

ASSESSMENT SUMMARY SHEET FOR UKAB MEETING ON 20th MARCH 2013

Total	Risk A	Risk B	Risk C	Risk D	Risk E
11	0	5	5	1	0

No	Reporting	Reported	Airspace	Cause	Risk
2012131	Cessna F406 (CIV)	Cessna 172 (CIV)	G (London FIR)	Late sighting by the F406 crew.	B
2012153	Sea King Mk4 (MIL)	PA28 (CIV)	G (Yeovilton ATZ)	The APP allowed the PA28 to carry out an overhead join in contravention of Yeovilton Aviation Orders and fly into conflict with the Sea King on a go-around from PAR.	C
2012155	BE35 (CIV)	SR22 (CIV)	G (London FIR)	The BE35 pilot did not follow the standard Missed Approach Procedure and climbed into conflict with the SR22.	B
2012158	Grob 115 (CIV)	Yak 50 (CIV)	G (London FIR)	The Yak 50 pilot was concerned by the proximity of the Grob 115 in the vicinity of the North Weald circuit.	C
2012161	R44 (CIV)	Bo105 (CIV)	G (Gloucester ATZ)	The R44 pilot departed without clearance and flew into conflict with the Bo105 on final approach.	B

2012163	Squirrel (A) Squirrel (B) (MIL)	R44 (CIV)	G (Ternhill ATZ)	The ADC allowed the R44 to enter the ATZ but did not integrate it safely with circuit traffic.	B
2012166	A320 (CAT)	Unknown (NR)	D (Glasgow CTR)	Sighting report.	D
2012168	Merlin (MIL)	AS350 Squirrel (MIL)	G (UKDLFS LFA 1)	A conflict prevented by the Squirrel formation leader.	C
2012170	Hawk T Mk 2 (MIL)	F15E (MIL)	G (Valley AIAA)	Effectively a non-sighting by the F15E crew. Contributory Factors: 1. Inadequate TI to both formations. 2. Hawk formation communication plan.	C
2012172	Lynx Mk 8 (MIL)	Beech 76 (CIV)	G (Yeovilton AIAA)	Late sighting by the Lynx pilot.	C
2012174	Scheibe SF25C Falke M/Glider (CIV)	RA390 Premier 1 (CIV)	G (London FIR)	A conflict in Class G airspace.	B

Note 1. The colour shading reflects the risk classification using the ARMS/ERC methodology.

AIRPROX REPORT No 2012131

Date/Time: 23 Aug 2012 1354Z

Position: 5047N 00016W
(Shoreham NDB Hold)

Airspace: Lon FIR (Class: G)

Reporting Ac Reporting Ac

Type: Cessna F406 Cessna 172

Operator: Civ Trg Civ Pte

Alt/FL: 2500ft 2700ft
QNH(1014hPa) QNH(1014hPa)

Weather: VMC CLBC VMC CAVOK

Visibility: >10km >10km

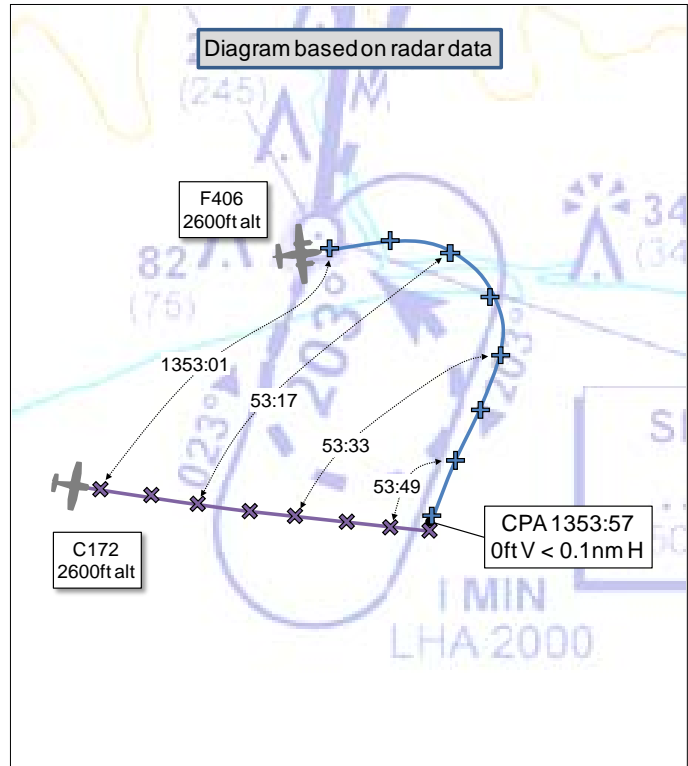
Reported Separation:

50ft V/50m H 100ft V/50m H

Recorded Separation:

0ft V/<0.1nm H

BOTH PILOTS FILED



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE CESSNA F406 PILOT reports conducting an instrument training sortie, operating in VMC under IFR with a PS from Shoreham ATSU [123.150MHz]. He was sitting in the L seat with an IR Examiner occupying the R seat. Screens were not fitted. The white ac had navigation, beacon and strobe lights selected on, as was the SSR transponder with Modes A, C and S selected. The ac was not fitted with an ACAS. He was starting the NDB(L)/DME RW20 approach to Shoreham A/D and carried out a sector 3 procedure (direct entry) to the hold, turning onto the outbound leg. Approximately 30sec after passing abeam the [SHM] beacon, on the 203° outbound radial, heading 210° at 140kt and altitude 2500ft [QNH 1014hPa], he saw a white, high-wing, Cessna type ac which flew straight across his track from R to L, approximately 50-100ft above him and at a range of no more than 100m. He disengaged the A/P and took 'aggressive avoiding action', descending and turning to the R. He stated that the other ac did not make RT contact with Shoreham ATSU despite flying straight through the IAP. He opined that, where possible, it would be better to utilise A/Ds which had radar coverage and with IAPs inside CAS, particularly on busy, good weather days. He also suggested that 'PPL/VFR users should be re-educated about IAPs', specifically that if they intend to fly adjacent to A/Ds with IAPs they are 'strongly recommended, when flying within 10nm of the aerodrome to contact the aerodrome ATSU' as is clearly marked on the legend of CAA aeronautical charts.

He assessed the risk of collision as 'High'.

THE CESSNA 172 PILOT reports transiting from Chichester/Goodwood A/D to an A/D in Germany, operating under VFR in VMC. He was in receipt of a BS from 'Farnborough Radar' on 125.250MHz, he thought. The red and grey ac had navigation, beacon, strobe and landing lights selected on, as was the SSR transponder. The ac was not fitted with an ACAS. After passing the Littlehampton VOR, he set course for the SFD VOR, following the 280° radial, and maintaining lookout for other traffic due to the vicinity of Shoreham A/D. He was heading 100° at 120kt, level at altitude 2700ft [QNH 1014hPa] over the sea, when his passenger warned him of an ac rapidly approaching from the L. He saw a twin-engine, low-wing ac at a range of about 1000m, about 100m below, in a climb, which seemed to be on a collision course. He considered avoiding action for 1 or 2sec but decided

to maintain height and heading as 'anything else did not appear to be appropriate'. He stated that it was the other pilot's responsibility to avoid a collision. Shortly thereafter, the other ac abruptly made a R turn and crossed behind his ac, at the same level and at a distance of 50-100m. He reported the incident on the radio.

He assessed the risk of collision as 'High'.

[UKAB Note(1): RoA, Rule 9 (Converging) states:

...
(3) ..., when two aircraft are converging in the air at approximately the same altitude, the aircraft which has the other on its right shall give way.

The RoA, Rule 8 (Avoiding aerial collisions) states:

'(1) ... it shall remain the duty of the commander of an aircraft to take all possible measures to ensure that his aircraft does not collide with any other aircraft.'

THE FARNBOROUGH LARS(E) CONTROLLER reports that he was the LARS(N) and (E) controller when [the C172 pilot] was handed over to him from Farnborough LARS(W). The frequency was very busy and [the C172 pilot] took a long time to call. When he did, the controller issued a squawk code, passed the QNH and agreed a BS. Five minutes later, between Shoreham and Seaford, [the C172 pilot] reported that an ac had flown quite close to him. The controller asked him if he was filing, to which he replied, 'No, I just thought I should tell you'. The controller then confirmed with him that he was under a BS and that TI is not provided.

THE FARNBOROUGH LARS(W) CONTROLLER reports that he was informed of the Airprox on 6th September and that the only recollection he had of the event was that the sector was very busy and he had to ask another ac to relay a message to [the C172 pilot] to change frequency to Farnborough LARS(E) [123.225MHz].

ATSI reports that an Airprox was reported 2.8nm SSE of Shoreham A/D at altitude 2400ft in Class G airspace when a Reims Cessna F406 (F406) came into conflict with a Cessna 172S Skyhawk 2 (C172).

Background

The F406 was operating under IFR, conducting the NDB approach to RW20 at Shoreham and was in receipt of a PS from Shoreham APP [123.150MHz].

The C172 was operating under VFR on a flight from Goodwood to an A/D in Germany and was in receipt of a BS from Farnborough LARS(W) [125.250MHz]. At the time of the Airprox, Farnborough LARS(W) had lost communications with the C172 pilot.

CAA ATSI had access to written reports from the pilots of both ac and the Farnborough LARS(W) and LARS(E) controllers, together with area radar recordings and RTF recordings.

The Shoreham METARs are provided for 1320 and 1350 UTC:

METAR EGKA 231320Z 21011KT 9999 FEW016 19/14 Q1014=
METAR EGKA 231350Z 22010KT 9999 FEW016 19/14 Q1014=

Factual History

At 1331:20 the F406 pilot contacted Shoreham approach at 3400ft at Selsey for a hold and NDB/DME approach to RW20. He was given a delay of approximately 10min for joining clearance.

The pilot replied that he would operate in the vicinity of Selsey up to 5000ft until he received an onward clearance.

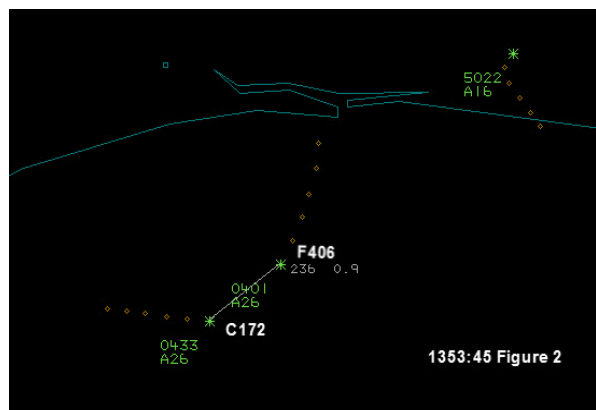
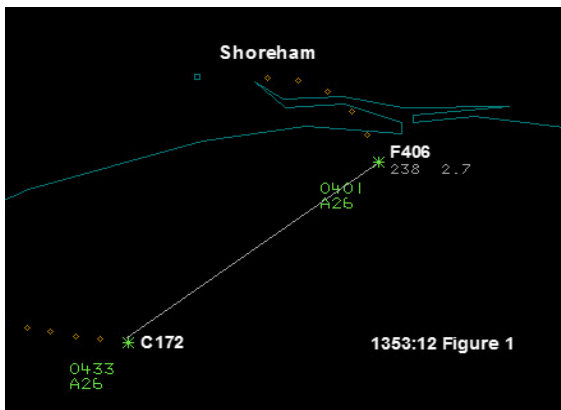
At 1345:00 the C172 pilot contacted Farnborough LARS(W) when S of Chichester at 2400ft. A BS was agreed and the pilot was given a squawk of 0433.

At 1349:00 the F406 pilot was cleared to proceed to the Shoreham NDB at 2500ft and given no delay for the NDB/DME approach for RW20, together with the Shoreham IFR squawk of 0401. At 1350:00 the F406 was 6.0nm WSW of Shoreham, tracking towards the NDB at 2600ft. The C172 was 1.3nm behind the F406, tracking E.

At 1350:00 the C172 pilot was instructed to report his squawk to LARS(E) [123.225MHz]. There was no response from the pilot. Between 1350:00 and 1353:00 the Farnborough LARS(W) controller made several attempts to re-establish contact with the C172 pilot without success.

At 1353:12 the F406 pilot had crossed over the SHM NDB and was in a R turn, tracking S at 2600ft. The C172 was 2.5nm SSW of Shoreham tracking E, also at 2600ft (see Figure 1 below).

At 1353:45 the F406 was tracking SSW, joining for the NDB procedure while the C172 was tracking E, 0.9nm WSW of the F406 (see Figure 2 below).



The 2 ac continued to converge and at 1353:57 were both at 2600ft, 0.1nm apart (CPA). At 1354:01 the F406 was at 2400ft and had crossed 0.2nm behind the C172.

At 1354:00 the Farnborough LARS(W) controller asked another ac to relay the change of frequency to the pilot of the C172. At 1354:30 the relay was completed and at 1354:40 the pilot of the C172 read back the frequency change.

The report from the Farnborough LARS(W) controller stated that the sector was very busy and his only recollection of the incident was of having to ask another ac to relay the frequency change to Farnborough LARS(E) to the pilot of the C172.

The F406 pilot's report stated that, whilst 5nm SSE of Shoreham, a high winged ac flew straight across his track from R to L, at approximately 50-100ft above, at a range of no more than 100m. The crew of the F406 were in VMC and the pilot took 'aggressive avoiding action'.

The C172 pilot's report stated that he first saw the F406 at approximately 1000m, to the L and 100m below, climbing. The C172 pilot considered avoiding action but decided to maintain height and heading as 'anything else did not appear to be appropriate. It was up to the other pilot to avoid a collision'. The C172 pilot observed that the F406 abruptly made a R turn and crossed behind him at a distance of 100m or less.

Analysis

Both ac were operating in class G airspace and the pilots were equally responsible for collision avoidance. The C172 pilot had right of way.

The C172 pilot was in receipt of a BS from Farnborough LARS(W). Under a BS there is no requirement to monitor the flight, although TI may be passed if a definite risk of collision exists. At the time of the Airprox the controller had lost contact with the C172 pilot.

The F406 crew were in receipt of a PS from Shoreham APP. It is published on the United Kingdom 1:250,000 and the 1:500,000 Aeronautical Charts that Shoreham has an Instrument Approach Procedure (IAP). Also published on both charts is the advice that 'pilots who intend to fly to or route adjacent to aerodromes with IAPs are strongly recommended when flying within 10nm of the aerodrome to contact the aerodrome ATSU'. The C172 pilot did not contact Shoreham, therefore Shoreham were unaware of his presence and were unable to pass TI to the F406 pilot.

Conclusion

An Airprox occurred in Class G uncontrolled airspace, 2.8nm S of Shoreham A/D when a C172 and a F406 flew into close proximity with each other.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The Board first considered the actions of each pilot. Members opined that the nature of the F406 pilot's sortie along with the provision of a PS may have lulled him into a false sense of security with regard to deconfliction from other airspace users. It was felt that the provision of 'a service' could sometimes result in an assumption of separation. Members noted that, unlike CAS, the responsibility for collision avoidance in class G airspace ultimately rested with the pilots, whether in receipt of ATSOCAS or not. The Board agreed with the F406 pilot's conclusion about the advantages of radar-based ATs and/or the protection of CAS for instrument training, especially on good weather days; Members noted that whilst VFR charts indicated A/Ds with IAPs, information regarding the position of IA holds was not included and realistically could not be, due to map clutter constraints. The Board also considered the practicality of pilots contacting A/Ds with IAPs. ATC Members pointed out that this practice would greatly increase controller workload, should a hand-over be required, but that free-calling would help to alleviate the problem; pilot Members also pointed out the increase in cockpit workload in either case. Members were unanimous in their opinion that the issue was essentially one of planning and that pilots would be well advised, in the first instance, to route further than 10nm from A/Ds with IAPs. In parts of the country where this was not practical, it was felt that pilots should request appropriate service provision and where that was not available to be ready to establish timely contact with the A/D. In this case the C172 pilot was not in contact with any ATSU at the time of the Airprox and so could not have received TI. The NATS Ltd Advisor noted that the F406 was displaying the Shoreham IA conspicuity code and that Farnborough controllers had been reminded that this information can be used to good effect. The CAA SRG Advisor noted that the Farnborough LARS(W) controller was task-centred on transferring the C172 pilot to LARS(E), rather than providing TI on the F406 or suggesting a handover or free-call to Shoreham.

The C172 pilot saw the F406 in good time and assessed that there was a collision risk. He also correctly assessed that he had right of way and decided to maintain course and height, which he did throughout the Airprox. In considering this, Members were at a loss to understand why he apparently took no avoiding action. Whilst Rule 9 afforded him right of way, both pilots were equally responsible for collision avoidance and he was well-placed to increase his conspicuity by wing-rocking or to break the collision geometry by climbing or descending. His lack of action significantly increased the risk to both aircraft involved and prompted the Board to consider whether there was a common misunderstanding of the VFR regulations. Some pilot Members opined that the VFR regulations

were written in an age when ac possessed significantly lower performance and greater commonality of speed and that they were not well framed for today's aviation environment. Members agreed that it would be wise always to assume that the other pilot had not seen one's own aircraft until positive actions prove otherwise.

The pilots shared equal responsibility to see and avoid and although the C172 pilot appeared to take no action, it was the late sighting by the F406 crew which caused the Airprox. The Board considered that the F406 pilot saw the C172 at about the last available opportunity and as a result had to manoeuvre aggressively to avoid it. Consequently, safety margins were reduced much below normal.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Late sighting by the F406 crew.

Degree of Risk: B.

AIRPROX REPORT No 2012153

Date/Time: 26 Sep 2012 1907Z (Night)

Position: 5101N 00238W (O/H RW09
Yeovilton - elev 75ft)

Airspace: Yeovilton ATZ (Class: G)

Reporting Ac Reported Ac

Type: Sea King Mk4 PA28

Operator: HQ JHC Civ Club

Alt/FL: 1000ft↑ 1500ft
QFE (994hPa) (QNH)

Weather: VMC CLBC VMC CLOC

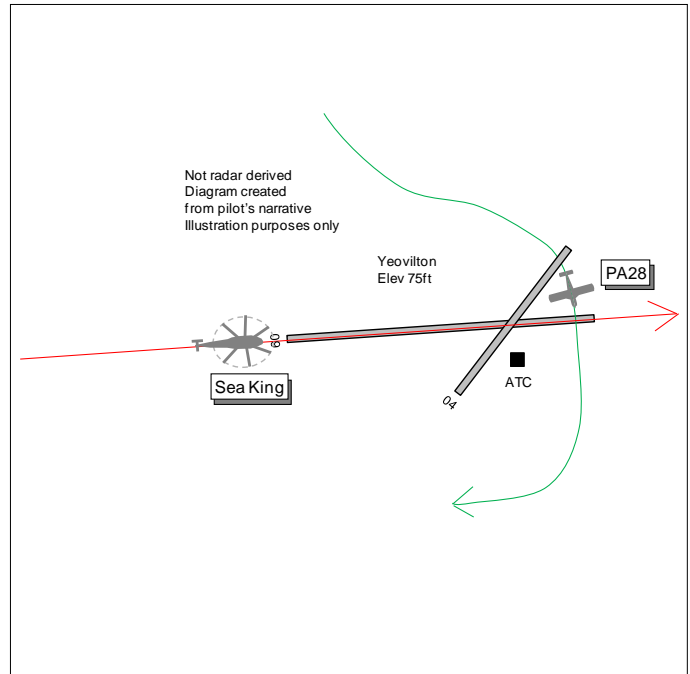
Visibility: 10km 20km

Reported Separation:

100ft V/400m H 1200ft V/1350m H

Recorded Separation:

NR



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE SEA KING PILOT reports flying a training flight using NVDs inbound from Poole HLS and in communication with Yeovilton Approach on UHF Channel 3, squawking 0222 with Modes S and C; TCAS was not fitted. The visibility was 10km flying 1000ft below cloud in VMC and the helicopter's red HISLs and flashing dim nav lights were switched on. Approaching decision height on a PAR approach and during the overshoot they saw traffic [the PA28] in their 9 o'clock to the N of their position. They initially thought the other ac may pass down their LHS and continue on its track. However, passing the RW09 midpoint approaching 1000ft QFE 994hPa heading 090° at 90kt they saw the other ac approach in a banking R turn from the N and cross the duty RW across their flightpath <500m ahead; they estimated the separation as 400m horizontally and 100ft vertically at the CPA. The ac continued its banked turn as it passed down their RHS. No avoiding action was taken as they were visual with the ac throughout. They had not heard the traffic on the Tower frequency or permission for the traffic to cross the duty RW. He assessed the risk as medium. Clearly the time for the ac to pass from L to R was a matter of seconds and had their helicopter been slightly higher or R of track and not visual with it then there would have been a high risk of collision.

THE PIPER PA28 PILOT reports flying a local night training sortie from Yeovilton, VFR and in receipt of a BS from Yeovilton Approach on 123.3MHz, squawking an assigned code with Modes S and C. The visibility was 20km in VMC and the ac's nav and red anti-collision beacon were switched on. The sortie was to complete the student's Night Rating Training, having completed cct training and solo ccts the previous evening. The flight was flown as a consolidation night NAVEX with initial tracking of the BRI NDB to the NW then tracking the EX NDB to the SW, followed by a reversal of the route with transfers to the appropriate ATSU's en-route. On return to Yeovilton, APP was contacted to the S of Merryfield; a BS and squawk were obtained and their intentions were passed to return to the A/D to land. An E'ly track was established towards Street [8nm NW of Yeovilton] at altitude 3000ft, with a lowering cloud base to the S in the vicinity of the A/D. The cloud base was scattered at around 4000ft with limited cloud at their altitude. Passing S abeam Street, he told his student to request an overhead rejoin at 1500ft at about 7.6 DME and he was aware of the appearance of a lower cloud-base to the S. The controller's response was, "RW09 Right Hand", therefore a track was established to route direct to the aerodrome O/H in a cruise decent aiming to join O/H at 1500ft QFE. Passing 2800ft in descent at 95kt, traffic was noted in their 2 o'clock at a similar level to the S of the AD tracking L to R, which he pointed out to his student. He also noted the cloud layer as being further S and above their level from the reflection of urban lighting. APP

then passed TI, "PAR traffic Sea King in your 2 o'clock RW09", which the instructor initially connected with the traffic he had just spotted below them. APP then directed them to, "make yourself No2". After a period long enough for him to discuss the traffic situation with his student, suggesting that the contact at about 2000ft was possibly been vectored onto a RH base-leg for RW09, he was content with this situation to join O/H into a RH downwind leg. However, APP then advised, "Sea King 1200ft on PAR"; this traffic was then identified by his student in their 2-3 o'clock at about 2.5nm. The instructor judged this would put them onto a reciprocal heading and possibly O/H the PAR traffic if he turned to starboard to join downwind LH for RW09 at this late stage. Therefore, he elected to continue O/H at 1500ft as he judged this would keep them clear of the traffic while maintaining good visual contact. At this point, as they were approaching the O/H at 1500ft just to the W of the intersection of RW04/09, they started to turn to the L to cross over the upwind end of RW09, whilst he remained visual with the traffic as it approached the threshold of RW09, whereupon APP advised, "Sea King conducting missed approach". Consequently, he instructed his student to take up a S'ly track to clear the overshoot; during this period he - the instructor - had continuous visual contact with the Sea King round to his starboard aft quarter just off the tailplane at the point the Sea King crew executed their overshoot at about 50ft. He estimated separation as 1200ft vertically and 1350m horizontally at the CPA. The helicopter passed behind, tracking at R angles to their track, assessing the risk as none. Once S of the C/L he directed his student to descend onto the downwind leg and when they were established mid-downwind at 800-1000ft QFE they heard the Sea King crew report an Airprox as he passed through their 3 o'clock. APP then switched them over to TOWER on 120.8MHz and a normal landing was completed. Taxying back to S dispersal he was requested to contact the DATCO on the landline.

UKAB Note (1): The Yeovilton METAR was: - EGDY 261850Z 36007KT 9999 FEW012 SCT020TCU BKN045 12/10 Q0995 WHT TEMPO 4000 SHRA FEW012 BKN018CB GRN=

UKAB Note (2): Sunset was 1801Z.

THE YEOVILTON APPROACH RADAR CONTROLLER (APP) reports whilst the Sea King was conducting a PAR to RW09 at range 5nm the PA28 flight under a BS requested an O/H join from 6nm NW of the aerodrome. After informing the ADC of the intentions he told the PA28 pilot about the radar traffic and instructed him to report when visual. The pilot reported visual when the Sea King was at 4nm at which point he told the PA28 pilot to make himself No2 to the radar traffic. He received confirmation from the pilot that he would make himself No2. On low approach the Sea King pilot called and APP instructed the pilot to climb to 2000ft. At this point he was unaware that the PA28 was crossing O/H at 1500ft QFE directly in front of the Sea King and still on the Approach frequency thus without permission to cross the Duty RW. Having thought the PA28 flight was already with Tower, owing to the ac being in the cct, he immediately instructed the flight to contact Tower for further instructions.

THE YEOVILTON DUTY AIR TRAFFIC CONTROL OFFICER (DATCO) reports that he was in the Visual Control Position (VCP) when the ADC was informed by APP that the PA28 pilot was conducting an O/H join for visual ccts to the duty RW09. The ADC stated that APP had advised him that the PA28 flight was told to make themselves No2 to the Sea King PAR traffic. As both ac were under the control of APP, he was confident that all deconfliction measures had been considered. The Sea King flight, through Talkdown, was given clearance by ADC to conduct a low-approach. Although he and the ADC observed both ac visually and on the Hi-Brite ATM, it was hard to ascertain the height of the PA28. The PA28 continued to close to the O/H from the NW and cross O/H the RW ahead of the Sea King, which was executing its low-approach and was climbing straight ahead on RW track. The PA28 pilot only free-called the ADC on VHF when the ac turned downwind and was then given instructions to join by the ADC. He made an 'open comment' to the ADC that it did not look right, explaining that if the Sea King crew had executed a Missed Approach because they were in IMC, then the ac would have been potentially climbing up through the joining ac's level. He was then informed by APP that the Sea King crew had queried if an ac had flown through the O/H about 0.25nm in front of their helicopter at a similar height. The PA28 pilot was asked to contact the DATCO on landing. He then informed the Duty Flying Supervisor (DFS) of the occurrence who made note to handover to Lt Cdr Flying and the oncoming DFS the next morning. The PA28 pilot

telephoned; he informed the pilot of the occurrence and asked why he did not join No2 to the PAR traffic. The PA28 pilot informed him that it is a Station Flying Club procedure to conduct O/H joins; however, he did inform the PA28 pilot that as a military A/D ATC do not conduct this procedure because of ac conducting IFR climbouts or missed approaches. He asked the pilot what height he was when he turned downwind, to which he replied, "1500ft QFE". The PA28 pilot had attended the night flying brief held in ATC prior to this sortie. Later, the DATCO was contacted by one of the Sea King pilots, who wanted to know what had happened; he explained what he thought had occurred from a VCP perspective, but also explained that APP was already in the process of raising the DASOR for the incident. He informed me that he would talk to the Sea King Capt and they would consider their options regarding submitting an Airprox or not. The PA28 pilot was informed that a DASOR would be raised.

