

ASSESSMENT SUMMARY SHEET FOR UKAB MEETING ON 16th March 2011

Total: 17 Risk A: 0 Risk B: 4 Risk C: 13 Risk D: 0

<u>No</u>	<u>Reporting</u>	<u>Reported</u>	<u>Airspace</u>	<u>Cause</u>	<u>Risk</u>
2010089	EC225 (CAT)	Typhoon (MIL)	F	The AWACS crew misidentified the EC225 as an exercise participant and directed the Typhoon pilot to visually identify it, causing the EC225 crew concern.	C
2010103	PA28(A) (CIV)	Untraced PA28 (NK)	G	Effectively a non-sighting by the pilot of PA28(A); it is not known whether or when the pilot of the untraced PA28 saw PA28(A).	B
2010114	EC225 (CAT)	PA23 (CIV)	G	The PA23 flew close enough to the EC225 to cause its crew concern.	C
2010117	Tucano (MIL)	Untraced Glider (NK)	G	Sighting Report	C
2010122	Tristar KC1 (MIL)	P180 II Avanti (CIV)	G	The LARS controller vectored the P180 into conflict with the Tristar. Contributory Factor: Lack of co-ordination between LARS and Director.	C
2010126	MD902 (CIV)	Beagle Pup (CIV)	G	Pilot perceived conflict.	C
2010128	C42 Microlight (CIV)	PA28-161 (CIV)	G	The PA28 pilot flew close enough to the C42 to cause its pilot concern.	C

2010134	SK76 (CIV)	BE200 (CIV)	G	A conflict in Class G airspace between IFR flights resolved by both pilots with the assistance of TCAS and ATC.	C
2010135	Harrier x 2 (MIL)	PA28-161 (CIV)	G	Effectively a non-sighting by the Harrier pilots.	B
2010138	Vigilant T1 MG (MIL)	PA32 (CIV)	G	An apparent non-sighting by the PA32 pilot and effectively a non-sighting by the Vigilant pilot.	C
2010145	Hawk (MIL)	Lynx (MIL)	G	Lack of Traffic Information led the Hawk pilot to believe there was a conflict with Lynx. Recommendation: 1. It is recommended that RAF Valley reviews its procedures for co-ordinating helicopter movements under fixed-wing circuit traffic.	C
2010146	3 x Hawk (MIL)	Ventus B Turbo (CIV)	G	A conflict in Class G airspace resolved by the Hawk formation leader.	B
2010151	Harrier T8 (MIL)	MC130H (MIL)	G	1. A conflict in the UKNLFS resolved by the lead Harrier pilot. 2. The MC130H was low flying in an area not allocated to it.	C
2010154	Airbus A320 (CAT)	Hawk T1 (MIL)	C	The Hawk pilot climbed above his co-ordinated level giving the LAC S4 controllers cause for concern.	C
2010155	PA28 (CIV)	GR4 (MIL)	G	A non-sighting by the GR4 crew.	B
2010159	Grob Tutor (MIL)	DA40 (CIV)	G	A conflict in Class G airspace resolved by both pilots.	C

2010165	BN2T (CIV)	C208 (CIV)	G	A non-sighting by the C208 pilot and a late sighting by the BN2T pilot.	C
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AIRPROX REPORT No 2010089

Date/Time: 13 Jul 2010 1309Z

Position: 5822N 00302W
(5nm S Wick)

Airspace: W4D (Class: F)

Reporting Ac Reported Ac

Type: EC225 Typhoon

Operator: CAT (H) HQ AIR (OPS)

Alt/FL: FL55 NR

Weather: VMC CLBL NR

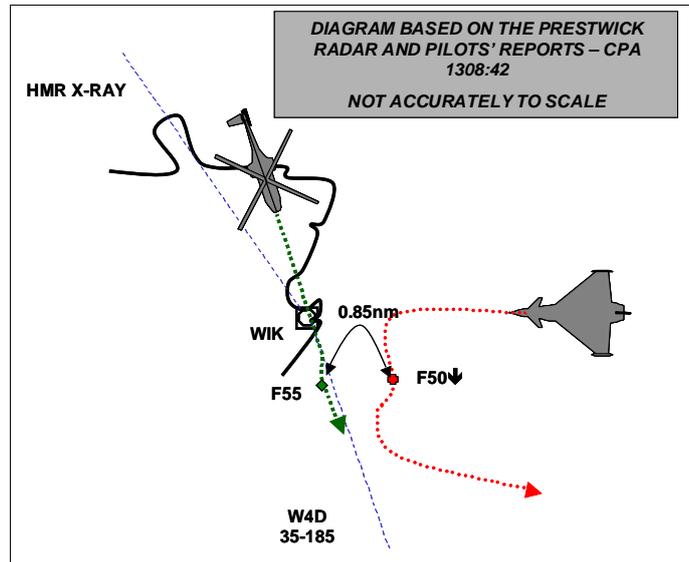
Visibility: >10km NR

Reported Separation:

0 V/1.0nm H 0 V/1.0nm H

Recorded Separation:

500ft V/0.85nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE EC225 PILOT reports flying a scheduled passenger flight inbound Aberdeen on ADR W4D from an oil rig, in receipt of a TS from ScACC, squawking 3610 with Modes C and S. When they had just passed WIK ScACC reported a military ac to the W, he thought, of their position and shortly after TCAS gave a TA. They then saw a Typhoon ac 2-3nm away in their 9 o'clock, belly-up in a left hand turn so they turned right for 2-3sec but the Typhoon then manoeuvred around their position for about 30sec before departing to the N.

The Typhoon pilot called the following day to apologise and explain that he thought they were a military helicopter participating in an exercise.

He assessed the risk as being Medium.

THE TYPHOON PILOT reports flying dual and leading a pair of ac on an exercise mission, in receipt of a TS from an AWACS and squawking an exercise squawk with Mode C. They were tasked with area defence, including a side mission to visually identify a slow moving Cessna 152 (an exercise player) and military Puma helicopters.

They were tasked by the AWACS to intercept a 'bogey', a slow moving track S of Wick at 5000ft and the track matched the characteristics of the expected exercise traffic. Of note the controlling AWACS was not using Modes 3A or C for training reasons. They achieved radar contact with the track at 25nm and visual contact at 10nm; they continued to close in order to identify the ac type and rolled out on the same track as the helicopter, line abreast at 1nm. From that position they noted visually that the helicopter was not a [military] Puma and exercise player and initiated a breakaway to depart.

THE ScACC CONTROLLER reported that he was the Moray bandboxed [high and low] controller and the traffic level was low.

An EC225 [Super Puma] was transiting from Foinavon to Aberdeen via the Wick overhead. He identified the helicopter well to the N of Wick; the pilot requested a TS, which he gave but limited the service to SSR traffic only. Prior to WIK he cleared the EC225 to join W4D at FL55. He then dealt

briefly with a Kirkwall outbound that was in conflict with unknown traffic. When he returned his scan to the helicopter, he saw military traffic on exercise squawks heading towards it from the E, one descending from just above, so he called the traffic. He updated the TI shortly afterwards as the conflicting ac was then at a similar level and the EC225 pilot reported that he was visual with a Typhoon.

At the range scale he was using it was difficult to determine how close the returns were or whether the helicopter deviated from its track, but the pilot reported that he had taken avoiding action and the returns came close to merging. He asked the EC225 pilot if he wished to file an Airprox to which he replied that he did.

Under normal operations he would offer an upgrade to a DS service when ac join the ADR but in this case the incident occurred just after Wick and he decided that it would be futile, even dangerous, to try to and give avoiding action, as the helicopter was extremely slow compared with the conflicting ac and there were many other ac around. Also the large range scale that he was using would have made it difficult to assess the best course of action.

UKAB Note (1): The exercise in which the Typhoon was participating was the subject of an ACN (2010-07-0020) and a NOTAM. The ACN stated:

1. 'Surface to Below FL100. NOTAM action by AUS. Crews are reminded that this airspace is **not segregated** and is in no way protected or reserved for this Exercise. **CQWI crews must expect to encounter non-participating military and civil ac operating in the area.** Caution; Advisory Routes (ADRs) and Helicopter Main Routes (HMRs) (See Para 20)'.
'

And also:

'd. Advisory Routes (ADRs). Pilots operating on the ADRs listed below are requested to take note of the intense aerial activity associated with FAOR operations and exercise extreme caution when transiting the associated airspace. Exercise participants are to be extra vigilant when manoeuvring in the vicinity of ADRs, particularly those listed below which are located in the vicinity of, or directly below, the FAOR North and associated Exercise Areas:

(1) N560D from BONBY to SUM.

(2) W4D from ADN to WIK.'

Et seq.

THE AWACS CONTROLLER reported that as part of the exercise there would be an inject whereby a light ac would be operating from near Wick. Their instructions for that exercise were to visually identify the ac and determine its registration.

During the exercise, his supervisor drew his attention to a low slow contact near Wick and so he tasked 2 Typhoons to identify the ac visually, believing it to be the exercise ac. The Typhoon leader called that he was visual with the traffic at about 10nm and he continued to close for a visual identification. At about 4nm leader reported that the ac was a helicopter; however, as a military Puma helicopter was also taking part in the exercise, this was not considered unusual. As the Typhoon leader closed the pilot reported that the ac was not a military helicopter and so they 'hailed off'.

The Typhoons were fully aware of the traffic at all times and were deliberately closing in to identify it visually. There was never any threat of collision.

THE AWACS SUPERVISOR reported the incident occurred on the 7th Mission of the exercise and that their equipment was fully serviceable. The workload of the Typhoon Controller was low-moderate. He was also supervising 2 other positions and they were controlling over 45 ac in the

exercise area of about 200 x 150nm. This was the busiest airspace that he had encountered during this and similar exercises. All ac under their control were receiving a BS due to the potential of communications jamming, but no jamming was apparent at the time.

[UKAB Note (1): Since there was no RT recording or transcript, it cannot be determined if the Typhoons were in receipt of a BS or TS.]

The exercise scenario for the day meant that the mission priority for their ac was the identification and (simulated) engagement of an Unmanned Aerial System/drones which were being simulated by a light ac or helicopters, based 10nm North of Wick, which were to track S towards their target. The Typhoon formation was planned to be the asset used to identify these ac. The SSR intentions of the light ac were not known, so the controllers' attention was directed towards searching for a low, slow ac, climbing out of the Wick area.

From about 1255, the Typhoons were controlled by the Offensive Counter Air Controller and the main exercise 'push' was expected at 1315. The Typhoons concerned pushed early behind 4 other Typhoons, all searching for 'enemy' ac and the Controller had a total of 6 ac on frequency near Wick but his scan also required him to build an initial picture on enemy fast jet ac over Stornoway/West Scotland. At about 1305 a contact matching the criteria given for the 'enemy' light ac appeared S of Wick, so the Typhoons were tasked with identifying it. At 1308, Typhoon Leader called "*visual helo*" and the controller instructed them to haul off and investigate another ac. The Typhoons called visual with the helicopter at 10nm but closed further in the belief that it was an exercise ac; on realising that the ac was civilian, they broke off.

HQ 1GP BM SM reports that the Sqn concerned conducted a thorough investigation into this incident but no tape transcript was available due to the limitations of the E3 recording system.

The surveillance team on the AWACS initially located and identified the EC225 as a civilian helicopter when it was about 80nm NNW of Wick. The identity track remained on the helicopter until it crossed overland near Dunnet Head. At that point the surveillance team changed its identity track to a 'friendly general' track, which is often used for general civilian ATC traffic, but is less specific than the previous track. As the EC225 continued SE, the Tactical Director [safety controller] made radio contact with the exercise light ac on the ground 10nm NW Wick and the pilot informed him that he would be getting airborne shortly and he re-briefed the crew.

The Surveillance Team Leader produced an identity matrix during mission planning, which allowed his team to categorise the identities of all ac within radar coverage. This plan was heavily operationally focused and did not account for non-exercise traffic. Although civilian traffic was often easily identified using the matrix, there was a weak area whereby any civilian traffic that might be considered as 'exercise suspicious' (i.e. near Wick when enemy activity was expected there) became labelled as an exercise player.

Shortly after the Tactical Director (TD) re-briefed the crew, the identity of the EC225 was changed to an 'exercise identity' of 'bogey' (unknown ac). The evidence suggests that given the weakness in the identity matrix, the workload of the surveillance team, the fatigue of the individual controller and the operational imperative of the exercise scenario, the surveillance controller suffered a cognitive failure and re-identified the EC225 as 'exercise suspicious'. This change of identification caused the Weapons Director to task the Typhoons to conduct a visual identification of the EC225.

The Typhoons gained radar contact with the ac at a range of 25nm, becoming visual at a range of 10nm. The radar replay accords with the Typhoon pilot's report, showing that the leader positioned 1nm laterally displaced to the helicopter's port side to confirm the visual identification before hauling off. At the point where the Typhoons commenced the haul-off, the Range Training Officer also called them on the control freq to instruct them to haul-off, having also become aware that the EC225 was not an 'exercise player'.

From an ATM perspective the weakness of the identity matrix indicated a flawed mission planning process and caused a chain of events that led to the Typhoons being tasked with conducting the visual ID of the EC225. The Squadron concerned has proposed a number of recommendations to militate against recurrences and is commended on the depth of the analysis undertaken.

ATSI reports that (in addition to the EC225 pilot's report) an Airprox was reported by the ScACC Moray (MOR) sector controller, in the Class F Airspace of ADR W4D, S of Wick at FL055.

The EC225 had departed Foinavon for Aberdeen and was in receipt of a limited TS from the ScACC MOR. At the time of the Airprox a large-scale military exercise was underway in Scottish airspace. The MOR controller reported that he had been in the same position on previous exercise days and that the sector was combined with MOR High and MOR Low being operated by a single controller working with a display range set to 100nm.

At 1242:15 the EC225 called the MOR sector maintaining FL055, the pilot was instructed to squawk 3610 and asked what service he required; he requested a TS, to join ADR W4D at FL055, and gave an estimate for WIK of 1306. The controller identified the EC225 at 1243:00 and placed it under a TS, limited to transponding traffic only and this was read-back by the pilot.

Code 3610 is allocated to 'Scottish ATSOCA Purposes' and is considered validated and verified.

The UK AIP ENR 1-1-1-4 (paragraph 4.2.1.2) in respect of ADRs states:

'The ICAO requirements for an Air Traffic Advisory Service are met in the UK through the provision of a Deconfliction Service or Procedural Service to IFR ac that have flight planned to fly along ADRs.'

At 1301:53 MOR cleared the EC225 to join Advisory Airspace at WIK, routeing W4D to Aberdeen at FL055, and the clearance was read-back correctly. The EC225 passed overhead WIK at 1306:56 and its ground speed was about 150kt. At 1307:40, when the EC225 was 1.7nm S of WIK on the ADR, the MOR controller passed TI to the EC225, "...traffic left ten o'clock six miles er crossing left to right indicating flight level seven zero descending" and the pilot responded that the traffic was showing on TCAS. The STCA, low level, activated at 1307:42 followed by a high level alert at 1308:02 and at the same time, the MOR controller updated the TI, "... now left ten o'clock at three miles er still descending through flight level six five". Ten sec later, having received no reply from the EC225, the controller asked if the pilot was visual with the traffic and he responded at 1308:18, "... we've just got it visual actually it's a fast jet and he's turning towards us we're just taking avoiding action"

As the Typhoon approached the EC225 from the E it reduced speed to 330kt and the EC225 began diverge off the ADR to the right and at 1308:35 reported, "... we got it on ACAS with a traffic alert ... looks like a Typhoon and he's taking avoiding action on us"; this was acknowledged by the controller who asked if the EC225 wished to file an Airprox and he replied, "Affirm".

