPa)

**Weather:** IMC Cloud/Haze VMC CLAC

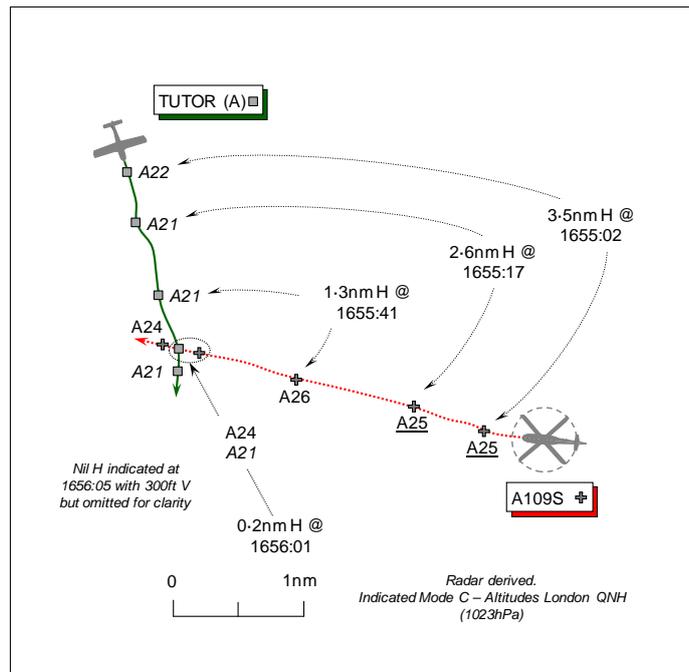
**Visibility:** 4km 5km

**Reported Separation:**

300ft V/½nm H Not seen

**Recorded Separation:**

Contacts merged @ 300ft V



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

**THE PILOT OF GROB TUTOR (A)**, a QFI, reports he was flying an instructional IFR recovery to Benson with a student and in receipt of a TS from Benson APP on 376-65MHz; a squawk of A3611 was selected with Modes C and S on. APP cleared him to descend to 1900ft QFE (1015hPa) and turn R onto a heading of 190° for final prior to the PAR procedure. Flying at 100kt, level at 1900ft QFE, he was flying just above the haze layer with some SCT cloud extending above; visibility was variable as the cloud tops were not clearly defined as his aeroplane transitioned intermittently in and out of the cloud/haze. At about 10nm final approach, whilst awaiting handover to TALKDOWN, conflicting traffic was called approaching from his L and slightly above. He was content to maintain a TS as the reduced visibility was intermittent. Following the first call from APP advising the traffic was about 5nm away, the conflicting ac was not sighted and thereafter on entering reduced visibility he informed APP that he was IMC. Shortly afterwards his aeroplane's Traffic Advisory System (TAS – a TCAS I) notified him of an ac in his 10 o'clock position about 1nm away, indicating +300ft above his aeroplane with an accompanying audible warning. Immediately, he requested a DS and was instructed by APP to maintain his heading of 190°; he spotted an ac over his L shoulder between the cloud tops and haze which then became clearly visible as it passed about ½nm behind from L – R (E to W) about 300ft above his aeroplane. The other ac was identified as an Agusta A109 helicopter, apparently white in colour, with a green longitudinal stripe. ATC was informed that the traffic had passed behind and he was then handed over to TALKDOWN to complete the PAR procedure. He noted that the ATC frequency was 'busy' and he assessed the Risk as 'Medium'. His aeroplane is coloured white with a blue longitudinal stripe; the HISLs and landing light were all functioning.

Whilst taxiing back to the dispersal he requested further information about the traffic. Shortly afterwards ATC were contacted by landline and following the discussion, he elected to submit an Airprox report.

**THE AGUSTA A109S HELICOPTER PILOT** reports he was in transit to Gloucestershire Airport and flying on track from BNN VOR to the Oxford overhead at 155kt. He had been in communication with Farnborough LARS, but the controller had asked him to contact Benson ZONE as they had traffic. He duly contacted Benson ZONE on 120.900MHz and was placed under a BS. From memory, he was flying VFR in VMC, on top, at 2000ft QNH when he was asked by ZONE to climb an additional 500ft to provide separation against fixed-wing traffic they were controlling on an instrument approach.

He happily climbed to 2500ft QNH and transited without incident. He never saw a fixed wing ac, but a passenger in the other front seat saw the aeroplane and didn't consider it very close. His helicopter is fitted with TCAS I and the aeroplane was displayed but no alert was provided. In his opinion there was 'zero' Risk and no safety issues. ZONE took action well in advance to keep his helicopter and the aeroplane apart and at no time did he feel the need to query ZONE or request avoiding action.

His helicopter is coloured beige and green. Anti-collision beacons above and below were on, together with HISLs on both sides of the tail boom. The assigned squawk was selected with Modes C and S on.

UKAB Note (1): The 1650Z Benson METAR: 26005KT 3000 HZ FEW015 11/08 Q1022 YLO1 NOSIG=

**THE BENSON COMBINED APPROACH CONTROLLER/DIRECTOR (APP)** reports he had 4 ac on frequency, all for radar approaches and all were being provided with a TS. The ZONE controller had seen that the Radar Training Circuit (RTC) was starting to become very busy and called another controller into the approach room, which he elected to use as a second TALKDOWN. The pilot of Tutor (A) was given TI on conflicting traffic when he had approximately 15nm to run. The traffic was SE at a range of 5 miles tracking W 100ft above, which he believed would pass down Tutor (A)'s LH side. The conflicting ac was now squawking A3601 and tracking more westerly and he had heard ZONE call Tutor (A) to the transit traffic – the A109, which ZONE said was VMC, under a BS and climbing to 2500ft QNH to pass between the subject Tutor (A) at 1900ft and Tutor (B) at 4000ft QFE. Whilst continuing to control other RTC traffic the pilot of Tutor (A) requested a DS and this was provided with the instruction 'previously reported traffic left 11 o'clock half a mile crossing L – R 400ft above, maintain heading'. As the primary contacts had now merged, he decided that any turn or change in height would increase the risk of a collision. ZONE then advised that the A109 pilot was now visual with Tutor (A), he thought; almost immediately Tutor (A)'s pilot reported visual with the A109 which was 'passing behind'. The pilot of Tutor (A) then requested a TS before being handed to TALKDOWN.

UKAB Note (2): There is no indication on the Benson ZONE VHF transcript that the A109 pilot reported visual with Tutor (A).

**THE BENSON ZONE CONTROLLER (ZONE)** did not submit a report.

**THE BENSON ATC SUPERVISOR** reports that APP and DIR was band-boxed, with 2 ac in the RTC under TS and 2 ac conducting GH also under a TS. The controller was busy, controlling calmly and competently. Normal recovery procedures for Tutor ac are visual joins; however, the weather had deteriorated and instead pilots were requesting instrument approaches to land. He had been in and out of the ACR seeing to other tasks, but when he returned to the ACR, ZONE informed him that the APP was busy and requested an additional controller to man DIR; this was because both Tutor pilots had called for recovery at the same time in addition to the 2 other ac in the RTC. He immediately went to find a DIR. However there was a few minutes delay as he had assumed the controller was in the back of the building when in fact he was in the crew room. On finding the controller he immediately came to the ACR, but APP requested a second TALKDOWN instead of a DIR, which was a wise decision as both Tutor ac had called up in close proximity in an area with little room for manoeuvre. When sitting back at the SUP's console, ZONE informed him of a free-call from a A109 pilot, at a position about 040° Benson 11nm, tracking NW. ZONE had issued the A109 a squawk of A3601, identified the ac, verified the Mode C and applied a BS as requested by the pilot. ZONE said that the pilot had reported at 2300ft QNH (1021hPa) and asked for guidance; he was aware of Tutor (A) on base leg for the PAR at 1900ft QFE (1015hPa), so he told ZONE to climb the A109 to 2500ft QNH to provide some extra separation above Tutor (A). The two ac were about 5nm away from each other and were called by both the APP controller and ZONE controller respectively. He had been monitoring a number of frequencies sporadically as he was also liaising with TALKDOWN regarding the order of recovery and passed TI to APP regarding the A109 climbing to 2500ft QNH. Instructing both controllers to update TI, when he next monitored he saw that the A109 had turned W

and was heading toward Tutor (A). The pilot of Tutor (A) then asked for a DS; the ac was heading 170° through the 12 o'clock of the A109. Unfortunately, he misheard the RT and thought that Tutor (B) had requested the DS and he called Brize Norton to co-ordinate. To hear the Brize Norton controller he had to switch off all frequencies, but he remained watching the radar, to see the Mode C of the A109 indicating 023 and climbing and Tutor (A) indicating 019.