UKAB Note (3): The radar recording does not capture the Airprox. The Sea King fades from radar at 1905:17 approximately 4nm from touchdown RW09 with the PA28 4nm NW of Yeovilton tracking SE'ly in the Sea King's 10 o'clock range 4nm. The PA28 continues towards the O/H fading at 1907:00 with 1.5nm to run.

THE YEOVILTON FLIGHT SAFETY INVESTIGATION reports the incident occurred in the Yeovilton visual cct during a period of Station night flying. At no stage during the instrument approach had the Sea King crew been given TI or advised that the PA28 was joining the visual cct via the O/H. APP had informed the ADC of the PA28's O/H join [1903:45] and that the pilot was visual with the Sea King making a GCA [1905:13]. The PA28 pilot was instructed to make himself No2 to the GCA traffic and acknowledged the instruction [1904:58]. The PA28 pilot reported conducting a visual O/H join and descending to 1500ft QFE and was visual with the Sea King during the approach. The PA28 had descended on the deadside before turning crosswind, crossing the Duty RW and turning to position late downwind RW09 RH. Transfer of control between APP and ADC was late (once the PA28 was established downwind) therefore ADC had not passed cct information to the GCA controller as part of the standard clearance issued at 3nm for the Sea King to low approach. Consequently the Sea King crew had no knowledge of the ac in the visual cct. APP had stopped monitoring the PA28 on radar as he believed the ac was under ADC's control and at no stage during the recovery of the 2 ac did the APP consider that a conflict to their flight profiles might occur. Thus the APP did not impose a climb-out restriction in the event of a missed approach procedure being initiated or attempt to de-conflict the ac. The ADC observed the PA28 approaching the aerodrome and contacted the APP to question whether the PA28 pilot was visual with the Sea King but the ADC did not request that the PA28 flight be transferred to the Tower frequency. When recovering visually, the O/H join method is not a recognised procedure at Yeovilton and the Yeovilton Aviation Orders (YAvOs) clearly state that O/H joins are not permitted due to there being a limited deadside. However, further investigation revealed that the Yeovilton Flying Club (YFC) Order Book 2010, which supplements YAvOs, contravenes this rule as the recommended join in VFR conditions when the aerodrome is open is to be an O/H join at 2500ft. Several factors led to this incident occurring. VFR night flying in the UK is a relatively new procedure (8Jun2012) and ATC is unfamiliar with the integration of Flying Club ac and Station based ac at night. The PA28 pilot requested a VFR join via the O/H as per YFC Order Book; this procedure is not authorised at Yeovilton as stipulated in YAvOs. APP approved this procedure and attempted to sequence the ac by asking the PA28 pilot to report visual and make themselves No2. The PA28 pilot reported initiating a descent to height 1500ft, which is 1000ft below that recommended in the YFC Order Book, and reported visual with the Sea King. APP's attention was then diverted to other ac on frequency and he lost SA, stopped monitoring the PA28's flightpath and subsequently believed the flight to be under the control of the ADC. The PA28 flight continued inbound and remained on the Approach frequency; the pilot reported late downwind to land, which was when the APP realised the frequency error and told the pilot to continue with Tower. The ADC and DATCO, having been passed TI from APP believed that the PA28 would sequence behind the Sea King by converting to a straight-in approach/L base flight profile in the No2 position. Whilst they could see the PA28 approaching the cct it was difficult for them to assess accurately the ac's position and intentions. At no stage were the Sea King crew passed TI or warned of the PA28's proximity.

Five recommendations were made: -

1) Alignment of YAvOs and YFC FOB. The PA28 pilot requested a procedure not authorised by YAvOs while the aerodrome was open for normal operational flying, during a period of night flying. This alignment is to ensure that procedures in YAvOs are not overruled by the lower level orders on the YFC FOB. Although this relates specifically to methods of rejoining the aerodrome whilst open for normal operations and ATC is manned, in order to ensure thoroughness all orders should be reviewed with YAvOs being the primary document. – Action completed 3/12/2012. The YAvOs and YFC have been aligned.

2) Recognition of unusual situation during low arousal. The progression of events from the approval of the PA28 pilot's request for an O/H join, to the point where the PA28 crossed the path of the overshooting helicopter, resulted from lack of SA by the ADC. Although visual with the PA28, clearly no contact had been established and this should have been questioned in a more robust manner as the situation developed. All controllers should be rebriefed on taking appropriate actions in the event of recognising an unusual circumstance that could lead to an unsafe situation developing, particularly during periods of low arousal such as during night flying. Action completed 10/12/2012. The results of the originating report have been highlighted to all ATC staff through formal training briefs (conducted 3 x weekly) and informally through Watch Leaders. Other ATC Incident reports have been promulgated for wider awareness and this has included populating the ATC crewroom with Accident/UKAB reports.

3). Competency of controller requires to be assured. APP did not impose a robust method of recovery for the PA28 in order to ensure separation from the Sea King conducting an IFR approach. The APP requires a period of retraining before acting in a solo capacity as APP/Director.

4). Review mixed operations of YFC and Station based ac during night flying. The PA28 pilot requested a procedure not authorised by YAvOs while the aerodrome was open for normal operational flying, during a period of night flying. Action completed 3/12/2012. Occurrence Review Group accepted that continued mixed operation could continue.

5). Review YAvOs 0211 – Fixed-wing recoveries. The progression of events from the approval of the PA28 pilot's initial request for an O/H join, to the point where the PA28 crossed the path of the overshooting helicopter, resulted in lack of SA by the ADC. Although visual with the PA28, clearly no contact had been established and this should have been questioned in a more robust manner as the situation developed. Fixed-wing recoveries are to be reviewed and re-written clearly defining that O/H joins are not permitted when Yeovilton is open or at night. The fixed-wing community operating at Yeovilton are to be involved in the review. Action part completed 30/01/2013. Amendment written, awaiting incorporation into YAvOs.

HQ JHC comments that whilst the closest reported proximity was 100ft V/400m H this could have been an incident with a far worse outcome. JHC welcomes the recommendations made by the investigation, which when enacted should greatly reduce the likelihood of another occurrence of this type. This incident highlights this challenges of integrating GA VFR traffic at night at a military aerodrome (albeit by a military civilian flying club ac) with military traffic undergoing IFR operations at night and should be highlighted across the MOD/GA aviation community to further educate those involved with flying at night of the potential issues of night VFR traffic with IFR/military night flying. Particularly with regards to ensuring that MOU's and local flying club FOB are updated to ensure compliance with the local military flying orders.

NAVY COMMAND comments that the Sea King was conducting a PAR recovery to Yeovilton in contact with the Approach controller and the PA28 from the Yeovilton Flying Club conducted a joining procedure that was not iaw YAvOs, of which they are required to be familiar, which resulted in it crossing the path of a the Sea King conducting a PAR approach. Although the PA28 pilot maintained VFR separation with the overshooting Sea King, a sequence of events in the build up to the incident contributed to the Sea King crew perception that the PA28 was too close. These included the PA28 pilot requesting a procedure that should not have been approved by the APP, who furthermore did

not take positive control of the joining PA28 or sequence it against his own IFR traffic. A subsequent delay in transferring the PA28 flight to Tower frequency further exacerbated the issue resulting in reduced SA for the ADC who therefore did not pass the required TI to the Sea King crew who were operating on the GCA frequency. This Airprox would most likely to have been averted if SOPs had been followed by both the PA28 pilot and the APP.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The initial factor which started the evolution to the Airprox was the disconnect between the YAvOs and the YFC FOB. The PA28 pilot was expecting to carry out an O/H join iaw YFC FOB; however, this procedure was not permitted in the YAvOs. Nevertheless, this request by the PA28 pilot, instead of being refused by the APP, was approved. The APP then did not apply positive control to the PA28 flight by issuing instructions to ensure both ac were deconflicted. This resulted in the PA28 flying into conflict with the Sea King on a go-around, which was the cause of the Airprox.

The Sea King crew was undoubtedly concerned when, without any TI, they saw the PA28 approaching from their L and then manoeuvre to pass over the upwind end of the RW ahead of their projected flightpath from L to R. APP had not transferred the PA28 flight to the Tower frequency which would normally occur with about 5nm to run and would lead to the ADC passing TI on cct traffic to the PAR approach traffic with its clearance when this requested by the PAR controller at 3nm. The ADC was initially concerned when he saw the PA28 approaching but his fears were allayed when he was told by APP that the PA28 pilot was visual with the Sea King and would position No2. The PA28 pilot, having been given TI on the Sea King and seen it, was told to "make yourself No2"; he judged that, at that late stage, a R turn to position downwind LH would have placed his ac closer to the helicopter. He elected to continue towards the crosswind position and then realised that the Sea King was commencing an overshoot so he told his student to track to the S to clear the C/L of the RW. Although this incident had had the potential for a more serious outcome, Members agreed that because the PA28 pilot had maintained visual contact with, and separation from, the Sea King throughout and because the Sea King crew also observed the PA28 crossing ahead, any risk of collision had been effectively removed.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Yeovilton APP allowed the PA28 flight to carry out an O/H join, contrary to YAvOs, and fly into conflict with the Sea King on a go-around from PAR.

Degree of Risk: C.

AIRPROX REPORT No 2012155

Date/Time: 4 Oct 2012 1059Z

Position: 5155N 00213W (2.3nm
NW GST NDB - elev 101ft)

Airspace: LFIR (Class: G)

Reporter: Gloucestershire APP

1st Ac BE35 2nd Ac SR22

Type: BE35 SR22

Operator: Civ Pte Civ Trg

Alt/FL: 4000ft↓ 4000ft
(QNH) (NK)

Weather: IMC/VMC VMC/IMC

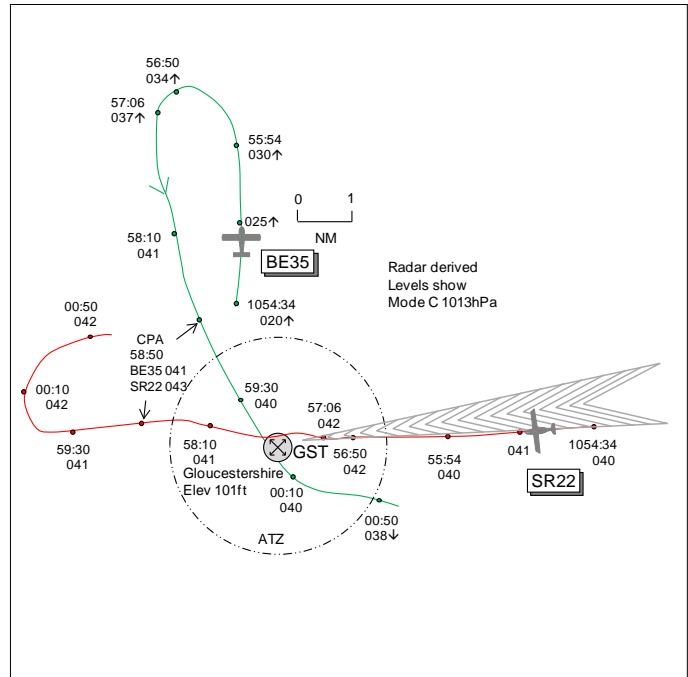
Visibility: >10km NK

Reported Separation:

0ft V/4nm H NK

Recorded Separation:

200ft V/2.1nm H



CONTROLLER REPORTED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE GLOUCESTERSHIRE APPROACH CONTROLLER reports that the BE35 pilot reported inbound to GST from the N at 4700ft for booked training NDB/DME approach after being in local area on a BS. The flight was placed under a PS and cleared to GST 4000ft QNH, no delay NDB/DME RW27. At 1041 the BE35 pilot was asked for his intentions and he replied direct outbound then touch and go into cct. At 1042:45 BE35 flight was believed to be beacon outbound, was cleared for the approach. At 1046 a new QNH 1009hPa passed to the BE35 flight which was acknowledged. About 1min later at 1047 the SR22 flight called inbound from Oxford at 4000ft QNH 1009hPa and after ascertaining the BE35's level as 2300ft (in base turn), the SR22 flight was cleared to the GST 4000ft QNH, no delay NDB/DME RW27 (holds required). At 1050 whilst on 4nm final, the BE35 pilot changed intentions for missed approach and back for another one which was acknowledged. Shortly afterwards the EAT for the SR22 was revised to 1111, based on BE35's 2nd approach. At 1054:30 the BE35 pilot recalled on 128.55MHz from the Tower and was placed under a PS and cleared NDB/DME RW27. At 1057 the BE35 pilot's intentions were sought and the pilot reported his distance to GST but on repeating the question, the pilot reported his intentions to touch and go into cct. At 1058 the SR22 was ascertained to be in the hold. Two minutes later at 1100 the BE35 pilot reported beacon outbound at 4000ft (missed approach procedure is to climb to 2800ft QNH). Clarification was sought of the ac's level and then essential TI was passed on SR22 and reciprocally. The SR22 pilot reported that he was 4nm W of GST - neither ac's pilots reported sighting each other.

THE BE35 PILOT reports flying a local sortie from Gloucestershire, IFR and in receipt of a PS from Gloster Approach on 128.55Mhz and then Gloster Tower on 122.9MHz, squawking with Modes S and C. The Wx was IMC in cloud becoming VMC on 'beacon outbound'. At 1040 he requested a practice NDB DME approach for RW27 and at 1041 was cleared to the GST NDB at 4000ft (QNH 1009hPa). He declared his intention after the procedure was for a 'touch & go' into the cct and at 1042 he received clearance for the procedure. At 1048 when 4nm from touchdown he declared his changed intentions to, "missed approach and another NDB DME". The 'missed approach' part of his declaration proved to be an error on his part as in fact he intended to change the original 'touch & go' into a low pass and breaking-off from the procedure in order to repeat again the same NDB DME, i.e.

the same NDB DME again as flown at 1041 approaching GST at 4000ft. So instead of 'low pass (or touch & go)' he declared, albeit mistakenly, 'missed approach' meaning he should have returned to the beacon at the published 2800ft which would not have resulted in any conflict. Since the incident, he has listened to the RT tapes at Gloucestershire ATC in order to tie up the actual events with his own recollection. The other ac involved, a SR22, was not seen but was believed to 4nm W of the GST when he reported O/H the GST, beacon outbound, at 4000ft QNH 1009hPa and 120kt turning onto heading 095°. He initiated a dive to 2800ft on receiving ATC instructions to descend. He assessed the risk as low.

THE SR22 PILOT reports was inbound to Gloucestershire from Oxford, IFR for instrument approach training and in receipt of a PS from Gloster Approach on 128.55Mhz, squawking 7000 with Modes S and C. He was aware of another ac in the procedure, the NDB/DME for RW27, so he was expecting to hold at 4000ft. He received clearance to join the hold at altitude 4000ft and achieved 4000ft before entering the procedural area of GST. This clearance was read back and he did not hear any other ac transmit the same clearance; he made a parallel join to the hold. The Wx was intermittent IMC/VMC. The first time he was aware of another ac at his level was when it's pilot called 'beacon outbound' at the GST at altitude 4000ft, as this formed part of his decision making; at the time his ac was 4nm W of the GST. The controller immediately instructed the other ac's pilot to descend beacon outbound and then informed him of the conflict. Based on his range and the information, he considered it safe to continue to the GST; there were no further issues.

ATSI reports that the Airprox occurred close to the GST(L)NDB at Gloucestershire Airport, within Class G airspace, between a BE35 and an SR22. The CPA occurred at 1058:50UTC, 2.3nm NW of the GST(L)NDB, which is located on Gloucestershire aerodrome.

The BE35 flight was operating locally from Gloucestershire and in receipt of a PS from 'Gloster' Approach on frequency 128.55MHz. The BE35 flight, operating IFR, had just completed a practice NDB(L)/DME approach for RW27. The SR22 was inbound IFR from Oxford in receipt of a PS from 'Gloster' Approach on frequency 128.55MHz. The SR22 was entering the hold at 4000ft for some Instrument Approach training.

Gloucestershire ATSU was providing a split Aerodrome and Approach Control Service from the VCR without the aid of surveillance equipment. The APP was acting as OJTI to a trainee. Gloucestershire is equipped with a Primary Radar System, without SSR surveillance capability and limited coverage due to the narrow beam width, tilt mechanism and radar O/H limitations. The AIP entry for Gloucestershire Airport, page AD 2-EGBJ-1-6 (30 Jun 11) paragraph EGBJ AD2.18 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.

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. RW27 was in use for Instrument Approaches and RW22 was in use for the visual cct.

CAA ATSI had access to RTF recordings for Gloster Tower and Approach, together with area radar recording, written reports from the APP and the 2 pilots concerned.

The Gloucestershire METAR was: EGBJ 041050Z 22007KT 180V260 9999 SCT028 13/08 Q1009=

At 1039:51, the BE35 flight reported returning to Gloucestershire at 4700ft, ready to go outbound for the procedure. The APP replied, *"(BE35 c/s) cleared to the Golf Sierra Tango at er altitude four thousand feet no delay expected NDB DME approach runway two seven."* This was acknowledged correctly and the BE35 pilot advised of his intentions after the approach, *"probably a touch and go please and back in the circuit if possible."*

At 1042:40, the BE35 pilot reported beacon outbound and the APP responded, “(BE35 c/s) cleared NDB DME approach runway two seven report base turn complete.” The BE35 pilot replied, “Clear for the procedure and er report base turn complete (BE35 c/s).”

At 1046:10, the BE35 was advised of a new QNH 1009.

At 1046:31, the SR22 flight contacted Oxford Approach and reported, “(SR22 c/s) S R twenty-two out of La – out of Oxford bound to your field one zero zero seven request NDB hold plus approach and two R Nav approaches (SR22 c/s).” In response to the APP’s requests the SR22 pilot reported at an altitude of 4000ft and the BE35 pilot (in the procedure) reported at 2300ft. The APP responded to the SR22 flight, “(SR22 c/s) Procedural Service cleared to the Golf Sierra Tango at er altitude four thousand feet --- (momentary break in transmission) and er QNH one zero zero niner”. The BE35 pilot replied, “One zero zero –”, which was clipped before the SR22 pilot transmitted, “Confirm that clearance (SR22 c/s)”. The APP replied (1048:00), “(SR22 c/s) clear to the Golf Sierra Tango at altitude four thousand feet no delay expected NDB DME approach Runway two seven.” This was acknowledged correctly and the SR22 pilot read back the QNH 1009.

By 1050:02, the BE35 flight had not reported base turn and the APP advised, “(BE35 c/s) I see you approaching four miles contact Tower one two two decimal nine fixed wing circuit is active.” The BE35 pilot replied, “- two decimal nine and I would like to make this one missed approach and another NDB DME if available.” The APP responded, “(BE35 c/s) Roger.”

The missed approach procedure for the NDB(L)/DME RW27 approach is promulgated in the UK AIP AD 2-EGBJ-8-6 as: ‘Climbing right turn onto a track 270°M to 900 then turn right onto 359°M climbing to 2800, then turn right to NDB(L) GST at 2800’. The hold is a 1min LH racetrack inbound QDR 092°. (See Fig 1 below)

In view of the intended missed approach by the BE35, the APP passed the SR22 pilot an amended EAT of 1111.

The ADC was made aware of the BE35’s intended missed approach and appropriate instructions were passed to other ac in the RW22 visual cct. The BE35 pilot called on Tower frequency, “Gloster Tower hello again (BE35 c/s) erm er NDB DME two seven er three miles to run.” The ADC replied (1051:00), “(BE35 c/s) Gloster Tower cleared low approach and go around runway two seven wind two one zero one one the fixed wing circuit active Runway two two.” This was acknowledged by the BE35 pilot.

At 1051:54 the radar recording shows the BE35 on a 1nm final at FL006 descending (~500ft QNH) with the inbound SR22 positioned 11.4nm E of the airfield tracking W indicating FL040 (~3900ft QNH 1009hPa).

At 1052:12, the BE35 pilot reported going around and shortly afterwards the ADC transferred the BE35 flight back to Approach on frequency 128.55MHz.

At 1054:33 the APP called the BE35 flight, “(BE35 c/s) Gloster Approach are you on frequency.” The BE35 pilot replied, “(BE35 c/s) go.” The APP responded, “(BE35 c/s) Procedural Service and er cleared NDB DME approach runway two seven report beacon outbound.” The BE35 pilot acknowledged, “Cleared for the er procedure and er report beacon outbound (BE35 c/s).” The QNH 1009hPa was then passed.

[UKAB Note (1): The radar recording at 1054:34 shows the BE35 2.6nm N of Gloucestershire tracking N indicating FL020 climbing with the SR22 5.7nm to the E of the aerodrome tracking W indicating FL040. Ninety seconds later at 1055:54 the BE35 is seen to commence a L turn climbing through FL030 6.9nm NW of the SR22 which is level at FL040.]

INSTRUMENT APPROACH CHART - ICAO

**GLOUCESTERSHIRE
NDB(L)/DME
RWY 27
(ACFT CAT A,B,C)**

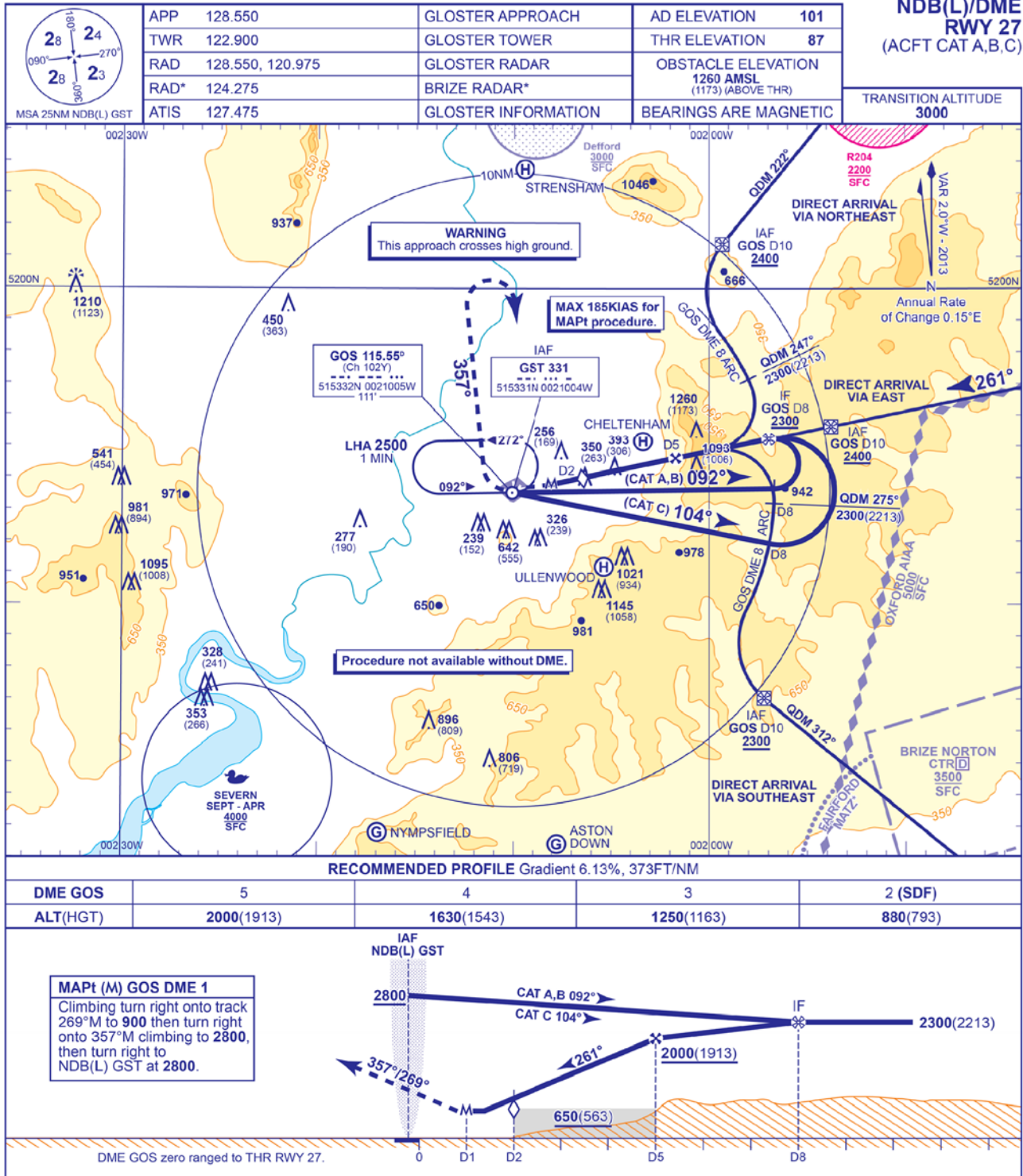


Fig (1)

At 1056:50, the radar recording shows the BE35 in the missed approach procedure 6-8nm N of the airfield in a non-standard L turn passing FL034 in the climb. The SR22 is approaching the GST on W'ly heading at FL042.

At 1057:08, the following RT exchange occurred:

- ATC “(BE35 c/s) request your intentions after this approach.”
- BE35 “(BE35 c/s) is six miles to the north.”
- ATC “(BE35 c/s) roger report your intentions after the approach.”
- BE35 “Say again (BE35 c/s)”
- ATC “(BE35 c/s) report your intentions after the approach please.”

BE35 *"Intentions after the approach is er to return to the circuit of er righthand circuit of two two please touch and go into the circuit."*
 ATC *"Roger"*
 ATC *"(SR22 c/s) confirm in the hold now"*
 SR22 *"-ffirm (SR22 c/s)."(Clipped transmission)*

[UKAB Note (2): By 1058:10 the BE35, indicating level at FL041, has steadied on a track of 170° with the SR22, tracking 280° and carrying out its parallel entry into the GST hold, crossing through its 12 o'clock range 3-5nm at the same level. Thereafter the BE35 commences a gradual L turn onto a track of 150° towards the GST as the SR22 continues on a W'ly track. The CPA occurs at 1058:50 with the SR22, at FL043, in the BE35's 2 o'clock range 2.1nm, vertical separation 200ft. The ac then diverge until the SR22 commences a R turn to track back towards the GST as the BE35 passes O/H the beacon.]