[UKAB Note (2): The EC225 is equipped with TCAS 1 therefore no RAs are generated.]

Prestwick Multi-Radar Tracking radar recording shows that at 1308:37 the Typhoon, having been on a track which took it behind the EC225, made a sharp left turn to parallel it displaced by 0.8nm in its 9 o'clock, and 500ft below and this was the CPA. The Typhoon, having commenced a southeasterly diverging track from the EC225 then turned back across the EC225's track, 1.5nm ahead of it at FL051 resulting in another STCA activation at 1309:07. At 1309:32 the MOR controller passed further TI on the Typhoon, "... traffic manoeuvring to your left ... nine o'clock at er three miles same height you still visual?" and the pilot replied, "... yeah ... he's clearing us now ...". The pair of Typhoons then cleared the ADR to the NW.

The EC225's route took it through Class F uncontrolled airspace along an ADR. Having identified the ac and issued it with instructions for transit of the ADR the MOR controller chose to provide a

limited TS. Based on the controller's experience of the effect of the military exercise on the sector and the EC225's slow speed, this was the most appropriate level of service available and was agreed by the EC225 pilot.

The EC225 was transponding a civil validated and verified SSR code; however, its appearance on a southbound track from Wick, gave it the expected characteristics of a participant in the military exercise and 2 Typhoons were tasked with intercepting and identifying the ac. The display of the civil purpose SSR code was insufficient to alert the military controlling authority that the EC225 was not an exercise participant. ATSI was unable to establish if the military controlling authority were able to see the SSR code 3610 on their displays or, if so, whether this was assimilated as a civil code.

The MOR controller gave TI as the Typhoon approached the EC225 and this was further updated as the Typhoon came closer to the EC225 and high-level STCA activated. The EC225 pilot initiated his own avoiding action by diverging from the ADR and reported visual with the Typhoon as it passed ahead of the EC225, along its left-hand side at 0.8nm and 500ft below.

HQ AIR (OPS) comments that the circumstances that led to the ambiguous tagging of the EC225 were discovered during the investigation and a number of recommendations to militate against recurrences have been made. The Typhoon pilot had good situational awareness on the location of his intended target and prosecuted his tasked mission to the point where he became aware that it was not an exercise player. Safety was not compromised.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the ScACC RT frequency, ScACC radar recordings, reports from the controllers involved and reports from the appropriate ATC and operating authorities.

The ASACS Advisor informed the Board that, technically, the Typhoons had been in receipt of a BS outside CAS from the AWACS since communication jamming was anticipated; this however did not change substantially the method of control employed by the crew. He also informed the Board that the TD had overall responsibility for the 'rear end' operation, was responsible for safety and had a full picture of all aspects of the exercise. The HQ Air (Ops) Member informed the Board that the Typhoons were JTIDS equipped and would have had a full tactical air picture of the exercise area. The Secretariat advised the Board that the C152 did not show on radar at any time and, although its intentions were not known, it was thought unlikely that it would route over the Moray Firth or near the ADR.

Members were surprised that the Exercise Planners had planned the 'Slow Moving Target' inject to take place in the Wick area, which is known to be busy with both civil fixed-wing and helicopter traffic and has no radar. There was discussion about the implications of military ac operating in and around ADRs such as W4D; the CAA ATC Policy and Standards Advisor stated, however, that ADRs are technically a centre-line only without any lateral dimensions but for ATC purposes are regarded as Class F airspace. He also stated that the future of Class F airspace, including W4D, is currently under review by the CAA. The Civil Helicopter Member, who has previous military experience, considered that poor, inconsiderate exercise planning and had been a significant factor in the incident. Had the inject been planned to have taken place elsewhere in the exercise area, then it is unlikely that the Airprox would have occurred. The HQ Air (Ops) Member stated that practising VIDs of all types of ac is a routine but essential part of such exercises. There was discussion about the possibility of military ac conducting VIDs using a discrete Mode 3 squawk so that civil controllers could easily identify them; however, this was considered impracticable by military pilot Members due to cockpit workload. There was also discussion as to whether ADR's should be placed out of bounds for exercise participants; however, it was agreed that this would be unnecessarily restrictive, providing that exercise participants pay due regard to civil traffic operating therein (as had not happened in this incident). Civil Controller Members were surprised that the AWACS controllers (all of them) had either not seen the helicopter's civil Mode 3 Squawk or that it had not prevented them

from tasking a VID on the EC225. The HQ Air BM SM and ASACS Advisors explained that the IFF/SSR situation in AWACS is complex, that exercise training considerations had precluded full use of IFF/SSR and that the civil helicopter had not been 'tagged' as a non participant as a result of human rather than systemic error(s). That being the case, Members agreed that the co-ordination arrangements and the ensuing ACN had been appropriate.

When considering the part played by the Typhoon pilot, Members agreed that he could not have been expected to ascertain the identity of the 'target' any earlier; one Member was surprised however, that he had not been aware that the ac was in the ADR and was squawking appropriately. They also agreed that the Typhoon pilot had broken off as soon as the error became apparent, but could not determine whether this had been directed or of his own volition; in any case it was not considered relevant to the circumstances of the Airprox, coming after the event.

A civil controller Member stated that neither the EC225 pilot nor the ScACC controller had been in a position to influence events in any meaningful way. The ScACC controller was unable to communicate or co-ordinate his ac with the AWACS and was faced with a traffic density such that he would not have been able to provide the EC225 with a full DS while still meeting the objective of progressing it along the ADR to Aberdeen; further the pilot had agreed to a TS. Although not strictly in accordance with MATS Pt1 procedures for ADRs, the application of a TS to the helicopter had, the Board agreed, been the best option in that it gave the pilot the highest level of information possible, thus enabling him to make his own judgement regarding avoidance or track progression; this gave the pilot significantly more information than the controller could offer with a Procedural Service that would have only informed the pilot about other participating IFR traffic in the ADR (in this case there was none). The civilian controller Member was familiar with ScACC and suggested that an AWACS liaison officer present in the appropriate sector might help to reduce the number of such events during exercises.

Despite the other factors mentioned above, Members agreed that this had been a simple case of mistaken identity by the AWACS mission crew caused by incorrect 'tagging' of the EC225; as a result of the Exercise constraints placed on them, and possibly a determination to complete the task in hand, the AWACS controllers had not considered the bigger picture and none of them noted the error until the Typhoon pilot informed them that the helicopter was not an exercise player. The Typhoon pilot had not closed to an unreasonable distance and Members agreed that he had broken away as soon as the error was discovered.

Due to the Typhoon pilot's early visual contact with the helicopter and the controlled manner in which he conducted the VID, the Board agreed that there had been no compromise of safety or risk of collision.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The AWACS crew misidentified the EC225 as an exercise participant and directed the Typhoon pilot to visually identify it, causing the EC225 crew concern.

Degree of Risk: C.

AIRPROX REPORT No 2010103

Date/Time: 24 Jul 2010 1049Z (Saturday)

Position: 5156N 00126W (near Enstone elev 550ft)

Airspace: London FIR (Class: G)

Reporting Ac Reported Ac

Type: PA28 PA28

Operator: Civ Pte NK

Alt/FL: 3000ft (NR) NK

Weather: VMC CAVOK NK

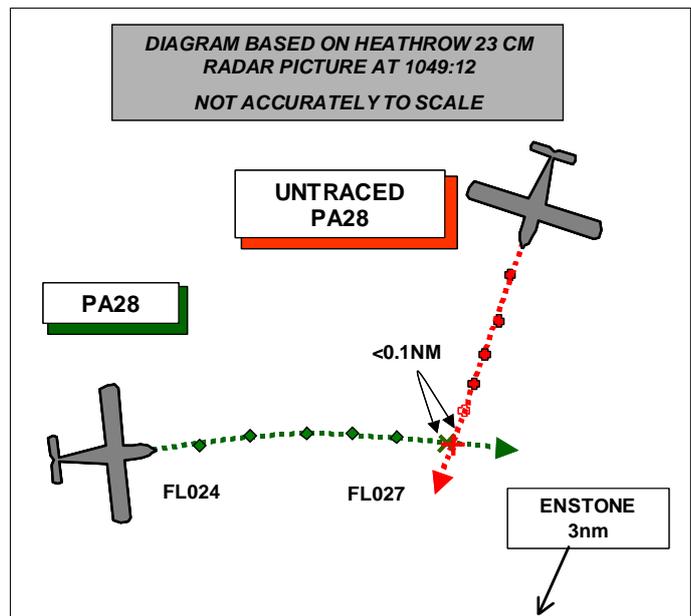
Visibility: >10km NK

Reported Separation:

0ft V/100m H NK

Recorded Separation:

NR V/ 0 H (see UKAB Note (2))



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PA28 (A) PILOT reports that he planned to fly private VFR flight, with a student pilot in the RHS, from Kemble to Duxford in a blue and white ac with all lights on, squawking with Mode C. The route was initially via Northleach Roundabout VRP and then direct to Duxford. The route passed close to Little Rissington, Enstone and overhead Upper Heyford in order to keep them clear of the hazards at Croughton and Weston on the Green, then north of Henlow and to overhead Royston where the circuit joining instructions for Duxford were expected. They were in receipt of a TS from Brize Radar and had already sighted a number of contacts called to them. They also had a warning from the controller that there was a risk of late or no warning of traffic due his workload and the traffic density.

When they were in the vicinity of Enstone, heading 085° at 110kt, he conducted a routine lookout scan and then looked in to reconcile their position on the chart. While he was doing this a blue and cream PA28 flew past them, from left to right, immediately in front and apparently in a shallow descent but the incident was over too quickly to note the other ac's registration. He quickly scanned the area to make sure the ac was alone and then reported the occurrence to the Brize LARS controller.

He tried to estimate the distance by recalling his image of the ac in comparison with the size of his own ac while parked at various distances from him and he concluded that it had passed within 100m of them.

He assessed the risk as being high.

UKAB Note (1): Despite extensive procedural tracing action the 2nd ac could not be traced.

UKAB Note (2): The recording of the Clee Hill radar shows the incident. As the recording starts at 1045:30 the PA28, squawking 3710 with a Mode C readout of FL024 is tracking 080° towards the incident position. At 1045:41 a primary only contact appears manoeuvring 5nm N of Enstone, but it disappears at 1047:44 in approximately the same position. The primary then reappears at 1048:40 tracking SW towards the incident position. The CPA is at 1049:14 when the PA28 at FL027 and the

primary contact are coincident. The ac cross and the primary contact departs to the SSE while the PA28 continues to the E.

HQ 1GP BM SM reports that reports from Brize LARS (RAD), the reporting pilot, a tape transcript and a radar replay were available with which to conduct the analysis; however, there are difficulties with the latter source. Firstly, the replay shows a picture that is heavily processed compared to the one that would have been available to RAD at the time of the occurrence. Consequently, it has not been possible to reconcile some pieces of TI passed by RAD to the PA28, to contacts on the replay. Furthermore, what is believed to be the reported ac appears as an intermittent primary only radar contact and this does not necessarily accord with what RAD may have seen.

In the build-up to the occurrence, RAD had a moderate workload and made a number of transmissions to the PA28 all passing accurate TI. At 1047:48, the TS was reduced due to high traffic density, probably due to a gliding competition around Bicester and other traffic. At the point that the reduction in service was passed, further TI was given relating to two contacts to the N that cannot be seen on the replay and also, *“further traffic left eleven o'clock five miles crossing left right no height information.”* Whilst this contact (AC2) does not appear on the replay at 1047:48, a contact can be seen on the replay in this position up to 1047:43; it is likely that this was the same ac.

A primary contact appears on the replay at 1048:39 NE of the PA28 at a range of approximately 1.6nm and, given the similarity of speeds and tracks; it is likely to be the same contact that had dropped-out at 1047:43. TI was passed at 1047:48 and seems to show AC2 cruising at around 100-120kts.

At 1049:03, the PA28 appears to turn from a track of around 080° to around 100°, onto a conflicting flight path with AC2 and at 1049:24, RAD issued a warning of manoeuvring traffic in the PA28's 12 o'clock at a range of half a mile with no height information. The PA28 pilot's response to the TI was that he was visual with the traffic and that, *“it's a glider.”* Again, this contact does not appear on the radar replay and at that point AC2 is around 0.3nms S of the PA28.

It is impossible to determine whether AC2 dropped out from RAD's Watchman display as it did with the radar replay; consequently, it is impossible to determine whether a sufficient window of opportunity existed for RAD to update the TI on AC2 passed at 1047:48. If the contact was permanently displayed on the Watchman display and given the fact that the controller does not seem to have been actively involved in another task, from the transcript it appears that there was an opportunity, in terms of time, for an update of TI to have been passed from 1048:33, at which point around 2nms lateral separation existed. However, analysis of the occurrence sequence demonstrates that RAD was providing a good level of service before and after the AIRPROX and had limited the service accordingly. Consequently, BM SM concludes that they seem to have been unable to perceive a requirement to update the TI, rather than not providing it outright. This notwithstanding, RAD did pass initial TI on AC2 in a timely manner and had made the PA28 pilot aware of the limitations of his service provision due to high traffic density, with CAP774 clearly stating the pilot's responsibilities for collision avoidance.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of PA28 (A), transcripts of the relevant RT frequencies, radar recordings and a report from the appropriate ATC authority.

Despite that the primary contact believed to be the untraced PA28 was intermittent and unpredictable, the Board was satisfied that the TI passed by Brize LARS to PA28 (A) was as comprehensive as the circumstances allowed and identified the correct ac rather than the glider mentioned in pilot's response to the call. The recording of the Cleve Hill radar showed several slow moving primary contacts believed to be gliders including one that was in PA28 (A)'s 12 o'clock but at a greater range than the unidentified PA28 that was crossing from L to R just ahead. Although the pilot of PA28 (A) saw the ac later than optimum, the conflicting ac had changed direction about 40sec before the CPA onto a conflicting track that was a line of constant bearing. The pilot had also been distracted by the glider that was also in conflict. Bearing in mind these factors the Board

agreed that the cause had been a late sighting by the pilot of PA28 (A) but they could not determine the part played by the pilot of the untraced PA28. Members accepted PA28 (A) pilot's estimate that there had been no vertical separation and this combined with the radar verified very close horizontal proximity led them to believe that normally accepted safety standards had been eroded.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Effectively a non-sighting by the pilot of PA28 (A); it is not known whether or when the pilot of the untraced PA28 saw PA28 (A).

Degree of Risk: B.