**BM SAFETY MANAGEMENT** reports that this Airprox occurred between the subject Tutor - Tutor (A) - operating IFR in IMC in receipt of a TS and, latterly, a DS from Benson APP and the A109 operating VFR in VMC in receipt of a BS from Benson ZONE.

APP was bandboxed with DIR throughout the incident sequence; this is typical for Benson operations and is based on an accepted assumption that, unless pre-noted, Benson-based Tutors will operate VFR. DIR is planned to be manned for helicopter recoveries when their intention to conduct IF training on recovery is pre-notified to ATC. APP reported that their workload was high to medium.

The pilot of Tutor (A) provided a good description of the weather conditions, stating that at 1900ft Benson QFE, visibility was 4000m just above a layer of haze with SCT cloud at 1400ft occasionally extending above the haze layer. Throughout the recovery phase, the aeroplane 'transitioned in and out of the cloud/haze' and as such 'reduced visibility was intermittent.' Consequently, the PIC of Tutor (A) was 'content to maintain a traffic service.'

The incident sequence commenced at 1649:08 as the pilot of Tutor (A) called APP for an instrument recovery. Up to this point, APP had been providing a TS to 2 ac in the RTC and 2 Tutors - Tutor (A) and Tutor (B) – both conducting GH NW of Benson. At 1649:08, Tutor (A) was 7.3nm NW Benson, tracking N'ly, indicating an altitude of 3600ft ALT London QNH (1023hPa); the A109 was 18.6nm NE Benson, tracking WNW'ly, indicating 2400ft ALT London QNH (1023hPa). At 1649:36, the pilot of Tutor (B) called APP for an instrument recovery. Tutor (A) and Tutor (B) were placed 3<sup>rd</sup> and 4<sup>th</sup> respectively in the order of recovery.

At 1652:11 Tutor (A) was turned R onto a heading of 090° then, at 1652:52, was descended to 1900ft QFE, this being the lowest Terrain Safe Height in that area. At this latter point, the A109 was 11.8nm ESE of Tutor (A), tracking WNW'ly, indicating 2400ft ALT. At 1653:08, the A109 pilot free-called Benson ZONE requesting a BS en-route to Gloucestershire/Staverton; a squawk was issued and the flight placed under a BS.

The SUP re-entered the ACR between 1653:08 and 1654:08; cognisant of Tutor (A) on base leg at 1900ft QFE [1015hPa) – equating to 2080ft QNH (1021hPa)], SUP instructed ZONE to request the A109 pilot to climb to 2500ft QNH. The A109s initial altitude of 2300ft QNH (1021hPa) would have provided 220ft separation against the Tutor; the climb to 2500ft QNH (1021hPa) requested by ZONE provided 420ft separation.

At 1654:07, APP turned Tutor (A), indicating 2100ft ALT, onto a heading of 170°. The A109 was 6.7nm ESE of the Tutor indicating 2400ft ALT. Almost simultaneously at 1654:08, ZONE asked the A109 pilot, *"..can you accept flight at altitude 2 thousand 5 hundred feet for separation?"* The A109 replied, *"affirm"* and ZONE thanked them saying, *"thanks, we've just got a couple of aircraft struggling to get visual inbound to Benson."* The A109 pilot replied, *"no problem, I'll climb now altitude 2 thousand 5 hundred feet on 1-0-2-1."*

Although Tutor (A) indicated level at 2100ft ALT on the radar replay at 1653:51, the pilot reported this at 1654:25. At 1654:35, APP passed accurate TI to the pilot of Tutor (A) on the A109 as, *"traffic south-east, 5 miles, tracking west, 1 hundred feet above."* At 1655:02, the A109's SSR Mode C indicated 2500ft ALT, 3.5nm SE of Tutor (A), continuing to track WNW'ly.

At 1655:18, ZONE passed accurate TI to the A109 pilot as, *"traffic right, 1 o'clock, 1 and a 1/2 miles, crossing right-left, 4 hundred feet below, Tutor."* The A109 pilot replied, *"..V-M-C on top and level 2 thousand 5 hundred feet, 1-0-2-1."* Based upon reports by APP and the SUP, it is likely that it was around this point when either ZONE or the SUP (their recollections differ) informed APP that the

A109 was 'VMC, under a Basic Service and climbing to 2500ft QNH to pass between [the two] Tutors.'

At 1655:42, the pilot of Tutor (A) reported, "*India Mike Charlie, not visual with that traffic, request Deconfliction Service.*" It is likely that this transmission was prompted by the reported 'audible warning' from the Tutor's TAS of traffic 'in the 10 o'clock position, approximately 1nm and +300ft.' At that point, the A109 was 1.5nm SE of Tutor (A) indicating 2500ft ALT, with Tutor (A) indicating 2100ft ALT. APP acknowledged Tutor (A) pilot's transmission stating, "*..roger, Deconfliction Service, previously reported traffic left 11 o'clock [radar shows 10 o'clock], half a mile, crossing left-right, 4 hundred feet above, maintain heading.*" The pilot of Tutor (A) acknowledged this instruction and then immediately reported at 1656:02, that he was, "*visual, it's passing behind*". APP reported that at the point where they applied a DS, the radar contacts for Tutor (A) and the A109 had merged and 'any turn or change in height would increase the risk of a collision.' At this point the A109 was 0.3nm E of the Tutor, continuing to track WNW'ly, indicating 2400ft ALT; Tutor (A) was indicating 2100ft ALT. The A109 pilot reports that he did not sight Tutor (A) but that his passenger did and 'did not consider it very close.' Moreover, the A109 pilot reports that whilst his ac is fitted with TCAS and the Tutor was displayed on it, 'no TCAS alert was provided.'

The CPA occurred at 1656:07 as the A109 passed 0.1nm N of the Tutor, indicating 300ft above. Notwithstanding the request by the pilot of Tutor (A) to upgrade the ATS to a DS, the timing of the request was such that APP could do little to affect the outcome of the occurrence from that point. Appreciating the potential conflict between the A109 and Tutor, the SUP/ZONE, prevented a more serious incident by initiating the request to the A109 pilot to climb. Whilst this was not to an altitude that would achieve deconfliction minima, there was no requirement at that stage of the incident sequence to do this. The intention was solely to provide increased separation that was achieved. The sole remaining ATM issue that warrants examination is that the TI for Tutor (A) on the A109 was not updated until the request for DS at 1655:42.

Although there are 3 gaps in the RT exchanges between APP and those ac in receipt of an ATS between 1654:35 and 1655:42, they are relatively short, each of around 10 secs duration. It must also be borne in mind that these gaps will typically be spent by APP dividing their attention between all those ac in receipt of an ATS – 4 at the time of the Airprox - including the helicopter traffic ahead of Tutor (A) on a PAR – and keeping their logging up to date on their flight strips. Given their traffic loading, BM SM contends that APP could not have updated the TI and that any such argument would be based on hindsight bias. This might suggest that the bandboxing of APP/DIR was a contributory factor; however, in this instance, BM SM does not believe that this was the case. The workload at the time of the Airprox was almost wholly traffic within the RTC and all of APP's transmissions between 1654:35 and 1655:42 related to RTC traffic. Consequently, if the RTC traffic had been controlled by a dedicated DIR, it would have been unlikely that updated TI would have been passed to Tutor (A) before 1655:42.

It is concluded that the pilot of Tutor (A) sighted the A109 very late, arguably too late to have taken effective avoiding action if it had been required; the pilot of the A109 did not sight Tutor (A). The conflict was resolved by ATC at 1654:08, by initiating the request that the A109 pilot climb to a higher altitude to increase separation between the 2 ac.

**HQ AIR (TRG)** comments that Benson ATC provided a good level of service and resolved the conflict by requesting the A109 pilot to climb. It is also noted that the deconfliction advice was provided to the A109 pilot on a BS but that ATSOCAS presumes against such advice being provided to the Tutor pilot under a TS. This incident is a good example of controllers fulfilling their objective, stated in Regulatory Article 3001, to prevent collisions between aircraft. Considering the lack of an update on the TI, the Tutor pilot was poorly placed to assess the likely proximity of the traffic as there was limited detail in the initial call and it was at considerable range. An earlier request for a DS would have enabled a more effective intervention, although this was less imperative given the earlier co-ordination with the A109. Equally, a more routine use of DS by those on IFR recoveries would ensure controllers were able to provide earlier and more effective assistance to pilots, who hold the ultimate collision avoidance 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 2 of the 3 air traffic controllers involved and reports from the appropriate ATC and operating authorities.