At 1100:10, the BE35 pilot reported, *"(BE35 c/s) is beacon outbound at four thousand feet on one zero zero nine."* The APP controller replied, *"(BE35 c/s) confirm your level your cleared level is er two thousand eight hundred feet."* There was no response from the BE35 pilot so the APP asked, *"(BE35 c/s) confirm your level."* At 1100:31, the BE35 pilot reported, *"(BE35 c/s) four thousand feet on one zero zero nine"* and in response the APP instructed, *"(BE35 c/s) roger descend er immediately with the procedure essential traffic in the hold at four thousand feet is a Cirrus S R twenty two."* The BE35 pilot replied, *"descending (BE35 c/s)".* The APP then advised the SR22 pilot, *"(SR22 c/s) er essential traffic beacon outbound four thousand feet descending it's a Beech Bonanza."* The SR22 pilot replied, *"Roger er (SR22 c/s) we're four miles to the er west of the beacon at the moment four thousand feet."* The APP acknowledged, *"(SR22 c/s) roger"*.

[UKAB Note (3): The BE35's descent is seen to have commenced at 1100:50 as its Mode C is showing FL038 descending, the SR22 is in its 6 o'clock range 6nm still in the R turn towards the GST.]

Just after 1102:00 the BE35 pilot reported descending through 3000ft on QNH 1009 and the BE35 completed the instrument approach without further incident.

The ATSU has recommended that as part of unit best practice controllers should, at an appropriate point, include the reiteration of the missed approach level, together with appropriate TI. Since the Airprox, controllers have been made aware of the requirement and the unit MATS Part 2 will reflect these changes at the next update due February 2013.

During the first NDB(L)/DME RW27 approach, the BE35 pilot did not make the requested base turn report. When the BE35 reached a 3nm final, the flight was transferred to the Tower and during the pilot's acknowledgement, the BE35 pilot advised of an intention to carry out the missed approach procedure. CAP 413, Chapter 4, Page 15, Paragraph 1.10.1, states:

'.....When a missed approach is initiated cockpit workload is inevitably high. Any transmissions to aircraft going around shall be brief and kept to a minimum.'

In order to accommodate the missed approach and the additional instrument procedure for the BE35, the APP revised the EAT for the SR22 approaching the GST at 4000ft.

After the BE35 was transferred from Tower to Approach, the flight did not immediately establish 2-way communication with the APP. The APP contacted the BE35 pilot, advising of the PS with a clearance to the NDB DME RW27 and a request for the BE35 pilot to report beacon outbound. The APP had an expectation that the BE35 pilot would comply with the missed approach procedure, returning to the GST(L)NDB at 2800ft.

The missed approach procedure for the NDB(L)/DME RW27 is a segment of the Instrument Approach Procedure (IAP) and is published on the IAP chart/plate. It is the procedure to be followed when the approach cannot be continued and it is expected that the pilot will fly the missed approach

procedure as published (ICAO). The UK AIP Page GEN 3-3-5 (22 Oct 09) paragraph 3.7.4.1 (Instrument Approaches) states:

‘Pilots will be expected to be conversant with the correct notified Instrument Approach Procedures detailed in published charts, but on request, in exceptional circumstances, Approach Control will supply the following information:

- a. The aid concerned, aircraft category and Final Approach Track;
- b. arrival level;
- c. type of reversal manoeuvre, including outbound track, length in time or distance, level instructions, and direction of procedure turn where applicable;
- d. intermediate and final approach tracks and fixes, and step down fixes (where applicable), with level instructions;
- e. Obstacle Clearance Height;
- f. Missed Approach Point and Missed Approach Procedure.’

The BE35 pilot did not comply with the requirement of the missed approach procedure track; *‘359°M climbing to 2800, then turn right to NDB(L)GST at 2800’*. The BE35 flight made a non-standard L turn at FL033 and returned to the GST(L)NDB in the climb to 4000ft. It is likely that the BE35 pilot would have heard the earlier call from the SR22 inbound to the beacon at 4000ft together with the clearance and revised EAT issued to the SR22.

When the loss of procedural deconfliction minima became apparent, the APP immediately instructed the BE35 pilot to descend in the procedure and then passed essential TI to both flights. At this point, unknown to the controller, the 2 ac had passed and were diverging.

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 following the NDB(L)/DME RW27 approach, the BE35 pilot elected to make a missed approach, but did not to follow the promulgated procedure which required a climb to maintain 2800ft. The BE35 pilot climbed to 4000ft and into conflict with the SR22 that had been cleared to the GST at 4000ft.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

Members ultimately agreed with the ATSI conclusion as to the cause of the Airprox. However, controller Members were quick to point out that there was an opportunity to break the chain before separation was lost between the ac. After the BE35 pilot had elected to carry-out a missed approach, which was approved by ATC, he did not call on the APP frequency after going-around and being transferred from Tower. This had required a prompt from the APP to elicit whether the BE35 was on his frequency; in response, the BE35 pilot’s initial call did not use the standard IFR phraseology which should have included the ac’s passing level and its cleared level [CAP413 Chptr 3 Pg 6]. The APP did not challenge the BE35 pilot’s transmission or state the ac’s cleared level, good defensive controllership, only reiterating the PS and clearing the flight for the NDB DME procedure. Thereafter the seeds were sown for the eventual outcome. The SR22 flight was on frequency but was unaware of the BE35 pilot’s climb above 2800ft and when ATC asked the SR22 pilot to confirm that he was in the hold, the pilot replied “affirm”, again with no mention of a level by either party. The BE35 pilot’s SA should have been updated as to the SR22’s presence as the SR22 pilot had called and been cleared to the GST NDB at 4000ft as the BE35 had commenced his 1st approach. As it

was, APP was unaware of the conflict until the BE35 pilot reported beacon outbound at 4000ft. By then it was too late. The ac had already passed as the SR22 was carrying out its parallel entry into the GST hold and the BE35 was tracking back to the NDB from the NW, having erroneously made a L not R turn after following the initial missed approach track to the N. One Member thought that a definite risk of collision existed as luck had played a major part in the incident, the ac passing without any visual sighting by either crew. This view was not shared by the majority; although there had been an element of luck in the proceedings, the actual geometry of the encounter, as revealed by the recorded radar, shows the ac passing over 2nm apart with 200ft vertical separation at the CPA. However the Board unanimously agreed that safety had not been assured.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The BE35 pilot did not follow the standard Missed Approach Procedure and climbed into conflict with the SR22.

Degree of Risk: B.

AIRPROX REPORT No 2012158

Date/Time: 10 Oct 2012 1359Z

Position: 5133N 00009W
(North Weald Base Leg
RW02 LH - elev 321ft)

Airspace: Lon FIR (Class: G)

Reporter: North Weald

1st Ac 2nd Ac

Type: Grob 115 Yak 50

Operator: Civ Pte Civ Pte

Alt/FL: 1200ft 800ft
(QNH 1014hPa) (QFE 1005hPa)

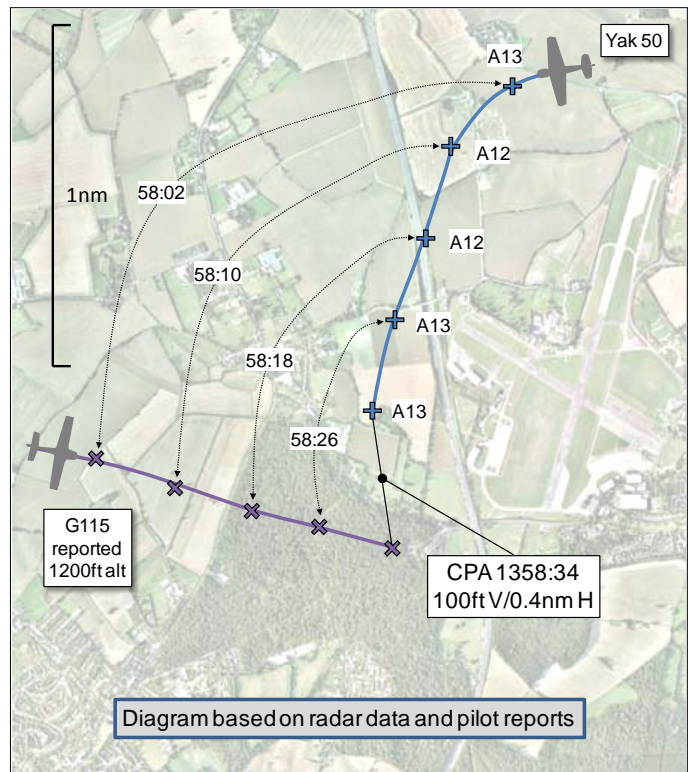
Weather: VMC CLBC VMC CLBC

Visibility: 20km >10km

Reported Separation:
0ft V/ NR H 100-150ft V
300m H

Recorded Separation:

NR V/0.4nm H



CONTROLLER REPORTED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE NORTH WEALD A/G OPERATOR reports that a Yak 50 pilot radioed ['North Weald Radio' 123.525Mhz] with the intention of carrying out 3 ccts followed by a local flight out to the E. At 1400, when late downwind in the cct at height 800ft [QFE 1005hPa], the pilot reported seeing a Grob G115, transiting over the A/D from NW to SE, on base leg at height 700ft. The Grob pilot had not made RT contact at the time of the incident. The Yak pilot sounded alarmed by his 'sighting of an Airprox' and, in view of a potential confliction, cancelled his cct intentions and departed to the E for a local flight. The Yak pilot subsequently acquired the Grob ac registration, which he relayed to the controller, who telephoned Farnborough Radar to enquire as to whether they had been 'working the Grob'. The Farnborough controller confirmed he had, informing him that the Grob pilot was routing to Thurrock and return to Panshanger. He requested that they relay a message to the pilot to contact 'North Weald Radio' on his return flight. The Grob pilot contacted 'North Weald Radio' as requested at about 1420 and was advised to establish RT contact whenever transiting O/H to avoid potential conflictions such as had occurred earlier. The Grob pilot stated words to the effect that 'pilots operating in the North Weald circuit should keep a better visual lookout'.

THE YAK 50 PILOT reports completing the first of 3 ccts for glide approach and engine failure practice. He was operating under VFR in VMC with an A/G service from 'North Weald Radio'. The green/grey camouflaged ac had the SSR transponder selected on with Modes A, C and S and was not fitted with strobes or an ACAS. When late downwind for RW02 LH, heading 200-205° at 100kt and passing 'abeam the numbers', he dipped his L wing to start the L turn to final, with power at idle. He saw another ac in his L 10 o'clock position passing R to L (SE bound) below him and just on the S boundary of the A/D. He was very surprised to see an ac in this position. He estimated the other ac had passed underneath his track by approximately 150-200ft a few seconds before he made visual contact. He followed the ac to 'check it wasn't Stapleford traffic' and, once seen heading

towards the Thurrock area, made a visual identification and relayed the details to North Weald Radio. After a short aerobatic practice he returned to North Weald and heard the Grob pilot call for a transit back through the A/D overhead. The Grob pilot tracked through the O/H again with a direct pass a few hundred feet above his ac mid downwind, whilst making an RT transmission to the effect that 'circuit traffic should keep an eye out for him'.

He considered this event very dangerous given:

1. The type of traffic at North Weald, ranging from ultralight through to fast jet, and the lack of RT call from the Grob 115 pilot to advise of his presence.
2. Without making RT contact the Grob pilot had no idea of the potential ac type(s) on approach. Tracking across finals a few hundred feet from any traffic was very poor airmanship. A Yak 52 with a steep approach would not be far off a direct conflict with this ac. He also noted that Helimed helicopters are based at North Weald.
3. The recent accident at Shoreham demonstrated that, even with 2 ac in RT contact, the dangers of a collision were still high in the cct.

He also questioned why Farnborough didn't suggest to the Grob pilot that he call North Weald Radio on his first transit.

He assessed the risk of collision as 'Medium'.

THE GROB 115 PILOT reports conducting a training flight from Panshanger to Thurrock and return. He was operating under VFR in VMC with a BS from Farnborough LARS(N) [132.800MHz]. The white and grey ac had the strobe light selected on, along with the SSR transponder with Mode A selected. The ac was not fitted with an ACAS. Approximately 2nm WNW of the unlicensed A/D at North Weald he saw an ac turning LH crosswind for RW02. Visual contact was maintained and the ac was seen to climb, turn downwind and level off at circuit altitude. He crossed the downwind track for RW02 'abeam the 02 numbers' on a heading of 120° at 90kt and altitude 1200ft [QNH 1014hPa as stated on RT recording], at approximately the same level as the other ac which, at that time, was established LH downwind for RW02, approximately abeam the 'departure end'. He stated that 'no avoiding action was necessary as visual contact was maintained and the continuation of course provided sufficient separation'. He maintained RT contact with 'Farnborough LARS' throughout. Approximately 3min later, '4 miles' ESE of North Weald, he was surprised to see a YAK 50 suddenly in close formation in his 4 o'clock position. The formation lasted approximately 20sec from first noticing him before he broke away behind and below. Separation during this period was no more than 10-15m. He took the same route on the return leg from Thurrock; however, this time a frequency change was made from Farnborough to North Weald Radio before crossing over the A/D. The radio operator at North Weald then advised him of the dissatisfaction that the pilot flying the Yak had expressed 'with the earlier event'. He contacted the Yak pilot once on the ground at Panshanger. Both he and his student had felt intimidated by the interception of his ac. He did not feel that the original event warranted an Airprox report.

He assessed the risk of collision as 'None'.

ATSI reports that the Airprox occurred at 1358:25 UTC, on the SW side of North Weald A/D, within Class G airspace, between a Yakovlev Yak 50 (Yak 50) and a Grob G115 (Grob 115).

North Weald A/D operates as an unlicensed A/D and provides an A/G service on 123.525MHz. North Weald A/D lies beneath the Class D Stansted CTA-2 (1500-2500ft) and is within the Stansted TMZ-2 (SFC to 1500ft).

The Grob 115 pilot was operating VFR on a training flight, routeing from Panshanger to Thurrock and return, and was in receipt of a BS from Farnborough LARS(N) [132.8MHz]. The Yak 50 pilot was operating on a local VFR flight in the visual cct at North Weald A/D and was in communication with North Weald Radio [132.800MHz].

CAA ATSI had access to area radar recording together with written reports from both pilots and the A/G operator at North Weald. Farnborough were not aware of the Airprox and no controller report was received. No RTF recordings were available from Farnborough as the request from ATSI was made more than 30 days after the incident due to the late receipt of pilot reports. ATSI visited North Weald to listen to the RTF recording.

The Stansted Airport weather was reported as follows:

METAR EGSS 101350Z 13005KT 090V170 9999 SCT034 SCT039 13/06 Q1015=

Factual History

At 1351:48 the Grob 115 was first shown on radar, 11.1nm NW of North Weald in the vicinity of Panshanger, squawking 5031 without Mode C level reporting. With regard to access to Stansted TMZ, the London LTC Manual of Air Traffic Services Part 2 at paragraph 5.13.3.3, states:

‘Upon receiving a TMZ access request from a Mode A only equipped ac, Farnborough Radar will allocate a discrete squawk and authorise entry to the TMZ without reference to TC Stansted. Farnborough will emphasise the level restriction of such an authorisation i.e. not above altitude 1500ft ...’

And at paragraph 5.13.3.4 states:

‘Aircraft flying inbound to or flying in the circuit pattern of Wethersfield, Andrewsfield, Hunsdon or North Weald are encouraged to operate a transponder with code A7010 (and Mode C) if so equipped. If Farnborough LARS authorise a Mode A only equipped transit of the TMZ inbound to one of these airfields, Farnborough will instruct the aircraft to select A7010 approaching the boundary of TMZ exempt airspace. It is recognised that this transfer can take place within the TMZ as the pilot might need to change frequency in time to obtain circuit joining instructions.’

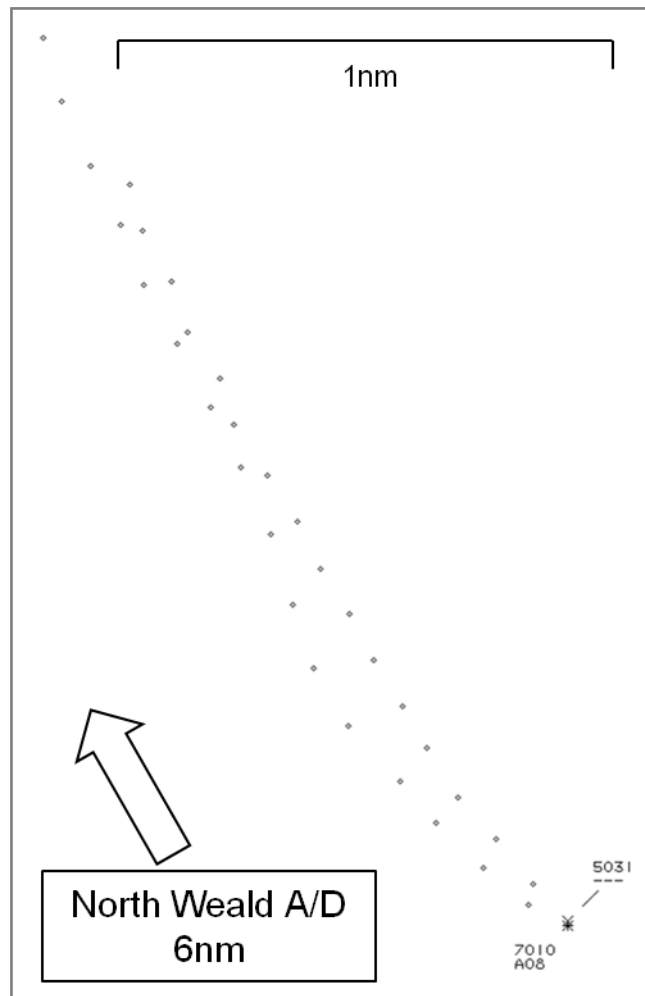
At 1354:30 the Grob 115 was shown 7nm NW of North Weald, crossing the lateral boundary of the Stansted TMZ. At 1357:48 the Grob 115 was 1.8nm WSW of North Weald, tracking SE across the S side of the A/D. The Yak 50 was shown 0.6nm N of North Weald, squawking 7010 and turning crosswind for the RW02 LH cct at an altitude of 1100ft.

At 1358:00 the Yak 50 pilot advised North Weald Radio of his intention to simulate an engine failure and to overfly the A/D without undercarriage. At 1358:25 the Yak 50 was shown midpoint downwind, indicating 1300ft, with the Grob 115 in the Yak 50 pilot’s 12 o’clock at a range of 0.5nm, crossing from R to L towards the RW02 threshold. The Yak 50 pilot reported traffic ‘just going crosswind’. The A/G operator replied that the other traffic had not identified itself to North Weald. The Grob 115 pilot’s written report indicated being visual with the Yak 50 at approximately the same level.

The CPA occurred at 1358:35, as the Yak 50 pilot continued downwind, with the Grob 115 in his half past 10 position at a range of 0.4nm.

At 1359:03, the Yak 50 pilot cancelled the simulated engine failure and reported heading E to ‘come back in a few minutes’. Radar recording showed the Yak 50 pilot turning towards the Grob 115 at a range of 0.9nm. The Yak 50 is shown to follow the Grob 115 on an E’ly track at 1000ft. The Yak 50 pilot continued to follow and manoeuvred behind the Grob 115. At 1401:48, the Yak 50 was shown 0.1nm NW of the Grob 115 at 900ft. The Yak 50 pilot continued to fly parallel to the Grob 115 and at 1402:00 was shown in the Grob 115 pilot’s 3 o’clock position at 0.1nm. The two ac continued converging and, at 1402:06, the distance between them reduced to less than 0.1nm. At 1402:14 the radar contacts merge with the Yak 50 indicating 800ft. The Grob 115 pilot’s written report indicated his being surprised to see the Yak 50 in close formation, within 10-15m of his ac for 20sec before breaking away behind and below.

[UKAB Note(1): The Stansted 10cm radar recording at 1402:14 is reproduced below:



The radar contact trail is at 4sec spacing]

At 1402:18, the two ac contacts started to diverge as the Yak 50 commenced a L turn to the NE. The Yak 50 pilot contacted North Weald Radio and advised the operator of the Grob 115 ac's registration.

At 1420:05, the Grob 115 pilot contacted North Weald Radio and reported returning to Panshanger via the North Weald O/H at 1200ft on QNH 1014. North Weald Radio advised that the cct was active with a Yak 50 in the O/H, with which the Grob 115 pilot reported visual. A short discussion occurred and North Weald Radio requested in future that the Grob 115 pilot establish RT contact when transiting ivo the A/D. The Grob 115 pilot responded, indicated that pilots should 'keep their eyes open' and also agreed to call North Weald Radio in the future.

Analysis

The Grob 115 pilot was in receipt of a BS and, given that his ac was not Mode C equipped, would have required Farnborough LARS(N) to approve the transit of the Stansted TMZ. The Grob 115 pilot remained in contact with Farnborough LARS(N).

Under a BS, the Farnborough LARS(N) controller was not required to monitor the flight. There was no indication on radar of activity in the vicinity of North Weald A/D until just prior to the incident. The Farnborough controller would not necessarily have transferred the Grob 115 pilot to North Weald Radio unless it was inbound to the A/D or had requested a change of frequency.

North Weald A/D is an unlicensed airfield and does not have an ATZ. As the Grob 115 pilot approached North Weald the Yak 50 became airborne and commenced a LH cct for RW02. This

resulted in the Grob 115 crossing the A/D 0.5nm ahead of the Yak 50 as it routed downwind. The Grob 115 pilot did not make any RT transmissions to North Weald Radio as he transited the A/D O/H. The RoA, Rule 12(1), states:

‘(1) ..., a flying machine, ...flying in the vicinity of what the commander of the aircraft knows, or ought reasonably to know, to be an aerodrome shall:

(a) conform to the pattern of traffic formed by other aircraft intending to land at that aerodrome or keep clear of the airspace in which the pattern is formed...’

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.’

Subsequent to the Airprox, the Grob 115 pilot continued to the SE, followed by the Yak 50 pilot. The two ac are shown to converge until the radar contacts merge.

[UKAB Note(2): The RoA, Rule 8 (Avoiding aerial collisions) states:

‘(1) Notwithstanding that a flight is being made with air traffic control clearance it shall remain the duty of the commander of an aircraft to take all possible measures to ensure that his aircraft does not collide with any other aircraft.

(2) An aircraft shall not be flown in such proximity to other aircraft as to create a danger of collision.

(3) ..., aircraft shall not fly in formation unless the commanders of the aircraft have agreed to do so.’]

Conclusions

The Airprox occurred when the Grob 115 pilot, in receipt of a BS from Farnborough LARS(N), transited in close proximity to North Weald A/D as the cct became active and crossed 0.5nm ahead of the Yak 50, which was downwind in the visual cct for RW02 LH.

The radar replay also showed that, after the reported Airprox, the Yak 50 pilot flew into close proximity with the Grob 115.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The Board’s discussion of the Airprox event centred around interpretation of Rule 12 of the RoA. It seemed clear from his report that the G115 pilot was aware of the location of North Weald A/D and that it was his responsibility to conform to the pattern of traffic formed by other aircraft intending to land there or to keep clear of the airspace in which the pattern was formed. The Board noted that there is no definition for the lateral limits of ‘the pattern of traffic’ and that this would be variable and depend on a number of factors including ac type and RW length. It was also noted that some high-performance ac based at North Weald require a cct pattern much larger than that flown by the Yak 50 pilot. In the absence of RT contact by the G115 pilot with the North Weald A/G operator, which would also have alerted North Weald cct traffic, the G115 pilot was only able to assess whether he was conforming or not by visually acquiring all the traffic in the North Weald cct. In the event, there was only the Yak 50, which the G115 pilot acquired when he was some 2nm WNW of the A/D and with which he maintained visual contact throughout. Given that he was visual throughout, and

passed ahead of the Yak 50 with a minimum separation between the ac of 0.4nm, Members were persuaded that the G115 pilot had not contravened Rule 12. However, pilot Members unanimously opined that the G115 pilot had shown poor airmanship in flying so close to the North Weald A/D at cct altitude without RT contact; he would have been much better advised to contact the North Weald A/G Operator to obtain information on traffic in the vicinity of the cct and to state his intentions. This did not occur and the Yak 50 pilot was startled to see another ac 'in the cct pattern'. The radar replay showed the G115 pilot transited through the North Weald cct close to the base leg position, and that the crossing geometry and late sighting had most likely caused the Yak 50 pilot to underestimate the separation. He was, however, undoubtedly concerned by the proximity of the G115. The NATS Ltd Advisor also stated that ac transiting the Stansted TMZ with a service from Farnborough would not normally be handed over to A/Ds in the vicinity of their track. On a BS, the Farnborough controller may advise a pilot of the proximity of North Weald A/D; however, it is the responsibility of the pilot to request to transfer to the North Weald A/G Operator, or to communicate with North Weald on a second radio if available.

The Board also considered the Yak 50 pilot's subsequent decision to obtain the G115 registration details and the manner in which this was achieved. While it was undoubtedly a reaction undertaken in the heat of the moment, the way in which it was undertaken demonstrated poor airmanship and, given that the radar returns from the ac merged, was likely to have been in contravention of Rule 8 of the RoA. Members noted that the G115 registration details could equally well have been obtained by the Yak 50 pilot at a safe distance, by the A/G Operator during his telephone call with the Farnborough LARS(N) Controller or by subsequent radar tracing of the contact.

Members observed that the Airprox occurred in an area where flights are constrained by the proximity of A/Ds and CAS. In such congested airspace it behoves all pilots to give other ac the greatest possible consideration and, when necessary, to reassure fellow aviators that they have been seen by giving clear signals such as exaggerated wing rocking.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Yak 50 pilot was concerned by the proximity of the Grob 115 in the vicinity of the North Weald circuit.

Degree of Risk: C.