AIRPROX REPORT No 2010114

Date/Time: 26 Aug 2010 1325Z

Position: 5816N 00257W (13nm SSE Wick)

Airspace: SFIR (Class: G)

Reporting Ac Reported Ac

Type: EC225 PA23

Operator: CAT Civ Comm

Alt/FL: 2000ft 2000ft
(QNH 1012mb) (QNH 1012mb)

Weather: VMC CAVOK VMC CLNC

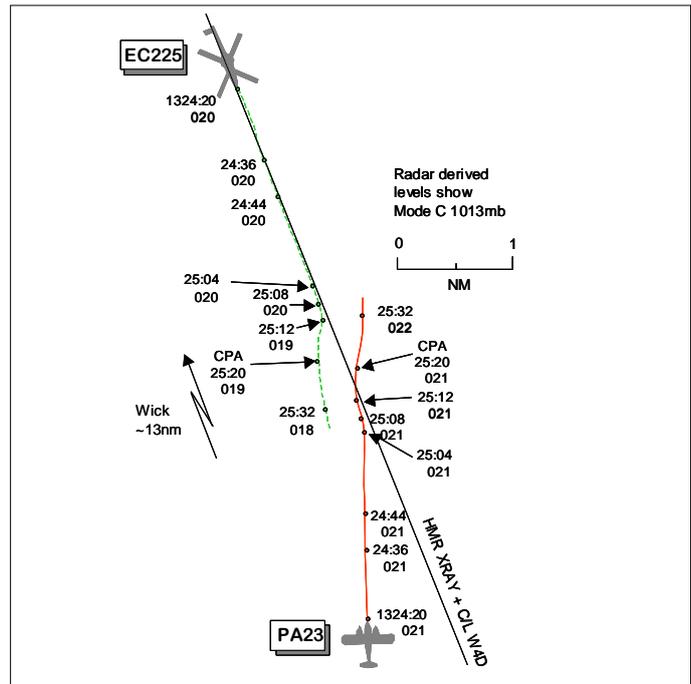
Visibility: >10km 45km

Reported Separation:

Nil V/0.5nm H 500ft V/2nm H

Recorded Separation:

200ft V/0.3nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE EC225 PILOT reports en-route to Aberdeen VFR and in receipt of a BS from Wick on 119.7MHz, squawking 3730 with Modes S and C; TCAS 1 was fitted. The visibility was >10km in CAVOK VMC and the ac was coloured red with nav, strobe and floodlights all switched on. In the cruise S of Wick, approaching the Wick 10nm handover point at 2000ft QNH 1012mb, heading 165° at 145kt they noticed and were monitoring an ACAS contact at a similar level. They were aware of a survey ac operating low level, not above 600ft, [not the subject PA23] in the vicinity of Beatrice Platform however, there was no ACAS indication for this ac in that area. At 10nm P1 contacted the survey ac on Comm Box 1 (122.8MHz) to pass information on position and intention whilst P2 reported '10nm S of Wick' on Comm Box 2 to Wick and was told to contact Lossie Departures on 119.35MHz. On contacting Lossie, ACAS generated a TA target and aural 'traffic' alert, simultaneously as both crewmembers became visual with an ac in their 12 o'clock range <1nm at a similar level flying in the opposite direction. P1 took avoiding action by turning R and descending whilst P2 asked Lossie to standby. As the other ac passed down their LHS about 0.5nm away they identified it as a white/blue coloured twin-engine Piper type. On subsequent communication with Lossie this was identified to them by c/s and Lossie were informed of their intention to file an Airprox. He assessed the risk as high.

THE PA23 PILOT reports conducting a wildlife survey in the Moray Firth at 2000ft alongside other company traffic conducting a similar survey at 600ft. He was receiving a BS from Lossie on frequency 119.35MHz and squawking 3721 with Modes S and C. The visibility was 45km in VMC and the ac was coloured white/blue with strobe and landing lights switched on. Prior to the flight faxes were sent informing various stations of their intentions that 2 ac would be operating in this particular area giving levels and times on survey. About 1325 when 5-8nm N of Beatrice HPZ, heading 360° at 130kt, Lossie passed TI on conflicting traffic 11 o'clock range 5nm. He responded 'visual' and he adjusted his heading R 5° to ensure the ac would pass down his port side without breaking-off his survey. The other ac continued on its heading and to his knowledge the flight was not working Lossie. He then saw the other ac, a red coloured twin-engine helicopter, make an avoiding turn to the R and descend when it was about 2nm away. Once the ac had passed he heard a pilot call on frequency reporting an Airprox and that he had had to take avoiding action. He then re-stated to ATC that he was visual with the traffic and that there had been no chance of collision. He was asked to contact Lossie ATC after landing. The helicopter pilot stated that he was aware of

the survey ac operating at 600ft but not another [his PA23] at 2000ft. He assessed the risk as low. Later when he spoke to the Supervisor he was told that they had received the faxes from his operations dept which had clearly stated that on this particular day 2 ac would operate in the area; he was told that Aberdeen Information had also received the same faxes.

ATSI reports that the Airprox occurred in Class G uncontrolled airspace between an EC225 and a PA23, 13.6nm S of Wick (WIK) at altitude 2000ft. The EC225 had departed Foinavon for a flight to Aberdeen and had been in contact with Wick Approach on 119.7MHz under a BS before transfer to Lossiemouth ATC. The PA23 was conducting a wildlife survey in the Moray Firth and was in contact with Lossiemouth on 119.35MHz under a BS. There was a second survey ac in the Moray Firth operating at 600ft amsl.

Wick ATSU provide Basic and Procedural, non-surveillance-based, services outside of CAS. No report was filed by the Wick ATSU in respect of this Airprox.

METAR EGPC 261320Z 14007KT 110V170 9999 FEW019 14/08 Q1012=

CAA DAP reported to ATSI that civil NOTAM action was not taken on the survey activity as the flights were to be in uncontrolled airspace where normal rules of the air applied. There was no ACN directly related to the survey activity in the Moray. ATSI were unable to verify the individual co-ordination activity that may have taken place between the operator and any ATSU.

AIS reported to ATSI that the Area En-Route Pre-Flight Information Bulletin for 26 August 2010 (0908 UTC) to 27 August 2010 (0908 UTC) contained no information on aerial activity in the Moray Firth.

At 1306:20 Wick APP called Lossiemouth with a pre-note on 2 ac, the second of which was the EC225. Wick passed the following information, which was read-back by the Lossiemouth controller, "...E C two two five ... Foinavon to Aberdeen ... two thousand feet on a Basic Service ... will be overhead Wick minute two zero". The Lossiemouth controller issued squawk 3730 and frequency 119.35MHz. The conversation terminated at 1307:50. In accordance with UK AIP ENR 1-6-2-9, SSR code 3730 is allocated to RAF Lossiemouth and is considered validated and verified. The Wick MATS Part 2 (Section 5 Chapter 4 paragraph 3.2.1) states:

'During the notified hours of Lossiemouth LARS the following coordination will normally be carried out: Traffic operating below FL100 and departing in the sector between W4D and N560D to the south of Wick, except traffic operating on the ADRs, should be pre-noted to Lossiemouth. Lossiemouth will issue an SSR code and any relevant traffic information.'

The EC225 flight called Wick Approach at 1307:40. Wick Approach responded by issuing the QNH and asking the EC225 to pass its message. The EC225 crew requested a BS and routing via the Wick O/H. The EC225 flight reported on the WIK 355 radial at 28nm maintaining 2000ft. Wick APP agreed to provide a BS. The EC225 was squawking 0040 (allocated to 'Civil North Sea Helicopters: considered unvalidated and unverified). Prestwick Multi Radar Tracking showed the EC225 on track WIK maintaining FL020. The PA23, squawking 3721 (RAF Lossiemouth - validated and verified), was operating within a 5nm radius of MORAY at FL021. A BS is provided for the purposes of giving advice and information useful for the safe and efficient conduct of flights. It may be provided with or without the use of ATS Surveillance Systems. The UK AIP ENR 1.1.2 paragraph 3 notifies that:

'Pilots should not expect any form of traffic information from a controller/FISO and the pilot remains responsible for collision avoidance at all times. However, on initial contact the controller/FISO may provide traffic information in general terms to assist with the pilot's situational awareness.'

The associated guidance material provided for CAP774, UK Flight Information Services, Chapter 2 paragraph 1 states:

'It is essential that a pilot receiving [a Basic Service] remains alert to the fact that, unlike a Traffic Service and Deconfliction Service, the provider of a Basic Service is not required to monitor the flight.'

This guidance is re-iterated for civil controllers in CAP493 (Section 1 Chapter 11). There is no similar warning for pilots in the UK AIP ENR 1.1.2.

At 1319:50 the EC225 flight reported O/H Wick and was instructed, "EC225 c/s for Lossiemouth squawk three seven three zero... next report ten miles south". This was acknowledged and the EC225's squawk was observed to change at 1320:28. At this time the PA23 was 4nm W of MORAY maintaining FL020. The Wick MATS Part 2 (Section 5 Chapter 4 paragraph 4.2) states:

'When co-ordinating traffic with Lossiemouth they will issue an SSR code. This should be...passed to the pilot prior to transfer to Lossiemouth.'

There is no specific requirement in the Wick MATS Part 2 for pilots to be requested to make a 10nm S of Wick position report. The EC225 continued its flight S of Wick following, but underneath, Advisory Route W4D, on the WIK VOR 164 radial.

[UKAB Note (1): The WIK 164 radial under the ADR is the HMR X-Ray. The UK AIP ENR 1-15-6/7 states the HMR is bi-directional between Aberdeen and Wick. Altimeter setting outside 30 DME ADN is the appropriate RPS or as directed by ATC. Cruising altitudes S'bound 2000ft to SMOKI (44 DME WIK) and then as directed. Para 2.4.1.2 Fixed-Wing Procedures states:

'Crews of wildlife and aerial survey aircraft should consider utilising notification procedures detailed at ENR 1.1.4 [Non-Standard Flight (NSF) or Unusual Aerial Activity (UAA)] as well as contacting Aberdeen ATSU prior to commencing operations.']

At 1324:20 the EC225 flight reported 10nm S of Wick and was transferred to Lossiemouth on 119.35MHz. The PA23 was 5.3nm S of the EC225, in the EC225's 12 o'clock, maintaining FL021 on reciprocal track.

At 1325:08 the PA23 is observed to turn N'bound on to a track approximating the WIK 164 radial at FL021 whilst the EC225 is 1.1nm N of the PA23, S'bound on the WIK 164 radial at FL020, i.e. on a reciprocal track. Four seconds later at 1325:12 the EC225 is seen to commence a R turn, off the 164 radial, and descend to FL019 when it is 0.8nm N of the PA23, which is indicating FL021 on the WIK 164 radial northbound.

At the CPA, 1325:20, the 2 ac pass abeam each other 12.8nm S of WIK, the EC225 W of the PA23 by 0.3 NM, the EC225 at FL019 and the PA23 at FL021. The PA23 then made a R turn away from the 164 radial as lateral distance between the 2 ac increased. The PA23 climbs to FL022 and the EC225 continues its descent to FL018. The EC225 then returns to a S'ly track on the WIK 164 radial at FL020 and the PA23 continues its flight N'bound at FL021.

Prior to transferring the EC225 to Lossiemouth, Wick had received no advance TI on the PA23's presence on the EC225's intended route. ATSI were unable to establish why Lossiemouth did not relay the presence of the PA23 to Wick Approach. Lossiemouth was unable to give traffic information to the EC225 as Wick APP had elected to retain the EC225 on the Wick frequency until 10nm S of Wick. Whilst not considered contributory to this event, ATSI consider that there is insufficient warning to pilots in the UK that, when under a BS, even if transponding on a discrete code, there is no requirement for the controller to be monitoring the ac.

THE LOSSIEMOUTH DEPARTURES CONTROLLER reports screening a U/T controller when the PA23 was conducting a whale survey over the Moray Firth in the vicinity of Beatrice Oil Field at 2200ft Orkney RPS 1007mb under a BS. Wick pre-noted a helicopter S'bound on HMR-X at 2000ft VFR to Aberdeen and a 3730 squawk was issued. A 0040 squawk was observed coasting out S of Wick with the PA23 transiting towards the 0040 squawk. TI was passed when the PA23 was about

5nm S of the 0040 squawk indicating a similar altitude; the PA23 pilot reported visual. The 0040 squawk was seen to change to 3730, and there was about 2nm separation when the EC225 flight made its initial call. The EC225 was identified by the trainee, given the RPS and was asked what type of service was required. The EC225 crew told them to “standby” and the radar return was seen turning and descending away from the PA23. TI was then passed by the mentor to the EC225 flight as his trainee had not done so on its initial call. The radar returns were then seen to merge at similar altitudes before the EC225 crew asked if they were working the ac adjacent to their helicopter. He told the EC225 crew what the other ac was and what his intentions were before requesting what type of service was required. The EC225 crew requested a BS and that an Airprox would be filed after landing, having had to take avoiding action down and to the R. The EC225 crew then asked why the PA23 was not at 600ft amsl in accordance with his notice. He replied that the PA23 pilot had asked to operate at 2200ft amsl. The PA23 pilot then called stating that his company should have passed an amendment to his altitude; however, this had not been received by Lossiemouth.

HQ 1GP BM SM reports this Airprox involved a PA23 conducting a whale survey over the Moray Firth in receipt of a BS from Lossiemouth Departures (DEPS), with the position being filled by a controller under training, and an EC225 outbound from Wick. The Airprox occurred shortly after the EC225 flight contacted DEPS en-route to Aberdeen.

From the reports of the controllers involved it is apparent that they believed that the PA23 was operating on a task that was subject to a NOTAM or ACN action, for which the promulgated altitude was 2200ft AMSL. The PA23 pilot believed that his ops had made this notification; however, it is clear from the transcript that the EC225 pilot expected the PA23 to be at 600ft AMSL.

At 1209:52, the PA23 was placed under a BS by DEPS, with Wick pre-noting the EC225 to DEPS just 1hr later at 1307:29 stating that the EC225 was flying at, “*2000ft on a Basic Service at Wick minute 20.*”

At 1324:35, DEPS passed TI to the PA23 on the EC225 stating, “*traffic 12 o'clock, opposite direction, indicating similar height.*” At this point 3-5nm lateral separation exists, with the PA23 indicating 100ft higher than the EC225 (SSR Mode C). Although DEPS passed no range information, the PA23 pilot immediately replies that his is “*visual with the traffic.*”

At 1324:45, the EC225 flight called DEPS, was identified and asked what type of service was required. The EC225 crew responded at 1325:03 stating, “*eh standby Lossie.*” At this point, approximately 1-3nm lateral separation exists between the EC225 and PA23. Realising the potential gravity of the situation, the DEPS screen controller stepped in on the frequency at 1325:08 and passed a traffic warning to the EC225 on the PA23, stating, “*traffic twelve o'clock, 3 miles, opposite direction at similar height.*”

[UKAB Note (2): Radar separation is 1.1nm when the DEPS screen controller’s transmission commences.]

There is then a pause of 72sec before the EC225 crew replied, “*yeah were visual with that making avoiding action.*”

One of the causal factors of this Airprox was the operation of 2 survey ac which the PA23 pilot believed had been promulgated. The unit has identified that the provision of TI to Wick on the PA23 operating in their area may have prevented this occurrence and has taken action to raise awareness of this amongst their controllers; however, from an ATM perspective, DEPS passed timely TI to both ac, with both ac obtaining visual contact with the 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 video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC authorities.