The Board agreed that Benson ATC had been helpful to the pilot of Tutor (A) although he might not have realised it at the time because at no stage was he informed that the A109 pilot was talking to ZONE or that co-ordination had been agreed. When the pilot of Tutor (A) was passed TI about the A109 as “*..south-east, 5 miles, tracking west, 1 hundred feet above*”, the apparent conflict would undoubtedly have been of concern to the pilot, especially when he encountered IMC. Therefore Members understood his request for an upgrade to a DS. Meanwhile, ATC had elected to engineer increased separation by requesting the A109 pilot to climb to 2500ft ALT. The A109 pilot acceded to this request without hesitation and quickly climbed his helicopter to the altitude requested. The Board commended the A109 pilot for his airmanship and co-operation as this was a good example of the collaborative way that the ATC ‘system’ should work to the benefit of all concerned. Here the Benson SUP showed sound appreciation of the developing situation through his instruction to ZONE, which was aimed at preventing further difficulty in the instrument pattern. The BM SM report makes it clear that a climb to 2500ft QNH (1021hPa) only provided 420ft separation against Tutor (A) flying level at 1900ft QFE (1015hPa); this was perhaps somewhat less than the minimum 500ft vertical separation the Tutor pilot might expect later under a DS, and not helped by the A109 pilot’s fluctuating Mode C level. Nevertheless, the Board understood the controllers’ rationale as APP was not required to effect planned ‘deconfliction minima’, merely TI at that stage as the Tutor pilot had only requested a TS. Members agreed with the Command perspective that an earlier request for a DS from the pilot of Tutor (A) would have given ATC more scope to achieve the specified deconfliction minima for this form of ATS. However, the pilot had only made this request when the A109 was 1.3nm away and some 23 sec before the contacts merged at 1656:05. APP could not descend Tutor (A) any further at that point because the ac was already level at the lowest terrain safe height for that vicinity, but a further climb for the A109 was still an option, which it seems the pilot would have been unlikely to refuse.

HQ Air (Trg) commented that the ATSOCAS doctrine presumes against deconfliction advice being provided under a TS, although it was provided to the A109 pilot here under a BS. However, the CAA Policy and Standards Advisor disagreed that this was so. The provisions of the TS and DS are in addition to those of a BS. Therefore ATC’s request to the A109 pilot to climb was proffered here to facilitate the ‘safe use of the airspace’ and to that end nothing prevents a controller from co-ordinating a flight under a TS against another similar flight, or a TS versus a DS, if it is appropriate and the pilot is willing to comply. In effect, ATC had resolved the conflict before they were required to do so and although they might not have achieved the ideal minima for a DS, in the Members view, ATC made a reasonable attempt in the circumstances and the time available. Although one Member demurred and perceived there was no conflict at all, this occurrence certainly met the criteria for an Airprox report. The Board concluded, therefore, that this Airprox had been the result of a conflict resolved by ATC.

Although the contacts had merged with 300ft of vertical separation evident, the Tutor pilot was not aware at that stage that the helicopter pilot had confirmed he was in level flight at an altitude clear above Tutor (A). All the Members agreed that there was no Risk that the ac would collide but they debated the classification of the event. One Member considered that because the separation was less than DS minima, the event should be classified as Risk Category C. However, the majority considered that the ATC system had worked as intended and that normal safety parameters had been maintained.

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

Cause: A conflict resolved by ATC.

Degree of Risk: E

## **AIRPROX REPORT No 2012037**

Date/Time: 17 Mar 2012 1451Z (Saturday)

Position: 5210N 00012W  
(3nm SE St Neots)

Airspace: Lon FIR (Class: G)

Reporting Ac Reported Ac

Type: MD900 DA40 See Below

Operator: Civ Pol Civ Pte

Alt/FL: 1000ft 1300ft  
QNH (1011hPa) QNH

Weather: VMC CAVOK VMC Haze

Visibility: >10km 4km

### Reported Separation:

100ft V/500m H 200ft V/NR H

### Recorded Separation:

300ft V /<0.1nm H

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

**THE MD900 PILOT** reports flying single pilot in a blue and yellow helicopter with strobes and anti-coll lights switched on, on a local police operational flight from RAF Wyton, monitoring Wyton APP (but not in receipt of an ATIS) and squawking 0054 (Cambridge Police ASU) with Mode C; TCAS was fitted. While heading 170° at 120kt he saw a white, low-wing, single-engine ac less than 1000m away just to the left of his nose, just above his height and heading straight towards him; he partially saw the ac registration but did not see any lights and had no TCAS warnings. He immediately initiated a tight right hand avoiding turn through 90° then resumed his track. He assessed the risk as 'close'.

**THE DA40 PILOT** reports flying a white and blue ac with strobes and nav lights switched on, on a VFR flight from Stapleford to Gamston, a route he is very familiar with, as he regularly visits the Diamond service centre at Gamston; he was squawking 7000 with Modes C and S but TCAS was not fitted. Unusually, on this occasion, Farnborough North had terminated the BS much earlier than he anticipated; his preference is to stay with them until 10nm S of Cottesmore. Once the service was terminated, he selected the Cottesmore frequency (now at Wittering) to maintain a listening watch before requesting a MATZ penetration.

About 2-3mins after Farnborough service terminated, heading 335° at 120kts and while busy making radio calls, he saw a helicopter approaching from the NW (left of his nose) about 200ft below. He saw the helicopter late (4sec before it disappeared below his wing) due to the poor Wx conditions, although there was enough time to react had it been necessary; he considered that it was not required as there was adequate separation and he assessed the risk as being low.

Had Farnborough not terminated the service early then perhaps he would have been given ample warning of the traffic. Also, perhaps if the Helicopter had been in contact with Farnborough, then the other pilot would also have been aware of him. He understands that the other ac was a police Helicopter; if so, TCAS may have been a help to the other pilot.

**ATSI** reports that an Airprox was reported by the pilot of a MD900 helicopter which came into proximity with a Diamond Star (DA40) in the vicinity of St. Neots.

The DA40 was on a VFR flight from Stapleford Abbotts to Gamston and maintaining a listening watch on the Cottesmore frequency prior to contacting the unit for a MATZ clearance. The MD900 was VFR on an Operational flight over Cambridgeshire and not in receipt of an ATS.

Meteorological Information for Cambridge Airport (approximately 13nm E of the incident):

METAR EGSC 171450Z 20006KT 160V240 9999 FEW010 BKN038 10/09 Q1010=

Between 1436 and 1449 the DA40 was in receipt of a BS from Farnborough LARS (North). During this period the ac flew in a general NW'ly direction from its aerodrome of departure at an alt of 1100ft (London QNH 1011 hPa).

At 1448:50 the Farnborough LARS controller informed the DA40, "...you're leaving Farnborough surveillance coverage shortly squawk 7000 suggest a freecall to London Information on 124.6". At 1449:00 the pilot replied, "Squawk 7000 and 124.6." The Radar replay showed that service termination was co-incident with the notified boundary of Farnborough LARS (North) area of service provision. The DA40's SSR code changed to 7000 at 1449:23 and at that time it was at an alt of 1100ft (London QNH), 6nm SSE of the MD900. The MD900 was on a S'ly track depicted on radar replay at an altitude of approximately 900ft (London QNH). Both ac were in Class G uncontrolled airspace.

The distance between the two ac continued to decrease as each remained in the other's 12 o'clock on reciprocal tracks as shown below. Note: SSR code 0054 is considered unvalidated and unverified.



At 1450:56 the position indication symbols of the ac merged on the radar replay with the MD900 at altitude 900ft and the DA40 at altitude 1200ft (as shown below).



Following the encounter the radar replay showed both ac adjust course to the right of their previous tracks.

The Airprox occurred in Class G uncontrolled airspace between two ac not in receipt of any form of ATS; as such, the avoidance of collision rested solely with the pilot of the ac and in accordance with the relevant RoA.

**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.

Members noted that this incident took place in a busy area of Class G airspace (below 3000ft) where 'see and avoid' is the principal method of collision avoidance. Both pilots had, they believed, some assistance with this responsibility. The MD900 was TCAS-equipped and, although the radar prints above showed the DA40 to have been squawking with Mode C, no warnings were issued by the TCAS. The DA40 pilot had been in receipt of a BS from Farnborough and seemed to be under the mistaken impression that this would provide him with traffic warnings. As explained in the ATSI report above, controllers are under no obligation to provide traffic information under such a service; should pilots require information on other traffic then either a TS or a DS should be requested. By the time of the Airprox the DA40 had flown out of Farnborough's coverage and both ac were in an area where there is little possibility of obtaining an effective TS at low altitudes. A Member noted that the DA40 pilot reported that he was flying at 1300ft; his selection of this unusual, but in the Board's view sensible, alt had avoided a closer vertical proximity.

The radar recording verified that the vertical separation was about 300ft, greater than either pilot estimated. Further both pilots saw the opposing ac, albeit rather belatedly, and were taking action to maximise the separation. That being the case Members unanimously agreed that there had been no risk that the ac would have collided.