AIRPROX REPORT No 2012161

Date/Time: 9 Nov 2012 1125Z

Position: 5154N 00210W
(Gloucestershire A/D
- elev 101ft)

Airspace: Gloucester ATZ (Class: G)

Reporter: Gloucestershire ADC

	<u>1st Ac</u>	<u>2nd Ac</u>
<u>Type:</u>	R44	Bo105

<u>Operator:</u>	Civ Pte	Civ Trg
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<u>Alt/FL:</u>	150ft QNH (1016hPa)	300ft QFE (NR)
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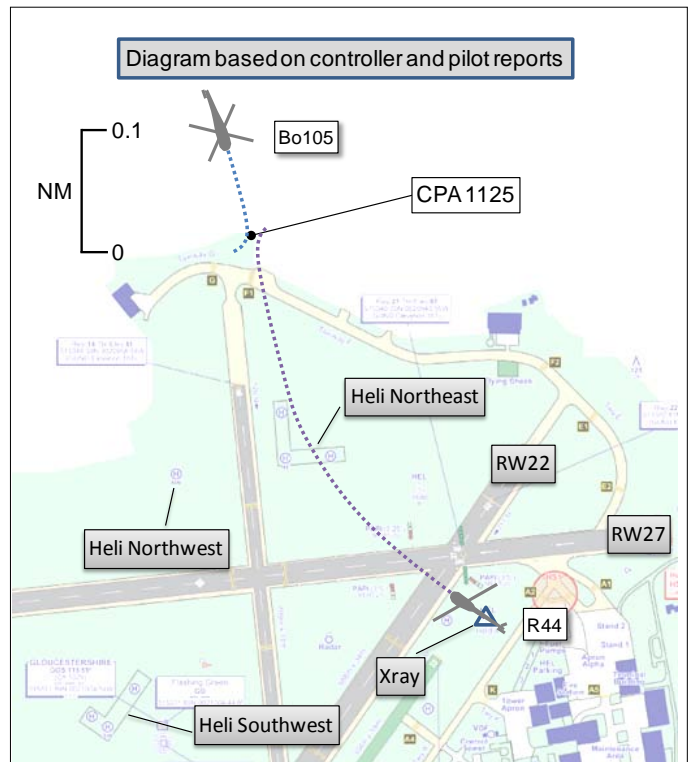
<u>Weather:</u>	VMC CLBC	VMC CLBC
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<u>Visibility:</u>	20km	>10km
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<u>Reported Separation:</u>	150-200ft V 200m H	30ft V/50m H
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Recorded Separation:

NR



CONTROLLER REPORTED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE GLOUCESTERSHIRE A/D CONTROLLER reports that the R44 pilot taxied but that booking out details had not yet reached him, who enquired whether this was a 'local flight to the north'. The R44 pilot had been given instructions to air-taxi to 'Heli-hold X', but in response to the ADC's question, incorrectly read back 'cross 22 and depart' and immediately transitioned. Pyrotechnic bird-scaring was in progress adjacent to RW18 and another helicopter was hovering at 'Heli Northeast' with the Bo105 pilot flying ccts. As there was no RWY traffic to affect the departure, he elected to allow the R44 pilot to continue his departure. Information was passed on the bird-scaring activity and hovering traffic, which the pilot acknowledged. TI was then passed on the cct traffic, on final approach to 'Heli Northwest', which was not acknowledged. TI was passed to the Bo105 pilot, but as it was passed he was seen to take avoiding action, climbing and turning L, he thought. The R44 pilot then reported having had a 'close encounter with a red air ambulance'. The pilot was advised that he had departed without clearance and Airprox reporting action was initiated.

THE R44 PILOT reports departing Gloucestershire A/D to a private site. He was operating under VFR in VMC in receipt of an A/D Control Service from 'Gloucester Tower' [122.900MHz]. The blue helicopter had a red strobe light selected on, as was the SSR transponder with Modes A and C. He called for clearance for a N'y departure and was instructed to taxi to 'Xray', a normal procedure. He commented that radio reception was not as clear as usual, that the A/D was busy and that ATC training was being conducted in the Tower, as advised by AFIS information 'Juliet'. Approximately 'half way to 'Xray', he heard his C/S on RT and thought he'd been given clearance to cross RW27 and 22 and take off, a procedure he'd carried out many times before in that direction without incident. He commented that he considered asking ATC to repeat the message, to confirm what he thought had been said, but that the RT was exceptionally busy and, with ATC training taking place as well, he decided not to increase their workload and continued his run. As he started to cross [the RWYs] at low level, ATC advised him 'to be aware of a pyrotechnic team operating on the north east grass area', known as 'Heli Northeast', which was just to the W of his departure track. His attention was

then diverted to their activities and, on clearing them, he started his climb out. When he reached the A/D N boundary, heading 355° at 50kt and about 150m E of RW18, he was confronted with a Bo105 helicopter directly ahead, inbound to the A/D and about 150ft above him. He informed ATC of the incident immediately, whereupon he was told that he had not been given take-off clearance. He noted that, as he crossed the A/D at low level, his view of the incoming Bo105 was obscured by boundary buildings and that his attention was focused on the pyrotechnic team's position.

He assessed the risk of collision as 'Medium'.

He apologised and flew the 5min transit to the private site, where he shut down and telephoned Gloucester ATC. He was informed that they were 'too busy to talk' and, after a further unsuccessful attempt, he conducted his next flying detail and returned to Gloucester A/D. He stated that he had eventually talked with the ATC Controller involved, in order to clarify how the incident had occurred. He was told that the RT call, which he had not heard, was to inform him of the incoming Bo105 and of a pyrotechnic team operating on the N side of the A/D. He queried why the controller hadn't instructed him to stop on hearing his incorrect read-back. The controller stated that, having started his 'run', he was more concerned that he should make him aware of the pyrotechnic team near his intended track. The controller was not aware that he hadn't seen the Bo105. He also queried whether there had been another ac using his call sign, since he had heard it used 'a couple of times', but that its use didn't appear to relate to his flight. The controller could not recall. He stated that he had learned a valuable lesson as to how a number of small errors, individually easily rectified, when brought together, could lead to a chain of events with potentially serious consequences. He also opined that he would have been better advised to ask ATC to repeat the RT transmission, rather than assume its content.

THE BO105 PILOT reports conducting an Operator Proficiency Check (OPC) in the Gloucester A/D RW22 cct, having briefed the student to fly a clear area arrival to Heli Northeast. He was PNF, occupying the L seat, with the student PF in the R seat. He was operating under VFR in VMC with a BS from Gloucester TWR but 'negative R/T' in the cct. The red helicopter had navigation, strobe and landing lights selected on. The SSR transponder was selected on with Modes A, C and S. The ac was not fitted with an ACAS. At approximately ½nm on finals, heading 170° at 60kt, he saw an R44 helicopter, in his L 10.30 position at a range of about 300m, which crossed RW27 from 'point Xray' towards the threshold of RW18, as if to depart the A/D to the N. It became apparent that the 2 helicopters were 'likely to be in close proximity' so he took control, climbed and turned R slightly to effect separation. ATC informed the R44 pilot that he had just taken off without clearance and had also crossed an active RWY (22) without permission.

He assessed the risk of collision as 'High'.

He stated that, in his opinion, had he been flying alone in the R seat a collision would very probably have occurred: an assertion he supported by the fact that the student did not see the R44 until it had passed behind and below them to the N, after the avoidance manoeuvre.

ATSI reports that this Airprox occurred at 1125:08, within the Gloucestershire A/D (Gloster) ATZ, Class G airspace, between a Messerschmitt-Bölkow-Blohm Bo105 DBS-4 (Bo105) helicopter and a Robinson R44 II (R44) helicopter.

Background

The Gloster ATZ comprises a circle radius 2nm, centred on the midpoint of the main RW09/27 and extending to a height of 2000ft aal (elevation 161ft). Other RWYs include 18/36 and 04/22. The Bo105 pilot was operating VFR from Heli Northwest, in the RH visual helicopter cct for RW22 and was on final approach. The R44 pilot had called for lift from the apron on the S side of the A/D (Heliflight one) for a VFR departure to the N. The ATSU was providing a split A/D and APP Control Service from the VCR. Controller training was being provided in A/D control, with a mentor OJTI retraining an experienced controller. Workload was assessed as medium with RW22 in use. The UK AIP, page AD 2-EGBJ-1-7, paragraph 5, states:

'(a) Helicopter circuits operate parallel to and inside fixed wing circuits up to a maximum of 750ft QFE, approaching and departing from the helicopter training areas as follows:

Fixed Wing	Rotary
Runway 09/27	Heli Northwest & Northeast
Runway 04/22	Heli Southwest & Northwest
Runway 18/36	Heli Northeast

(b) In order to reduce RT loading and avoid conflict between rotary and fixed-wing circuits, standardised phraseology and procedures are established for helicopter operations. The standardised phrases are assigned the following meanings:

(i) Standard Helicopter Departure: Departure into wind or as required, remaining clear of the fixed-wing runway in use, turning to depart circuit at right angles to runway in use (i.e. beneath downwind leg), not above 750ft QFE, before departing ATZ on required track.

...

(iii) Standard Helicopter Circuits: Circuits to/from most upwind available spot, not above 750ft QFE, negative RT, maintaining a listening watch on ADC frequency.'

CAA ATSI had access to RTF recordings for Gloster Tower and area radar recording, together with the written reports from the two pilots concerned and the Gloster Aerodrome controller. A telephone interview took place with the OJTI controller concerned. The area radar recording showed intermittent traffic in the Gloster circuit, but did not show the Airprox encounter.

The Gloster weather was recorded as follows:

METAR EGBJ 091120Z 21010KT 180V240 9999 FEW020 BKN030 11/05 Q1008=

Factual History

At 1111:48 the Bo105 pilot called for taxi prior to commencing an OPC in the RH helicopter cct for RW22. The Tower controller gave him a clearance to air-taxi to holding point Xray and, at 1114:24, he was cleared to cross RW22 for air-taxi to the helicopter training area 'Heli-Northwest'.

At 1115:45, the Bo105 pilot called at 'Heli-Northwest' ready to commence training. The Tower controller responded, "[Bo105 C/S] *is clear for take-off standard helicopter circuits wind two one zero degrees one zero knots*" and this was acknowledged, "*Clear take off standard helicopter circuits based on two two righthand* [Bo105 C/S]."

The R44 pilot had not previously booked out and, at 1123:03, he established two way RT with the Tower and reported, "*er* [R44 C/S] *R forty four with information hotel at Heliflight one POB ready to lift for flight to the north*". The Tower controller responded, "[R44 C/S] *Gloster Tower lift air-taxi to Xray*" and this was acknowledged, "*Taxi Xray* [R44 C/S]".

As the R44 pilot air-taxied to Xray, the Bo105 pilot was in the RH visual helicopter cct for RW22. In addition, another helicopter was operating at the Heli Northeast training area and pyrotechnic bird scaring was in progress adjacent to RW18. The controller had intended to pass essential aerodrome and traffic information to the R44 pilot prior to approving the crossing of RW22 and then a take-off clearance in accordance with the 'Standard Helicopter Departure' procedure.

When questioned, the OJTI indicated that after the issue of the appropriate information and clearance, his expectation was that the R44 pilot would have crossed RW22, turning L into wind, making an earlier R turn to clear the cct before then turning N. The controller indicated that, as the R44 pilot had not booked out, he wanted to confirm the flight was local i.e. departing from and returning to Gloster. At 1124:28 the Tower controller transmitted, "[R44 C/S] *confirm it's a local flight er*" and the R44 pilot replied, "[R44 C/S] *cross er two two to er flight to north*".

When questioned, the OJTI indicated that the R44 pilot had been air-taxiing quite fast towards Xray (25-30 knots) and when the pilot was asked to confirm it was a local flight, he immediately increased speed and transitioned to cross the RWY. The Tower controller elected to allow the R44 pilot to continue across the RWY and, 5sec after the incorrect transmission, at 1124:40, the controller passed essential aerodrome and traffic information, “[R44 C/S] *the heli-the vehicle at Heli-North will be letting off some pyrotechnics shortly and there’s a Schweizer operating from Heli-Northeast and Heli-Southwest*”. The R44 pilot acknowledged, “*Copied that [R44 C/S] I will be clear of that in a few seconds*”.

At 1124:56, the following RTF exchange occurred:

Tower “[R44 C/S] *are you visual with the er Bolkow on final Heli South*”

[The OJTI could not recall that Heli South had been specified, instead of Heli Northwest. However the R44 pilot had immediately reported the Bo105 in sight.]

R44 “*Visual [R44 C/S]*”

Tower “[Bo105 C/S] *you visual with the departing Robinson*”

[The controller observed the Bo105 taking avoiding action]

R44 “*Yes very close encounter [R44 C/S] with incoming er [Bo105 C/S]*”

Tower “*And [R44 C/S] you weren’t actually given a clearance to cross the runway or depart*”

R44 “*... begging your pardon [R44 C/S] I thought you’d given me clearance*”

The Bo105 pilot’s written report indicated that, when on final at 0.5nm, he had observed the R44 on a N’ly track crossing RW27 and converging. The Bo105 pilot continued to monitor the R44 and judged that it was likely to be in close proximity. The Bo105 pilot elected to avoid the R44 by taking control and climbing and turning slightly to the R.

The R44 pilot’s written report indicated that, after he had lifted and started to cross the runway he received a transmission about the pyrotechnics. The R44 pilot indicated that his attention was diverted to looking for the pyrotechnic activity, following which he started to climb and observed the Bo105 about 150 feet above. He had reported hearing a similar C/S being used a couple of times previously and wondered if another ac had used it. A detailed analysis of the RTF recordings from 1111:00, until 1126:12, when the R44 was transferred to APP, showed that no other ac had used a similar C/S and that the Tower controller only used the R44 C/S when communicating with the R44 pilot as stated above.

The controller asked the Bo105 pilot to contact ATC after landing and at 1126:12, the R44 pilot was transferred to Gloster APP [128.550MHz].

Analysis

The controller cleared the R44 pilot to hold at Xray with the intention of passing aerodrome and traffic information prior to departure. It is not clear why the R44 pilot misunderstood the transmission “*confirm it’s a local flight*” to be an executive clearance, which would have included a take-off clearance and use of the ‘Standard Helicopter Departure’ terminology and surface wind check. The R44 pilot indicated that he had conducted this same procedure many times. It is possible that he may have been conditioned to expect a crossing and take off clearance at this point.

The controller’s normal course of action would have been to correct the read back and reiterate the instruction to hold at Xray. However, the R44 pilot had already started to transition and cross the RWY immediately after making the incorrect transmission. His written statement indicated that, as he crossed the RWY, the Tower controller told him about the pyrotechnics, some 5sec after his incorrect transmission.

The R44 pilot was already crossing the RWY and the controller allowed him to continue. In the limited time available, the controller passed essential information on the pyrotechnics and other ac operating at Heli Northeast and Heli Southwest. The controller then asked the R44 and Bo105 pilots if they were visual with each other.

Conclusions

The Airprox occurred when the R44 pilot mistakenly assumed that he had been given take off clearance and immediately transitioned from air-taxiing to depart, crossing RW22 and into conflict with the Bo105 pilot operating in the 'Standard Helicopter Circuit' for RW22.

The R44 pilot was already crossing the RWY when the controller passed essential TI, asking whether the R44 and Bo105 pilots were visual with each other. Under normal circumstances this would have been passed in a timely manner prior to the issue of a crossing and take off clearance.

The R44 pilot did not book out with ATC in advance and the R44 pilot's first communication with ATC was by RTF requesting lift for departure to the N. This is considered to have been a contributory factor.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The Board first considered the actions of the R44 pilot and agreed with his analysis that a series of relatively small errors, including a lapse of concentration due to familiarity with a seemingly routine procedure, had compounded to result in a serious near-miss with the Bo105. The lack of booking-out notification caused confusion in the ADC's mind, prompting a query over the RT, leading to a misunderstood call and assumption of its content, resulting in commencement of the R44 pilot's T/O. Once the ADC realised the R44 pilot had commenced his T/O, he was faced with the need to make a quick decision to either allow him to continue or to attempt to stop him. He opted for the former course of action and advised the pilot of what he perceived to be the greatest threat, namely the pyrotechnic team at Heli Northeast. ATC Members noted that individual circumstances would indicate a preferable course of action and that the ADC's response allowed the R44 pilot to vacate the A/D; an attempt to halt his T/O had the potential for the helicopter to end up stopping on the busy A/D manoeuvring area and possibly causing further conflict. The ADC then questioned whether the helicopter pilots were visual with one another, with the Bo105 pilot taking avoiding action first and resolving the conflict.

The Board considered this Airprox to be the result of a series of interlinked errors, resulting in the R44 pilot departing without clearance. He had, by his own admission, some misgivings about the clarity of RT before he commenced his T/O and in the process has been afforded the opportunity to learn a valuable lesson. The Board unanimously agreed that although avoiding action was taken, safety margins had been much reduced below the normal.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The R44 pilot departed without clearance and flew into conflict with the Bo105 on final approach.

Degree of Risk: B.

AIRPROX REPORT No 2012163

Date/Time: 13 Nov 2012 1007Z

Position: 5253N 00231W (1.2nm NE
Ternhill - elev 272ft)

Airspace: Ternhill ATZ (Class: G)
Reporting Ac Reporting Ac Reported Ac

Type: Squirrel (A) Squirrel (B) R44

Operator: HQ Air (Trg) HQ AIR (Trg) Civ Comm

Alt/FL: 700ft↓ 1000ft 800ft
QFE (1013hPa) QFE (1013hPa) (QFE)

Weather: VMC CLBC VMC CLBC VMC NR

Visibility: 30km 50km 30km

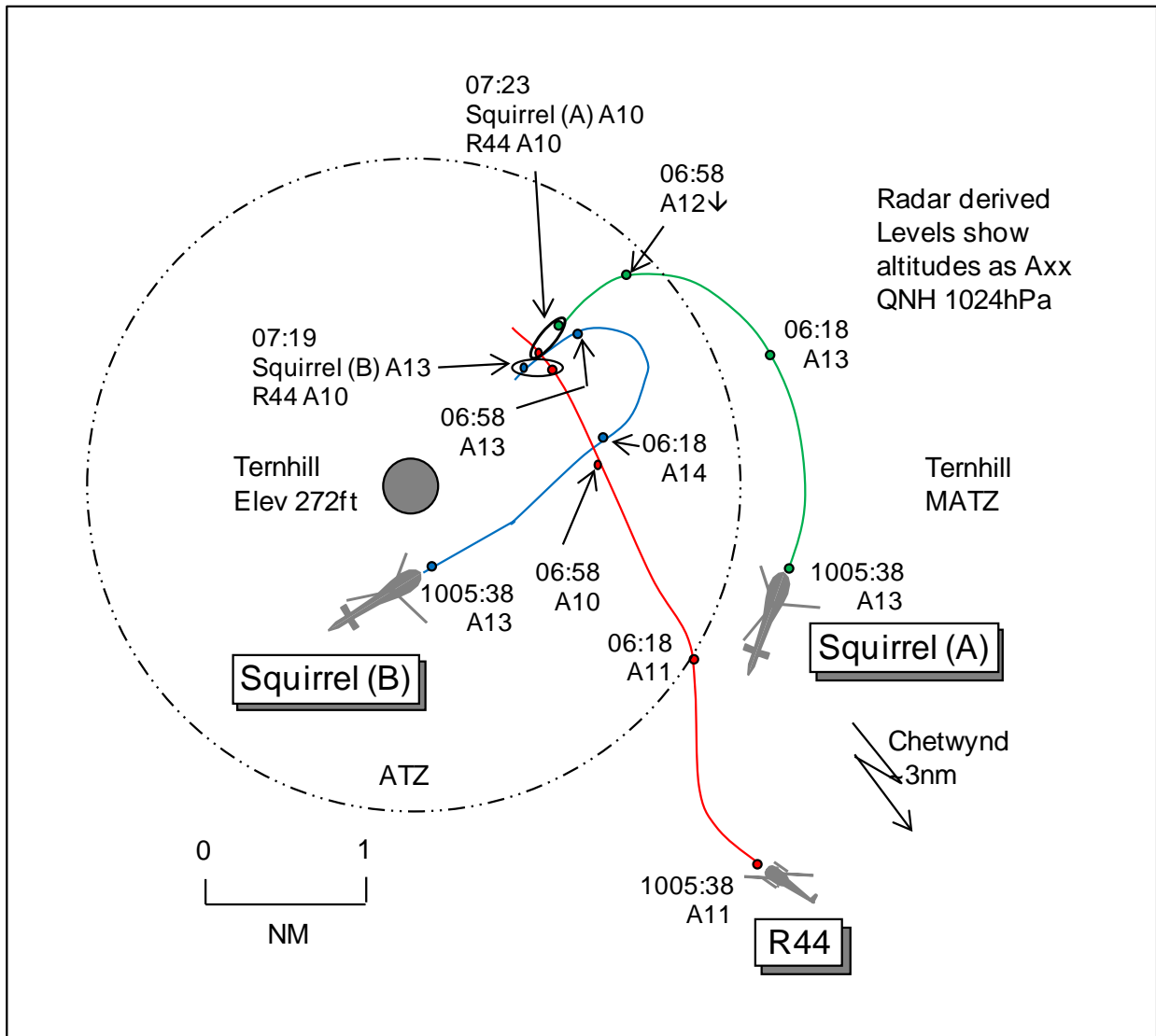
Reported Separation:

100m 300ft V/behind H 100ft V/200m H

Recorded Separation:

CPA 1 300ft V/0.2nm H

CPA 2 Nil V/0.2nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE SQUIRREL (A) PILOT reports a dual training sortie from Shawbury, VFR and in receipt of a BS from Ternhill Tower on 376.4MHz, squawking 0221 with Modes S and C. The visibility was 30km flying 2000ft below cloud in VMC and the helicopter was coloured black/yellow with 2 HISLs switched on. Whilst joining Ternhill on a GH refresh sortie, responses to a PINS ac were heard from ATC, indicating that the ac was operating on VHF. Following the VHF conversation ATC put out a broadcast on UHF, informing those operating at Chetwynd and Ternhill that there would be a PINS ac crossing the ATZs initially W'ly through Chetwynd, followed by a S to N transit of the Ternhill ATZ. This was followed by another transmission announcing that the PINS ac would be not above 1000'. It was at this point that a question was raised in the ac commander's head as to the safety of having an ATZ crosser below 1000', across the active RW with both ccts active (one with EOLs). To add to the safety concern, the crossing ac would be operating on a different frequency. It was at this point that the ac commander highlighted his concerns to ATC. Concurrent with the completion of the transmission whilst heading 220° at 90kt and 700ft QFE descending, the PINS ac was spotted in approximately the 11 o'clock position at approximately 100m, if not closer, at the same level. This did not correlate with the expected position of the PINS ac, which was reported to have been transiting the Chetwynd ATZ at around that time. The ac commander then put out a second call, to get another Squirrel in area L to go-around from an EOL that would have placed him close to the passing PINS ac, which they did. The PINS ac, a white/blue coloured R44, passed from L to R at approx 100m, banking away slightly once their helicopter was seen, and departed the area to the N. The ac commander filed an Airprox with ATC at the time. The remainder of the sortie was aborted and the ac returned to Shawbury without further incident. On landing the Executive Flying Supervisor was advised, along with SATCO, of what had occurred. He assessed the risk as very high.

THE SQUIRREL (B) PILOT reports flying dual QHI training sortie from Shawbury, VFR and in communication with Ternhill Tower on UHF. The visibility was 50km flying clear below cloud in VMC and the helicopter was coloured black/yellow. He joined the Ternhill cct to conduct 2 EOL sorties. From the outset it was obvious that the RT from ATC was not as fluid as usual; regularly 2-3 RT calls were made by Tower where one would normally be sufficient. He was working in the 22 L cct to the triangle with another Squirrel (C) in the same cct also conducting EOLs. At about 1005Z ATC made a call that a Pipeline Inspector ac would be conducting an ATZ crossing of Chetwynd W'bound and then crossing the Ternhill ATZ. Subsequently ATC made another call that the ATZ crosser would be at 1000ft and below; he was turning final as this was unfolding. Given the disposition of Chetwynd and Ternhill, he presumed the ATZ crosser was in the vicinity of Chetwynd and therefore 5min away from Ternhill. He scanned the horizon in that direction but saw nothing of concern. Immediately after the last ATC transmission that the ATZ crosser would be at 1000ft or below, Squirrel (A) flight, in area R, asked on the frequency if having the ATZ crosser transiting through 2 active ccts was a good idea. At this point Squirrel (C) flight called "Final 180 EOL to the triangle" and then his (Squirrel (B)) student, a QHI, called "final EOL for the triangle". It then became obvious that Squirrel (A) pilot was alarmed by what he had seen and called, "Squirrel (C) c/s overshoot" but in the confusion Squirrel (C) pilot did not hear this call, nor did he overshoot. Electing not to allow the student QHI to enter autorotation, Squirrel (B) pilot took control, flew through at 1000ft and repositioned on final. Having not seen anything of concern he then continued and the student conducted an EOL iaw the sortie profile. During this manoeuvre Squirrel (A) pilot stated he wished to, "file against the ATZ crosser", overshoot his approach and returned to Shawbury. On completion of the sortie Squirrel (B) pilot was made aware that the ATZ crosser had passed close behind his helicopter about 300ft lower; however, he had not seen the ATZ crosser at any stage.

THE R44 PILOT reports en-route from Coventry to Sandtoft, VFR and in receipt of a BS from Ternhill Tower on 122.1MHz, squawking 0036 [pipeline conspicuity] with Modes S and C. The visibility was 30km clear below cloud in VMC and the helicopter was coloured white with nav, landing and strobe lights all switched on. The flight was a routine inspection of a government owned pipeline, Stourport to Ellesmere Port, flying at 500ft MSD therefore typically 600-800ft agl at 90-110kt. Initially he contacted Shawbury LARS when E of Telford [11nm SSE Ternhill] and was told to, "standby". They called him back as he passed Lilleshall [9nm SSE Ternhill] and he requested MATZ and ATZ transit

of Ternhill. He was told to contact Ternhill Tower and he did so and repeated his request. At the ATZ boundary he reported his position and was given TI on 4 ac and, "ATZ transit approved". He could see all 4, 1 on the ground, 1 in a climb and 2 over Market Drayton. One over Market Drayton [Squirrel (B)] was higher and passed O/H whilst the second to his R [Squirrel (A)], was slightly lower (100ft) than him. He kept checking its position, it seemed slow, and did not think a collision was likely but on passing he did think it was closer than expected (200m) and commented so to his observer. A company SMS (safety management system) entry was made. Having spoken to Shawbury ATC it appeared there had been an assumption that the pipeline helicopter would be at 200ft agl at 60kt whereas the reality is 600ft agl and 110kt. A local agreement has been made to inform Shawbury by telephone in advance of flights through Ternhill ATZ/MATZ. He assessed the risk as none.

THE SHAWBURY APPROACH CONTROLLER reports the incident occurred towards the end of an initially quiet session with Zone, Director and Low-Level frequencies bandboxed to the Approach position when traffic levels increased to a manageable medium/high level. During this period he received a freecall request for a BS from the R44 flight and, although not positively identified, the presence of a 0036 squawk and a correlating DF trace indicated the ac was in the area NE of Telford. On that basis, and due RT loading at the time, he asked the R44 flight to standby while he continued to work through other traffic. On returning to the R44, which had tracked about 3nm NNW, he ascertained that the pilot wanted to route through Chetwynd and on through Ternhill ATZ. He established a height 'not above' on Shawbury QFE and elected immediately to pass the flight onto Ternhill for actual crossing clearance as it was apparent they were active at the time. In the time taken to cover this RT exchange and the liaison call to Ternhill the helicopter was finally told to contact Ternhill when it was bearing 210° from Chetwynd range 2nm tracking NNW. He subsequently handed over the control position to a colleague and was later informed of the incident.

THE SHAWBURY ATC SUPERVISOR reports that owing to controller sickness the section was undermanned and, as there was little flying at Shawbury, all of the radar frequencies were selected on the Approach position. At the time of the incident he was away from the ACR dealing with other issues.