The DAP Advisor informed Members that AUS routinely consider the issue of an ACN for survey flights if contacted by the operator. Such an ACN, if raised, would be distributed to all relevant ATSU's, which may be able to provide a service to these flights, as pre-notification of intent. With respect to the issue of a NOTAM for survey flights, as the source information provided is normally generic i.e. only specifying overall activity areas, start and finish dates and max/min altitudes, and since the decision to carry out these flights is usually made at short notice (taking into account various factors including Wx, ac availability etc on the day), the production of a timely and/or meaningful NOTAM to cover such unpredictable activity is not usually possible nor deemed necessary. However, for activity at and below 2000ft amsl, survey operators are encouraged to notify the UK Military Low Flying Section under the CANP system. Furthermore, the AIP entry was not pertinent to this flight – a NSF is for flights within CAS and the wildlife survey was not an UAA; this explained the comment in the ATSI report where NOTAM action would not be taken for this Class G airspace activity. The notification by operators via fax or telephone to ATSU's was what would be expected as this would contain the precise details of the intended flight and could be linked to an associated ACN if previously generated. The LF Ops Advisor also commented that it was common practice that survey operators informed the LF Booking Cell who notified the activity to all users booking into the Low Flying System.

It was clear the EC225 crew were surprised to encounter the PA23 at a similar altitude when they were expecting a survey flight to be operating in the area well below their level at 600ft. That said, the crew were aware of the PA23 from their ACAS equipment display when they were approaching 10 DME WIK, i.e. when it was over 5nm away. The PA23's flightpath had triggered a TA alert - TCAS 1 cannot generate RAs – as the EC225 crew contacted Lossie. The PA23 was seen <1nm ahead and the P1, unhappy with the separation that pertained, initiated a R turn and a descent to avoid it, estimating 0.5nm separation. The PA23 pilot, although under a BS, was given a traffic warning by Lossie DEPS on the approaching EC225 and he immediately saw the helicopter over 3nm away and elected to turn R 5° to ensure it passed down his LHS but without breaking-off his survey and taking visual separation on it. However, in doing so, the PA23 had flown close enough to the EC225 to cause its crew concern and this had caused the Airprox. Members agreed the PA23 pilot had been overly task-focussed, for although he had taken due regard of the EC225 and discharged his responsibilities under 'see and avoid', he should have considered the situation more carefully and the separation that pertained – aiming to pass with minimum separation does not allow any margin for error by either party.

Wick APP had pre-noted Lossie DEPS about the EC225; however, DEPS had not told Wick about the PA23, in accordance with the MATS Part 2 procedure. After the initial RT exchange between the trainee and the EC225 flight, DEPS Mentor had stepped-in and passed a traffic warning, owing the proximity of the PA23, although by then the EC225 crew were already taking action. The radar recording shows 0.3nm and 200ft separation at the CPA, the ac passing port to port on opposite direction tracks. Although this had been an untidy affair, all of the actions taken, when combined, were enough to allow the Board to conclude that any risk of collision had been effectively removed.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The PA23 flew close enough to the EC225 to cause its crew concern.

Degree of Risk: C.

AIRPROX REPORT No 2010117

Date/Time: 27 Aug 2010 1230Z

Position: 5405N 00111W (2nm NE
Linton-on-Ouse - elev 53ft)

Airspace: Vale of York AIAA (Class: G)

Reporting Ac Reported Ac

Type: Tucano Untraced Glider

Operator: HQ Air (Trg) NR

Alt/FL: 3000ft↑ NR
QFE (1012mb)

Weather: VMC CLBC NK NK

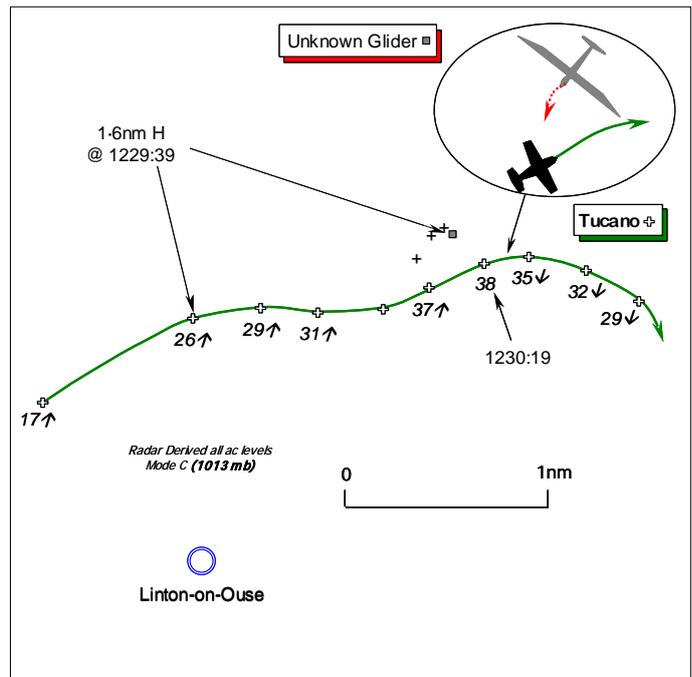
Visibility: >10km NK

Reported Separation:

400ft V/Nil H NK

Recorded Separation:

Not recorded



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE TUCANO PILOT, a QFI, reports he was conducting an instructional sortie in the vicinity of Linton-on-Ouse. As the PF he was configuring his ac for a simulated stuck throttle exercise at a high power setting whilst in communication with Linton TOWER on 240.825MHz; he was not in receipt of an ATS. Wide downwind, climbing wings level through 3000ft QFE, heading E 3nm NE of the aerodrome, he became aware of a white glider orbiting near the cloudbase about 400ft above him. The glider was approaching from his 11 o'clock in a shallow L turn and to avoid it he bunted his ac to 'negate their closure' as the glider passed about 400ft above with a 'medium' Risk of collision. No discernible avoiding action was taken by the glider pilot. He stressed that he was working under a reasonably high workload at this point of the sortie as care was needed not to overspeed the landing gear and flaps, which were set to full.

His aeroplane has a black colour-scheme; the HISLs and taxiing lamp were on.

UKAB Note (1): The time of the Airprox was originally specified by the reporting pilot as 1420UTC. The Station and the Tucano pilot were aware of a gliding competition taking place and a competition was NOTAM'd from Pocklington on this day with 50 gliders participating. An Airprox report was also obtained from a Schleicher ASW 22 glider pilot who was identified in the vicinity at 1420UTC but had not seen the Tucano. However, examination of the radar recording for this time period subsequently revealed the reported Airprox timing was incorrect. The launch and recovery times for the subject Tucano were ascertained from Linton-on-Ouse as 1139UTC and 1239UTC respectively, the Schleicher ASW 22 glider discounted and no other identified, consequently, the reported glider pilot remains untraced.

At 1229:39, the Tucano is shown squawking A4501 passing 1.3nm N of the aerodrome whilst turning R downwind passing 2600ft Mode C (1013mb) in a steady climb. An unidentified primary contact, which might or might not be the reported glider, is shown manoeuvring in the Tucano's 12 o'clock at a range of 1.6nm. The Tucano steadies easterly at 1229:55, while climbing through 3100ft Mode C before the Mode C indication is lost for one sweep and the Tucano reverses L; at the same time the primary contact of the glider fades and is not evident at all thereafter. The Tucano ascends above the MATZ to a maximum indicated level of 3800ft Mode C – about 3710ft QFE (1010mb) – at 1230:19, in a position 2.1nm NE of the aerodrome which is perceived to be the point that the Airprox

occurred in Class G airspace. On the next sweep the Tucano indicates a descent through 3500ft Mode C, which is perhaps indicative of the reported avoiding action 'bunt', before descending steadily through 3200ft whilst turning R.

HQ 1GP BM SM reports that for a variety of reasons, no reports or tape transcripts have been provided by the ATSU, which has impacted on the ability of this Command to investigate this Airprox. A recent interview with the ADC about this Airprox has been unable to shed any light on the occurrence. The ADC is an experienced and reliable controller who states that no mention was made of the Airprox on the frequency, nor that there was anything untoward during the period.

It is possible that the reported glider did not appear on the Hi-Brite ATM, as there was another Airprox at Linton-on-Ouse 6 days later when the reported glider was not displayed on the ATM. Alternatively, with the glider operating at around 3400ft, it is more possible that the glider would have been lost in the radar overhead.

Whilst acknowledging that the Airprox occurred in Class G airspace, given the nature and volume of activity at Linton, planning to route over the MATZ in a non-transponding ac and without establishing RT contact with ATC peels away the barriers to an occurrence, leaving only 'see and avoid'.

HQ AIR (TRG) agrees with the observation of HQ 1GP BM SM on the actions, or rather the omissions of the glider in this case. The only additional mitigation for the Tucano pilot would have been to ask for a radar service outside of the MATZ but this would have been impractical for several reasons. Indeed, it is unlikely that this would have highlighted the presence of the glider in any case. This incident highlights again the hazards of non-transponding aircraft operating in the vicinity of known high concentrations of traffic without talking to appropriate agencies to warn of their presence. Despite the best efforts of the Board it has proved impossible to trace the glider operator to understand his side of the incident.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included a report solely from the Tucano pilot, radar video recordings, and reports from the appropriate ATC and operating authorities.

The investigation of this Airprox had proven somewhat problematic and the Board noted the unavailability of the ATC RT recording and controller's report, upon which HQ 1Gp BM SM had commented. Moreover, the absence of a report from the glider pilot, who remained untraced, naturally led to an incomplete analysis of the Airprox, which the Board could only assess on the basis of the Tucano pilot's report and the extremely limited recorded radar data.

The Station and the Tucano pilot were aware of a gliding competition taking place and Controller Members noted the comment by HQ 1 Gp BM SM about the lack of RT contact with gliders flying in the vicinity of military aerodromes. Good airmanship would suggest that it was desirable for glider pilots operating nearby to establish RT contact with an aerodrome's ATSU to notify them of their presence and to advise their intentions, which might thereby facilitate mutual warnings about military ac operating from the aerodrome and the glider itself. However, when competitions involving 40-60 gliders were involved controller Members were concerned at the potential to overload RT channels and the controller himself, who might have other higher priority tasks, so a balance had to be struck between information useful to controllers/other pilots and overloading ATC. Whilst acknowledging that any information was better than none, the Board recognised there was no compunction on glider pilots to call ATC when operating VFR under see and avoid and not all glider pilots have RT licences. In the absence of any recorded RT or input from Linton ATC, it was not evident if any glider pilots had called Linton APPROACH (APP). The Tucano pilot was not in receipt of a radar service whilst operating above the MATZ up to 3700ft aal more than 2nm away from the aerodrome, however, it was likely that TOWER would have liaised with APP beforehand. Thus if any glider pilots were in contact with APP on RT or evident on radar it could well have prompted a warning through TOWER

to the Tucano pilot, but gliders are notoriously difficult to detect on primary radar and the lack of an SSR transponder makes them even less conspicuous to the controller.

A civilian controller Member emphasised, and the Board recognised, that both pilots were operating in Class G airspace above the Linton MATZ and embedded ATZ where see and avoid prevails and freedom of operation in accordance with the Rules of the Air is entirely axiomatic. Some suggested that this was a late sighting by the Tucano pilot, but then other Members contended that he had probably seen the glider as early as he could reasonably have been expected to do so. The HQ Air pilot Member concurred that the glider had been seen in sufficient time for the Tucano pilot to avoid the glider and, in his view, this was not a close encounter. The Tucano pilot reports he was able to clear 400ft below the glider after he had bunted his ac in avoidance. Moreover, the radar recording also confirmed the rapid descent in the vicinity of where the Airprox occurred. On the basis of the limited information available, the Board could only conclude that this Airprox was the result of a Sighting Report by the Tucano pilot and that the prompt avoiding action taken was entirely effective in removing any Risk of a collision.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Sighting Report.

Degree of Risk: C.

AIRPROX REPORT No 2010122

Date/Time: 5 Jul 2010 1000Z

Position: 5144N 00129W (4nm SSE of Brize Norton - elev:287ft)

Airspace: London FIR (Class: G)

Reporting Ac Reported Ac

Type: Tristar KC1 P180 II Avanti

Operator: HQ Air (Ops) Civ Comm

Alt/FL: 5000ft↓ 3000-5000ft
QFE (1011mb) QNH (1020mb)

Weather: IMC VMC IICL

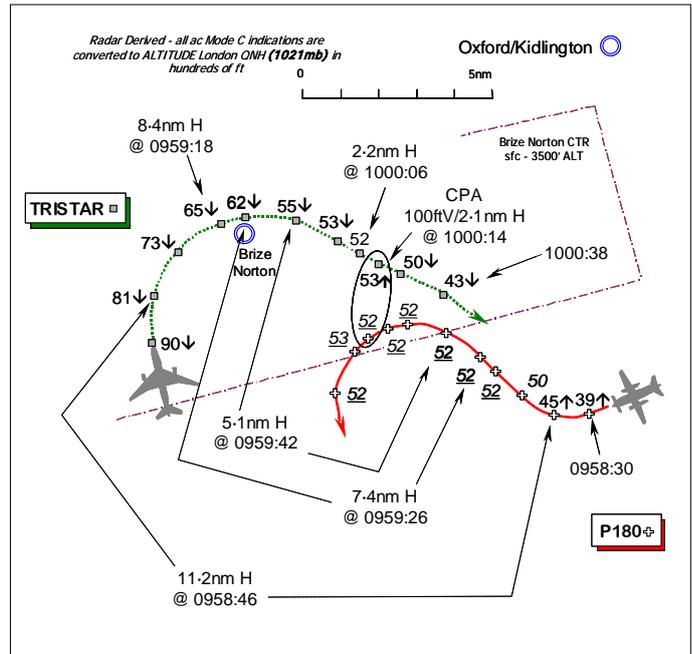
Visibility: 10km 10km+

Reported Separation:

Nil V/<2nm H NK

Recorded Separation:

100ft V/2.1nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE LOCKHEED TRISTAR KC1 PILOT reports he was inbound to RW26 at Brize Norton from Akrotiri under IFR and in receipt of a TS from Brize DIRECTOR (DIR) on 133.75MHz. The assigned squawk was selected; Mode S and TCAS are fitted.

About 10nm S of the aerodrome in the descent from FL160 to FL80 at 270kt, DIR vectored them onto a radar heading of 340° straight towards the aerodrome and instructed them to descend to 4000ft Brize QFE (1011mb). Their proximity to the aerodrome and their height necessitated the use of full speed brakes. Passing about 9000ft they were given further descent to 2500ft and, once through the RW centreline, they were turned onto a heading of 100°, positioning them S of the aerodrome. Shortly afterwards, DIR gave a further R turn onto a heading of 120° towards traffic displayed on TCAS level at 5000ft. DIR then requested they expedite their descent. At about 6000ft QFE he elected to begin a level off, to avoid both the other ac's height and also to avoid entering cloud with tops at 5300ft QFE. This was followed very shortly afterwards by a TCAS RA, initially demanding a descent at over 2000ft/min, which the crew followed whilst informing ATC of the RA. Almost immediately thereafter they entered cloud and received a further RA, commanding a climb at 1500ft/min, which the crew initiated. During the period of the RA, DIR attempted to give avoiding action but once again he informed the controller of the TCAS RA. Shortly after receiving the 1500ft/min CLIMB RA, TCAS enunciated MAINTAIN VERTICAL SPEED indicating a 600ft/min climb, 5sec later CLEAR OF CONFLICT was enunciated. They then began descending to 2500ft in compliance with DIR's instruction and completed an approach and landing without further incident.