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

Cause: Late sightings by the pilots of both ac.

Degree of Risk: C.

## **AIRPROX REPORT No 2012038**

Date/Time: 11 Mar 2012 1442Z (Sunday)

Position: 5338N 00059W (10nm  
N Doncaster/Sheffield)

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

Type: Paramotor EC120

Operator: Civ Pte Civ Pte

Alt/FL: 400ft 1000/1500ft  
QFE NK

Weather: VMC NR VMC NR

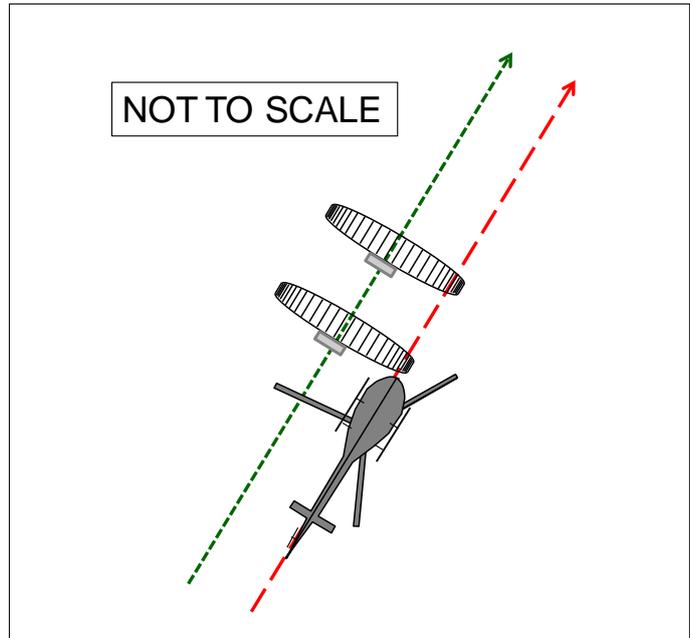
Visibility: 10km >10km

### Reported Separation:

200ft V/10ft H Not Seen

### Recorded Separation:

(See UKAB Note (1))



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

**THE PARAMOTOR PILOT** reports flying an orange and black paramotor with no lights or SSR but he carried a radio. Having taken off from a field into a 5–7mph W'ly breeze he carried out a left turn and proceeded to climb out on a NE heading with the intention of then flying N (parallel with the M18) to Drax Power Station, after he had cleared local farms and houses. During the climb heading 035° at 25kt and at around 400ft agl, he became aware of a fast moving shadow approaching rapidly from behind and at about the same time a pilot on the ground radioed to inform him that a helicopter was behind him. A fellow paramotor pilot was also taking off and was ¼nm behind him and the helicopter passed him slightly to his right with a height clearance of about 250ft.

As the helicopter flew over the top of his wing (about 10ft to his left and parallel to his flight path and about 200ft above him); he felt a slight disturbance similar to that encountered in a thermal gust and braced himself for a sudden deflation however, the wing remained in a stable condition. He was concerned that the helicopter pilot had either not seen the two brightly coloured wings on a clear day or had not altered his flight path to take avoiding action.

The consequences of helicopter down draft affecting flexible paraglider wings would be rapid collapse of the wing with possible fatal results, especially at low level where deployment of an emergency parachute may not be successful.

UKAB Note (1): The Paramotor pilot provided a photograph of the incident taken by a ground observer at the take off point. It showed the identified helicopter passing to the right and above the second paramotor at distances similar to those calculated at UKAB Note (2) below. (Due to the oblique angle of the shot, they could not be estimated accurately).

**THE EC120 PILOT** provided an incomplete report saying that at the time he was on a private VFR flight with a passenger from a private site near Doncaster, general handling between 1000 and 1500ft agl in good visibility. He did not see any other ac.

UKAB Note (2): The recording of the Claxby radar showed the EC120 throughout. It was positively identified from its Mode S (enhanced) data. During the period the ac tracked 033°, passing 0.32nm (~600m) to the E of the reported position at 1444:38. The position of the incident reported by the paramotor was to 2 decimal places, probably from a GPS and therefore probably accurate; at the time the helicopter was indicating FL002 (Mode C), the Doncaster QNH was 1036hPa and the terrain at the incident position is about 10ft; therefore the EC120 was at 880ft agl. If the Paramotor(s) was/were, as reported at 400ft there would have been about 480ft vertical separation.

**ATSI** reports that this Airprox was believed to have occurred at 1441:51, about 10nm N of Doncaster Airport in Class G airspace, between a Eurocopter EC120B (EC120) and a Paramotor. The position of the reported Airprox is below the Doncaster Control Area, CTA-5, which has a base alt of 2000ft.

The EC120 was operating VFR from a private site at Edenthorpe 5.6nm NW of Doncaster Airport and the paramotor was operating on a VFR training flight from Wormley Hill, a private site 10nm N of Doncaster Airport.

CAA ATSI had access to the RTF recording, NATS Area Radar recordings and the pilots' written reports. The Doncaster weather was:

METAR EGCN 111420Z 31010KT CAVOK 18/09 Q1036=

At 1441:40 the EC120 helicopter contacted Doncaster Radar and reported leaving CAS from Edenthorpe and heading N; the controller gave the Doncaster QNH 1036, issued a squawk 6160 and agreed to provide a BS outside controlled airspace.

At 1441:57, radar recording first showed the EC120, 5.6nm NW of Doncaster airport, tracking N, indicating minus FL002 (converts to an altitude of 420ft with QNH 1036 and 1mb equal to 27ft). At 1443:50, the EC120 crossed the boundary of CAS, the controller advised the pilot about a gliding site N of the zone and active up to 4500ft and the pilot reported going as far as the M62 before routing back.

The Paramotor pilot's report indicated that after departing from the field at Wormley Hill, he climbed on a NE'ly heading to a height of 400ft agl. (The elevation of Wormley Hill is approximately 15ft). The Paramotor pilot reported that he became aware of a helicopter approaching from behind and around 200ft above.

At 1444:51, radar recording showed the EC120, passing the approximate position of the reported Airprox, indicating FL002 (820ft). Neither, the NATS area radar recording, nor the Doncaster radar recording showed any other ac in the immediate vicinity.

The EC120 then routed N calling for rejoin at 1451:56 via the Thorpe Marsh power station and reported it to be the last flight of the day. The EC120 pilot did not mention the Paramotor or any other aircraft in his close proximity.

ATC were not aware of the Airprox and no report was received from Doncaster ATC.

The Airprox occurred when the Paramotor and EC120 helicopter came into close proximity within Class G airspace. The Paramotor was not shown on the Doncaster radar display and the Doncaster controller would have been unable to pass any warning to the EC120 helicopter in receipt of a BS.

## **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 [the paramotors were not displayed], reports from the air traffic controllers involved and reports from the appropriate ATC authorities.

Although Members noted that this incident took place in Class G airspace where the respective pilots had an equal and shared responsibility to 'see and avoid' other ac, since the helicopter was approaching from above and behind the paramotor(s), Members agreed that it would be unreasonable to expect their pilots to see it in time to manoeuvre to avoid it. The paramotor(s) on the other hand, were directly ahead of the helicopter, albeit well below it, and its pilot was in a position to see them and, if he felt it warranted, avoid them by a greater lateral margin. Several Members thought that the vertical separation extant was adequate and the incident had been a 'normal' operation with no risk attached; the same number [five] thought that although there had been no risk of collision, some horizontal separation should have been afforded by the helicopter pilot to positively ensure safety; the Chairman agreed with the latter view. Three Members abstained and another considered that there was not enough information on which to base a decision [Risk D].

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

Cause: A non-sighting by the EC120 pilot.

Degree of Risk: C.