THE TERNHILL TOWER CONTROLLER reports that he was screening a UT controller in the Ternhill ADC position. At the time there were 4 ac in at Chetwynd and 3 in at Ternhill, conducting ccts and EOLs. They received a call from Shawbury Approach warning of a pipeline inspection ac, an R44, wishing to pass O/H Chetwynd and through the Ternhill ATZ not above 1000ft, and to listen out on VHF as the ac was on that frequency. During this call, Squirrel (A) flight called to join at Ternhill and the UT controller passed joining instructions. The R44 pilot then called on VHF, stating his intention to fly from S to N through the Ternhill ATZ not above 1000ft. The UT controller asked the PINS R44 pilot to confirm his intentions; he responded that he would transit S to N, passing 1nm to the E of the airfield. The UT controller informed the R44 pilot that there were 4 ac in at Chetwynd and 4 at Ternhill, to which the R44 pilot replied he was visual with all 4 ac. The UT controller then confirmed that the ATZ transit was approved, to which the R44 pilot responded he was 2nm S. The UT controller then broadcast on the Ternhill and Chetwynd frequencies that there was an ATZ crosser, proceeding W through the Chetwynd O/H and then S to N through Ternhill, not above 1000ft. They then attempted to spot, using binoculars, the R44 making its transit. They spotted him much closer and travelling much faster than anticipated, apparently on a track between the airfield and 2 ac on finals for area L and R, 1 for an EOL to area L, 1 final for normal ccts to area Right. The R44's flightpath was taking it right in front of these ac very shortly. When the EOL flight [Squirrel (B)] called final, Squirrel (A) pilot warned Squirrel (B) pilot, he thought, to go around and the R44 continued through and was sent back to Shawbury Zone. Squirrel (A) pilot reported his intention to file an Airprox for this incident.

BM SAFETY POLICY AND ASSURANCE reports that this Airprox occurred between 2 Squirrel helicopters (A and B) operating independently within the Ternhill visual cct and an R44 conducting a pipeline inspection.

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

At the time of the incident, RW22 was the designated duty RW at Ternhill; however, given its use as a RW RLG, Ternhill has a number of operating surfaces available as depicted at Figure 1.



Figure 1: Operating Surfaces at Ternhill.

In addition to providing an Aerodrome Control Service at Ternhill on UHF 'Stud 7', the ADC also provides a BS (effectively an A/G service) to ac operating at Chetwynd field on a separate UHF (Stud 8 'Chetwynd Radio'). Two controllers are rostered to operate at Ternhill, with the additional controller providing the ability to 'split' the Ternhill Tower and Chetwynd Radio tasks during periods of increased workload. Figure 2 depicts the respective locations of Shawbury, Ternhill and Chetwynd; Chetwynd lays 6nm SE of Ternhill. No Hi-Brite VRD is available to the Ternhill ADC.



Figure 2: Local Area Map.

The ADC position was manned by an ab-initio trainee conducting his 4th day of training at Ternhill and an instructor; Ternhill was the trainee's first exposure to live controlling since graduating from the Joint Air Traffic Control Course. The instructor reported that the workload for the trainee was high to medium with a high level of task complexity. Four Squirrels were operating at Chetwynd on Stud 8 and 4 Squirrels were operating at Ternhill on Stud 7.

The incident sequence commenced at 1000:19 as the R44 flight called Shawbury Approach/Radar (RAD) for a, "...Zone transit, Basic Service." RAD noted a 'Pipeline' squawk NE of Telford and, correlating this with a DF trace associated with the R44 flight's transmission, instructed the R44 pilot to, "standby" in order to allow them to complete a pre-note on unrelated LARS traffic from Brize Radar; at this point, the R44 was 13.1nm SSE of Ternhill. Due to low traffic levels at Shawbury that were expected to require surveillance-based ATS, RAD was 'boxed' with DIR, Zone and Low-Level. RAD described their workload as 'high to medium' with 'routine' task complexity. Although it has not been possible to determine conclusively the number of ac that RAD was providing with an ATS, analysis of the tape transcript indicates that at least 3 ac were in receipt of a BS on Low-Level and 3 ac were in receipt of an ATS on Zone; based on analysis of the radar replay, there were approximately 5 ac operating within the Shawbury visual cct. The Supervisor was unavailable throughout the incident sequence dealing with an unrelated, non-operational matter elsewhere within the Tower. Although the Supervisor has reported that, 'due to controller illness, the section was undermanned', this did not drive the decision to 'box' the radar positions and would not have impacted the unit's ability to deliver ATSS until the lunch period.

RAD completed the prenote from Brize Radar at 1000:45 but then became involved in exchanges of RT with 2 flights on Low-Level and 2 further flights on Zone. RAD was able to return to the R44 at 1001:55 asking them to, "pass message"; at this point, the R44 was 10.2nm SSE of Ternhill. The R44 pilot replied, "(R44 c/s) R44, Coventry to Sandtoft, we're at 1300 feet 1-0-1-3, we'd like to transit through Ternhill MATZ and ATZ, entering at Chetwynd and exiting to the north, ah, transit, Basic Service." RAD answered, "(R44 c/s) Basic Service, maintain squawk, request your operating height not above, Shawbury Q-F-E 1-0-1-3?" The R44 pilot read back the QFE and reported that they would be, "not above 1000 feet" which was acknowledged by RAD. Immediately thereafter at 1002:43, RAD became engaged in an exchange of RT with an ac on the ground at Shawbury conducting radio checks, delaying them contacting Ternhill until 1003:12; at this point the R44 was 7.6nm SE of Ternhill, tracking NNW'ly, indicating 1200ft.

Having requested the Ternhill ADC to, "turn on 1-2-2 decimal 1 [NATO Common Tower VHF]" RAD advised the ADC of a, "Chetwynd and Ternhill Crosser, not above 1000 feet Q-F-E is (R44 c/s)...R44 helicopter, 2 miles south of Chetwynd, coming to you now" which was acknowledged; the landline call was terminated at 1003:30. At 1003:35, RAD instructed the R44, "for Chetwynd and Ternhill cross, contact Ternhill Tower 1-2-2 decimal 1"; at this point, the R44 was 6.9nm SE of Ternhill and approximately 2.4nm SW of Chetwynd, tracking NNW'ly, indicating 1200ft.

At 1003:52, now 6.4nm SE of Ternhill, the R44 pilot contacted Ternhill TWR requesting "...zone transit." The ADC transmitted on both VHF and Stud 8 requesting the R44's, "routing and height not above." The R44's pilot replied at 1004:04 that they were, "not above a thousand, 1-0-1-3, I'm just to the W of Chetwynd (unreadable) zone transit through the eastern edge of the A-T-Z, about a mile east of the airfield, then we vacate to the north with Zone." However, Squirrel (A) pilot transmitted a request to join the Ternhill cct on Stud 7 at 1004:10, thus stepping on the majority of the R44 pilot's transmission. The ADC replied to the R44 flight, initially incorrectly transmitting on Stud 8 at 1004:20, then on VHF at 1004:26, "(R44 c/s) roger, after, say again after not above 1000 feet?" The R44 pilot restated that they were, "entering the MATZ just to the west of Chetwynd, route vaguely north through the ATZ at Ternhill, one mile [at this point, the ADC transmitted on Stud 7 to Squirrel (A), "station calling, standby"] and then out towards Beaston Castle."

At 1004:32 there was an unreadable transmission on Stud 7 from a flight, followed by a reply on Stud 7 from the ADC instructing the flight to, "standby." The ADC then replied to the R44, initially incorrectly transmitting on Stud 7 at 1004:42, then on VHF at 1004:43, "(R44 c/s) roger."

Immediately thereafter, between 1004:48 and 1005:28, the ADC was involved in exchanges of RT with Squirrel (A) flight and 1 other Squirrel within the Ternhill cct.

At 1005:43, the R44 pilot advised the ADC that they were, *“just approaching the ATZ boundary, confirm er transit?”* At this point the R44 is 3nm SE of Ternhill, tracking NNW'ly, indicating 1200ft. The ADC did not immediately reply to the R44 flight but transmitted on Studs 7 and 8 and VHF at 1005:50, *“all stations, all stations, pipeline inspection helicopter, routing west through Chetwynd MATZ then routeing through Ternhill ATZ.”* Around 8sec after that transmission, the ADC added on Stud 7, *“all stations, all stations, that is not above 1000 feet.”* There then followed a number of transmissions on the 3 frequencies in use, as the ADC tried to authorise the R44 flight's transit on VHF (at 1006:16) and ensure that he had provided the 'height not above' information on all frequencies in use. The ADC's instructor reported that following this, they 'attempted to spot, using binoculars, the R44 making its transit. We spotted him much closer and travelling much faster than anticipated, apparently on a track between the airfield and 2 ac on finals'. The unit investigation determined that the speed (reported as 105kt airspeed) and height of the R44 surprised the controllers as they were expecting a pipeline inspection to be completed at a much lower height and at around 60kt.

At 1006:16 the ADC transmitted on VHF, *“(R44 c/s) A T Z penetration approved”*. The R44 pilot acknowledged, *“A-T-Z penetration approved (R44 c/s) I'm about 2 miles now and visual with your multiple rotary traffic”*; the R44 was 2.1nm ESE of Ternhill, tracking N'ly, indicating 1100ft. The ADC replied that they, *“...believe there's four at Chetwynd and will be four at Ternhill”* and the R44 pilot confirmed that he was, *“visual with the four at Ternhill.”* At that point, the R44 was 1.7nm ESE of Ternhill, tracking NNW'ly, indicating 1100ft. Squirrel (B) was 1.2nm N of the R44, commencing a left hand turn towards finals, indicating 1300ft; Squirrel (A) was 1.8nm NNE of the R44, commencing a LH turn towards Ternhill, indicating 1300ft; a 3rd Squirrel (C) was manoeuvring 2.4nm WSW of the R44 positioning for finals; a 4th Squirrel 1.9nm SSW of the R44, tracking ENE'ly, indicating 1300ft had no part in the Airprox.

[UKAB Note (1): Following the R44 pilot's report of, *“...visual with the four at Ternhill”* the pilot of Squirrel (A) at 1006:56 questioned the wisdom of ATC to, *“...have an aircraft go through Ternhill and Chetwynd at the (unreadable) height er with other ac operating at that height and then dropping (unreadable)”*.]

The pilot of Squirrel (A) stated in their DASOR that, as they highlighted their concerns over the transiting R44, at approximately 1007:10, they visually acquired the R44 in their 'approximately 11 o'clock position, at approx 100m if not closer'. Comparison of the radar, RT transcript and DASOR shows that lateral separation between the R44 and Squirrel (A) at this point was 0.7nm. At 1007:11, immediately following the Squirrel (A) pilot's last transmission, Squirrel (C) flight (SW of Ternhill) reported, *“finals 1-80 engine off for the triangle”*; Figure 3 depicts the building incident geometry at this point. Squirrel (A) pilot immediately transmitted to Squirrel (C) flight at 1007:14, *“(Squirrel C c/s) standby go-around”* which was not acknowledged by either the ADC or Squirrel (C). The Unit's investigation determined that the pilot of Squirrel (A) erroneously believed that Squirrel (C) was Squirrel (B) ahead of them. At 1007:19, Squirrel (B) pilot reported, *“...finals, engine off for the go-around”*; Figure 4 depicts the incident geometry at that point. Due to further exchanges of RT, Squirrel (B) pilot's finals call was not acknowledged by the ADC.

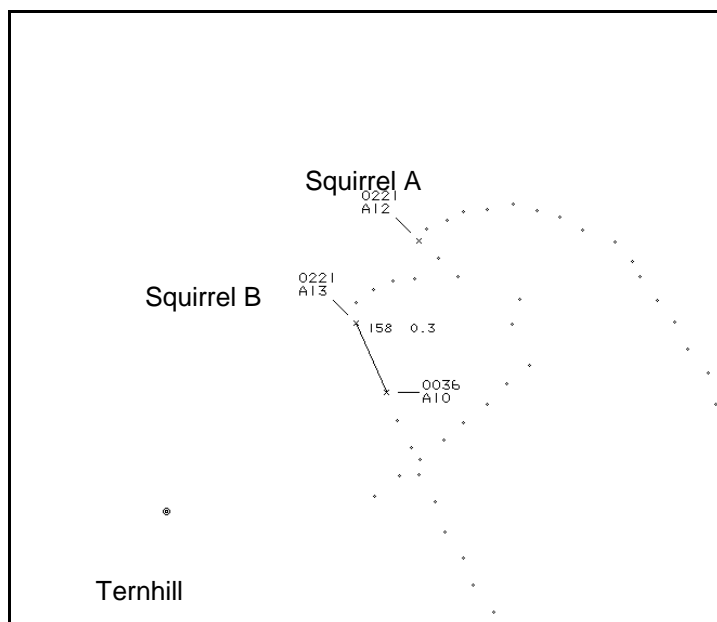


Figure 3: Incident Geometry at 1007:11

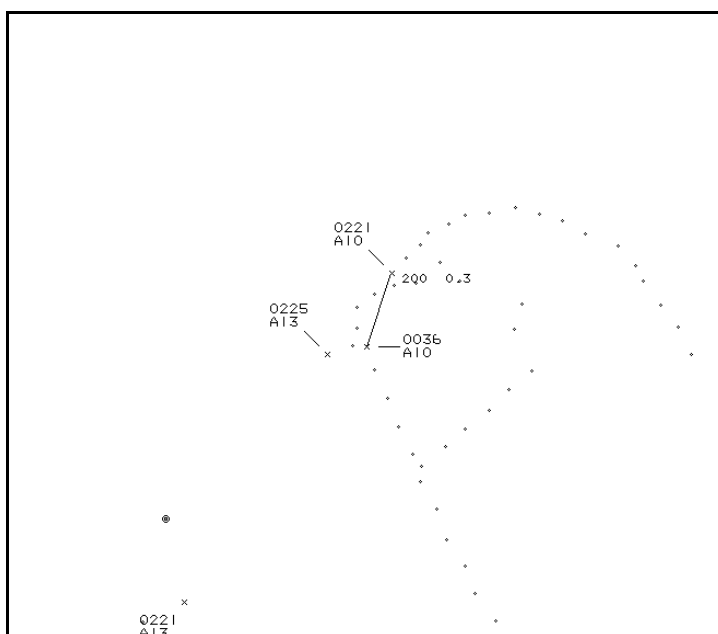


Figure 4: Incident Geometry at 1007:19

The CPA with Squirrel (B) occurs between radar sweeps at 1007:17 as the R44 crosses 0.2nm behind the Squirrel indicating 300ft below; the crew of Squirrel (B) did not visually acquire the R44. As can be seen in Figure 4, the PSR and SSR return of Squirrel (B) was subject to significant track jitter and code garbling following the Airprox. The CPA with Squirrel (A) occurs at 1007:23 as the R44 passes 0.2nm ahead of the Squirrel at the same indicated height. The R44 pilot stated in their report that Squirrel (A) was 'slightly lower' than them and 'seemed slow'; they did not 'think a collision was likely but on passing did think it (Squirrel A) was closer than expected'.

It is worthy of note that in completing the unit's investigation, the R44 pilot was contacted and stated that they had not submitted details of their flight through the PINS and cited its lack of utility as the reason.

Given that the R44 pilot was visual with Squirrel's (A) and (B) throughout the incident sequence and their comments highlighted above, it seems that the R44 flew sufficiently close to Squirrel (A) to cause its pilot and, to an extent, himself concern. However, there are a number of ATM related aspects that warrant further examination.

The unit's investigation reported that RAD's description of the R44's position to the ADC at 1003:21 as "*2 miles south of Chetwynd*" degraded the ADC's situational awareness and that RAD's 'rushed handover' of the R44 to the ADC reduced the time available to the ADC to 'manage' the R44's transit; however, both of these assessments were made without the benefit of a radar replay. Analysis of the replay demonstrated that RAD's report of the R44's position as "*2 miles south of Chetwynd*" was relatively accurate. Moreover, BM SPA contends that, given that the R44 pilot's initial contact with the ADC occurred when the ac was 6.4nm SE of Ternhill and 3min 25sec prior to the CPA, sufficient time existed for the ADC to have affected a plan to integrate the R44. Finally, whilst BM SPA does not consider the decision to 'bandbox' RAD, DIR, Zone and Low-Level as 'good practice' given the volume of Shawbury traffic operating in the area, this was neither a causal nor contributory factor in this Airprox. Specifically, given that the demands on RAD's time were all on the Zone and Low-Level positions, positions which would routinely be 'bandboxed', the workload for a 'split' Zone/Low-Level position would have been identical to that faced by RAD in this instance.

Based on the ADC's 'all stations' ATZ crossing transmission at 1005:50, it is clear that the ADC team had not assimilated the positional information given to them by the R44 pilot at 1004:26 and 1005:43 and that their mental picture of the situation reflected that the R44 was approaching Chetwynd. Unfortunately, the lack of a Hi-Brite VRD at Ternhill meant that the ADC team was wholly reliant on visual scan to acquire the R44 and to update their mental picture of its location. It is noteworthy that the absence of a Hi-Brite display at Ternhill was cited as a contributory factor in the investigation of Airprox 086/11. As a consequence of their incorrect mental picture, the ADC team focussed their lookout on the Chetwynd area and, given the restricted field of view of binoculars and the angular difference between Chetwynd and the R44's track, they were unable to visually acquire the R44 until a late stage. Although it has not been possible to determine when the ADC team sighted the R44, the unit's investigation determined that it was too late for them to have issued an additional warning to the Squirrel crews operating at Ternhill. Subsequent to the Unit's investigation, the ADC instructor has stated that they felt somewhat reassured about the developing situation, by the R44 pilot's statement that he was visual with the Ternhill traffic, believing that the R44 pilot would sequence himself with the existing cct traffic. What is clear from analysis of the transcript is that the ADC was struggling to manage the 3 separate frequencies and that, as a result of the frequency separation between the R44 and the Squirrels, the Squirrel pilots' SA was severely affected. Previous Airprox have highlighted the weakness of the current MASCOT communications system and its inability to cross-couple frequencies; this Airprox provides further evidence for the requirement to provide frequency cross-coupling functionality within MASCOT.

Notwithstanding the fact that the ADC team were unable to update their SA of the R44's position, they did not impose active deconfliction measures to integrate the R44 with the Ternhill visual cct traffic. One option could have been to have instructed the Squirrels to maintain cct height until the R44 had cleared the ATZ; however, a better option may have been to have effected such deconfliction, having elicited from the R44 a specific transit height, rather than relying on a broader 'operating height not above'. This would have provided additional benefit such that a more specific ATZ crossing broadcast could have been made to the Ternhill visual cct traffic, thus aiding the development of their SA.

Finally, although the ADC was not required to engage with the Chetwynd traffic during the incident sequence, controller workload is based on a number of factors including the complexity of the task, task loading and the individual's perception of their ability to manage the task. Given the ADC trainee's inexperience and that they had 9 speaking units on 3 separate frequencies, it is possible that the ADC trainee was nearing overload and that this was exhibited through their frequency management errors during the incident sequence.

Whilst the R44's crew were visual with the Ternhill visual cct traffic, the R44 was flown close enough to Squirrel (A) to cause its crew concern. Moreover, whilst active deconfliction measures could have been implemented by the Ternhill ADC team, they were not. Finally, the ADC team had not utilised the information from the R44 to update their mental picture of its position and thus were unable to provide accurate information to the Ternhill visual cct traffic.

In mid-2012, following a period of incident trend analysis, the RAF ATM Force Cmd requested the Air Defence and Air Traffic Systems (ADATS) Design Team (DT) to investigate the feasibility and safety implications of frequency cross-coupling through MASCOT. An initial technical trial has been completed which highlighted a number of technical, safety and data assurance issues. The ADATS DT is continuing to work alongside the MASCOT system contractor to develop a technically compliant solution.

The Unit investigation team made a number of recommendations that have been accepted by the Unit Occurrence Review Group (ORG). Significant amongst these from an ATM perspective was that a review of the practice of 'bandboxing' would be conducted.

RECOMMENDATIONS

BM SPA supports the recommendations made to and agreed by the RAF Shawbury ORG and in addition, the Stn Cdr at RAF Shawbury has been requested to:

- a. Investigate the provision of a Hi-Brite VRD at Ternhill RLG.
- b. Review the practice of combining Ternhill Tower and Chetwynd Radio positions and the associated operating procedures and airspace deconfliction measures.
- c. Review the ATC Sqdn's training package to ensure that information on Pipeline inspection helicopters and their potential routeings and handling is included.
- d. Review the original unit investigation with regards to the new information derived from the NATS radar replay.

Given this and other related incidents, the ATM Force Cmdr has been requested to conduct a Force-level Safety Survey, to review the practice of 'bandboxing' with a view to providing additional guidance to units.

OUTCOMES

BM SPA received a reply from Stn Cdr RAF Shawbury stating that they agreed with the additional recommendations and advising of progress already made against those recommendations; specifically that:

	Recommendation	Action Undertaken
1	Provision of HI-Brite VRD at Ternhill.	<ol style="list-style-type: none"> a. Engineering Change Request (ECR) submitted in 2010. b. Cost approx £82k CDeI and £3k RDeI but Business Case stalled owing to lack of funding. c. New ECR to be submitted with improved safety assessment.
2	Review practice of combining Ternhill and Chetwynd positions and associated operating and airspace procedures.	<ol style="list-style-type: none"> a. 'Splitting Out' of Ternhill and Chetwynd was at the discretion of the controller. A maximum number of total speaking units (6 ac) has now been included in the ATC Order Book but does allow for controllers to split out the 2 positions prior to the number being reached. b. ATZ crossing procedures have been reviewed and strengthened with a greater emphasis on the radar controller gaining approval for an ATZ transit prior to the ac being handed to the Ternhill controller.
3	ATC Training Package for PINS ac.	<ol style="list-style-type: none"> a. All controllers have been re-briefed on pipeline ac. b. Whilst discussion of pipeline ac was part of the training package, it has now been formally included as a training objective and must be signed off by a SQEP controller.
4	Review of original investigation.	This has been passed to the chair of the ORG to action.

Stn Cdr RAF Shawbury also highlighted their concern over the R44 pilot's statement 'that they had not submitted details of their flight through the PINS' because of 'its lack of utility'. BM SPA would like to request that the Board includes the utility of the PINS in their deliberations over this Airprox.

HQ AIR (TRG) comments that the PINS system was introduced decades ago following near misses between military fast jets and PINS helicopters and functioned by increasing awareness amongst aircrew of the potential presence of PINS helicopters. The current proliferation of PINS operations means that it is normal for PINS to be notified as active in all areas, creating a persistent but non-specific warning. It is hoped that a new online planning and deconfliction system will allow PINS operators to input their routes much more specifically, with a commensurate increase in awareness by military crews. In this sense, the concerns of the operator over the utility of PINS notification are valid.

This incident raises questions over the control of an ATZ and a visual cct by ATC. An ATZ is designed to protect the aerodrome users from passing traffic. In this case, this protection was breached when the R44 was permitted to enter, into conflict with the established traffic; the hazard was immediately apparent to the pilot of Squirrel (A) from ATC's transmissions. Arguably, the R44 pilot might have been expected to visually deconflict in any case, but this did not happen and the chosen flightpath was into direct conflict with traffic established in the pattern to land. The lack of planning for a sortie profile that clearly required a flight through a congested MATZ/ATZ, presumably following a pipeline of some kind, is of concern.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of all 3 ac, transcripts of the relevant RT frequencies, radar photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

It was clear that there had been a breakdown in information flow between all parties involved. With the Squirrel helicopters operating on UHF and the R44 on VHF, it was imperative that information exchanged between aircrew and ATC, which was then subsequently rebroadcast to the respective parties, was timely and accurate. The R44 pilot had contacted Shawbury Approach and passed his flight details which led to Shawbury notifying Ternhill of its position and its imminent transfer to the Ternhill frequency. The R44 pilot then called Ternhill and passed his flight details again as well as an update of his position. This flight was a routine and regular occurrence so should have not been a surprise to Ternhill ATC. Owing to frequency congestion some of the information was lost but eventually the R44 called approaching the ATZ boundary requesting an ATZ transit. This updated position was not assimilated by the ADC as his next 2 all-stations broadcast erroneously inferred that the R44 was in the Chetwynd area tracking towards Ternhill not above 1000ft. Unfortunately, Squirrel (A) pilot used this information to update his mental air picture, content that the R44 was quite some distance away so that he would be able to complete his approach before the R44 crossed through the final approach track. Following these 2 transmissions, the ADC approved the R44's ATZ transit without placing any restrictions on the flight or giving positive instructions to its pilot to ensure the R44 was deconflicted from, or integrated with, the Squirrel traffic in the cct. Members agreed that this was the cause of the Airprox. With the apparent high workload of the ADC trainee, Members wondered why the screen controller had not intervened to resolve the deteriorating situation. The trainee was having difficulty in relaying information on 3 separate frequencies, which had led to transmissions having to be repeated; Members agreed that cross-coupling, had it been available, would have improved the SA of the aircrew. The R44 pilot was given TI on the 4 helicopters in the cct area and he reported visual with all 4. Unbeknown to both Squirrel (A) and (B) pilots, the R44 was now within the ATZ on a conflicting track. Squirrel (A) pilot was surprised when the R44 suddenly appeared in his 11 o'clock before it quickly crossed ahead at close range. From the radar recording it appeared that the R44 was flying about 300ft below both Squirrels (A) and (B) when they commenced their final approach; however, Squirrel (A) then commenced a descent towards the R44. Members commended Squirrel (A) pilot for broadcasting an alert to Squirrel (B)

ahead but unfortunately he used Squirrel (C) c/s. Squirrel (B) pilot was concerned by (A)'s transmission and elected to maintain height as the R44 passed behind and below, unsighted to him. Although the R44 pilot had seen both Squirrels (A) and (B) and was maintaining his own separation from them, it appears he was slightly caught out by Squirrel (A)'s flightpath as it passed close to his R and slightly below. Three Board Members believed that the visual sightings by both Squirrel (A) and R44 pilots had ensured that the ac were not going to collide, risk C. This view was not shared by the majority who agreed that the dynamics and geometry were such that safety margins had been eroded below those normally expected during the encounter, risk B.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Ternhill ADC allowed the R44 to enter the ATZ but did not integrate it safely with cct traffic.

Degree of Risk: B.