The other ac was not seen - it might have been in cloud – but he estimated minimum separation was within 2nm at the same height with a 'high' Risk of a collision. The Airprox occurred while the crew were under a high workload during their descent in the airfield overhead utilising speed brakes and about to enter cloud.

THE PIAGGIO P180 II AVANTI PILOT, the PF, reports that they were outbound from Oxford/Kidlington under IFR to join CAS at COMPTON (CPT), flying at 200-250kt. The assigned squawk was selected; enhanced Mode S and TCAS I is fitted.

After take-off from RW01 they climbed to 2500ft QNH (1021mb) making a R turn onto a downwind and quickly contacted Brize RADAR for a DS. Cloud was FEW at 3800ft and Brize RADAR gave them further clearance to climb but he was unsure to what altitude [FL50 – ALT52]. They were given several radar headings with large turns between them (i.e. 90° to L and R). Several contacts were seen on TCAS and he assumed this was the reason for the turns, but none of these triggered a 'warning' from their TCAS I whilst flying in 'intermittent VMC' in and out of cloud. After approximately 5min they were given a clearance to climb and proceeded enroute. The other ac was not seen.

They were not aware that an incident had taken place and both he and his colleague were quite surprised to hear from the UKAB. Had they been aware at the time then an occurrence report would have been filed.

His ac has a white/orange livery and the HISLs were on.

BRIZE NORTON DIRECTOR (DIR) reports that he had a light workload and was working the Tristar inbound from airways on a radar-vectored ILS approach under a TS. He had taken the Tristar through the centre-line, overhead the aerodrome, in a descent to 2500ft QFE (1011mb) on a heading of 120°. At this point the Tristar was descending through FL61 [ALT63] when he noticed that there was traffic – the P180 - working LARS heading NW at FL50 [ALT52]. He asked LARS where they were taking the ac and the ATS, which was a DS. Traffic information was given to the Tristar crew who were told to expedite their descent. Updated TI was given again at 4nm range and then the Tristar crew called a TCAS RA. The P180 turned southbound and the Tristar then continued inbound under his radar vectors.

THE BRIZE NORTON LARS CONTROLLER (LARS) reports she was mentor to a trainee controller on LARS when the P180 departed Oxford and requested a DS. The ac was immediately in conflict with numerous contacts around the CPT area so she took over from her trainee and issued an avoiding action turn. She did step in during the session as it was one of the first times the trainee had experienced providing a DS and the trainee's initial avoiding action was ineffective. There was not time to let him rectify this, or discuss it. Although the workload was high for the trainee, she did not feel like she as mentor was working to capacity; indeed, she felt in control of the situation with both the trainee and the traffic. At no time did the P180 crew report an Airprox or a TCAS RA.

The main problem for the P180 was conflicting traffic in the CPT area, which required some liaison with the civil sector to get a higher joining level. She initiated this liaison, which was completed by the Supervisor. It was stressed that she did not feel pressured or unduly busy and felt the situation was under control and safe.

HQ 1GP BM SM reports that the Tristar was being vectored for an ILS approach to RW26 at Brize Norton and in receipt of a TS from DIR. The P180 was outbound from Oxford/Kidlington to join airways at CPT, whilst in receipt of a DS from LARS, which was manned by a trainee and mentor.

When identified and instructed by LARS to climb to FL50, the P180 crew requested a DS at 0957:25. LARS did not place the flight under the requested ATS at that point, although it is clear from LARS' actions that they applied a DS. Immediately, at 0957:39, LARS offered an avoiding action turn onto W against another ac that is not within recorded radar coverage [not the Tristar], “[C/S] *avoiding action turn right immediately heading 2-7-0 degrees traffic was south 5 miles tracking west indicating 2 thousand feet below.*” At this point, about 12nm horizontal separation existed between the P180 and the Tristar, which was descending through FL114, S of Brize Norton. At 0958:33, LARS issued a further avoiding action R turn instruction onto a heading of 310°, against the other contact that was now manoeuvring 3nm to the south, but “*..indicating 3000 feet below*” with the P180 in the climb to FL50.

Meanwhile, after establishing from the crew that a TS was required when the Tristar exited CAS, at 0957:37 DIR instructed them to, “*..set Brize Q-F-E 1-0-1-1 descend...height 2 thousand 5 hundred feet*”, followed later by a turn onto 100°. DIR turned the Tristar R onto a heading of 120° at 0958:44,

followed at 0959:22 by TI on the P180; “[C/S] *traffic south east 6 miles north west bound indicating flight level 5-0 expedite descent*”. Although DIR reports that he asked LARS ‘where they were taking the ac’ and ascertained that the P180 was under a DS, there is no evidence on the transcript of any liaison being conducted between DIR and LARS, nor does the LARS mentor mention it. It is possible that DIR’s instruction to the Tristar crew to “*expedite descent*” was in order to assist LARS, conscious that the heavy ac would be unable to level off quickly as, at the time, it was passing FL63 Mode C [about 8.4nm NW of the P180].

[UKAB Note (1): At 0959:44, DIR updated the TI on the P180 to the Tristar crew, “...*that previously called contact 12 o'clock 3 miles now opposite direction indicating flight level 5-0*” [ALT52], which was not acknowledged by the crew. This was followed by an instruction to turn L 20° onto a heading of 100°. At 1000:03, the Tristar crew advised DIR “*..just got TCAS R-A*”, to which DIR replied, “*confirm what heading*”. The Tristar crew repeated 5sec later “[C/S] *is 5 thousand feet TCAS R-A*”, whereupon DIR responded, “*roger that's copied turn left heading 1-0-0 degrees descend height 2 thousand 2 thousand 5 hundred feet*”. This instruction was read-back by the crew “*left heading 1 hundred and descend 2 thousand 5 hundred feet [C/S] currently I-M-C*”, which was acknowledged by the controller. Following a further L turn instruction from DIR onto 080°, the crew advised at 1000:34 that they were “*..now clear of conflict*”.]

Although the Tristar pilot reports that at about 6000ft they ‘elected to begin a level-off’ to avoid the P180’s level and also entering cloud, they did not mention the level-off on the RT. [UKAB Note (2): A reducing RoD is evident from the Tristar’s recorded Mode S Downlinked Ac Parameters (DAPs) as the ac steadies outbound from the Brize overhead, after 0959:42, from about 2500ft/min to 1100ft/min at 0959:50. Mode S then shows an increasing ROC up to ~900ft/min through to the CPA. However, this ROC is hardly reflected at all in the ac’s indicated Mode C, before the descent is resumed after 1000:14, increasing to over 3300ft/min.]

It is clear that LARS was aware of the P180’s proximity to the Tristar at 0959:23, when an instruction to turn L onto 180° was issued; however, it is not until 0959:42 that the turn begins to become evident on the radar recording [about 2 sweeps later], when LARS amended the instruction into avoiding action, “[C/S] *avoiding action turn left immediately heading 1-7-0 degrees traffic was north east [sic] 4 miles tracking east indicated at flight level 5-0*”. The transcript is not clear but the P180 crew may have become visual with the Tristar at this point stating, “*request traffic in sight and..turning left heading 1-7-0.*”

[UKAB Note (3): The P180 pilot reports the Tristar was not seen. When the avoiding action turn was transmitted the Tristar was actually 5.1nm NW of the P180, not NE as stated by LARS, indicating 5300ft (1013mb) and some 340ft above the P180 that was at 5200ft London QNH (1021mb) – (at the western edge of the displayed London QNH (1021mb) area). The CPA occurred at 1000:12 as the ac passed abeam, 2.1nm apart, with the Tristar indicating 100ft above the P180 on Mode C. A change of controller is noted on the transcript for the next transmission to the P180 crew at 1000:30, suggesting the mentor stepped-in at this point; “[C/S] *avoiding action turn right immediately heading 2-7-0 degrees traffic [not the Tristar] was south east 4 mile manoeuvring indicating 2 thousand 2 hundred feet below*”. This was read back by the crew, “*..right heading 2-7-0 again*”, before LARS [the mentor] added, “[C/S] *I am going to struggle to get you close to COMPTON under a Deconfliction Service as there is a lot of conflicting traffic in that area [are you] happy to accept a downgrade to Traffic Service for your controlled airspace join?*” This was declined by the P180 crew, “*..roger we prefer a Deconfliction Service*”. DIR then responded by modifying the previously transmitted avoiding action turn by 10° at 1000:56. A further avoiding action R turn was given onto E before the P180 crew was released own navigation for CPT, the CAS joining clearance issued and the flight switched to LACC.]

Although the Tristar crew state that, based on their interpretation of the TCAS display, DIR’s turn onto 120° vectored them into confliction, this is not the case. At the point that the turn was issued to the Tristar crew [at 0958:44] the P180 was SE of Brize Norton and no factor. Furthermore, even after the P180 was turned onto 310° [at 0958:33], the Tristar’s heading of 120° would still not be a conflicting heading within the terms of a TS, insofar as about 1nm of horizontal separation would

have been achieved. Moreover, whilst the Tristar crew highlight that DIR passed them avoiding action after ATC were advised of the TCAS RA, this is technically incorrect in that it was a re-statement of the heading of 100° previously issued. Having acknowledged the TCAS RA, DIR then continued to vector the Tristar inbound. JSP 552 245.120.3 states that:

‘controllers shall not attempt to modify the aircraft flight path until the pilot reports Clear of Conflict’.

Notwithstanding the potential cockpit workload during this phase of the flight, of further concern is the fact that the crew appeared to have decided to level-off without communicating this intention to DIR and that they did not advise DIR of the first TCAS RA.

From an ATC perspective, once LARS had given the P180 crew the avoiding action turn onto W against another ac at 0957:39, the trainee controller was faced with a challenging situation, given the airspace constrictions and his experience level. However, at no stage did LARS attempt to coordinate with the military ATSU that was working the traffic that caused them to take avoiding action. Nor did they reduce the ATS for the high traffic density, which may have afforded them greater flexibility to route towards CPT. Although the mentor took over from the trainee immediately after the avoiding action turn away from the Tristar, this Command contends that earlier intervention by the mentor could have prevented this Airprox. Notwithstanding DIR’s actions after being advised of the TCAS RA, DIR had attempted to provide the best level of ATS to the Tristar by requesting the expedite descent and turning them away from the P180.

Normally in this situation, the SUPERVISOR (SUP) would be expected to maintain oversight and liaise between the controllers involved, a presence that could have affected the outcome of this Airprox; however, in this instance, the SUP had been busy in the VCR [although LARS says the airways join was finalised by the SUP after he returned to the ACR]. RAF Terminal ATSUs have for some time operated with only one Supervisor in ATC whose remit extends to both the VCR and ACR, yet a number of incidents have occurred where the lack of a supervisory input has been a contributory factor. As the RAF begins to concentrate ac types at a reduced number of MOBs, it may be appropriate to re-consider the RN system of a dedicated VCR Supervisor – the Duty Air Traffic Control Officer (DATCO) – in addition to a Radar Supervisor in the ACR.

An aggravating factor in this occurrence was the slow response of the P180 to the avoiding action turns, possibly as a result of the crew’s use of the A/P to initiate the turn, rather than flying the ac manually. If this is the case, this issue has been highlighted before in Airprox investigations and warrants further investigation.

Recommendations made by BM SM

- i. HQ 1 Gp BM SM will shortly begin a regular newsletter to publicise the findings of occurrence investigations, which will cover the issues raised above.
- ii. RAF ATM FLC, in association with units, is requested to examine the utility and possibility of instituting dedicated ACR and VCR Supervisors.
- iii. The UKAB is requested to engage with the CAA about the use of A/P initiated avoiding action turns, rather than manual flying, when operating in un-controlled airspace.

HQ AIR (OPS) comments that the analysis by the HQ 1GP BM SM is supported and that HQ Air (Ops) has nothing further to add.

UKAB Note (4): Although not involved in this Airprox, NATS Ltd helpfully provided a TCAS review of this Airprox using the Eurocontrol Automatic Safety Monitoring Tool (ASMT) to analysis TCAS RA messages downlinked via Mode S (TAs are not downlinked) and the InCAS simulation tool. As TCAS interrogates once every second and the radar recordings used for the simulation give data updates rates of up to 8sec intervals, interpolation is necessary. Hence, there can be variations

between the InCAS simulation and what actually occurred in the cockpit. The InCAS simulation here used interpolated single source radar data from the Heathrow 10cm (4sec data update rate), the Airprox diagram is based on the Clee Hill Radar recording (8sec data update rate). The main elements of this simulation are summarised herein.

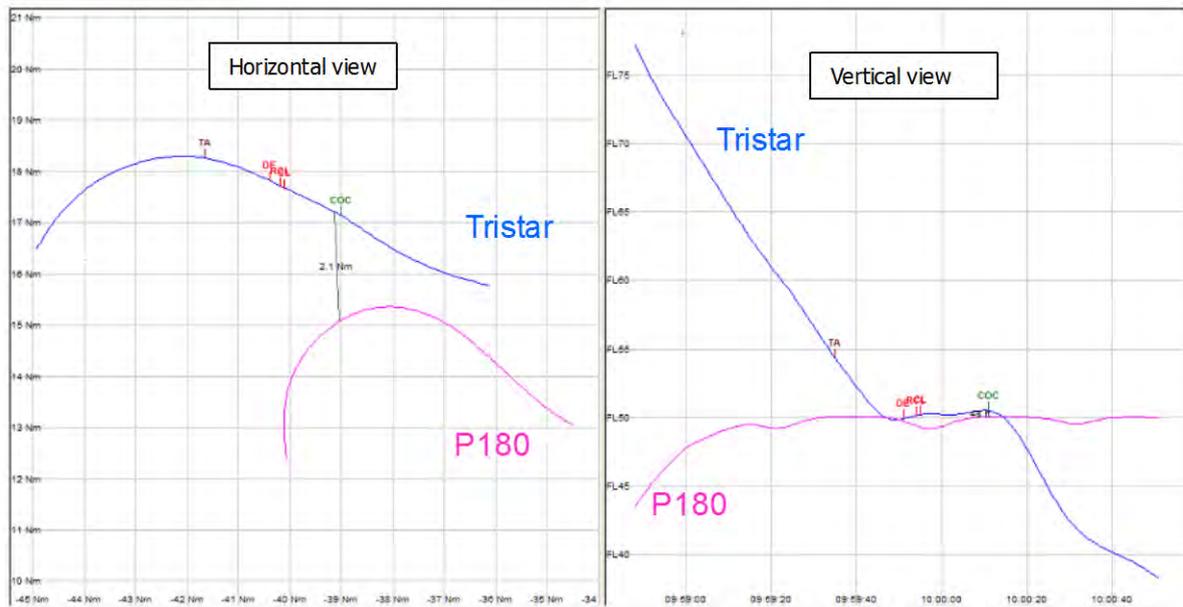
InCAS indicates that the Tristar crew first received a TA at FL54 at 0959:35, when the P180 was at a range of 5.88nm and 432ft below the Tristar. The ASMT recorded two TCAS RA messages downlinked via Mode S from the Tristar during this encounter. When the P180 had closed to a range of 3.57nm and 22ft below the Tristar, the latter's crew received a Descend RA within the 4 seconds prior to 0959:51. This RA changed to Maintain Vertical Speed within the 4 seconds prior to 0959:54. Analysis of the 'raw' downlinked messages indicates that this RA was specifically a Maintain Climb type of RA. (This RA is enunciated as "Maintain Vertical Speed, Maintain".) This would indicate that the sense of the RA must have reversed from a descending sense into a climb via an additional 'Reversal Climb' RA between the initial Descend RA message and the Maintain Climb RA message. The ASMT has not recorded this probable RA as no radars interrogated the ac during this brief period.