## AIRPROX REPORT No 2012042

Date/Time: 22 Mar 2012 1527Z

Position: 5154N 00214W (2.5nm  
W GST - elev 101ft)

Airspace: LFIR (Class: G)

Reporter: Gloucestershire APP

Type: 1st Ac AS355 (A) 2nd Ac HS25

Operator: Civ Trg Civ Comm

Alt/FL: FL40 QNH ↓2500ft

Weather: VMC CLNC VMC NR

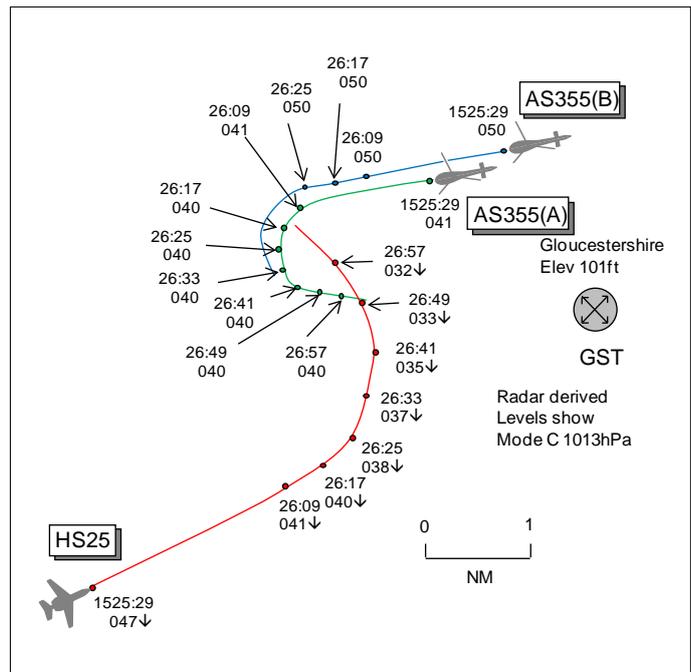
Visibility: >10km >10km

Reported Separation:

400m H >500ft V

Recorded Separation:

>700ft V/0.2nm H  
OR Nil V/2.3nm H



## **CONTROLLER REPORTED**

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

**THE GLOUCESTERSHIRE APP** reports that the RW in use was RW09 LH cct and at about 1520Z Filton pre-noted the HS25 inbound, IFR and coordinated at 3000ft QNH 1026hPa; both units were very busy at the time. The subject AS355 (A) was in the GST hold at FL040 whilst another AS355 (B) from the same company was also in the hold at FL050. A fast moving contact was observed on primary radar about 10nm to the SW routeing NE'bound towards the GST. Two blind transmissions were made to the HS25 flight with no success. After a third transmission the HS25 crew replied (approximately 4nm SW of GST) stating they were at FL050 descending to 3000ft. Essential TI was passed immediately to the HS25 flight on the GST holding traffic at FL040 and FL050 to which the crew replied they were visual. Essential TI on the HS25 was also passed to both AS355 flights. AS355 (A) pilot reported that the HS25 had just passed O/H, he thought [actually under], by about 400ft. The pilot was asked if he wished to file an Airprox to which he replied he would call on the ground.

**THE AS355 (A) PILOT** reports inbound to Gloucestershire, IFR and in receipt of a PS from Gloster Approach, squawking 7000 with Mode C. The visibility >10km in sky clear VMC and the helicopter was coloured blue/gold with anti-collision beacon, nav and strobe lights all switched on. The HP's (student) forward visibility was impaired by IF screens required for IR training. While holding at GST at FL040, heading 094° flying out of sun on the inbound leg at 105kt, separation under a PS was compromised by a HS25 descending through both his level and that of another company AS355 (B) established in the hold at FL050. The HS25 flight was on frequency but not receiving a service. No avoiding action was taken by him or AS355 (B) commander as ATC informed both flights of the approaching HS25 approximately 10sec before both AS355 pilots became visual. The speed of the HS25 and late sighting did not allow for avoiding action but neither he nor the commander of AS355 (B) felt their ac were in danger. The HS25 was descending rapidly, passing through his level about 400m away while it was turning beacon outbound. He assessed the risk as none. As the incident occurred in Class G airspace and involved an ac not receiving a PS, little could be done to prevent

such an event by either commander. He opined that the procedure and its execution selected by the HS25 Capt had added to the incident as an ac of this weight and speed would normally fly a DME arc to the FAT and not fly directly to the GST to fly a non-standard join.

**THE HS25 PILOT** reports inbound to Gloucestershire IFR and in communication with Gloster Approach squawking with Modes S and C. The visibility was >10km in VMC and the ac was coloured white/grey with anti-collision beacon, strobes, landing and nav lights all switched on. Turning L outbound at the GST descending to 2500ft, he thought [actually 3000ft], QNH at 180kt flying out of sun a TCAS TA alerted them to traffic and they saw 2 helicopters, he thought 250m away [see ATSI report], and above his ac by 500ft or more. No avoidance was undertaken owing to the visual sighting and he assessed the risk as none.

UKAB Note (1): The hold is a 1min LH racetrack QDM 094°. The Gloucestershire NDB(L)/DME procedure is outbound GST track 284° (CAT A,B) or 296° (CAT C) at 2800ft descending to 2200ft to GOS 8DME turn L to intercept the FAT 093°. The alternative procedure is to extend the outbound leg of the NDB(L) GST holding pattern descending to 2200ft then continue as the Main Procedure.

**ATSI** reports that the Airprox occurred at 1526:53 UTC, 2.5nm to the W of Gloucestershire Airport (Gloster), within Class G airspace, between an AS355 helicopter and an HS25.

The AS355 (A) was inbound IFR from Blackbushe (EGLK), operating on an instrument training flight and holding at FL040 at the Gloucestershire NDB (GST). A second AS355 (B) was also holding at the GST at FL050.

The HS25 was inbound IFR from Madrid-Torrejon Airport (LETO) and prior to being transferred to Gloster Approach was in receipt of a TS from Filton Radar. The Filton Radar controller reported traffic levels as medium and workload as medium/heavy. Filton Radar is promulgated to provide a LARS between the hours of 0800 – 1800 (Local) Monday – Friday, excluding public holidays, within a radius of 30nm from Filton up to FL95.

The Gloster Approach controller, who was providing an Approach Control (Procedural) Service from a position in the VCR, reported traffic levels as medium and workload as medium/heavy. The Radar room is situated on a floor below the VCR and the radar system has an additional slaved display in the VCR, which is approved for use as an ATM.

Gloucestershire Airport is equipped with a Primary Radar System, without SSR surveillance capability and limited coverage due to the narrow beam width, tilt mechanism and radar overhead limitations. The AIP entry for Gloucestershire Airport AD 2-EGBJ states:

‘Radar services (Primary only) within 25nm below FL80, availability subject to manning. Use of ‘Radar’ suffix denotes availability only. Provision of a specific radar service is not implied Designated Operational Coverage (DOC) 25nm /7000ft.’

CAA ATSI had access to RT recordings for Gloster and Filton, NATS area radar recording, together with the written reports from the 2 pilots concerned and the Gloster Approach controller. The Gloster Airport METAR was provided:

EGBJ 221520Z 07009KT 9000 NSC 18/02 Q1026= and EGBJ 221550Z 08009KT 040V120 9000 NSC 18/03 Q1026=

Gloster ATC had accepted the 2 AS355s for training. At 1504:02 the first helicopter, AS355 (A) flight, was cleared to the GST at FL040 with no delay and the pilot was instructed to report taking up the hold. This was acknowledged and a PS was agreed. CAP774 Procedural Service, Chapter 4, Page 5, states:

‘A Procedural Service shall only be provided by controllers at ATC units with Regulatory approval to provide such a service. Controllers at ATC units that do not have surveillance

information available may routinely apply Procedural Service to pilots of aircraft carrying out IFR holding, approach and/or departure procedures without the need to first elicit the pilots' requirements; however, for other flights the type of service required is to be confirmed.'

'A controller shall provide deconfliction instructions by allocating levels, radials, tracks, and time restrictions, or use pilot position reports, aimed at achieving a planned deconfliction minima from other aircraft to which the controller is providing a Procedural Service in Class F/G airspace.'

At 1509:33, the Filton radar assistant contacted Gloster with an inbound estimate (1523) and level (3000ft) for the helicopter AS355 (B). The Gloster controller replied, "*Okay flight level five zero for him please.*" This was acknowledged by the Filton assistant.

At 1510:33, AS355 (A) flight reported entering the hold at FL040 and the pilot was asked to report ready for the approach.

At 1512:00, Cardiff Radar advised Gloster that the HS25 was positioned 5nm S of EXMOR, estimating Gloster in approximately 10min and likely to be working Bristol after Cardiff.

The Gloster controller later indicated that his plan was to keep the 2 training helicopters in the hold at FL040 and FL050, in order to allow the HS25 to make an approach first. The Gloster controller decided to allocate 3000ft for the HS25, with an expectation that Filton Radar would transfer the flight once it reached 3000ft. The controller then intended to offer the HS25 pilot the option to carry out the direct (8DME arc) arrival, which would expedite the arrival sequence.

(Note: The RW09 direct arrival from the SW, when approved by ATC, requires the inbound to cross the IAF GOS D10 at 2800ft and then turn L to intercept the GOS DME 8 ARC arrival).