AIRPROX REPORT No 2012166

Date/Time: 2 Dec 2012 1256Z (Sunday)

Position: 5551N 00406W
(GOW 090 11nm)

Airspace: Glasgow CTR (Class: D)

Reporting Ac Reported Ac

Type: A320 Unknown

Operator: CAT NR

Alt/FL: 4000ft NR
 QNH(1015hPa) QNH(NR)

Weather: VMC NR NR

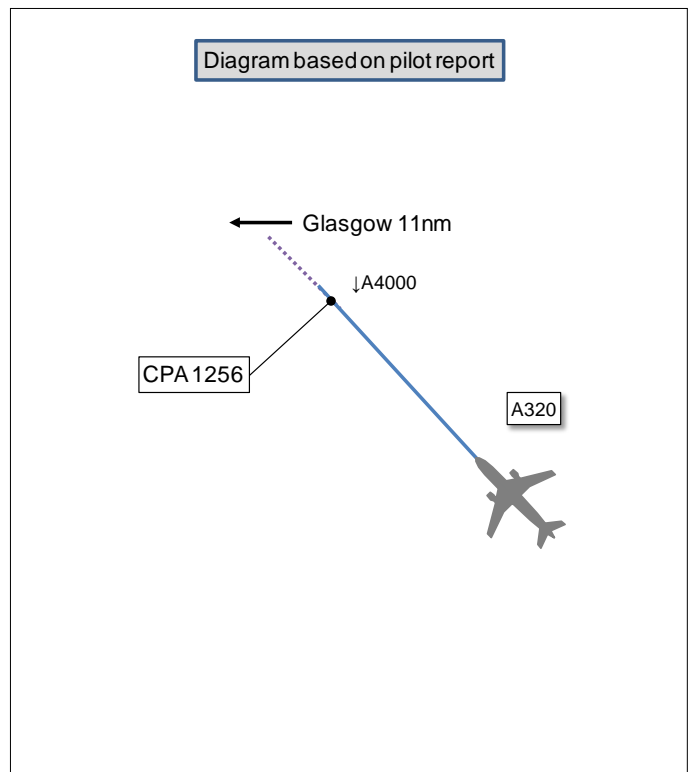
Visibility: >10km NR

Reported Separation:

300ft V/0m H NR

Recorded Separation:

NK



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE A320 PILOT reports descending on final descent into Glasgow, operating under IFR in VMC with a RCS from Glasgow APP. The landing lights were selected on, as was the SSR transponder with Modes A, C and S; the ac was fitted with an ACAS. Passing altitude 4000ft (QNH 1015hPa), in clear conditions with the sun behind them, both he and the PNF saw an object 'loom ahead' at a range of about 100m. The object passed directly beneath before either of the crew had time to take avoiding action or had 'really registered it' although they were both agreed that it appeared blue and yellow (or silver) in colour with a small frontal area but that it was 'bigger than a balloon'. The estimated mis-distance was 300ft.

He assessed the risk of collision as 'High'.

THE GLASGOW INTERMEDIATE APPROACH CONTROLLER reports that an A320, about 11nm E of Glasgow at altitude 4000ft under a RCS, was being vectored for a ILS approach to RW23 when the pilot asked if he was 'talking to anything in the area' as he had 'got quite close' to a blue and yellow ac, travelling in the opposite direction, which had passed just below him. The controller stated that he was not talking to anyone else in that area and that nothing was seen on radar. Search action was taken with no result and the A320 pilot stated his intention to file an Airprox.

ATSI reports that an Airprox was reported by the pilot of an Airbus A320 when the ac, inbound to Glasgow, passed an object in the vicinity of Baillieston (13nm east of Glasgow) at an approximate altitude of 3500ft.

Meteorological data for Glasgow was recorded as follows:
METAR EGPF 021250Z 06002KT CAVOK 01/M00 Q1015=

Factual History

At 1249:30 an A320 pilot called Glasgow Approach on track LANAK in the descent to FL070. The A320 was 47nm from touchdown via an ILS approach to RW23. At 1251:40 the A320 pilot was instructed to continue on his present heading and descend to altitude 5000ft (QNH 1015hPa). Further descent to 3500ft was given 2 min later.

At 1255:20 the following exchange between the A320 pilot and Glasgow APP took place:

A320: "Glasgow Approach [A320 C/S]"

EGPF: "[A320 C/S] pass your message"

A320: "Er yeah we just had something pass underneath us quite close [1255:30] and nothing on TCAS have you got anything on in our area"

EGPF: "Er negative er we've got nothing on er radar and we're n- not talking to any traffic either"

A320: "Er not quite sure what it was but it definitely er quite large [1255:40] and it's blue and yellow"

EGPF: "OK that's understood er do you have a an estimate for the height"

A320: "Maybe er [1255:50] yeah we were probably about erm four hundred to five hundred feet above it so it's probably about three and a half thousand feet."

Figure 1 below shows the Prestwick (ACC) Multi Tracking Radar picture at 1255:20. The A320 is transponding Mode A code 4226. The distance between each marker in the replay trail history is equivalent to 4sec. The Figure shows no other track histories within the immediate vicinity of the A320 at this time. There is an unidentified track history 1.3nm E of the A320's position 28 seconds earlier, but no surveillance data to suggest a detectable object passing underneath the A320.

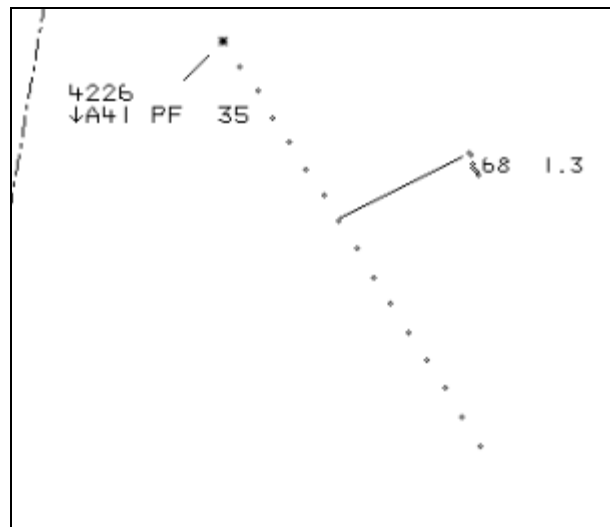


Figure 1: 1255:20 UTC (Prestwick MRT)

Additionally, a further detailed review of individual radar sources did not yield any conclusive radar data that matched the A320 pilot's description of the encounter. The ATC unit's own radar replay also showed no surveillance traces in the immediate vicinity of the A320 at the time.

Once on the ground the A320 pilot gave a further description of the event to the Glasgow Aerodrome Controller:

A320: "...we seemed to only miss it by a couple of hundred feet it went directly beneath us ... wherever we were when we called it in it was within about ten seconds"; "... couldn't tell what direction it was going but it went right underneath us"

EGPF: "do you suspect it might have been a glider or something like that"

A320: "well maybe a microlight ... it just looked too big for a balloon."

Conclusion

The pilot of an A320, inbound to Glasgow, gave a contemporaneous account of his ac's encounter with an untraced object at 3500ft. Investigation of the available surveillance sources was unable to trace any activity matching that described by the A320 pilot. Additionally there was no other information to indicate the presence or otherwise of activity in the area.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included a report from the A320 pilot, transcripts of the relevant RT frequencies, radar photographs/video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC authority.

The Board initially considered likely candidates for the untraced ac. The A320 crew had not been able to assimilate any information regarding the form of the untraced ac in the fleeting glimpse they had, reporting only a likely colour. Members were of the opinion that, in the absence of a primary radar return, it was unlikely that the untraced ac was a fixed-wing or rotary-wing ac or man-carrying balloon. It was considered that a meteorological balloon would be radar significant and unlikely to be released in the area of the Airprox. A glider could not be discounted but it was felt unlikely that one would be operating in that area, both due to the constrained airspace and the lack of thermal activity due to the low temperature. Similarly, The Board considered that a hang-glider or para-motor would be radar significant and that conditions precluded them, as they did para-gliders or parascenders. Members were unable to reach a conclusion as to a likely candidate for the conflicting ac and it was therefore felt that the Board had insufficient information to determine a Cause or Risk.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Sighting report.

Degree of Risk: D.

AIRPROX REPORT No 2012168

Date/Time: 30 Nov 2012 1203Z

Position: 5114N 00118W (13nm W Odiham)

Airspace: UKDLFS LFA1 (Class: G)

Reporting Ac Reporting Ac

Type: Merlin AS350 Squirrel

Operator: HQ JHC HQ Air (Trg)

Alt/FL: 120ft Low-hover
(agl) (agl)

Weather: VMC NR VMC NR

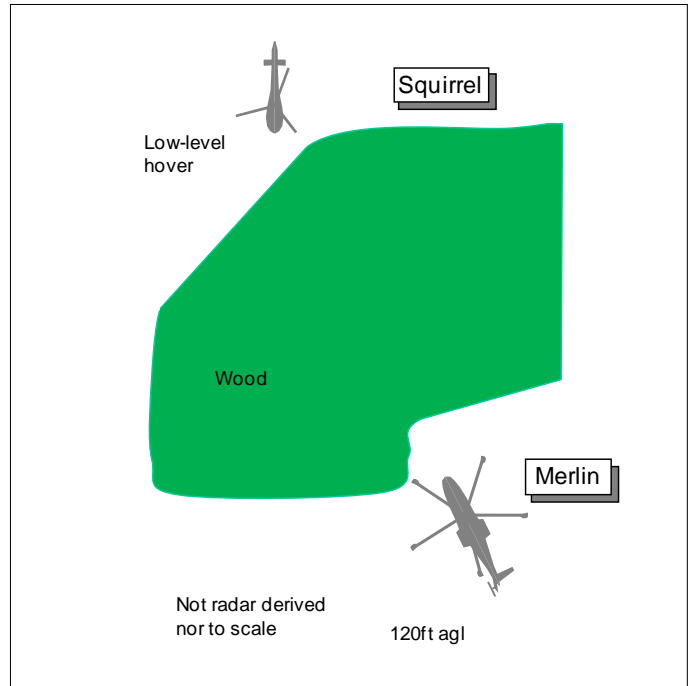
Visibility: 10km 10km

Reported Separation:

100ft V/Nil H 70ft

Recorded Separation:

NR



BOTH PILOTS FILED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE MERLIN PILOT reports en-route from Odiham to Benson, VFR and in receipt of a BS from Odiham on 372-375MHz, squawking 3646 with Modes S and C. The visibility was 10km in VMC and the helicopter was coloured green with upper and lower HISLs, nav and 2 landing lights all switched on. While transiting at 120ft agl, heading 340° and 130kt, the centre seat Capt spotted a military Squirrel helicopter approximately 3nm away in their 11 o'clock. The LHS HP took padlock [responsibility for maintaining visual contact] and manoeuvred the ac to position away from the conflicting traffic. The Squirrel was operating at very low-level and seemed to approach to a hover in an open field and begin a spot-turn. Whilst crossing a small wood [OS Grid Ref provided, wood 0.5km S of Laverstoke] the LHS pilot noticed a 2nd Squirrel helicopter pass directly underneath by about 100ft. This Squirrel was hovering at the far side of (behind) the wood and was completely hidden to the crew until they were O/H. The crew checked to ascertain the Squirrel was not affected by their downwash before continuing towards Benson. He assessed the risk as medium.

THE AS350 SQUIRREL PILOT reports flying an instructional Recce Patrol sortie as No2 in formation from Middle Wallop, VFR and listening out on the Low Flying Common frequency, squawking 2676 with Mode C. The visibility was 10km in VMC and the helicopter was coloured black/yellow with anti-collision, strobe and landing lights all switched on. As he was the Patrol 2IC he was in a low hover when the Patrol Commander gave him a threat call on a Merlin before it was about to pass O/H. At the time his helicopter was positioned behind a wood, in his 12 o'clock, and he did not see the Merlin so he stayed in that position as told to do so by the Patrol Commander. He then turned though 180° and saw the Merlin 50m to the N flying away, estimating it had passed about 70ft above. Their formation had made several calls on the Low Flying Common frequency but had heard no calls from the Merlin flight. He assessed the risk as medium.

THE SQUIRREL SQUADRON FSO reports that the 2 Squirrel helicopters were manoeuvring on an Aviation Recce Patrol at very low-level, 'pepperpotting' from woodline to woodline. The Merlin was first sighted by the Lead Squirrel pilot who then warned the No 2 pilot to maintain position as the Merlin was very close but hidden to the No 2 by the treeline. The first the No 2 Squirrel pilot saw of the Merlin was when it had passed by.

BM SAFETY POLICY AND ASSURANCE reports that the Airprox occurred at 120ft agl, between Whitchurch and Overton within LFA1 and just E of the A34, approximately 13nm W of Odiham (Figure 1 refers, the W edge of Odiham's MATZ stub can be seen to the right of the picture), between a Merlin in receipt of a BS from Odiham Information and a pair of Squirrels.

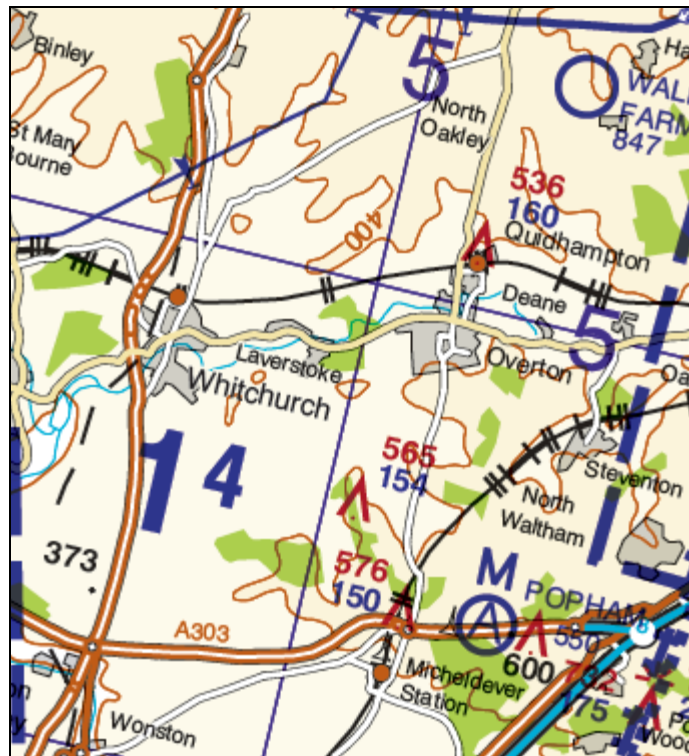


Figure 1: Extract from LF Chart Depicting Area of Airprox.

The Airprox was not captured by NATS Radar Heads and BM SPA contends that, given the height of the Airprox, neither the Merlin nor the Squirrels would have been detected by Odiham's Watchman PSR.

Investigation by Odiham ATC determined that the Merlin entered LFA 1, calling Odiham Information, at approximately 1147:00, having conducted a PD at Odiham, and left the Odiham frequency at approximately 1210:00, going 'en-route' to Benson. No other transmissions were received from the Merlin flight by Odiham during this period. Moreover, there was no record of the Squirrel formation being 'worked' by Odiham Information.

The Military Low Flying Handbook (MLFH) stipulates that:

'Where possible, ac within LFA 1 should monitor the UKLFS common safety frequency 278.0 MHz, which may be used for blind safety calls when lifting from fields or other landing sites. A Basic Service is available during ATC operating hours from Benson (376.65MHz), Boscombe Down (359.775MHz); Middle Wallop (280.625MHz) and Odiham (131.3MHz).'

The BINA En-Route Supplement lists Odiham Information's frequency as 372.375MHz, the frequency stated by the pilot of the Merlin as the one on which they were operating and makes no mention of LF Common. Whilst not stipulated within the MLFH, the historic boundaries of responsibility for the provision of a BS to ac within LFA 1 are the M4 and A34.

Given the height at which the Airprox occurred and that Odiham Information had no knowledge of the Squirrel formation's presence, they were unable to affect the outcome of the occurrence.

HQ JHC comments that this is a known area of increased helicopter activity for ac departing or joining SPTA and RAF Odiham and as such it is evident from the narrative that both ac were conducting meticulous lookouts. Both crews were operating iaw extant military low flying regulations. The Squirrel patrol leader gave timely information to his wingman on the overflying Merlin and the Merlin crew were ensuring separation on the first Squirrel they had visually acquired. The effectiveness of the low level frequency was probably negated due to the terrain and line of sight issues. Neither of the Squirrels had undergone the ongoing Traffic Advisory System (TAS) modification yet and a collision avoidance system is being actively pursued by this command for all JHC manned platforms, which would have been likely to provide an earlier warning. Both of the ac communities involved have discussed this Airprox occurrence and have used it to reinforce the requirement for a stringent lookout when operating, particularly at low level.

HQ AIR (TRG) comments that all crews in the LF system should monitor the LF Common Frequency whenever possible, along with Guard. Groups have been requested to remind units of this requirement. Further guidance regarding the use of LF Common is under consideration. Following a recent but unrelated change to booking procedures, LF Ops Sqn now pass details of other users of the LF System on booking in. However, rotary-wing ac are not required to book in, making it impossible to ascertain the numbers or details of other users, creating a reliance on 'see-and-avoid'. In the event, the nature of the training exercise made sighting more difficult, but the Squirrel formation leader's intervention was effective, albeit that it made sighting by the Merlin impossible.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

With the helicopter crews operating in accordance with the low-flying regulations, the primary means of discharging their responsibilities was through 'see and avoid'. This, for all intents and purposes, had worked well, given the tactical flying tasks being executed. The Squirrel formation's 'hide and seek' sortie profile had intentionally placed the helicopters where they would be difficult to see in an operational scenario. The Squirrel leader had done well to spot the approaching Merlin and had told the No2 pilot to stay put in a very low hover behind a wood to deconflict from it. Meanwhile the Merlin crew had also done well in seeing the No1 Squirrel at some range and had manoeuvred to avoid it. However, the Merlin crew was unaware of the measures that had been taken by the Squirrel formation when they overflew the No2 Squirrel, which they saw only as it passed beneath and which had caused them concern. The Board agreed that the Squirrel formation tactics and the leader's actions had been effective in preventing a conflict occurring, the helicopters passing each other, albeit at close quarters, with no risk of collision.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict prevented by the Squirrel formation leader.

Degree of Risk: C.

AIRPROX REPORT No 2012170

Date/Time: 28 Nov 2012 1207Z

Position: 5311N 00418W
(RAF Valley 120°/9nm)

Airspace: Valley AIAA (Class: G)

Reporting Ac Reported Ac

Type: Hawk T Mk 2 F15E

Operator: HQ Air (Trg) Foreign Mil

Alt/FL: 15000ft 15000ft
RPS (1015hPa) RPS (NR)

Weather: VMC CLAC VMC NR

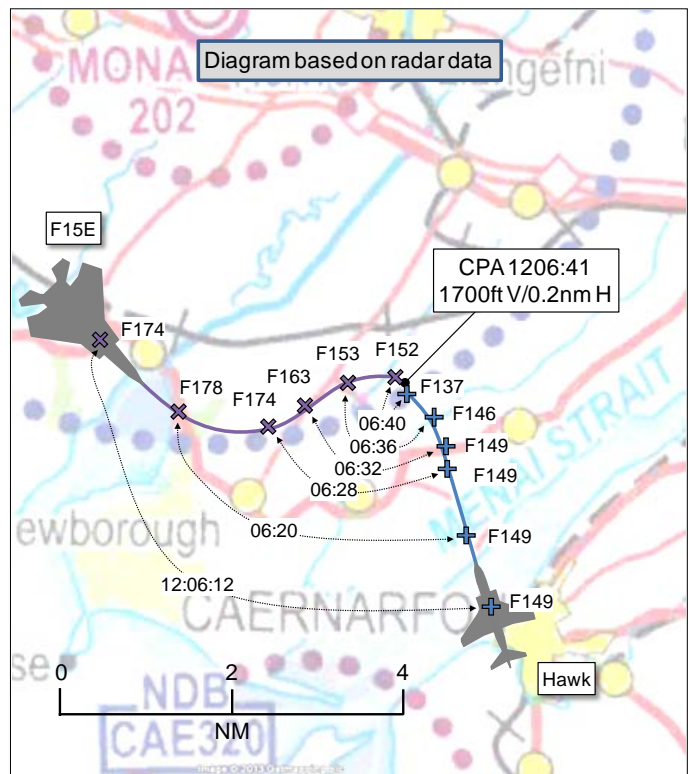
Visibility: 40km 30km

Reported Separation:

0ft V/1500ft H 0ft V/500m H

Recorded Separation:

1700ft V/0.2nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE HAWK T MK 2 PILOT reports leading a 2 ac formation, setting up for a basic radar intercept sortie, on CAP as a singleton in the NW of the over-land part of the Welsh MTA, initially at position 53 05N 004 15W. The other formation member was simulating a hostile ac with both ac using a datum split [initial separation] of 50nm along the 150° radial from RAF Valley. He was operating under VFR in VMC without an ATS. The black ac had navigation lights, nose light and HISLs selected on. The SSR transponder was selected on with Modes A and C and the ac was fitted with an ACAS. On departure from RAF Valley, 'Valley Radar' informed him that there were multiple contacts in the operating area above 20000ft. The formation was not going to go above 20000ft before speaking to an ATC agency and both ac went en-route. In accordance with the squadron SOP, he selected the deconfliction frequency for the Valley Air Training Area (VATA) on his 'main' radio and formation operating frequency on his 'back' radio; the number 2 pilot contacted London Mil on his 'main' radio, selected the formation operating frequency on his 'back' radio, and the formation members separated to generate the required 50nm split range. The number 2 pilot agreed a TS with London Mil and obtained squawks for both ac. The formation leader commenced his CAP orbit with a London Mil squawk but without an ATS, TI being passed by the number 2 pilot. Seven F15s were conducting training in the MTA and the number 2 pilot was initially passed TI that 'all the traffic was above 20000ft'. Whilst in his CAP orbit, the formation leader received a TCAS warning of Traffic 2500ft above, descending within 5nm of his position. He became visual with an F15 at 4nm range in his L 11o'clock position, in a descending RH turn and took avoiding action by descending to the L. He estimated the separation was approximately 1500ft H. During this event, the number 2 pilot was passed TI that the [F15] contacts were all changing height down to 9000ft in his position and the formation leader's position. He terminated any further training in the Welsh MTA due to high traffic density and moved to an adjacent danger area.

He assessed the risk of collision as 'Medium'.

THE F15E PILOT reports that a flight of 4 F15Es were operating in the Welsh MTA for a Surface Attack Tactics training mission, attacking simulated targets at RAF Valley. He was operating under VFR in VMC with a TS from 'London Mil'. The dark grey ac had position lights and flashing red anti-collision beacon selected on. The SSR transponder was selected on with Modes A, C and S. The ac was not fitted with an ACAS. He was operating in the altitude block 9000-40000ft, using the lowest

RPS for the NWMTA, coordinated with a flight of 3 F15Es [the non-factor formation to the S]. At approximately 1205 the F15E formation completed a simulated target attack and turned SE to prepare for another attack. The formation members were all at or above altitude 17000ft after the turn. At approximately 12:06:15, the formation simulated a surface-to-air system targeting [F15E (4)] from the SW at a range of 10nm. At 12:06:25, [F15E (4)] pilot began a descending LH turn to the N in response to the simulated threat. At 12:06:39, the crew of [F15E (4)] saw a Hawk ac passing 500m H from, and level with them in their R 3o'clock position. He terminated the defensive manoeuvre to deconflict from the Hawk. He stated that no other formation members saw or detected the Hawk before this point. He stated that it was apparent from a subsequent review of ac recorded data that London Mil had attempted to pass TI to the formation when the Hawk was approximately 5nm away. Only one formation member had heard the TI, which was concurrent with the simulated threat call RT to [F15E (4)].

He assessed the risk of collision as 'Medium'.

He also stated that the F15E squadron members would continue to request a TS when conducting general handling and that techniques on clearing flight paths before aggressive manoeuvres, like the defensive training that led to this incident, would be emphasized. Additionally, RT contact, both within the formation and with London Mil, would be emphasized such that if one formation member heard TI, the formation would terminate manoeuvres until the TI was resolved. They would also attempt to work with RAF Valley to determine which area frequencies were used, in order to monitor or pass advisory calls to other airspace users, in a similar fashion to the Low Flying System Advisory Frequency.

He reported that the Valley ATA, Welsh MTA, and Valley AIAA areas overlap on the British Isles En Route Low Altitude Chart, UK(L)2, in such a way that is difficult to discern where one airspace ends and another starts both laterally and vertically.

[UKAB Note(1): The RAF Valley weather was reported as follows:

METAR EGOV 281150Z 36011KT 9999 FEW025 07/00 Q1019 BLU NOSIG

METAR EGOV 281250Z 01011KT 9999 FEW028 BKN035 07/00 Q1019 BLU NOSIG]

BM SAFETY POLICY AND ASSURANCE reports that this Airprox occurred in VMC on 28 Nov 12 between a Hawk (1) and an F15E (4). Hawk (1) was operating under VFR within Valley Aerial Tactics Areas (VATA) East, without an ATS, as part of a formation of 2 Hawks, with Hawk (2) in receipt of a TS. F15E (4) was operating under VFR within the North Wales Military Trg Area (NWMTA), as part of a 4-ship formation of F15Es in receipt of a TS. Both formations were receiving an ATS from LATCC(Mil) W Tac. All heights/altitudes quoted are based upon SSR Mode C from the radar replay unless otherwise stated.

Information

The Mil AIP, ENR 5-2-18 Para 9.1, states that the NWMTA has 'been established within Class C airspace to provide military ac with the operational freedom to manoeuvre, without the requirement for the provision of a RCS. Although the airspace is intended for autonomous activity, a DS, TS or BS may be requested from the military ATCC'. The vertical boundaries of the NWMTA are FL195-FL660 (see Figure 1). The RAF Valley FOB states that deconfliction between 4FTS traffic within the NWMTA but outside of the VATAs 'is to be achieved by either requesting a TS or DS or by free-calling the [4FTS] deconfliction frequency'.

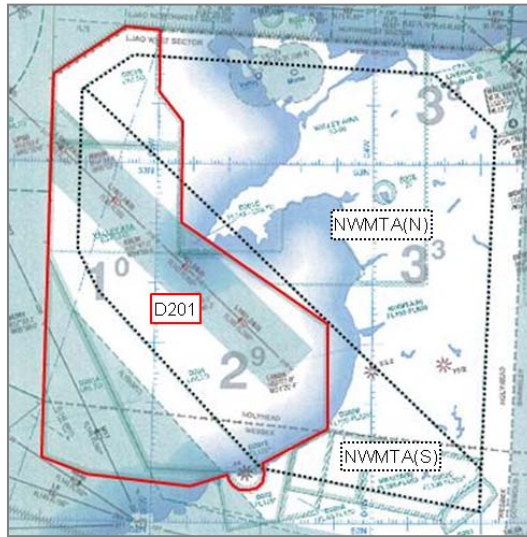


Figure 1: Depiction of NWMTA and D201

The RAF Valley FOB states:

‘the northern part of the NWMTA is divided into 2 areas by the VYL 180° radial: VATA East and VATA West (see Figure 2). The VATAs provide a degree of autonomy from other 4FTS users and may be activated by formations conducting Air Defence training or other high energy manoeuvring. However, aircrew should be aware that the VATAs are a local arrangement only and sit within Class G airspace and that other, non-4FTS traffic, may be encountered within them.’