(Notably, the downlinked TCAS RA messages from the Tristar indicate that it treated the P180 as a Mode A/C aircraft and not as Mode S equipped. This is despite the ground radars identifying the aircraft as at least Mode S Elementary Surveillance capable.)

Thus the encounter geometry of the ac was such that the Tristar could have been in receipt of a Descend RA at 0959:51, followed within 4sec by a 'Reversal Climb' RA at 0959:54 as detailed above.

The simulation indicates that the Clear Of Conflict message would have been generated at 1000:11.

InCAS Simulation



Encounter Diagram Based on Heathrow 10 Single Source Radar Data

CODE	DESCRIPTION	CODE	DESCRIPTION
TA	Traffic Alert	DE	Descend
RA	Resolution Advisory	RCL	Reversal Climb
COC	Clear of Conflict	KVS	Maintain Vertical Speed

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 together with a TCAS analysis.

The Board noted the comments in the HQ 1GP BM SM report relating to the perceived slow response by the P180 crew to the avoiding action instructions issued by LARS, possibly as a result of the crew's use of the A/P rather than hand flying the ac. The Board was briefed that the recorded radar data (only updated every 8sec) suggested that the P180 was turning at a rate of about 3°/sec (rate 1) with a radius of turn of about 2nm. This seemed reasonable and a CAT pilot Member explained that his company's policy had changed recently from disengaging the A/P when given an avoiding action instruction to now applying the turn with the A/P still engaged. However, it was unclear how the P180 crew had executed the avoiding action turns in this instance. The Board had discussed on several occasions the advantages of the rapid response when flying manually against the disadvantages of disengaging the A/P and adding to the crew's workload in a potentially difficult and intense situation. A GA Member familiar with the P180 opined that it is fitted with a good, responsive A/P and the consensus here was that faced with multiple instructions to avoid other ac, including the Tristar, under the DS and their preparations to join CAS, the P180 crew was probably complying with LARS's instructions as best they could and their speed of response had little impact on the eventual outcome of this Airprox. Nevertheless, in view of the concern expressed by HQ 1GO BM SM, the CAA ATS Policy and Standards Advisor agreed to clarify, outwith the meeting, the current 'best practice' advice relating to the use of the A/P when complying with ATC avoiding action instructions.

Military controller Members noted that although the Tristar pilot was in receipt of radar vectors there was no necessity to achieve any stipulated separation minima under the TS requested by the pilot. A Member was concerned at the use of TS for directing IFR recoveries in IMC; some military controller Members suggested this was the only suitable radar service in Class G airspace, given the density of traffic commonly encountered in this locale. The military fast-jet pilot Member agreed that it was the Tristar pilot's choice; a balance had to be struck between an expeditious approach under a TS, where the pilot was content to maintain his own separation against traffic that he could see, versus the significant delays occasioned by following avoiding action vectors under a DS to achieve the stipulated deconfliction minima. A military controller Member opined that DIR would have been taking other traffic into account when issuing vectoring instructions in the pattern and agreed with the Command that the Tristar was not vectored into conflict by DIR. However, other pilot and controller Members had different views. This Airprox illustrated the importance of an early all round and frequent scan for other traffic by radar controllers, which might affect ac under service. DIR reports that he had not noticed the P180 until the Tristar was descending through FL61 and Members recognised this was moments before he transmitted the first TI about it to the Tristar crew as the latter passed abeam Brize Norton. DIR was not busy, but it seemed to civilian controller Members that the controller had spotted the P180 at a late stage; with vectors into a LHD pattern S of the RW centreline, combined with the decent to 2500ft QFE, it was always going to be difficult to get the Tristar safely below the P180 and a Member thought that DIR had subsequently vectored the Tristar unnecessarily close to the P180. Hence the request to the Tristar crew to expedite their descent below the P180's level. In the absence of verbal co-ordination, not knowing what LARS might do with the P180, a military controller Member thought it would have been better to have vectored the Tristar into a RHD pattern downwind N of the RW centreline, but by the time DIR had seen the P180 and appreciated the situation it was all too late. At these ranges the potential for triggering a TCAS RA by vectoring the Tristar so close ahead of another ac in level flight whilst descending through its level should have been readily apparent and ultimately resulted in the three RAs being generated in close succession. The TCAS analysis indicates that the Tristar crew received a TA and three RAs over the space of 20sec: a Descend RA, a reversal into a Climb RA followed by Maintain Vertical Speed, before Clear of Conflict was achieved. In considering the Tristar pilot's response to the TCAS instructions, the Board noted that he had advised DIR 12secs into the RA sequence, which the Board viewed as entirely reasonable in the circumstances given the requirement is to notify ATC as soon as possible, but with the caveat 'as permitted by flight deck workload'. CAT pilot Members

rejected the Command's criticism of the Tristar crew for not communicating this and his intention to level out earlier. Moreover, pilot Members stressed that even if there is a conflict between an RA and an ATC instruction, pilots must comply with the TCAS RA that will, if followed promptly, ensure that they fly clear of the conflicting ac. Members agreed DIR should not have issued or reiterated any instructions to the Tristar crew once the RA had been declared. A civilian controller was concerned that this Airprox might illustrate a deficiency in military ATC training, but the HQ 1Gp BM SM Advisor reassured the Board, and the extract from JSP 552 confirmed, that the instructions for military controllers not to attempt to alter the ac's flightpath until advised that the ac was 'Clear of Conflict' were the same as that for their civilian colleagues.

Whilst endeavouring to descend the Tristar speedily below the P180 it seemed that DIR had attempted to liaise with LARS, but the Command had highlighted that no verbal co-ordination was evident from the transcripts. Irrespective of whether a TS or DS was being afforded, controller Members were adamant that co-ordination was warranted to ensure the safe deconfliction of these two ac. However, in the provision of a DS, controller Members opined that LARS had the primary responsibility to initiate verbal co-ordination to achieve the stipulated deconfliction minima. Neither controllers' workload was high, which should have allowed them to reach an accord that could have helped LARS significantly, prevented the eventual erosion of deconfliction minima and forestalled the TCAS RAs. The Board agreed that the lack of co-ordination between LARS and DIR was a Contributory Factor.

Especially in the early stages of training, Mentors must not allow the limited abilities of the trainees in their charge to adversely affect the ATS being provided. The LARS Mentor had reported her trainee's initial avoiding action was ineffective, but it seemed that she had not taken over control from the trainee until after the CPA had occurred. Judging exactly the most appropriate point to step-in and take-over is not always obvious or straightforward. Nevertheless, Members agreed that earlier intervention by the LARS mentor, who was entirely responsible for the actions of the controller under training, could have been beneficial here. Whether or not the CAS joining clearance affected LARS ability to co-ordinate or monitor the trainee, the Command's comment about the efficacy of retaining a Supervisor exclusively in the ACR had merit and might have led to earlier resolution of the developing conflict. When LARS elected to turn the P180 R onto 310° it might have taken the P180 away from the other ac, but it vectored the P180 closer towards the aerodrome radar pattern, which illustrated to some Members a lack of awareness of the overall traffic situation. This, coupled with the absence of any verbal co-ordination against an ac descending through the level of the P180 was indicative of a lack of team work within the ATSU, a civil controller Member opined. The HQ BM SM report shows that LARS did not attempt to resolve the conflict with the Tristar until the P180 was turned L onto 180°, when the Tristar was just over 7nm away and closing rapidly with horizontal deconfliction minima being eroded moments later. This signified that LARS was also caught unawares by the tanker descending into the ILS pattern, but which should have been readily apparent to them. After a wide ranging debate, the Members concluded that this Airprox had resulted because LARS vectored the P180 into conflict with the Tristar.

Turning to the inherent Risk, the P180 pilot reported that he did not see the Tristar, although his RT response to the avoiding-action turn and TI about the Tristar might feasibly have confused the controller into thinking that he had. Nevertheless, whilst flying in between cloud layers the proximity of the Tristar should have been apparent to the P180 crew from their TCAS I display. Similarly, while the Tristar crew were aware of the P180 from their TCAS display and warnings, they did not see it visually. Although the rapidly changing TCAS RAs had only enabled the Tristar crew to gain 100ft separation above the 'non co-operative' TCAS I equipped P180 at the CPA, the analysis demonstrates that TCAS was resolving the conflict in the vertical plane. Furthermore, the avoiding action L turn instruction issued to the P180 crew did eventually ensure that their ac was flown clear to the S of the Tristar with 2.1nm horizontal separation as the ac passed. This convinced the Board that no Risk of a collision had existed in these circumstances.

The Board noted the first two internal Recommendations made within the HQ Air BM SM report and awaited further advice about the use of A/P initiated avoiding action turns, versus manual flying, when operating in un-controlled airspace.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: LARS vectored the P180 into conflict with the Tristar.

Degree of Risk: C.

Contributory Factor: Lack of co-ordination between LARS and Director.

AIRPROX REPORT No 2010126

Date/Time: 1 Sep 2010 1701Z

Position: 5221N 00001W
(3nm E Wyton)

Airspace: Lon FIR (Class: G)

Reporting Ac Reported Ac

Type: MD902 Beagle Pup

Operator: Civ Com Civ Pte

Alt/FL: 1300ft 1700ft
(QFE 1014mb) (QNH)

Weather: VMC CAVOK VMC CAVOK

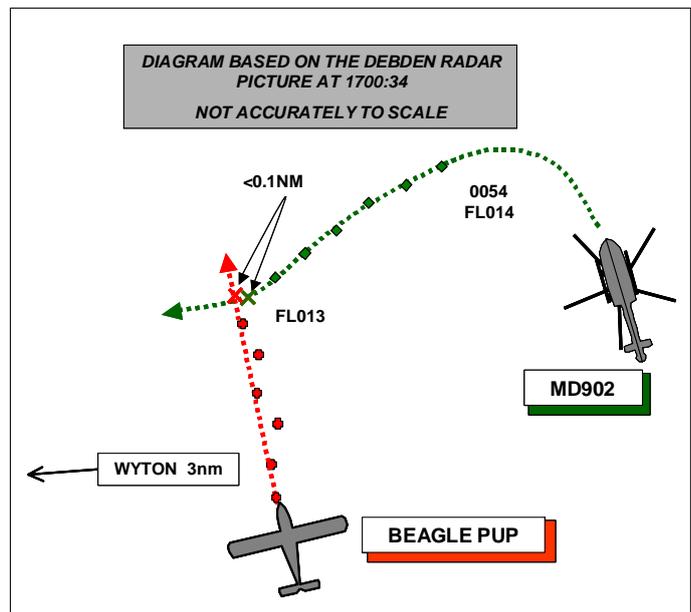
Visibility: NR Good

Reported Separation:

300ft V 400-500ft V/O H

Recorded Separation:

NR V/ <0.1nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE MD902 PILOT reports flying a blue and yellow helicopter with all lights switched on, on a training flight with the PF in the right seat conducting IF training and the captain in the left seat responsible for the lookout. They were squawking 0054 [county police] with Mode C, in receipt of a BS from Wyton APP and he had been head-in briefly to change frequency. They were heading 260° at 100kt, at about 1300ft QFE passing 3nm on the final descent of a GPS letdown into RAF Wyton when he saw a low-wing, dark-coloured, single-engine ac ½nm away and 300ft above crossing from left to right. He advised the PF who descended the helicopter rapidly to increase separation but they could not assess the separation or risk. TCAS was fitted but no alert was displayed.

THE BEAGLE PUP PILOT reports he is an experienced GA pilot and was informed of the incident 8 weeks after the event, but did not consider that there had been any danger and therefore did not report it; as a result his recollection of events is not clear.

He was flying alone in a black ac with nav-lights switched on in good weather and was not using GPS but was squawking 7000 with Mode C. He left Popham at 1650 en-route to Fenland via Booker, BNN, BPK, BKY and from there routed to a point just to the W of Fowlmere, which gave him a straight course to Fenland avoiding any controlled airspace, restricted areas or airfields. He thought that the incident had occurred at about 1700, just after passing abeam Cambridge, at 1700ft, heading 355° at 85kt and that the reporting MD902 had been flying at about 1700ft amsl. At that time he was listening out with London Info and there was little other aerial activity. He saw something to his right a few miles ahead and as he closed he recognised it as a black helicopter, he thought, circling. When the ac was in his 2 o'clock position it took up a South Westerly track towards him, passing he estimated 400-500ft below. Once it had passed he gave the matter no further thought until the chairman of his flying group contacted him well after the flight.

He kept the helicopter visual for the entire period ensuring that there was no risk/danger whatsoever and there had been no need for him to take avoiding action; he thought that the other pilot had also seen his ac.

At the time of the 'incident', the visibility to the E was good, to the N fair and to the W poor due to the setting sun.

UKAB Note (1): The incident shows on the recording of the Debden radar. The MD902 is squawking 0054 with Mode C and the Beagle 7000, but with no Mode C. At the start of the recording at 1658:40 both ac are tracking 355°, the MD902 indicating FL014, is in the Beagle's 0130 at 2nm. At 1659:30 the MD902, still at FL014, turns left onto a track of 260° to cross the Beagle's track, from L to R, as it intercepts the centreline of RW26 at about 5nm; it flies slightly through the centreline and closes it from the N as the Beagle continues on 355°. It continues to close with the Beagle and at 1700:38 passes less than 0.1nm behind it having descended by 100ft; the ac then diverge.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The Board noted that both ac were operating legitimately in Class G airspace where the pilots shared an equal responsibility to see and avoid other ac. Under the Rules of the Air the Beagle Pup should have given way to the MD902 since, at least initially, it was on his right but the (Beagle Pup) pilot considered that no avoidance was required due to the significant altitude difference between the two ac. Although Members accepted this, they observed that the MD902 crew had no way of knowing that the Pup pilot had seen their ac and was content with the vertical separation extant; the Board agreed that a wing waggle or ac manoeuvre by the Pup pilot would have reassured the helicopter crew that they had been seen. Members agreed that by maintaining visual contact with the helicopter throughout, the Beagle Pup pilot had ensured that there was no risk of collision.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Pilot perceived conflict.

Degree of Risk: C.