The Gloster controller had earlier requested information about the HS25 from Filton. At 1516:37, the Filton Radar assistant returned the call and the following telephone exchange occurred:

Gloster controller: "*Gloster Approach.*"  
Filton assistant: "*Filton Radar Assistant.*"  
[Filton reported that a pre-note had been received on the HS25 from Cardiff]

Gloster controller: "*Cardiff told me he was about he was at Exmor I think about five minutes ago.*"  
Filton assistant: "*er yes he's about ten miles northeast of Cardiff at the moment.*"  
Gloster controller: "*Ten miles northeast of Cardiff roger is he going to be working you.*"  
Filton assistant: "*Sorry say again.*"  
Gloster controller: "*Is he going to be working you.*"  
Filton assistant: "*He will yes.*"  
Gloster controller: "*Okay could I have him at altitude three thousand feet then please.*"  
Filton assistant: "*Three thousand feet.*"  
Gloster controller: "*My QNH one zero two six.*"  
Filton assistant: "*One zero two six for (HS25 c/s).*"  
Gloster controller: "*Ah standby please.*"

At 1517:40, during the pause in the conversation, the HS25 flight contacted Filton Radar reporting in the descent to FL080 routeing direct to the GST. The Filton Radar controller was not involved in the conversation with Gloster but became aware that Gloster had given an acceptance level of 3000ft. The controller could be heard in the background saying that he thought this was incorrect because he thought an earlier ac had been allocated 4000ft. The telephone conversation with Gloster then resumed:

Gloster controller: *"Sorry Filton say again."*  
 Filton assistant: *"That's alright can you confirm three thousand feet for the."*  
 Gloster controller: *"Altitude three thousand feet please one zero two six."*  
 Filton assistant: *"Okay and you gave another one four thousand I think earlier is that right."*  
 Gloster controller: *"Er sorry four thousand."*  
 Filton assistant: *"Okay."*  
 Gloster controller: *"Er no no er I've got one in the hold at four zero."*  
 Filton assistant: *"Right Okay that's alright I just as 4000ft feet had been allocated to an earlier arrival right okay alright I just ????????"*  
 Gloster controller: *"Sorry I've got er about twenty aeroplanes calling me at the moment."*  
 Filton assistant: *"Okay is there anything further you need."*  
 Gloster controller: *"Er no three thousand feet the one zero two six."*  
 Filton assistant: *"Three thousand feet one zero two six for (HS25 c/s)."*  
 Gloster controller: *"Affirm."*

The Filton assistant, having confirmed 3000ft, then annotated the fps with red ink, 3000 Q1026, and handed the strip to the Filton Radar controller. It was not clear if the Filton assistant made the Filton controller aware of the traffic holding at FL040. At 1518:01, the HS25 was 16.8nm WNW of Filton, passing FL086 in the descent with 36.8nm to run to Gloucestershire Airport.

At 1518:55, the AS355 (A) pilot reported ready for the procedure next time over the beacon. The Gloster controller responded, *"...maintain the hold flight level four zero I got airways traffic inbound from the s-er southwest now at three thousand feet."* This was acknowledged by the AS355 (A) pilot.

At 1519:34, AS355 (B) flight contacted Gloster Approach, reporting 6DME to the S and passing FL040 for FL050. The AS355 (A) was in the GST hold at FL040. The Gloster controller instructed the AS355 (B) pilot to report level FL050 and then passed essential TI to the pilots of AS355 (A) and AS355(B) about each other.

At 1521:56, AS355 (B) pilot reported level at FL050 and was instructed to report taking up the hold.

At 1522:42, the AS355 (A) pilot reported inbound to the beacon (FL040) requesting an update. The Gloster controller responded, *"(AS355(A) c/s) er affirm I believe that er the Hawker traffic is now about eleven miles er sorry fourteen miles southwest of the field so er expect to go outbound shortly I'll call you back."* This was acknowledged and the controller added, *"If you go once more round the hold then expect to go erm outbound after that one."* The AS355 (A) pilot replied *"Wilco."*

At 1522:50, the HS25 was 16.3nm SW of Gloucestershire Airport maintaining FL050, having passed over 4 contacts in the area at altitudes 2000ft, 2900ft, 3400ft and 2100ft. A number of other ac are shown in the vicinity of Gloucestershire Airport with 3 SSR labels garbled and overlapping. These contacts were the 2 AS355 helicopters at FL040 and FL050 and, unknown to the Gloster controller, a third contact indicating FL048 is shown tracking SE through the holding pattern and passing 0.5nm behind the AS355(B) as it approached the GST. (This ac was squawking 3710 and was subsequently traced as a Tucano, believed to be in receipt of a TS from Brize Norton).

At 1523:45, the Gloster controller called the HS25 flight to check if it was on frequency, with no response.

At 1524:08 the AS355 (B) flight reported taking up the hold at FL050 and was instructed to report ready for the approach.

At 1524:25, the HS25 was at a range of 9.6nm from the GST, indicating FL050.

At 1524:41, the Gloster controller again called the HS25 flight, with no response. The controller advised the AS355(A) pilot, *"...there may be a further delay er I haven't actually got the aircraft yet it's*

*still working Filton it's about seven miles southwest I was hoping he'd be doing the direct arrival from the west but er looks like he's routeing to the G S T at three thousand feet."* The pilot replied (1525:03) *"Okay no problem happy to take a Basic Service and er continue outbound er on my ????? (AS355 (A) c/s)." The Gloster controller replied, "(AS355 (A) c/s) roger I'll call you back er once I've figured out what er approach this aircraft wants."*

Meanwhile at 1524:52, the Filton Radar controller instructed the HS25 pilot, to continue descent to altitude 3000ft on Gloster QNH 1026, which was read back correctly by the pilot. The HS25 was then transferred to Gloster on frequency 128.55MHz.

At 1525:21, the Gloster controller again called the HS25 flight. The HS25 pilot responded, *"Gloster Approach good afternoon (HS25 c/s) affirm we are out of five thousand feet for three thousand feet information Tango inbound G S T."* The Gloster controller responded, *"(HS25 c/s) Gloster Approach roger essential traffic in the hold flight level five zero is a twin squirrel and flight level four zero is also a twin squirrel."* The HS25 pilot replied, *"Okay sir er T-looking out."* The HS25 pilot was instructed to report reaching 3000ft and the pilot confirmed the requirement for the full NDB approach.

At 1525:29, the HS25 was passing FL047, 5.5nm SW of the GST. The 2 helicopters were to the NW of the GST, W'bound on the outbound leg of the hold at FL041 and FL050.

At 1526:03, the controller advised the AS355 (A) flight, *"...traffic which is essential to you is a Hawker which is four miles southwest descending from five thousand three thousand."* This was acknowledged by the AS355 (A) pilot. The controller then asked the AS355 (B) pilot if he had also copied that traffic and the AS355 (B) pilot acknowledged, *"Affirm."*

At 1526:17, the HS25 indicating FL040, was 2.6nm from the GST. The AS355 (A) was in the HS25 10 o'clock at a range of 2.3nm at the same level. Both ac had commenced a L turn towards each other.

At 1526:28, the Gloster controller asked the HS25 pilot to report his level. There followed a crossed transmission ending with the AS355 (A) pilot stating, *"...coming straight through my level turning straight towards me straight through the hold."* The distance between the 2 ac was 1.9nm with the AS355 (A) indicating FL040 and the HS25 indicating FL038 in the descent.

[UKAB Note (2): Immediately after the AS355 (A) transmission the Gloster controller replied, *"Roger it was actually pre-noted from Filton at three thousand for exactly that reason."* The AS355 (A) pilot then enquired, *"Er just confirm he's I F R (AS355 (A) c/s)."*]

The Gloster controller then transmitted, *"(HS25 c/s) report your level."* The HS25 pilot reported, at 1526:37, *"(HS25 c/s) is out of four thousand feet three thousand and we have er the above traffic both in sight."* This was acknowledged by the controller. The distance between the ac was 1.5nm with both ac still in the L turn towards each other, with a vertical separation of 300ft. As the 2 ac converged the vertical separation was 500ft at a range of 1nm (1526:41) and 700ft at 0.4nm (1526:49) as the HS25 crossed through AS355 (A)'s 12 o'clock.

[UKAB Note (3): The next sweep at 1526:57 shows the HS25 descending through FL032 and 0.3nm to the NNW of AS355 (A) with a vertical separation of 800ft the ac having passed. It is estimated, at the CPA shortly before this radar sweep, separation was 0.2nm/>700ft.]

The AS355 (A) pilot reported, *"...passing over the traffic er it's at least four hundred feet."* This was acknowledged by the controller who asked the pilot if he wished to file an Airprox. The pilot reported that he would decide when on the ground. The HS25 completed the NDB approach and landed without further incident.

Later the Filton Radar controller indicated that he had asked the assistant to check the 3000ft level allocated. When this was confirmed the assistant annotated the fps in red (3000 Q1026) and the fps was passed to the Radar controller. The Filton Radar controller indicated that the HS25 had

contacted him when passing W abeam Filton, about 6min flying time from Gloucestershire Airport. Due to the combination of the HS25's speed, other traffic in the area, workload and the controller handover, this had caused the late transfer of communication to Gloster. The Filton MATS Part 2, Section 2, Chapter 4, Page 61, Paragraph 3.2.6, states:

'IFR traffic inbound to, or routeing within 10nm of the GST will be co-ordinated providing at least 10 minutes before ETA and transferred no less than 5 minutes before.'