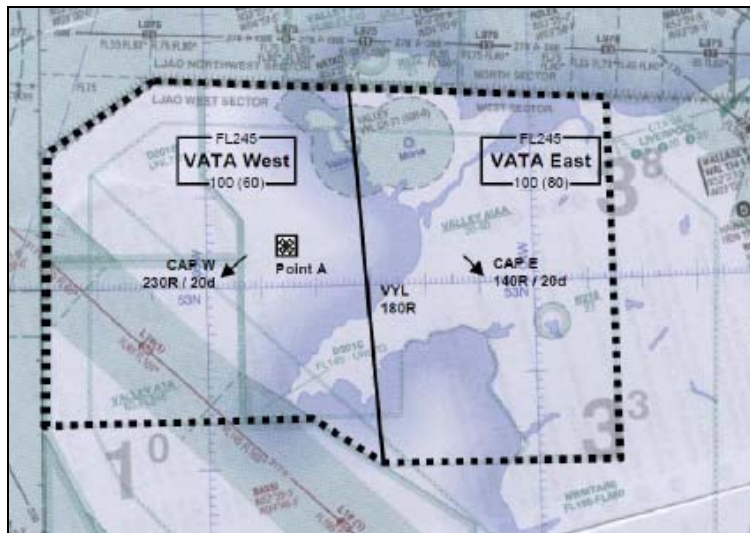


Figure 2: Depiction of VATAs

The FOB further states:

‘Since the VATAs are within Class G airspace several other users may be encountered within them. Not all of these users will be receiving a service from either Valley or London Mil. Whilst deconfliction against such traffic is not possible in the MTA unless Valley aircrew are in receipt of a TS or DS, Valley ATC will nevertheless inform Active VATA users of any traffic that is known to be within the lateral and vertical limits of that VATA. Such traffic will include those in receipt of a service from Valley, have been identified by Valley SSR but not in receipt of a service, or have contacted Valley informing of their intention to operate within an active VATA ie ‘known’ traffic. This information will be passed by ATC on the [the 4FTS] formation frequency as soon as it is safe to do so.’

The pilot of Hawk (1) reported that ‘In accordance with...Sqn SOPs...Hawk (1) [was] holding the deconfliction freq for VATA on the main radio and formation frequency on the back radio. Hawk (2) contacted London Mil on the main radio and formation freq on the back radio’. The RAF Valley FOB

states that 'During routine training flights from RAF Valley, the Hawk T2 will normally use Comm 1 for ATC and deconfliction and Comm 2 for intra-formation communication'.

Throughout the incident sequence there was a confused mixture of callsigns used by the Hawk Formation and W Tac to refer to the Hawks. In terms of this report, where reference is made to Hawk (1)'s or Hawk (2)'s C/S, it refers to the individual ac's C/S; where reference is made to the Hawk formation's C/S, it refers to both ac. For example, if RIPS AW 1 was Hawk (1)'s C/S, RIPS AW 2 would be Hawk (2)'s C/S and RIPS AW would be the formation C/S. Analysis of the RT has determined that whilst the only voice on the RT from the Hawk formation was that of the pilot of Hawk (2), he used the formation C/S, Hawk (1)'s C/S and his own C/S.

The LATCC(Mil) W and SW positions were 'band-boxed' and manned by the W Tac trainee and an instructor, with an experienced controller operating as a Planner. At the time of the incident, although a 'multi-tourist', the trainee had completed around 50% of the trg toward their first Area endorsement following graduation from the Area Radar Training Course (ARTC). Whilst the W and SW Tac positions were separate, they routinely operate 'band-boxed' due to traffic levels. The W Tac instructor reported that workload was high and that the task complexity was 'very difficult'. The Planner reported that their workload was low and that the task was undemanding, relating that 'the majority of the workload was RT related'. At the start of the incident sequence, W Tac was providing ATS to 2 formations of F15Es on a discrete UHF; the 4-ship incorporating the incident F15E was operating as 2 pairs, SE of Valley in the vicinity of Caernarfon, and a 3-ship was operating as a pair and a singleton, E of Aberporth and to the N of L9 and UL9.

Prior to the start of the incident sequence, Hawk (1) and Hawk (2) had been in communication with Valley RAD, asking, at 1158:27, whether there was, "any further traffic to affect?" RAD replied that there were, "multiple London tracks, flight level 2-3-0 and above manoeuvring" which was acknowledged by the Hawk formation, advising RAD that they would, "be going free-call for an agency once we get to that height." The Hawk formation left RAD frequency at 1158:42.

The incident sequence commenced at 1202:21 as Hawk (2) free-called W Tac on the W ICF using his individual C/S. At this point, Hawk (2) was 22.6nm SE of Valley, tracking SE'ly, indicating FL130. Hawk (1) was 8.6nm N of Hawk (2), tracking NW'ly, indicating FL140. The incident F15E formation were operating between 7.1nm and 9.2nm NE and ENE of Hawk (1), tracking SSW'ly, indicating between FL206 to FL212. The unrelated F15E formation was 69.3nm S of the incident F15E formation, tracking E'ly, indicating between FL259 and FL287 within the NWM TA. Figure 3 depicts the incident geometry at this point.

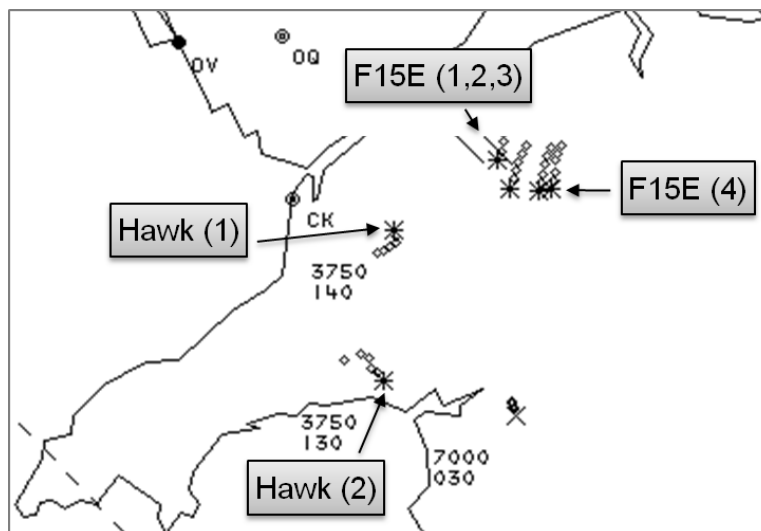


Figure 3: Incident Geometry at 1202:21.

W Tac replied to Hawk (2) requesting him to, "pass your message" and Hawk (2) advised, "Now [Hawk formation C/S], 2 Hawks operating North Wales MTA, er looking to maintain a Traffic Service

with yourselves, FL100 to FL300 for 3-0 mikes.” It has not been possible to determine whether W Tac perceived the changed C/S by detecting the pause between the use of the formation C/S and the number of ac in the formation. W Tac then acknowledged Hawk (2) instructing him, “[Hawk (2) C/S] Squawk 3-3-4-0, what type of service do you require?” Hawk (2) pilot acknowledged the squawk and re-iterated his request for a TS, responding using the formation C/S. Shortly afterwards, at 1203:00, Hawk (2) pilot transmitted, “Er London, [Hawk Formation C/S], request a squawk for [Hawk (1) C/S] but they won’t be on frequency.” W Tac replied, “[Hawk (2) C/S] roger, 3-3-4-1” which was acknowledged by Hawk (2) pilot, erroneously using Hawk (1) C/S. During this exchange, at 1203:04, the SSR3A code assigned to Hawk (2) was displayed on W Tac’s surveillance display changing from 3750, as depicted in Figure 3, to 3340.

Immediately after Hawk (2) pilot’s acknowledgement of the squawk for Hawk (1), W Tac advised, at 1203:18, “[Hawk (1) C/S] identified, Flight Level 1-3-0, Traffic Service.” However, whilst W Tac had utilised Hawk (1)’s C/S, he had identified Hawk (2) as it was Hawk (2) that was maintaining FL130 and Hawk (1) had not yet begun to squawk the assigned SSR3A code. Hawk (2) replied at 1203:24, “sorry, stepped on, say again for [Hawk formation C/S]” and again at 1203:31, “London [Hawk formation C/S] say again.” W Tac replied at 1203:33, “[Hawk formation C/S] identified Traffic Service, confirm Flight Level 1-3-0?” Although live-mic recording was not available, given W Tac’s transmissions at 1203:18 and 1203:33, it is likely that the delay in W Tac replying to Hawk (2) was that his instructor had prompted him to verify Hawk (2)’s level, rather than assume that the displayed SSR Mode C information was correct. Hawk (2) pilot confirmed that he was at FL130 and advised W Tac that the formation were, “looking to work in the block Flight Level 100, Flight Level 300.” W Tac then replied, using Hawk (1)’s C/S, instructing the [Hawk (2)] pilot to, “manoeuvre as required between FL100 and FL300, report 1 minute to completion. Be advised there’s 7 F-15s operating within the North Wales M-T-A.” This was acknowledged by Hawk (2) using the formation C/S. At this point Hawk (1) pilot had not commenced squawking the SSR3A code assigned to him and was 9.3nm WNW of F15E (4) and 25.7nm NNW of Hawk (2). Figure 4 depicts the incident geometry at this point.

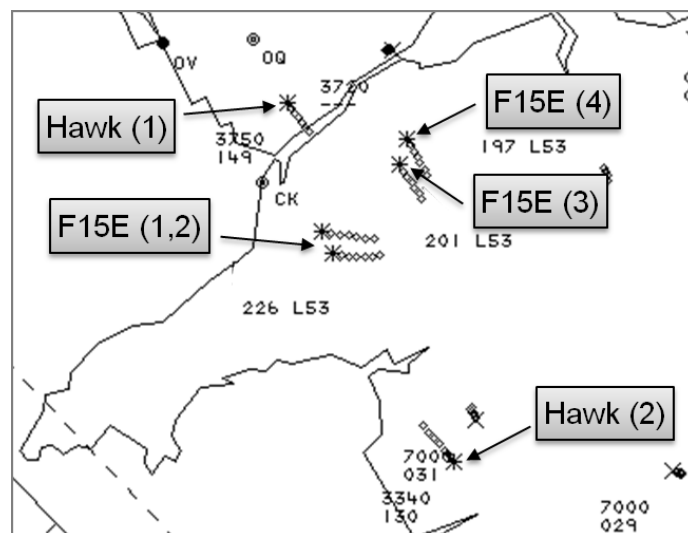


Figure 4: Incident Geometry at 1203:43.

Hawk (1) pilot began to squawk his assigned SSR3A code at 1204:36; however, an ATS was not applied by W Tac and the electronic flight strip was not amended to suggest that it had been placed under a service. At 1205:10, W Tac asked, “[Hawk Formation C/S] would you be happy to manoeuvre within Delta 2-0-1 if I can arrange it, to remain clear of the F15s?” The position of EGD201 is depicted in Figure 1. At this point, F15E (4) was 10.8nm N of Hawk (1), tracking W’y, indicating FL193; Hawk (1) was tracking SSE’y, indicating FL151. Hawk (2) replied, “er [Hawk formation C/S] whereabouts are they operating?” W Tac advised, “[Hawk formation C/S] they’ll be operating all over. They’re currently split between the north and south but they will be er tracking back in.” Initially, Hawk (2) pilot acknowledged this information then added at 1205:33, “er [Hawk formation C/S] I’ll only be operating a further 5 miles south of here.” W Tac replied, “roger, if you’re

happy you can manoeuvre there, then I'll keep you informed of traffic as it becomes relevant" which was acknowledged by Hawk (2) pilot. This exchange of RT finished at 1205:46 and W Tac engaged in no further recorded communication until 1206:16.

At 1206:16, transmitting on both the Hawk and F15E formation's frequencies, W Tac trainee attempted to provide TI to the N'ly F15E formation on Hawk (1); however, quoting the W Planner, the trainee 'stumbled' over his phraseology, prompting the instructor to step in. The instructor stated, "[F15E formation C/S] Hawk west...east 2 miles, manoeuvring, Flight Level 1-5-0, operating in the block Flight Level 300 Flight Level 100", which was acknowledged using the F15E formation C/S. However, based on the F15E formation's report, it was not the formation leader who acknowledged the TI, a point that will be examined later. At the time the W Tac trainee attempted to pass TI, F15E (3) and F15E (4) were 4.5nm and 4.8nm respectively NW of Hawk (1), tracking SE'ly, indicating FL180 and FL175 respectively. As the instructor passed TI to the F15E formation, at 1206:28, F15E (4) turned left approximately 30° introducing the conflict with Hawk (1), 2.3nm ESE of him. At 1206:36, F15E (4) turned left approximately a further 45° and commenced a rapid descent, further reducing the separation on Hawk (1). This detail can be seen in Figure 5. Extrapolation of the radar data demonstrated that approximately 2.1nm lateral separation would have existed between Hawk (1) and F15E (4), prior to this manoeuvre. Immediately after the F15E formation's acknowledgement of the TI, the W Tac instructor replied to an unrelated free-calling ac on the SW ICF, instructing them to, "standby". The CPA between Hawk (1) and F15E (4) occurred between radar sweeps at approximately 1206:42 as F15E (4) crossed 0.2nm L to R through Hawk (1)'s 12 o'clock. Figure 5 depicts the incident geometry at 1206:39 at the radar sweep immediately prior to the CPA. In the radar sweep immediately after the CPA, at 1206:43, the F15E is shown having made a tight R turn through 45° towards Hawk (1), indicating FL153. Hawk (1) was indicating FL135, after his 'avoiding action...descending to the left'; Figure 6 shows this detail with the flight path of F15E (4) highlighted in red and that of Hawk (1) highlighted in blue.

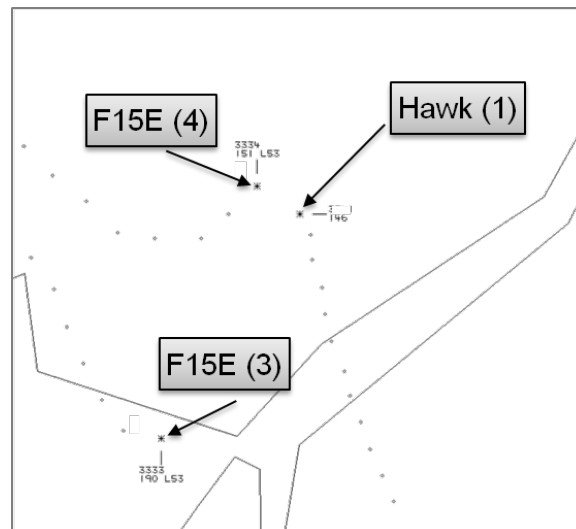


Figure 5: Incident Geometry at 1206:39 immediately prior to the CPA.

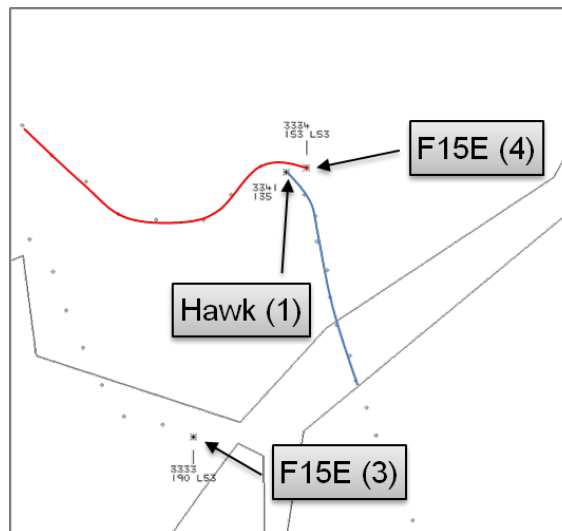
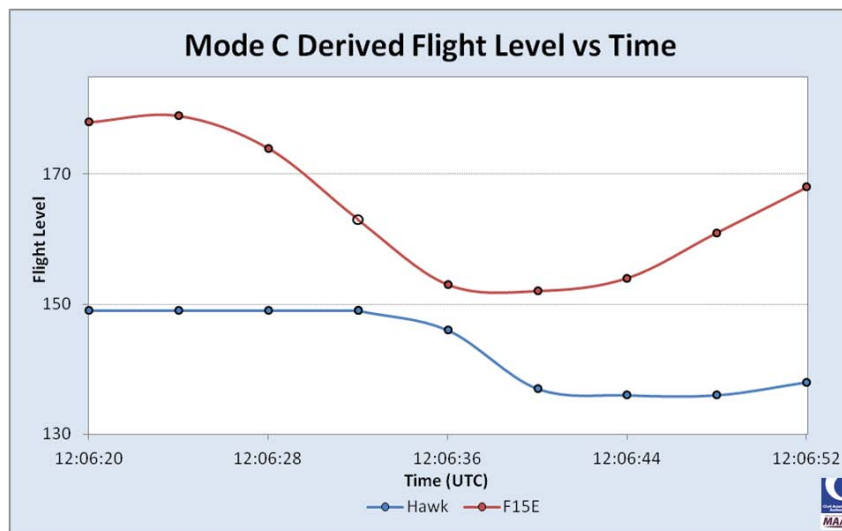


Figure 6: Incident Geometry at 1206:43 immediately after the CPA.

[UKAB Note(2): The vertical profile of the encounter, derived from Mode C data, is shown below:



Note that the F15E Flight Level is interpolated between 12:06:28 and 12:06:36 as its RoD exceeded the surveillance system parameters for processing height readout.]

The guidance material contained within CAP774 Chapter 3 Para 5 states:

‘Controllers shall aim to pass information on relevant traffic before the conflicting aircraft is within 5nm, in order to give the pilot sufficient time to meet his collision avoidance responsibilities and to allow for an update in traffic information if considered necessary.’

Although the regulation states that ‘high controller workload and RTF loading may reduce the ability of the controller to pass traffic information, and the timeliness of such information’, no reduction in the ATS was applied by W Tac.

The F15E formation reported that ‘only one ac actually heard the radio call [the TI from W Tac]. This was around the same time that F15E (1) was transmitting a simulated threat call to F15E (4). It is reasonable to argue that the timing of the ‘simulated threat call’ explains the manoeuvring conducted by F15E (4) between 1206:28 and 1206:36. Following this Airprox, the F15E Sqn stated that ‘they will emphasise techniques on clearing flight paths before aggressive manoeuvres like the defensive manoeuvre that led to this incident’.

Immediately after instructing the unrelated ac free-calling the SW ICF to, “standby”, at 1206:54, the W Tac instructor transmitted to the Hawk formation, “4 F15s south west of you in your current location, in the block Flight Level 9-0 Flight Level 4-0-0, indication Flight Level 1-8-5.” At this point, F15E (4) was 2.2nm E of Hawk (1) tracking SE’ly indicating FL166; F15E (3) was 3.3nm S of Hawk (1) tracking E’ly, indicating FL193; F15E (1) and (2) were 9.3nm SSW of Hawk (1) indicating FL206 and 200. Although the TI was inaccurate, given the surveillance display range scale that W Tac would have required in order to monitor the W and SW AoRs, combined with the proximity of the F15E formation to Hawk (1), it is unlikely that W Tac would have been able to provide more accurate TI.

It has not been possible to determine the point at which W Tac detected Hawk (1)’s squawk; however, based upon the DASOR’s submitted by the W Tac instructor and the Planner, it is clear that W Tac had not detected the conflict between Hawk (1) and F15E (4) prior to it being pointed out by the Planner. This might also suggest that W Tac had not detected Hawk (1)’s SSR3A code prior to this point. An argument which is lent weight by the W Tac instructor’s report that he had assumed prior to the incident that Hawk (1) and Hawk (2) ‘were in close formation’, adding that he had become distracted by the proximity of the F15E 3-ship operating in the S of the area to L9, UL9 and EGD203 at Sennybridge. During the closing stages of the incident sequence, the F15E 3-ship operating in the S of the area was around 14nm W of EGD203 maintaining an orbit in which the S edge was around 8nm N of the lateral boundary of L9. The W Tac instructor stated that he passed TI to the F15E formation first as this ‘was coherent to frequency set up at the time’. It is likely that W Tac had selected the F15E formation’s discrete freq to transmit in case he was required to broadcast a warning to the S’ly formation of their proximity to L9/UL9 or EGD203.

Analysis

In terms of this incident as an Airprox, both Hawk (1) and F15E (4) pilots were operating in Class G airspace and were required to discharge their responsibilities for collision avoidance. Based on the available data, although the pilot of Hawk (1) had SA on the F15E through TCAS, he seemed to have visually acquired F15E (4) relatively late and shortly before 1206:39, given that his avoiding action is seen to take effect at this time. At this point, 0.7nm lateral separation existed, with 500ft vertical separation indicated. Based on the formation report, the pilot of F15E (4) appears to have visually acquired Hawk (1) at approximately the CPA. Moreover, the Airprox appears to have occurred following defensive manoeuvring from the F15E (4) pilot, in response to a simulated threat, which brought him into conflict with Hawk (1).

In terms of the ATM aspects of the incident, both the W Tac trainee and the instructor had become distracted such that they were unable to divide effectively their attention between all their ac; consequently, TI was provided late to the incident F15E formation and, given the intra-formation RT traffic, the TI was rendered nugatory. Although the Planner had stepped in to prompt the W Tac trainee and instructor, the intervention came too late to affect the situation given the likely lateral separation at that point, compounded by the trainee’s ‘stumbled’ phraseology.

The question of provision of service to Hawk (1) pilot is more difficult. Given the generic nature of the warning passed by W Tac at 1205:10, BM SPA contends that, although Hawk (1)’s SSR3A code was visible from 1204:36, W Tac had not detected it by 1205:10 and was only monitoring Hawk (2) who was operating in clear airspace. Moreover, despite the trainee’s erroneous transmission to Hawk (1) at 1203:18 and the whole formation at 1203:33, Hawk (1) was never formally identified and placed under an ATS. The basis of ATSOCAS is that pilots and controllers agree a ‘contract’ between them, based upon the Service Principles and the details of the specific ATS as laid down in CAP774. Whilst acting as a formation, the formation leader may agree a ‘contract’ with an ATCO on behalf of the formation; however, in this instance, the formation were split by up to 44nm and Hawk (1) pilot was not on frequency. Consequently, each element of the formation was required to have been identified separately and an ATS agreed between the pilot and W Tac. Implicit within that statement is that each ac in receipt of an ATS should be on the ATC frequency in use. That said, given W Tac’s transmissions to the formation and that W Tac did not challenge Hawk (2) when he learned that Hawk (1) would not be on freq, the Hawk formation probably believed that both ac were

in receipt of an ATS. Unfortunately, as previously stated, it has not proved possible to conclusively determine the point at which W Tac obtained 'track ident' on Hawk (1); subsequent to completing their DASOR, the W Tac instructor could only recall that it was spotted prior to TI being passed. As argued previously, it appears reasonable to suggest that the SSR3A code was sighted as the Planner identified the conflict to the Tac. However, what is clear is that the distraction that affected the ATS provision to the incident F15E formation would have similarly affected the monitoring of Hawk (1); thus W Tac was unable to provide an earlier, more specific warning to Hawk (1). Disappointingly, this distraction affected both the trainee and the instructor in equal measure. It is also reasonable to argue that the generic traffic warnings passed by W Tac to the Hawk formation could have included more specific detail to enhance the Hawk formation's SA; for example, expanding on the N/S split between the F15E formations to include range and bearing information.

Whilst neither causal nor contributory to the Airprox, BM SPA believes that the following observations identified in the conduct of this investigation are noteworthy.

1. Notwithstanding the issues over the 'ATS contract', the 'comms plan' presented to W Tac by the pilot of Hawk (2) appears convoluted. At best this arrangement could lead to a significant delay in the passage of time critical TI to the second ac; at worst, it could lead to inaccurate and potentially misleading information being passed. The RAF Valley FOB states that deconfliction between 4FTS traffic within the NWMTA but outside of the VATAs 'is to be achieved by either requesting a TS or DS or by free-calling the [4FTS] deconfliction frequency'; however, it states that within the VATAs, crews may either elect to receive a TS or DS or they will receive generic traffic warnings from Valley ATC. This latter arrangement is despite there being no agreed ATS between ATC and the 4FTS aircrews and has the potential to blur the boundary between autonomous ops and being in receipt of an ATS; an issue that was highlighted by both the SATCO and BM SPA as being unsatisfactory when it was introduced following Airprox 2011/134. These flying orders present aircrews with an 'either/or' arrangement; however, in this instance, the Hawk formation were attempting to conduct both activities in order, perhaps understandably, to achieve greater SA.
2. Operating in the 'band-boxed' position, given W Tac's task-load and the distribution of ac around the West AoR, BM SPA contends that W Tac was working at or very near capacity. Thus, it is unlikely that he would have had sufficient capacity to provide ATS to additional free-calling ac, in either the W or SW AoR. However, the Planner does not appear to have attempted to 'split' the control positions or to seek an additional Tac controller to increase sector capacity. Moreover, whilst the Supervisor reported being cognisant of the traffic loading on the 'band-boxed' position, he did not mention whether this was discussed with the Planner. This observation provides additional evidence to support 2 recommendations made to the RAF ATM Force Cmd. Firstly following the investigation of Airprox 2012/117, where a request was made to consider the requirement for LATCC(Mil) Planner endorsed personnel to be re-briefed on assessing task complexity, in addition to task load, when determining sector manning. Secondly, following the investigation of Airprox 2012/163, a request was made to review the practice of 'band-boxing'.

Conclusion

This incident resulted from a conflict of flight paths within Class G airspace that was resolved by the pilot of Hawk (1). Lack of TI to both the pilot of Hawk (1) and lack of timely TI to the incident F15E formation was a contributory factor in this Airprox, caused by controller distraction.

HQ AIR (TRG) comments that the conflict was due in large part to weakness in communication between the controllers and crews involved. It appears that neither party perceived the potential for a conflict, despite their efforts to maintain a TS. It should be emphasised that a TS provides no form of deconfliction as is suggested by the RAF Valley FOB extract, unless:

1. A controller 'goes the extra mile' to engineer it, as was attempted in this case with an offer to move to D201.

2. The crews perceive the potential for a conflict and arrange their own deconfliction with the other traffic directly.
3. Deconfliction is arranged through ATC.
4. By moving clear themselves.

By remaining in the airspace the crews accepted the collision avoidance responsibility but it appears in this case that they may not have perceived the full conflict potential, despite the controller's suggestion of an airspace move; they were not informed of the F15's operating block, other than Valley RAD's call that they were '230 and above', nor were they offered any direct TI for the reasons given in the report. More precise RT phraseology may well have painted the picture of the Hawk formation's disposition to the controller, enabling better TI to be passed. Equally, the controller's description of the disposition of the F15s did not convey the potential for conflict and this, coupled with the lack of a timely call of the F15s' operating block, created a false sense of security.