AIRPROX REPORT No 2010128

Date/Time: 4 Sep 2010 1010Z (Saturday)

Position: 5116N 00057W (5nm SW of Pitsford Reservoir)

Airspace: London FIR (Class: G)

Reporting Ac Reported Ac

Type: C42 Microlight PA28-161

Operator: Civ Pte Civ Pte

Alt/FL: 1400ft 1800ft
QFE (1007mb) QFE (1007mb)

Weather: VMC NR VMC CLBC

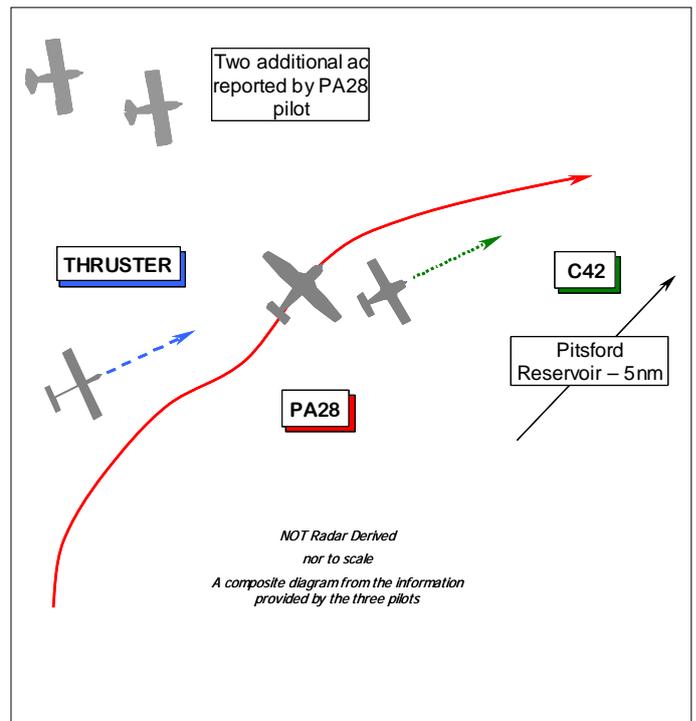
Visibility: 15nm 10km

Reported Separation:

40ft V/10ft H 100-200ft V/100m H

Recorded Separation:

Not recorded



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE C42 MICROLIGHT (ML) PILOT reports he was inbound VFR to Sywell for a light ac rally and listening out with Sywell INFORMATION on 122.700MHz [a modified BS was provided]. Following his white and dark blue C42 was a Thruster Sprint in his 7 o'clock position flown by a colleague.

Approaching a position 5nm SW of Pitsford Reservoir [the feature notified as the assembly area for the rally 4nm WNW of Sywell] heading 060°, in a level cruise at 1400ft QFE (1007mb), he was just entering Sywell's published arrival procedure for RW03 at 75kt when a PA28 passed 40ft above and 10ft to port of his ac as it overtook him. The blue and white PA28 – registration given – was flying an estimated 30-40kt faster and crossed L – R, within 5 to 10° of his heading. No avoiding action was taken, there was no time; by the time he saw it, the PA28 was above him and the separation was increasing during the overtake. Assessing the Risk as 'high', he added the airspace was busy with multiple ac inbound to the rally.

The PA28 overtook the Thruster Sprint to starboard and included within the C42 pilot's report was a written account from the Thruster pilot (summarised below). The C42 pilot did not report the Airprox on the RT but discussed the occurrence at Sywell after he had landed.

THE PA28-161 PILOT reports that he was inbound to the light ac rally at Sywell from Wycombe and was in receipt of a 'modified' BS from Sywell INFORMATION on 122.700MHz. A squawk of A7000 was selected with Mode C; Mode S is not fitted. His ac is coloured blue and white.

On arrival in the vicinity, to the W of Northampton, he was heading N at 100kt, level at 2200ft QNH (1022mb) and his intention was to follow the suggested VFR arrival route in the AIC issued for the rally – Yellow 062/2010.

At that point there were two ac in his 10-11 o'clock position: a small high-wing ac [the C42] leading another ac some distance behind [the Thruster], crossing L to R. Once the high-wing ac had passed in front, he then turned R to position behind it and slowed to 90kt.

Heading NE, he became visual with Pitsford Reservoir assembly area and tracked towards it whilst resetting his altimeter to the Sywell QFE (1007mb). The assembly area was to be flown not below 1500ft QFE and he also reduced speed to 80kt as he was aware he was still gaining on the ac in

front. At this time he also noted two additional ac off his port wing-tip joining from the NW. The separation between the lead ac, which was now to the R of his track at a speed of about 70kt, and his PA28 was still reducing. He was reluctant to reduce speed any further, as this would not increase the separation and he felt it would be unsafe to do so in case he had to take any sudden action at the resulting low airspeed that could potentially put him in a stall/spin situation. His first option of a LH orbit was prevented by the other ac closing off his port wing-tip, which could have caused a head-on conflict with either of them. A RH orbit was also considered, but this would have taken him closer to the lead ac and they were to the N of Northampton by this time, over built-up areas of the City. Also, he was acutely aware that there was another ac behind him but he had no idea of its position or proximity so S turns to increase separation were therefore discounted. He felt he was becoming increasingly boxed-in but could see ahead that there were no ac at the Pitsford Assembly Area and decided his best option would be to pass the small high wing ac into clear airspace beyond. Both ac were on similar parallel tracks and he felt the risk was minimal. He positioned further to the L of the lead ac, mindful of the other two ac off his port wing tip, and accelerated to about 100kt. This also caused his ac to climb slightly, prior to re-trimming, and further increased the separation. The ac ahead and now to his R, which now appeared to be a small two seat high-wing very light ac type [the C42 ML], then passed down his RH side and under his starboard wing tip, 100-200ft below and about 100m away with a 'low' Risk.

Once he had passed the C42, he continued to Pitsford Reservoir Assembly Area. With no other ac now in the area, he began a descent and slowed to begin his approach to RW03 at Sywell. Late on base-leg flying at about 75-80kt he began catching-up two Piper Cub type ac, but he was able to turn finals for the hard RW03 whilst they extended their base leg before turning for the grass runway.

He added that multiple ac in close proximity flying on converging tracks at the time of the Airprox was a significant factor.

THE THRUSTER T600N SPRINT PILOT provided a supplementary account stating that he was also flying to the rally at Sywell and following his colleague, 500m astern of the C42 ML whilst listening out with Sywell INFORMATION on 122.700MHz. Flying a track of 060°, NW abeam Northampton approaching Pitsford Reservoir, he spotted a PA28 in his 4 o'clock - 300m away heading about 050° on a similar course. The PA28 was flying about 30-40kt faster and overtook from R to L in front of his ac, flying between his Thruster and the C42 at the same level. He did not feel there was any Risk at this point, even though the PA28 pilot did not give way to his ac, nor to his colleague's C42, by altering course to the R. It was not until the PA28, now to port of the C42, climbed slightly and unexpectedly turned R by 15-30° that there was a 'high' Risk of a collision with the C42 ahead. From his position 500m directly astern of the C42, the PA28 appeared to fly directly over the top of the C42 with very little vertical separation. The RT was very busy, so he was unable to make a radio call to warn the C42 pilot of the imminent danger posed by the proximity of the PA28.

UKAB Note (1): The AIC issued for the rally – Yellow 062/2010 dated 12 Aug 2010 - promulgated procedures for the event that had been devised – to ensure the safety of participants and also create an orderly flow of traffic, including a Temporary Restricted Area in force within a 4nm radius of Sywell ARP (sfc - 3500ft agl).

A modified BS was available from Sywell INFORMATION during the period of the Airprox, and all radio equipped ac, including Microlights and Autogyros, were required to proceed to an Assembly Area at Pitsford Reservoir (4 nm WNW of Sywell) via suggested routes depending on the direction of arrival.

At Para 4.2.2, it was specified that:

'Prior to reaching Pitsford monitor 'Sywell INFORMATION' on 122.700MHz on which regular broadcasts will include the active runway and QFE. NO RADIO CALLS ARE NECESSARY FOR JOINING. Fly an anticlockwise holding pattern at Pitsford 020/200 degrees not below 1500 ft.....'

Hence, the modified BS.

UKAB Note (2): This Airprox is not apparent on the LATCC (Mil) radar recordings despite extensive analysis of the recorded data. A large number of ac are shown as intermittent primary contacts approaching Sywell via the notified Assembly Area at Pitsford Reservoir. Therefore, in the absence of Mode S data it is not possible to identify the C42 or Thruster Sprint from the myriad of other ac in the vicinity. Furthermore, no ac squawking A7000 with Mode C is shown approaching the Assembly Area in the manner described by the PA28 pilot. That is not to say that he did not comply with the promulgated procedures, just that it is not possible to identify his ac with certainty.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The Board was briefed that the Airprox was not evident on recorded radar data, but the radar recording did confirm that there was a large volume of traffic inbound to Sywell converging on the Assembly Area from all around. The GA Pilot Member has experience of various rallies, both in the UK and abroad; he explained that it is not an easy task to integrate into the inbound flow with so many disparate types of ac of greatly varying performance levels arriving from different directions. The smaller ac can be difficult to spot in the first instance and the widely differing speed ranges made it difficult to judge spacing in any inbound sequence. He emphasised that this rally is a very popular event attracting many ac from all over the Country and safe participation relies on good airmanship coupled with sound common sense. A number of Members, pilots and controllers alike, also have experience of such events and concurred that they could present a challenge for less experienced pilots. The GA pilot Member's view was that the procedures developed for the event had generally proved satisfactory provided pilots complied with them and exercised good overall airmanship.

The CAA ATS Policy and Standards Advisor commented on the use of a 'Modified' Basic Service and was concerned that this was not a term that he recognised within the range of ATSS promulgated for use within the UK outside CAS. Practically speaking, no form of ATS was afforded to rally traffic, especially within the ATZ, and this was effectively, a one-way 'listening watch'. Nevertheless, controller Members who had operated an aerodrome Flight Information Service during such events commented that these can be extremely busy scenarios, it was debatable, therefore, whether this volume of traffic could be operated under a more positive or more RT intensive form of ATS. The GA pilot Member said that in his experience, attempting to apply more positive control to such events limited the flow rate of inbound traffic to an unacceptable degree. However, another Member added that stipulated 'slot-times' could be helpful in smoothing out the peaks and troughs in the traffic flow. Nevertheless the Policy and Standards Advisor elected to review the use of this 'Modified' Basic Service in more detail outwith the meeting.

Notwithstanding the promulgated arrival routes, this Airprox occurred whilst ac were in transit to the Assembly Area, outside the ATZ, in the 'Open FIR' where see and avoid in accordance with the Rules of the Air applied. Broadly, the reports from the two pilots involved, together with that of the Thruster Sprint pilot, all agreed on the relative positions of ac during the encounter, except the crucial point of the minimum separation. It was clear to the Board that the PA28 pilot had spotted both the C42 and the Thruster and elected to follow the C42, not realising initially the significant speed differential before he found he had limited room for manoeuvre. A GA Member pointed out that pilots of slower microlight types must expect to be overtaken by other aeroplanes that are plainly not capable of being flown safely at such slow speeds. Thus, appreciation of differing ac performance needed to be taken into account by everyone involved. Members also noted the significance of the low-wing PA28 overtaking to port and above the high-wing C42; the C42 pilot would not have been able to see the PA28 until it started to draw alongside and flew into his field of view ahead. Plainly, it would have come as quite a surprise when the PA28 overtook his C42, from his perspective passing 40ft above and 10ft to port of his ac, contrary to the Rules of the Air, but the separation might have been difficult to gauge. It was evident that the PA28 pilot had the C42 in plain view for some time,

whilst considering the apparently limited options available to him, having ‘tucked-in’ behind a slower ac. Notwithstanding the AIC’s instruction that the Assembly Area he was approaching had to be flown at or above 1500ft QFE, the fast-jet pilot Member believed that the PA28 pilot was perhaps forgetting the vertical option, which was to overtake by passing well clear on the R after descending beneath the C42, resulting in a slightly increased speed, but allowing him to keep the C42 in sight throughout and also completing the manoeuvre more quickly, regaining height before reaching the assembly area. Nonetheless, it was the PA28 pilot that chose the separation during the overtake manoeuvre to port of the C42, which he estimated was about 100m away and 100-200ft below his starboard wing tip, but might not have been visible to him throughout in his low-wing aeroplane. The C42 pilot’s colleague in the Thruster believed the PA28 passed directly over the top of the C42 with very little vertical separation, but from his perspective he would not have been able to judge the horizontal separation accurately at the point that the PA28 actually overtook the C42. In the absence of radar data the pilots’ differing perceptions of the separation during this encounter could not be resolved independently, but it was clear to the Members that the C42 pilot had been justifiably concerned at being overtaken to port. The Board concluded that this Airprox had resulted because the PA28 pilot flew close enough to the C42 to cause its pilot concern. In the Board’s view, however, there was no evidence of an actual Risk of collision in these circumstances.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The PA28 pilot flew close enough to the C42 to cause its pilot concern.

Degree of Risk: C.

this point the SK76 crew reported visual with the traffic and stated they would be filing an Airprox report as they believed there to be <300ft separation.

ATSI reports that the Airprox occurred at 0637:12, in Class G airspace, 4.5nm N of DTY VOR, between a SK76 and a BE200.

The SK76 was on flight from a private site near Uttoxeter to Battersea Heliport. The SK76 flight initially called East Midlands Radar and was transferred to Birmingham Radar prior to the Airprox where it was in receipt of a TS. The pilot's written report indicates that the SK76 was operating IFR.

The BE200 was on a flight from Gamston to Oxford. The BE200 flight initially called East Midlands Radar for transit through their zone and was then transferred to Oxford Approach. Oxford do not have surveillance equipment capability. The BE200 reported changing to IFR and was placed under a PS just prior to the Airprox.

The METAR observation for Oxford was not available. East Midlands and Birmingham are provided:
METAR EGNX 140620Z 22016KT 9999 -RA BKN009 SCT042 17/15 Q1013=
METAR EGBB 140620Z 22011KT 190V260 6000 -RA FEW009 BKN029 6/15 Q1014=

At 0620:10 the SK76 crew called East Midlands Radar routeing direct to BNN, climbing to 3000ft on QNH 1013 and squawking 7000. The SK76 flight was instructed to squawk 4550 and at 0620:49 the radar recording shows the SK76 change squawk 17.5nm to the WNW of East Midlands Airport and indicating FL030. A BS was agreed and at the request of the pilot this was later updated to a TS.

At 0620:50 the BE200 flight called East Midlands Radar, and reported VFR, en route from Gamston to Oxford, levelling at altitude 4000ft VMC, requesting a BS and transit through the East Midland Zone towards DTY. The BE200 crew was instructed to squawk 4551 with QNH 1013. At 0622:01 radar recording shows the BE200 23.4nm NNE of East Midlands Airport, indicating FL040. A BS was agreed and the BE200 crew was given clearance to transit the East Midlands Airspace at 4000ft on QNH1013. As the BE200 left East Midlands CAS, a TS was agreed.

At 1632:30, the SK76 flight was transferred to Birmingham and the radar service was terminated. At 1632:38 the radar recording showed the distance between the 2 ac was 9.8nm with tracks slowly converging. The SK76 indicated FL030 and the BE200 indicated FL040. Shortly afterwards the BE200 reported 16nm to run to DTY and requested a frequency change to Oxford. East Midlands Radar advised the BE200 to squawk 7000 and free call en-route.

The SK76 flight established contact with Birmingham at 0633:05 and reported on a squawk of 7000, due E of the Coventry NDB (CT) at 3100ft on QNH 1013. The flight rules under which the SK76 was operating were not established. The SK76 crew was instructed to squawk 0403 and at 0633:45, Birmingham Radar identified the SK76, 5nm E of the CT. A TS was agreed.

At 0634:55 the BE200 flight contacted Oxford Approach and reported inbound from Gamston, routeing towards DTY and requesting a straight in approach for the ILS RW19 with QNH 1016. Oxford acknowledged the call and agreed a BS passing a new QNH 1015.

At 0635:07, Oxford Approach instructed the BE200 crew to make a straight in approach RW19 ILS and to report LLZ established. The BE200 crew reported at altitude 3800ft descending to 3000ft and requested an upgrade from VFR to IFR. At 0635:46 Oxford agreed a PS and instructed the BE200 flight to descend not below 2300ft on QNH 1015.