The Filton RT and telephone recordings showed that the Filton Radar controller's workload was high and, in addition to the number of ac on frequency, the controller was involved in a radar handover to Brize Norton, coordination of a departure with the Tower controller and a controller handover of the radar position. The radar display was set at approximately 30nm range and showed a number of ac operating in the Gloucestershire area with SSR labels overlapping and garbled. The Filton controller indicated that during the handover to the oncoming controller, he realised that the HS25 was late in being transferred and gave the HS25 descent to the acceptance level of 3000ft and immediately transferred communication of the flight to Gloster. The Filton controller stated that with more time he would have passed generic TI and would have spoken to Gloster Approach about the traffic situation. The Filton controller stated that, had the Gloster controller communicated his plan and requested coordination, he would have either agreed or suggested an alternative plan due to the traffic situation. The Filton MATS Part 2, Section 4, Chapter 3, Page 1, Paragraph 3.3, states:

'Whilst no formal agreements exist, co-ordination is effected whenever possible between Gloucester and Filton, ... Filton, Bristol and Brize Norton are tasked to provide LARS, up to FL095 and may, in certain circumstances, be able to assist in the resolution of procedural conflicts...'

Later the Gloster Approach controller indicated his workload was high due to the number of ac on frequency. When questioned, the Gloster controller reported that, whilst there were no local agreements or procedures, Filton Radar often ensured that ac were at the acceptance levels prior to the transfer of communication. The Gloster controller believed that he had in fact coordinated an acceptance level of 3000ft and advised Filton about the traffic holding at FL040. The Gloster controller's expectation was that the HS25 would be levelled at 3000ft prior to the transfer of communication.

The Gloster controller indicated that had Filton not been able to descend the aircraft to 3000ft or if the flight had been transferred from Cardiff, he would have allocated FL060 and an EAT. The controller was asked why EATs had not been allocated to any of the flights when holding was taking place. The controller indicated that he had not issued EATs for the 2 helicopters because he planned to offer the HS25 a 'direct arrival' in order to expedite the approach sequence.

The Gloster controller indicated that more effective coordination with Filton Radar would have prevented the Airprox and the Gloster ATSU reported that it is reviewing the LoA with adjacent units.

Approach Control will normally assign levels at the holding facility to adjacent area or radar units on the basis of 'lowest and earliest'. MATS Part 2, Section 3, Chapter 1, Page 2, Paragraph 14, states:

'Levels at holding facilities shall be assigned so as to permit aircraft to approach in their correct order. Normally the first aircraft to arrive over a holding facility should be at the lowest level with following aircraft at successively higher levels.'

The Gloster Manual of Air Traffic Services Part 2, Section 4, Chapter 2, Page 2, Paragraph 2.5.1, states:

'Whilst no formal release procedures are established for operations outside Controlled Airspace, adjacent units will normally pre-note arrivals, pass an estimate and/or co-ordinate an acceptance level. When an adjacent unit requests an acceptance level, APC is to issue an EAT.'

With traffic holding at FL040 and FL050, the next available level would have been FL060 with an EAT. The Gloster controller, having formulated a plan to expedite the arrival of the HS25, believed that having coordinated an acceptance level “at 3000ft” with “one in the hold at FL040,” Filton radar would descend the HS25 to that level before the transfer of communication. The controller believed that this was normal practice between Gloster and Filton. This very likely predisposed the Gloster controller’s thinking and belief, that having allocated 3000ft, the HS25 would be descended by radar to be level prior to the transfer of communication. None of the flights had been allocated an EAT.

It was noted that the previous inbound AS355 (B) was pre-noted by the Filton assistant, at a level of 3000ft. Gloster allocated an acceptance level of FL050 without coordination regarding the AS355 (A) holding at FL040. This resulted in a loss of the deconfliction minima when the AS355 (B) reported passing FL040 for FL050, 6nm from the GST.

The Filton assistant was asked by the Filton controller to check that the 3000ft level allocated was correct. The assistant, having checked the acceptance level of 3000ft, then confirmed the level on the controller’s fps in red ink. The traffic situation was complex and the Gloster controller did not ‘request coordination’ or communicate his plan to the Filton Radar controller, who was the person vested with the authority to agree specific coordination. MATS Part 1, Section 1, Chapter 9, Page 5, paragraph 2, states:

‘Co-ordination is the act of negotiation between two or more parties each vested with the authority to make executive decisions appropriate to the task being discharged. Co-ordination is effected when the parties concerned, on the basis of known intelligence, agree a course of action. Responsibility for obtaining the agreement and for ensuring implementation of the agreed course of action may be vested in one of the controllers involved.’

The Filton controller descended the HS25 initially to FL050. This was very likely due to the four contacts below the intended track. A combination of factors caused the Filton controller to further delay the descent and transfer of the HS25. The general traffic situation in the Gloster area was complex and labels were overlapping causing a garbling of the presented information. A handover to the oncoming controller probably distracted the controller and delayed his realisation that the HS25 hadn’t been transferred. The transfer of communication was late and the Filton controller did not terminate the TS or pass generic TI.

The Gloster controller became increasingly concerned when the HS25 was not on frequency making 2 blind transmissions to the flight. The controller mistakenly assumed the HS25 was at 3000ft and was surprised when the HS25 flight called passing 5000ft for 3000ft. The late transfer of communication gave the Gloster controller little time to resolve the conflict. The controller passed essential TI to the HS25 crew and subsequently to the 2 helicopter flights.

Both controllers were operating with a medium/high workload. CAP774, Chapter 4, Page 5, states:

‘High controller workload or RTF loading may reduce the ability of the controller to pass deconfliction advice, and the timeliness of such information. In the event that an aircraft that requires a Procedural Service makes contact with the controller whilst already within the deconfliction minima, controllers shall pass traffic information to all affected aircraft. In such circumstances, it is recognised that controllers cannot guarantee to achieve deconfliction minima; however, they shall apply all reasonable endeavours to do so as soon as practical.’

CAP774, Chapter 1, Page1, Paragraph 2, states:

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

The Airprox occurred when the Gloster controller allocated an acceptance level of 3000ft, without communicating his plan or requesting coordination to ensure that the 1000ft deconfliction minima was assured. This resulted in the HS25 descending into conflict with traffic in the GST holding pattern and into close proximity with the AS355 (A).

A number of factors were considered to be contributory:

- a) The Gloster controller believed that it was normal practice to allocate an acceptance level with an expectation that Filton would climb or descend the inbound aircraft to be level prior to the transfer. This belief very likely predisposed the Gloster controller into believing that the HS25 was at 3000ft.
- b) Due to a number of factors the Filton Radar controller transferred the HS25 later than was required by the Filton MATS Part 2.
- c) The descent of the HS25 was delayed due to opposite direction traffic.
- d) The range setting of the Filton Radar display showed a number of SSR labels in the vicinity of Gloster overlapping and garbled, which did not give the Filton controller a clear picture of the traffic situation at Gloster.
- e) The workload of both controllers was high and was likely to have prevented additional discussion to clarify the situation.

#### Recommendations

CAA ATSI recommends that Gloster ATSU review their procedures for the allocation of levels and EATs to inbound ac in the provision of a PS, ensuring that when additional coordination is required to resolve procedural conflicts, specific coordination is agreed with the appropriate person authorised to make executive decisions appropriate to the task in accordance with the requirements of MATS Part1, Section 1, Chapter 9, Page 5.

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

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

The ATSI Advisor informed the Board that Gloucestershire ATC are reviewing the LoAs with adjacent ATSUs regarding level allocation and coordination and any amendments will be incorporated into the MATS Part 2. Controller Members agreed that several assumptions had been made by Gloster APP, which had ultimately led to the HS25 arriving in the Gloucestershire O/H and in conflict with AS355 (A). APP had informed the Filton ATSA that the acceptance level for the HS25 was 3000ft and had assumed the Filton Radar controller would ensure the HS25 was level before transferring the flight. The APP had not conveyed his plan, through coordination, to the Filton Radar controller; coordination may only take place controller-to-controller. Nevertheless, the Filton Radar controller overheard the telephone exchange between Gloster APP and the ATSA and queried the level issued, but the APP had re-iterated that 3000ft was the required level for the HS25. Because APP had not ensured the Filton controller was aware that the GST hold was occupied by 2 ac at FL40 and FL50, there was no compunction on Filton Radar to ensure the HS25 was level 3000ft well before reaching the hold such that deconfliction minima were achieved. It was unfortunate that the Filton Radar controller was busy and that there were several ac in the area which delayed the HS25's descent and he transferred the flight later than required by the MATS Part 2. This late descent and handover resulted in the APP being unable to offer the HS25 flight the DME arc procedure. However, the onus was on the Gloster APP to issue a safe acceptance level (which would have been FL60 in the circumstances) unless precise coordination had been effected, controller to controller, to ensure that

the APP's plan would work. By allocating 3000ft, the APP did not ensure that deconfliction minima were achieved between the HS25 and the AS355 (A) and this had caused the Airprox.