It has been suggested that a booking system for the NWMTA could be instigated but this presupposes that it is unacceptable to operate more than one formation in the area at any one time. In light of the relatively small number of issues in the MTA, and its potential to impact availability of the airspace to Valley traffic, this is not being pursued at present. There remain several options to get detail of other traffic in the MTA (or Overland Training Area) and the crews in this case were well aware of the other traffic, albeit once they had got airborne. A greater willingness to accept the suggested airspace change might have prevented this incident. The F15 unit have taken some useful lessons from this incident and hopefully have an increased awareness of the Hawk activity in the area.

The crews attempted to cover all bases with their communications plan but its complexity, and the imprecise use of phraseology and callsigns, rendered it ineffective. The option to use a GCI service should also be considered as a viable option to achieve a service on a single and discrete frequency. Such a service is normally preceded by a brief to the specific controller and should provide the greatest situational awareness for the formation.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

Board Members considered the Hawk formation's communications plan was flawed. In trying simultaneously to comply with the Squadron SOPs and the RAF Valley FOB they achieved a radio configuration that denied them the service they were seeking. The Hawk (2) pilot's use of differing C/Ss further confused the issue, such that the LATCC(Mil) W Tac trainee Controller likely thought he was communicating with both Hawk formation members when in fact he was in RT contact with Hawk (2) pilot only. The Hawk formation leader's plan was to obtain ATSOCAS for both ac; however, they were separated by up to 44nm and he was not on frequency. Consequently there was little prospect of him obtaining timely TI, if any. ATC Members further opined that it is only feasible to provide a service to a formation member who is not on frequency if the formation ac are close together and not if formation elements have split. An attempt to do so in the latter case, by having a formation member relay TI, would only serve to increase risk. The Board concluded that the Hawk formation communication plan had been a contributory factor in the Airprox. Military pilot Members questioned why the Hawk formation were not using GCI control but also acknowledged that Air Surveillance And Control System (ASACS) provision was limited and subject to prioritisation, such that it may not be possible to provide GCI control regularly for RAF Valley sorties of this type. The USAFE Liaison Officer advised that UK-based F15 crews were also affected by the availability and prioritisation of ASACS resources. The Air Cmd Safety Policy and Assurance Advisor advised the Board that

LATCC(Mil) were considering a request by RAF Valley for a dedicated service in the NWMTA; this development was welcomed by the Board.

The F15E formation was operating in the N of the NWMTA, with a separate but coordinated 3-ac F15E formation operating in the S. The N'ly formation was in receipt of a TS from the same controller with whom Hawk (2) was in RT communication. TI was passed to both formations before CPA but it did not include operating blocks and the Hawk formation had previously received information from Valley RAD that the F15Es were operating above FL230. The TI to Hawk (2) pilot crucially did not inform him of the true F15E operating block of FL90-FL400 until shortly after the CPA. The LATCC(Mil) W Tac trainee controller had earlier suggested, sensibly and proactively, to Hawk (2) pilot that the Hawk formation move W to D210 but without accurate block information the Board opined that Hawk (2) pilot did not perceive there to be a potential confliction issue and that the Hawk formation pilots were operating in the mistaken belief that the F15E formation would remain above FL230. The Hawk operating block of FL300-FL100 was passed to the F15E formation some 20sec before CPA but it transpired that this was as the formation was reacting to a simulated threat, transmitting on the discrete formation frequency, and did not increase formation SA in time to avoid the incident. The LATCC(Mil) W Tac trainee and instructor controllers did not pass specific TI to Hawk (2) pilot prior to CPA and could not pass TI to Hawk (1) pilot directly. The Board opined they probably became aware of Hawk (1) pilot's location shortly before CPA, but by then had insufficient time to pass TI to him, via Hawk (2) pilot. The Board concluded that the lack of adequate TI to both formations had been a contributory factor in the Airprox.

The LATCC(Mil) W Tac trainee controller and instructor were operating bandboxed W and SW positions with 'high' workload and 'very difficult' task complexity reported by the instructor. The experienced Planner reported the task complexity to be undemanding with the majority of the 'low' workload due to RT. ATC Board Members opined that this disparity in perceived work load was indicative of the Planner not being aware of the Tac controllers' level of concern over the proximity of the S'ly F15E formation to the airways and Danger Area and responsible for his consequent late intervention to indicate the impending Hawk and F15E confliction. The Board agreed with the military ATC analysis that the W Tac trainee and instructor controllers were distracted by the proximity of the S'ly F15E formation to the L9/UL9 airways and D203 and that this had degraded their capacity to control the situation in the N of the area.

The F15E and Hawk formation members were all operating in class G airspace with equal responsibility to 'see and avoid'. The geometry of the conflicting ac flight paths prior to CPA indicated that Hawk (1) pilot had right of way. Hawk (1) pilot was warned of the proximity of F15E (4) by his TCAS and saw it at an estimated range of 4nm, in his L 11 o'clock. He was thus well-placed to take avoiding action. F15E (4) pilot did not see Hawk (1) until it was in his R 3 o'clock position, which was too late to take avoiding action. The Board concluded that the Airprox was caused by the F15E crew's effective non-sighting but that the Hawk pilot had taken effective and timely action to prevent the ac colliding.

[Post meeting note: Director UKAB has undertaken to write to AIDU about the depiction and clarity of the airspace boundaries of the NWMTA]

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Effectively a non-sighting by the F15E crew.

Degree of Risk: C.

Contributory Factors:

1. Inadequate TI to both formations.
2. Hawk formation communication plan.

AIRPROX REPORT No 2012172

Date/Time: 28 Nov 2012 1025Z

Position: 5108N 00249W
(RNAS Yeovilton 320°/10nm)

Airspace: Yeovilton AIAA (Class: G)

Reporting Ac Reported Ac

Type: Lynx Mk 8 Beech 76

Operator: RN Civ Trg

Alt/FL: 2100ft 2000ft
RPS (1008hPa) RPS (1008hPa)

Weather: VMC CLBC VMC CLBC

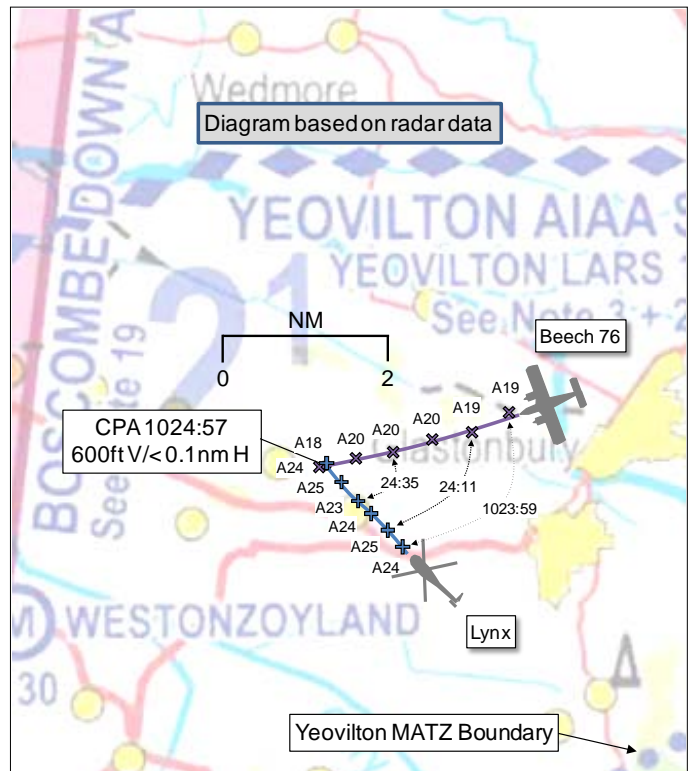
Visibility: 25km 10km

Reported Separation:

100ft V/0ft H 100m V
500-1000m H

Recorded Separation:

600ft V/<0.1nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE LYNX MK 8 PILOT reports conducting a partial Air Test following ac maintenance. He was operating under VFR in VMC, 400ft below cloud, in receipt of a BS from Yeovilton APP [234.300MHz]. The grey camouflaged ac had navigation and anti-collision lights selected on. The SSR transponder was selected on with Modes A and C. The ac was not fitted with a Mode S capable transponder or an ACAS. He stated that, immediately after 'setting up' to test one of the engines, heading 335° at 100kt and altitude 2100ft, he saw a white and red/orange coloured, low-wing, twin-engine 'civilian' ac in his R 3 o'clock position on a closing course. He immediately assessed there was no risk of actual collision so elected to remain 'straight and level'. Approximately 1-2sec later the conflicting ac, which also remained straight and level, passed directly below him with 100ft V separation.

He assessed the risk as 'High'.

He stated that cockpit workload was moderate but did require both crew to look inside to verify switch selections. He also stated that he had elected not to take a TS, based on the level of RT traffic on Yeovilton APP frequency.

THE BEECH 76 PILOT reports instructing a CPL VFR navigation exercise. He was PNF in the R seat, with PF, the student, occupying the L seat. He was operating under VFR in VMC, 500ft below cloud, the PF being in the process of establishing a BS with Yeovilton LARS. The white and red ac had navigation and strobe lights selected on, as was the SSR transponder with Modes A and S. The PF had descended from altitude 2500ft to altitude 2000ft due to weather ahead when the Instructor saw a Lynx helicopter in his L 10 o'clock position at a range estimated at 10km. He considered that the student was 'late in asking for a BS from Yeovilton' but that, as an instructor, he sometimes had to 'sit and watch to see how long it takes'. He stated that 'they were always N of Yeovilton' but that they were also in the Yeovilton AIAA. He assessed the student lookout as 'poor', that it was safe to maintain track of approximately 270° and that, being on the R, he had right of way, albeit that both parties had to be visual to 'implement this'. When he deemed it unsafe to continue he took control and descended to avoid the Lynx, which he lost sight of but judged had passed behind.

He assessed that there was no risk of collision.

[UKAB Note(1): The RNAS Yeovilton weather was reported as follows:
METAR EGDY 280950Z 34011KT 9999 FEW010 SCT025 OVC030 06/01 Q1016 BLU NOSIG
METAR EGDY 281050Z 35011KT 9999 FEW010 SCT025 OVC030 06/01 Q1016 BLU NOSIG]

THE LYNX SQUADRON OCCURRENCE MANAGER reports that the Airprox occurred because of a lack of SA. He stated that crews are being strongly encouraged to request an ATS commensurate with the weather conditions and task in hand.

THE YEOVILTON APPROACH CONTROLLER reports that the Lynx pilot, positioned approximately 15nm N of the A/D, was in receipt of a BS. He was in the process of handing over two separate ac, positioned approximately 15nm S of the A/D and under TSs, to a fighter control agency when the Lynx pilot transmitted that he would like to report an Airprox. He then observed a contact in the vicinity of the Lynx, at a similar level. This contact then descended and was seen to change squawk to a Yeovilton LARS squawk. Shortly after the incident the Lynx pilot upgraded his ATS to a TS.

[UKAB Note(1): The Yeovilton APP RT Transcript is reproduced below:

To	From	Speech Transcription	Time	Remarks
VL App	[Lynx C/S]	Approach, [Lynx C/S]	10:26:10	
[Lynx C/S]	VL App	[Lynx C/S], Yeovil Approach, standby	10:26:12	
Freddie	VL App	Own navigation, squawking one seven six one	10:26:14	Landline Call resumed
VL App	Freddie	Contact	10:26:17	
Freddie	VL App	Climbing flight level one six zero, traffic service	10:26:18	
VL App	Freddie	Climbing flight level one six zero, traffic service, Amber one identified, contact Freddie channel eight, back up channel nine	10:26:20	
Freddie	VL App	Channel eight, back up channel nine, roger, Approach	10:26:27	
Amber 1	VL App	Amber one, contact Freddie channel eight, two four zero decimal four	10:26:31	
VL App	Amber 1	Amber one, channel eight	10:26:40	
Amber 1	VL App	Amber one, back up channel nine	10:26:42	
VL App	Amber 1	Copied	10:26:44	
[Lynx C/S]	VL App	[Lynx C/S], Yeovil Approach, pass your message	10:27:26	
VL App	[Lynx C/S]	[Lynx C/S], I'd like to report an Airprox, I've got a position, height and details for you	10:27:27	
[Lynx C/S]	VL App	[Lynx C/S], roger, standby	10:27:38	
[Lynx C/S]	VL App	[Lynx C/S], Yeovil Approach, go ahead	10:27:48	
VL App	[Lynx C/S]	Yeah, err, we were at two thousand one hundred feet, one double oh eight set, in position north five one zero eight decimal six, west zero zero two four nine decimal two at ten twenty five exactly local, a, err, twin engine, white aircraft, flew directly underneath us, about a hundred foot separation. Our track three three zero, he was tracking south westerly	10:27:51	
[Lynx C/S]	VL App	[Lynx C/S], roger, many thanks, I have the details.	10:28:25	
VL App	[Lynx C/S]	Roger, we'll give you a ring when we get back	10:28:28	
[Lynx C/S]	VL App	[Lynx C/S], roger.	10:28:30	

]

THE YEOVILTON LARS CONTROLLER reports that [the subject Beech 76] free-called Yeovilton LARS [127.350MHz] and requested a service. He agreed a BS and issued a squawk. He was then asked by someone else in [the subject Beech 76] to 'standby' because they were avoiding a conflicting ac. He looked at the radar display and noticed a 7000 conspicuity code in the vicinity of a recognised Yeovilton APP squawk. Once [the subject Beech 76] was established in a 'safe area', he was then asked to repeat his last message.

[UKAB Note(2): The Yeovilton LARS RT transcript is reproduced below:

To	From	Speech Transcription	Time	Remarks
VL Lars	[Be76 C/S]	Yeovilton Radar, [Be76 C/S fragment], err, [Be76 C/S fragment], err, request MATZ penetration.	10:23:52	
[Be76 C/S]	VL Lars	[Be76 C/S], Yeovil Radar, pass your message.	10:24:00	
VL Lars	[Be76 C/S]	[Be76 C/S], err, Beach Seventy Six, from Bournemouth to Bournemouth we are, err, north of Bridgewater to err west of Bridport, err, currently, err, south of err Wells, err, one, err, two thousand err feet, QNH one zero zero eight, request MATZ penetration.	10:24:04	
[Be76 C/S]	VL Lars	[Be76 C/S], roger, squawk zero two four four, basic service, Portland regional is one zero zero eight.	10:24:37	
VL Lars	[Be76 C/S]	Say again, sorry, [Be76 C/S], just descending for the Lynx.	10:24:46	
[Be76 C/S]	VL Lars	Roger	10:24:50	
VL Lars	[Be76 C/S]	Clear of the Lynx, say again please, [Be76 C/S].	10:24:53	
[Be76 C/S]	VL Lars	[Be76 C/S], roger, squawk zero two four four, Portland regional one zero zero eight.	10:25:56	
VL Lars	[Be76 C/S]	Zero two four four, [Be76 C/S]	10:25:02	

]

HQ NAVY COMMAND comments that this Airprox occurred between two ac operating VFR in receipt of a BS from Yeovilton ATC, albeit two different controllers. The Beech 76 had not yet been identified as they had only just called the LARS controller and the Approach controller had prioritized his attention to the TS ac under his control. This meant that no warning of proximity was passed to either ac, however both saw each other in time and avoided a collision. Both crews report 'mission focus' by being either 'eyes in' the cockpit or allowing the student pilot to have rein, and the Lynx Squadron Occurrence Manager states that crews are encouraged to request the most appropriate ATS. Collision was averted by the sighting of both ac, albeit somewhat late by the Lynx crew.

[UKAB Note(3): RoA, Rule 8 (Avoiding Collisions) states:

- (1) Notwithstanding that a flight is being made with air traffic control clearance it shall remain the duty of the commander of an aircraft to take all possible measures to ensure that his aircraft does not collide with any other aircraft.
- (2) An aircraft shall not be flown in such proximity to other aircraft as to create a danger of collision.
- ...
- (4) An aircraft which is obliged by this Section to give way to another aircraft shall avoid passing over or under the other aircraft, or crossing ahead of it, unless passing well clear of it.
- (5) ..., an aircraft which has the right-of-way under this rule shall maintain its course and speed.

...

RoA Rule 9 (Converging) states:

...

(3) ..., when two aircraft are converging in the air at approximately the same altitude, the aircraft which has the other on its right shall give way.

RoA Rule 11 (Overtaking) states:

(1) ..., an aircraft which is being overtaken in the air shall have the right-of-way and the overtaking aircraft, whether climbing, descending or in horizontal flight, shall keep out of the way of the other aircraft by altering course to the right.

(2) An aircraft which is overtaking another aircraft shall keep out of the way of the other aircraft until that other aircraft has been passed and is clear, notwithstanding any change in the relative positions of the two aircraft.

...]

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar photographs/video recordings and a report from the helicopter operating authority.

The Board first considered the actions of the two pilots. The JHC Member opined that the Lynx pilot knew the air-test would involve more than normal in-cockpit activity and consequently that his lookout would be degraded, exacerbated by the Lynx Mk 8 only having flying controls for the single pilot. He would therefore have been better served by using a TS or DS. Planning for this level of service would have been a useful part of his pre-flight preparation, especially with regard to risk mitigation, and may even have led him to make the decision that provision of such a service was an essential requirement to undertake the air-test. Turning to the Beech 76, a civilian Pilot Member commented that an instructor did have to give his student time to complete procedures that were necessarily limited in tempo by the student's inexperience, but the dividing line between achieving a valuable learning exercise and continuing to the detriment of safety could be a fine one. Some pilot Members opined that the Beech 76 instructor had taken control too late to avoid the Lynx by a margin sufficient to avoid causing the Lynx pilot concern. Both pilots were operating in class G airspace and had equal responsibility to 'see and avoid'. The Beech 76 instructor correctly assessed that he had right of way, but the Board emphasised that both pilots were responsible for collision avoidance. In this case the Beech 76 pilot had achieved collision avoidance but it was felt that he would have been better served by not passing almost directly beneath the Lynx.

It was apparent from the radar recording that the 2 ac were separated by some 600ft at the CPA. Nevertheless, the Lynx pilot was sufficiently concerned to file an Airprox. The Board opined that the Lynx pilot's concern was due to his late sighting and consequent surprise at the proximity of the Beech 76 and that the Beech 76 instructor had taken effective and timely action to avoid a collision.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Late sighting by the Lynx pilot.

Degree of Risk: C.

AIRPROX REPORT No 2012174

Date/Time: 29 Nov 2012 1344Z

Position: 5054N 00029W (1.4nm SSW
Parham G/S)

Airspace: LFIR (Class: G)

Reporting Ac Reported Ac

Type: Scheibe SF25C RA390
Falke M/Glider Premier 1

Operator: Civ Club Civ Pvt

Alt/FL: 2500ft NR
(QNH)

Weather: VMC CLNC NR

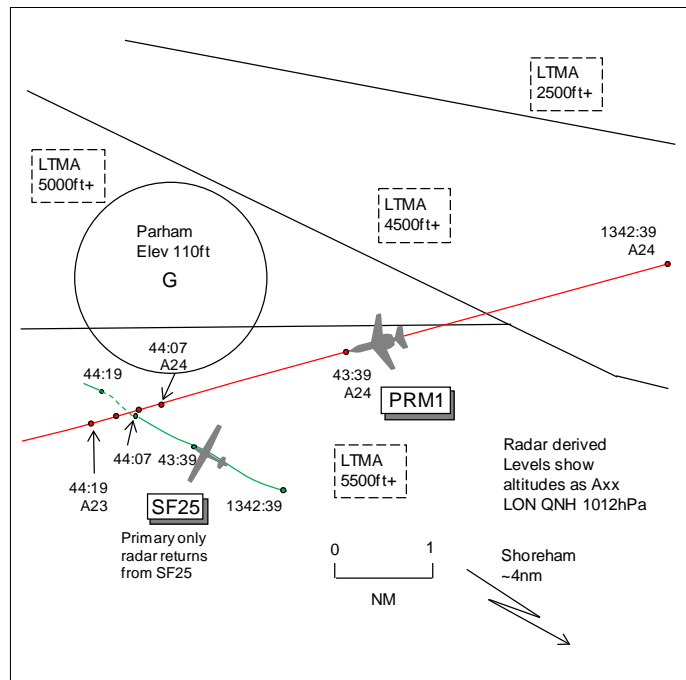
Visibility: 30km NR

Reported Separation:

Very close NR

Recorded Separation:

~0.1nm



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE SCHEIBE SF25C FALKE MOTOR GLIDER PILOT reports, 7 weeks post incident, en-route from Shoreham to Lasham, VFR and not in communication with any ATSU; no transponder was fitted. The visibility was 30km in VMC and the ac was coloured canary yellow with strobe lights switched on. About 1nm W of Parham, heading NW'ly at 2500ft QNH and 80kt, a business jet was first sighted abeam his R wing tip at very close range. It passed them from behind rolling R and climbing before it rolled L, presumably back onto its course. He believed that the jet would have collided had it not taken avoiding action. He assessed the risk as high.

The pax pilot provided a brief description, 12 weeks post incident. He believed the incident occurred about 3nm SW of Parham; they had been looking at the Gliding Site just before the encounter so were within a short distance of the spot. Their altitude was around 2500ft and after the incident they descended 200-250ft to about 2300ft amsl so that they would not be cruising at a round number of feet. The twin-engine (rear-mounted) business jet approached from the ENE and departed WSW. He had seen it over his R shoulder a split second before it passed, their heading was NW'ly, and he thought it was marginally above their level. After passing it turned a bit to the L; he believed it was resuming its original heading having jinked a bit to its R to avoid their ac before it disappeared in the direction of the I-O-W.

UKAB Note (1): The identity of the business jet was delayed owing to an incorrect time provided by the reporting pilot. Initially, following confirmation of the erroneous time by the SF25 pilot, it was thought the reported ac may have been a DA42 TwinStar, which was seen on the recorded radar about 15min prior to the stated time. However, no radar contact could be seen which correlated to the SF25's departure from Shoreham on a NW'ly track. The SF25 pilot agreed that from his viewpoint of the other ac it could have been a DA42. The DA42 pilot kindly provided a report which included the sighting of, and subsequent avoiding action taken on, a glider close to Parham. However the geometry of the encounter described by the SF25 pilot could not be correlated to the track observed to be flown by the DA42. After a further request to the SF25 pilot to confirm the date/time of the incident, he was able to confirm (10 weeks post incident), after consultation with his pilot pax who had returned from extended absence abroad, that the incident time was over 50min prior to the previous time given. RAC Mil carried out further tracing action and found the radar

recording for the revised time does capture the Airprox. The reported ac was identified as a RA390 Premier 1 business jet. Unfortunately the operator ceased trading 2 weeks post incident and it has not been possible to obtain a report from the crew.

UKAB Note (2): Shoreham METAR shows: - EGKA 291350Z 36012KT 9999 FEW020 06/02 Q1011=

ATSI reports an Airprox occurred 1.4nm SSW of Parham gliding site and was reported by the pilot of a Scheibe Falke motor glider (SF25).

The SF25 was on a VFR flight from Shoreham to Lasham and was not in contact with an ATSU.

The reported ac was a Raytheon RA390 Premier 1 (PRM1), which had departed from Manston and was in contact with Farnborough LARS. The fps from Farnborough seems to indicate that the PRM1 was in receipt of a TS but due to the time elapsed between the incident and the confirmation of the Airprox time and date (78 days) it was not possible to obtain RT recordings.

CAA ATSI had access to written reports from the pilot of the SF25 and area radar recordings.

There is no report available from the pilot of the PRM1. As there are no recordings available from Farnborough it cannot be established if TI was passed to the PRM1 flight on the SF25.

[UKAB Note (1): The area radar recording at 1342:39 shows a primary return 2.5nm SSE of Parham tracking NW, which is believed to be the SF25. The PRM1 is seen 5nm E of Parham tracking WSW squawking 5020 (Farnborough LARS) at altitude 2400ft (QNH 1012hPa). The ac close on a line of constant bearing and by 1343:39 the SF25 is in the PRM1's 1130 position range 1.6nm. The SF25 exhibits track jitter as the ac close, and by 1344:07 the SF25 is just L of the PRM1's 12 o'clock range 0.3nm. The CPA occurs between the next 2 radar sweeps at 1344:11 and 1344:15, the SF25 crosses ahead of the PRM1 from L to R but its primary returns are unreliable owing to jitter. It is seen to steady in the PRM1's 4 o'clock on the radar sweep at 1344:19 at range 0.3nm; taking the SF25's speed prior to and post jitter it is estimated the separation is about 0.1nm at the CPA. Subsequently the ac diverge, the PRM1's Mode C shows a descent of 100ft at 1344:19 to altitude 2300ft, which is maintained for 8sec before readjusting to 2400ft.]

The Airprox occurred in Class G airspace where the principles of see and avoid apply. It is unclear if the PRM1 flight received TI on the primary return believed to be the SF25 but ultimately the pilots of both ac were responsible for their own collision avoidance.

An Airprox was reported by the pilot of the SF25 when it came into proximity with a PRM1.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the SF25C pilot, radar video recordings and reports from the appropriate ATC authorities.

Without the benefit of a report from the Premier 1 crew or a full ATC investigation, Members had only limited information on which to assess the incident. As this had occurred in Class G airspace both crews were responsible for maintaining their separation from other traffic through see and avoid. The Premier 1 had approached the SF25 from its R rear quarter and was only spotted by both pilots on board the SF25 in their R 3-4 o'clock position shortly before it passed very close behind. The SF25 was there to be seen for some time as it was crossing through the PRM 1's projected flightpath but without knowing whether the PRM 1 crew had seen the SF25, Members could only categorise this incident as a conflict.

Looking at the risk element, the Board was unsure whether there was enough information to make an assessment. From the SF25 cockpit's viewpoint, it appeared that the PRM 1 crew may have taken late avoiding action on their ac as it was perceived to have manoeuvred as it passed. The

radar recording does not show any discernible track deviation but any small/momentary deviation would be unlikely to show. This perceived avoiding action manoeuvre flown by the PRM 1 may have been purely fortuitous. If the SF25 had passed unsighted to the PRM 1 crew, then a definite risk of collision existed, risk A. Alternatively, if the PRM 1 did manoeuvre as late avoiding action, given the radar recording shows the ac passing about 0.1nm apart, the action taken had been just enough to remove the actual collision risk but safety was not assured, risk B. On balance it was judged that this had been a risk bearing Airprox with at least a B rating for the risk.

A Board Advisor commented that he was airborne from Parham that afternoon and there were several gliders operating on the S Downs where the Airprox occurred as the Wx conditions were favourable for ridge soaring. A gliding pilot Member also commented that it was fortunate that the PRM 1 was cruising at 2400ft crossing the S Downs as the strength of the N'ly wind over the local terrain on that particular day made it conducive for flying on the N side of the ridge at around 1500ft. for best lift.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict in Class G airspace.

Degree of Risk: B.