Turning to risk, the APP had told AS355 (A) pilot that his approach would be delayed owing to the impending arrival of the HS25 at the intended altitude of 3000ft. The progress of the approaching HS25 was updated twice more to the AS355 (A) flight but each time including its erroneous level. When the HS25 flight finally called descending through 5000ft, Members commended the prompt action taken by the APP when he passed essential TI quickly to its crew on both AS355s. The APP then passed essential TI on the HS25 to AS355 (A) flight and ensured that AS355 (B) pilot had copied the transmission. The AS355 (A) pilot was undoubtedly concerned that the HS25 was not flying in accordance with the plan that the APP had communicated to him as the HS25 was seen turning towards his helicopter having descended through his level (radar shows separation as 200ft vertical and 1.9nm horizontal). Immediately after this the HS25 crew had reported sighting both AS355s above their ac, the radar showing the HS25 300ft below AS355 (A) with 1.5nm lateral separation. Thereafter the vertical separation increased as horizontal separation decreased, the subject ac passing at the CPA with >700ft vertical and 0.2nm. Although this had had the potential for being a more serious encounter, the visual sightings by both crews and actions taken by the APP and HS25 crew 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: Gloster APP allocated an acceptance level which did not ensure that deconfliction minima were achieved.

Degree of Risk: C.

## **AIRPROX REPORT No 2012046**

Date/Time: 27 Mar 2012 1646Z

Position: 5558N 00128W  
(Newcastle - elev 266ft)

Airspace: Newcastle CTA (Class: D)

Reporting Ac      Reported Ac

Type: A319                      Hot Air Balloon

Operator: CAT                      CAT

Alt/FL: 3500ft                      3500ft  
NK                                      QNH

Weather: VMC CAVOK      VMC CAVOK                      See Fig 1.

Visibility: 10km                      >20km

### Reported Separation:

0ft V/0m H                      200ft V/<1nm H

### Recorded Separation:

NRV /0.8nm H

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

**THE A319 PILOT** reports flying a scheduled passenger flight, IFR from Belfast inbound to Newcastle squawking as directed with Modes C and S; TCAS was fitted but gave no indications at the time of the incident. They were in receipt of vectors from Newcastle APR, heading 140° at 250kt, S of the RW07 extended centreline at about 20nm. As they were turned N to establish on the ILS he saw off the left wing tip a large hot air balloon less than 1nm away and about 500ft above them. The balloon pilot had made no radio transmissions while they were on the frequency.

They avoided it without any aggressive manoeuvring.

They understood that Newcastle ATC were also filing a report as the Balloon was inside the CTZ/A.

**THE HOT AIR BALLOON PILOT** reports that following take off from a site which was 800ft amsl the balloon was climbed to 2000ft to avoid livestock downwind, having been advised of a recent problem by a local balloonist.

When they were 10min into the flight the wind dropped dramatically to less than 1kt, so they climbed (outside CAS) in order to investigate winds at different levels, but there was no significant difference; when steady at about 3500ft they could not detect any movement over the ground.

He was busy transmitting to his ground support party when an ac passed close to them, heading about N and passing to their E. The ac was in straight and level flight and they saw no avoidance being taken. He assessed the risk as being low/none.

His flight was plagued by light and variable winds and it took another 60min to travel a straight-line distance of 2nm to final landing position.

The pilot attached an Ordnance Survey map showing the track of the balloon and overlaid on the map is the relevant section of Newcastle CTA.

**ATSI** reports that the Airprox occurred at 1645:53, 12nm SW of Newcastle Airport, on the boundary of the Newcastle Control Area CTA-4, Class D controlled airspace (CAS) between an Airbus A319-111 (A319) and a Lindstrand LBL 260A Hot Air Balloon (Balloon). The A319 was inbound to Newcastle airport IFR from Belfast Aldergrove (EGAA), in receipt of a DS, upgraded to a RCS when it entered CAS. The Balloon had departed VFR from Slaley Hall, a private site just to the W of the boundary of Newcastle Control Area CTA-4 Class D CAS, which has a base of 3000ft. The Balloon pilot did not contact Newcastle Radar but reported listening out on the frequency [before the CPA].

CAA ATSI had access to RTF recording, NATS Area Radar and Newcastle ATSU radar recordings, with reports from the controller and two pilots.

The Newcastle weather was:

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METAR EGNT 271620Z 10004KT 8000 NSC 20/06 Q1035=  
METAR EGNT 271650Z 10005KT CAVOK 20/05 Q1034=
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At 1638:22, the A319 contacted Newcastle Radar (RAD) on handover from Scottish Control. The A319 was identified by RAD, 34nm W of Newcastle and a DS service was agreed; the A319 was then descended to FL070.

At 1638:49, the A319 pilot reported a possible nose gear (inflation) problem and warned that after landing the aircraft might need to stop on the RW. The A319 was turned onto a heading of 115° and descended to an alt of 3500ft on the QNH of 1035hPa.

At 1640:41, RAD advised the A319 pilot that he was number 2 in the arrival sequence, but planned to delay the arrival, to allow two departures to get airborne before his landing; the A319 pilot then reported reducing speed.

The Newcastle radar display showed a number of spurious returns, (anomalous propagation) resulting from the high pressure atmospheric conditions; one of these contacts was subsequently believed to be the Hot Air Balloon.



Fig 1. (1646:06)

At 1643:47, the A319 was turned left onto a heading of 015° and as it crossed the boundary of CAS the controller changed the service to a RCS.

At 1645:30, the A319 was given descent to an alt of 2500ft and at 1645:46, the pilot reported, “er (A319)c/s sorry also we’re just passing a Balloon very very close he’s just to our left here probably er less than 5 miles”. The controller replied, “OK what altitude - can you tell” and the pilot responded, “Er slightly higher than us about 4000ft er white and black ...” This was acknowledged by RAD and the A319 was turned right onto a heading of 050° to intercept the RW 07 localiser and then continued the approach without further incident.

The CPA occurred at 1645:53, as the A319 passed 0.8nm E abeam the radar contact which was believed to be the Hot Air Balloon. At that point the A319 was indicating an alt of 3500ft and the pilot reported that the Balloon was at a higher level.

From the data available to CAA ATSI, it was considered likely the Hot Air Balloon drifted inside CAS before descending below the base of the control zone. The Balloon pilot had been operating close to boundary of CAS and indicated that he was listening out on the Approach (Radar) frequency 124.375MHz. It was not clear why the pilot had not called in order to improve the SA of both ATC and other airspace users.

It is likely that the workload of the A319 crew was high in preparation for the landing with a nose wheel problem and they did not report visual sighting of the balloon until about 20sec before the CPA. The pilot’s report indicated that the Balloon was ‘avoided without any aggressive manoeuvring’ but he was concerned about the close proximity of the balloon which had no transponder or radio contact.

The Airprox occurred when the Hot Air Balloon, which was operating close to the boundary of CAS, was believed by CAA ATSI to have crossed marginally into Class D CAS without an ATC clearance and into potential conflict with the A319.

## **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 shown a photograph taken by a balloon passenger on a mobile telephone apparently showing the A319 slightly below them. The poor quality of the photograph and the lack of camera technical details precluded a full analysis.

Due to the lack of positive information, in particular altitude information on the balloon, the Board could not positively determine whether the balloon had inadvertently drifted just inside CAS as apparently shown on the radar recording or whether it was below; in any case Members agreed that it would not substantially affect the cause or degree of risk of the incident.

Whether or not the balloon entered the Newcastle CTA, Members agreed that the pilot was unwise choosing to operate (or drifting into) that area (close to the extended centreline) without informing Newcastle ATC on the RT (Members assumed the pilot had an RT licence since he was carrying passengers). A simple call to Newcastle Radar would almost certainly have allowed them to identify the primary only contact as the balloon, adopt a helpful approach and inform other ac that the balloon had become becalmed and route them well clear of it.

As it was the A319 did route clear of the balloon by (radar verified) about 1nm horizontally, the crew albeit slightly belatedly saw the balloon opting for only a gentle turn away, and Members agreed that that was sufficient separation to ensure there was no conflict or risk.

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

Cause: Sighting report.

Degree of Risk: E.