At 0636:11 Birmingham Radar advised the SK76 flight of unknown traffic, *"and (SK76)c/s there's unknown traffic in your left ten o'clock range of two miles indicating three seven in the descent unverified."* Radar recording shows the BE200 to be in the SK76 helicopters half past nine position at a range of 2.2nm, with the SK76 indicating FL030 and the BE200 indicating FL037. The SK76 pilot replied, *"er (SK76)c/s er we've got TCAS in about our left er nine o'clock would that be the traffic."* Birmingham Radar responded, *"Yeah looks more like your eleven o'clock though."*

Shortly afterwards at 0636:51, the radar recording shows the 2 ac converging at a range of 0-8nm with 400ft vertical separation as the BE200 continued a slow descent. The SK76 pilot reported, “er (SK76)c/s I’d er like some help with that separation please we don’t have him visual.” Birmingham Radar advised, “and (SK76)c/s looks like he’s crossing you left to right so if you make a er right turn now a radar heading of er two one zero degrees.” At 0637:05 the SK76 pilot replied, “Radar heading two one zero degrees and we’re in the descent we got that aircraft visual he’s clearing us by about three hundred feet ?????.” Birmingham Radar acknowledged, “(SK76)c/s that’s understood if you’re visual you can resume own navigation.”

At 0637:15, the radar recording shows the 2 ac merging, with the SK76 now indicating FL028 and the BE200 indicating FL033. Shortly afterwards the SK76 pilot advised of the intention to file an Airprox and requested information on the other traffic.

The BE200 pilot was advised of the Airprox after landing and indicated that the other ac had not been sighted, but confirmed that it was monitored on TCAS 500ft below.

The SK76 pilot was in receipt of a TS from Birmingham Radar and was provided with TI to assist the pilot in avoiding the other traffic. At a late stage the SK76 pilot requested assistance with separation. The pilot did not request a change of service and there was insufficient time for the Birmingham Radar controller to upgrade the level of service. The Manual of Air Traffic Services Part 1, Section 1, Chapter 11, Page 5, Para 4.1.1 states:

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

The BE200 was provided with a PS just prior to the time of the Airprox. Oxford Approach, were not aware of the SK76 helicopter and were unable to provide TI. The Manual of Air Traffic Services Part 1, Section 1, Chapter 11, Page 10, Para 6.1.1 states:

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

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

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.

With both flights operating within Class G airspace, both crews were responsible for maintaining their own separation from other traffic. Although both flights had previously been working East Midlands, they had then contacted different ATSU's. At the time of release, the ac were both tracking towards the DTY area but separated by 1000ft. Thereafter the SK76 flight had called Birmingham and received a TS whilst the BE200 flight had called Oxford, after unsuccessfully calling Coventry, and accepted a BS before upgrading to a PS as he descended. Pilot Members believed that as the Wx appeared to have been marginal for VFR flight, the BE200 pilot would have been better placed if, in

his pre-flight planning, he had planned to use radar equipped ATSU's prior to Oxford – Coventry had no ATC available at the time of the Airprox. Both crews were aware of each other's presence from TCAS whilst the SK76 crew's SA was supplemented with TI from Birmingham. Members thought that the SK76 crew had been right to ask for an upgraded service but they had left it rather late in the evolution, leaving the Birmingham controller fewer options to resolve the conflict. The BE200 pilot had also upgraded to a PS from Oxford; however, Oxford APP, being a non-radar ATSU, was unaware of the SK76's presence. Both crews had seen the deteriorating situation and acted in the vertical plane to resolve it, the BE200 pilot arrested his descent while the SK76 crew commenced a descent and saw the BE200 as it crossed above. The Board unanimously agreed all parties had acted appropriately throughout and that this Airprox had been a conflict between IFR flights which had been resolved by the combined actions of both crews with the assistance of TCAS and ATC, thereby removing any risk of collision.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict between IFR flights resolved by both crews with the assistance of TCAS and ATC.

Degree of Risk: C.

AIRPROX REPORT No 2010135

Date/Time: 16 Sep 2010 1013Z

Position: 5221N 00124W (2.75nm E of
Coventry - elev 267ft)

Airspace: UKDLFS/FIR (Class: G)
Reporting Ac Reported Ac

Type: Harrier x2 PA28-161

Operator: HQ Air (Ops) Civ Trg

Alt/FL: 700ft NR
RPS

Weather: VMC NR NR

Visibility: 10km NR

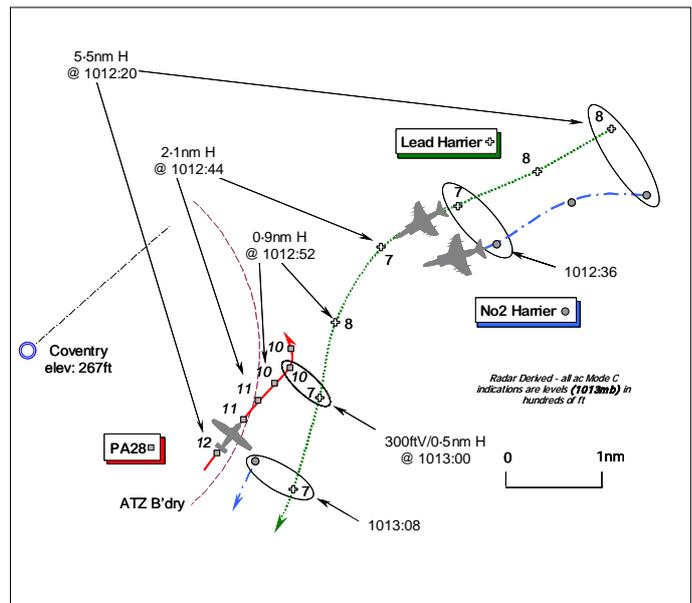
Reported Separation:

100ft V NR

Recorded Separation:

PA28 v Lead Harrier 300ft V/0.5nm H

PA28 v No2 Harrier not recorded



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE HARRIER PILOT reports that he was leading a VFR low-level pairs sortie from Wittering, but because of two Royal Flights passing close to Wittering a different route to the normal VFR low-level routing was planned. This route passed 3nm from Coventry Airport and remained outside their ATZ.

At 1013:00Z, the westerly ac of the pair – the No2 - had an Airprox with a light civilian ac, with blue undersurfaces and white upperworks, operating from Coventry Airport [the PA28]. The light civilian ac was seen 0.2nm away at a very late stage whilst heading 240° at 420kt, no time was available for avoiding action to be taken. The PA28 passed just above the No2 Harrier on a reciprocal track with vertical separation of about 100ft.

During the RAIDS debrief the Harrier is shown passing outside the ATZ by 0.5nm. The HUD video shows that the Risk of collision was 'high' and that the reported separation is approximately correct.

The lesson from this Airprox is that although the Harrier's navigational equipment is now so accurate as to allow LFS avoidance areas to be 'just' missed, this level of navigational accuracy is not necessarily the same with other airspace users.

The Harriers have a grey colour-scheme and the HISLs were on. The lead ac was squawking A7001 with Mode C; the No2 was not squawking.

UKAB Note (1): The UK LFH at Part 1-2-4-3 highlights that the Coventry ATZ is in close proximity to the Birmingham Avoidance Area (AA). The UK LFC illustrates the Coventry ATZ boundary as lying at the extreme SE corner of the AA.

THE PIPER PA28-161 PILOT declined to provide an Airprox report.

ATSI reports that this Airprox occurred at 1013:00, in Class G airspace 2.9nm to the E of Coventry Airport just outside the ATZ. The 2.5nm radius Coventry ATZ is centred on the mid-point of RW05/23 and extends to 2000ft above the aerodrome elevation of 267ft.

The 0950UTC Coventry Weather was: sfc wind: 280/10kt, variable 260°-320°; visibility: >10km with showers in the vicinity; Cloud: FEW at 1000ft, BKN at 1800ft; QNH 1011mb.

The PA28 pilot had rejoined the left hand visual cct for RW23 after returning from a local detail and was in receipt of an Aerodrome Control Service from Coventry TOWER, squawking A0260 with Mode C. The Coventry TOWER controller observed a contact on the Aerodrome Traffic Monitor (ATM), E of the Airport, squawking A7001 without Mode C. At 1012, although the Tower controller had not acquired visual contact with the unknown ac, a warning was passed to the PA28 pilot as the ac approached the midpoint of the downwind leg. Shortly afterwards TOWER advised the PA28 pilot that there might be two contacts in the PA28's 1 o'clock position. The PA28 pilot reported sighting the ac below and then, shortly afterwards, reported sighting both ac. At the same time the Tower controller acquired one of the Harriers visually as it turned onto a southerly heading.

At 1016, TOWER advised the PA28 crew that the pilot of the Harrier had called on the RT to apologise. Coventry ATC was not immediately aware that an Airprox would be filed and no written report was provided by either the Tower controller or the pilot of the PA28. The ATSU subsequently provided a summary of the controller's recollection of events.

The Manual of Air Traffic Services (MATS) Part 1, Section 2, Chapter 1, Page 1, Paragraph 2.1, states:

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

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

TOWER passed an appropriate warning to the PA28 pilot regarding the close proximity of the unknown traffic. The Harrier pilot's written report indicates an intention to route close to the Coventry ATZ boundary, but no RT call was made to Coventry ATC until after the event.

[UKAB Note (2): The Clee Hill Radar recording shows the Harrier pair at 1012:20, approaching the Airprox location from the NE, heading SW, with the lead ac squawking A7001 and indicating 800ft unverified Mode C – about 740ft Coventry QNH (1011mb). The No2 Harrier is shown as a primary contact only in battle formation on the leader's port wing at a range of about 0.5nm. The PA28, which is 5.5nm away at this point is shown downwind for RW23 just inside the ATZ indicating 1200ft unverified Mode C. The lead Harrier and the PA28 both descend slightly by 100ft maintaining a steady course, to 700ft and 1100ft respectively. After 1012:36, primary contact on the No2 wingman fades. On the next sweep at 1012:44, the PA28 crossed the ATZ boundary downwind, indicating 1100ft Mode C (1013mb) – about 1040ft QNH - with the lead Harrier 2.1nm directly ahead commencing a L turn SSW'ly, vertical separation remaining constant at 400ft Mode C. Some 8sec later the lead Harrier has started to draw to starboard of the PA28's nose 0.9nm away, at the midpoint of the jet's turn, when vertical separation reduced to 200ft, the Lead Harrier climbing 100ft and the PA28 descending the same amount to an indicated 1000ft Mode C. The CPA between the PA28 and the lead Harrier occurs in between sweeps. The minimum recorded separation occurs at 1013:00, the lead Harrier now 3.12nm from the Airport - 0.62nm outside the ATZ - drawing R into the PA28's 3 o'clock, passing 0.5nm SE and 300ft below the latter, which itself is shown at a range of 2.75nm from the Airport and thus 0.25nm outside the ATZ. The No2 Harrier is still not evident. However, on the subsequent sweep at 1013:08, with the lead Harrier 1.5nm due S of the PA28, which itself is now turning L, the No2 is revealed 0.5nm off the leader's starboard wing thereby showing that the pair had conducted a cross-over turn on to SW. Interpolation of the No2's track history supports the lead pilot's report that the westerly ac of the pair - the wingman - passed directly beneath the PA28 at 1013:00, during or shortly after the No2's turn.]

HQ AIR (OPS) comments that whilst technically acceptable to fly this close to an ATZ without first contacting the controlling agency, it is not good airmanship. An early call to the airfield controller

may well have improved the situational awareness of the Harrier flight and facilitated greater separation. It is disappointing that the PA28 pilot elected not to cooperate with the investigation.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included a report solely from the lead Harrier pilot, radar video recordings, and reports from the appropriate ATC and operating authorities.

The Board agreed that it was most unfortunate that the PA28 pilot had elected not to contribute toward the investigation of this Airprox and pilot Members considered this to be a most unprofessional attitude from the PIC. The Board was denied his perspective on the encounter and the assessment of this Airprox was thus somewhat unbalanced. However, additional information was available from the ATSI report and radar recordings, which enabled the Board to complete its assessment. It was apparent that the Coventry TOWER controller had spotted one of the approaching Harrier's on the ATM and then astutely detected the other. The Board commended the controller for his alertness, swift appreciation of the situation and the prompt warnings passed to the PA28 pilot downwind for RW23. Why the PA28 pilot was flying such a wide cct downwind was unclear, but it was plainly wide enough to take the ac outside the relative sanctuary of the ATZ, which caused concern amongst the pilot Members. Without the PA28 pilot's account there was no apparent reason for this wide cct and the Harrier pilots might not have expected to encounter cct traffic here. Subsequent to TOWER's warning, however, it was plain from ATSI's RT recording that the PA28 pilot had spotted both jets. Whilst the PA28 is shown turning L on the radar recording at the point the Airprox occurred, whether its pilot was taking avoiding action himself, or this was just a base-leg turn was not evident.

The Harrier formation pilots clearly had a responsibility to remain clear of the Coventry ATZ at the extremity of the UKLFS Birmingham Avoidance Area, but Members noted that the lead pilot had reported that their route had been planned to pass 3nm from Coventry Airport and thus no more than ½nm outside the 2½nm radius ATZ boundary. Evidently, it is unwise to assume that aerodrome traffic will be contained within the ATZ boundaries. In the absence of RT contact with TOWER, who could have advised about the presence of any local traffic, pilot Members agreed with the Command's view that it was not good airmanship to plan to fly this close to an ATZ boundary. Moreover, despite the reported accuracy of the Harrier's navigational equipment, executing a cross-over turn at this point, thereby placing the No2 even closer to the ATZ also seemed unwise. Indeed the Chairman commented that there was little value in tactical formation flying in this area because of the profusion of LFS avoidances. The radar recording showed that the Harrier's cross-over turn was initiated just before they passed abeam the ATZ at the nearest point, as they also closed on the PA28 that was still unseen ahead. The Harrier pilot's laudably frank account states that the PA28 was not seen until a very late stage when it was a mere 0.2nm away – 400yd - with no time available for avoiding action as the PA28 passed about 100ft above the No2 Harrier. Therefore, the Board concluded that the Cause of this Airprox was effectively, a non-sighting by the Harrier pilots.

It was difficult for the Members to arrive at a more meaningful assessment of the inherent Risk without the PA28 pilot's account. However, on the information provided it was clear the Harrier pilots were unable to avoid the PA28 by any greater margin and the No2 would have been severely restricted in his ability to manoeuvre. Whether the PA28 pilot might have been able to alter his ac's flightpath significantly if he had seen the wingman in time was not known. Neither was it feasible to confirm the vertical separation that actually obtained without Mode C data from the wingman, but there was no reason to doubt the veracity of the leader's estimate of 100ft. The Board concluded that the safety of the ac involved had been compromised.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Effectively a non-sighting by the Harrier pilots.

Degree of Risk: B.

AIRPROX REPORT No 2010138

Date/Time: 28 Aug 2010 1039Z (Saturday)

Position: 5111N 00056W (3¼nm
S of Odiham - elev 405ft)

Airspace: London FIR (Class: G)

Reporting Ac Reported Ac

Type: Vigilant T1 MG PA32

Operator: HQ Air (Trg) Civ Pvt

Alt/FL: 2300ft 3400ft
QFE (1006mb) QNH (1021mb)

Weather: VMC NK

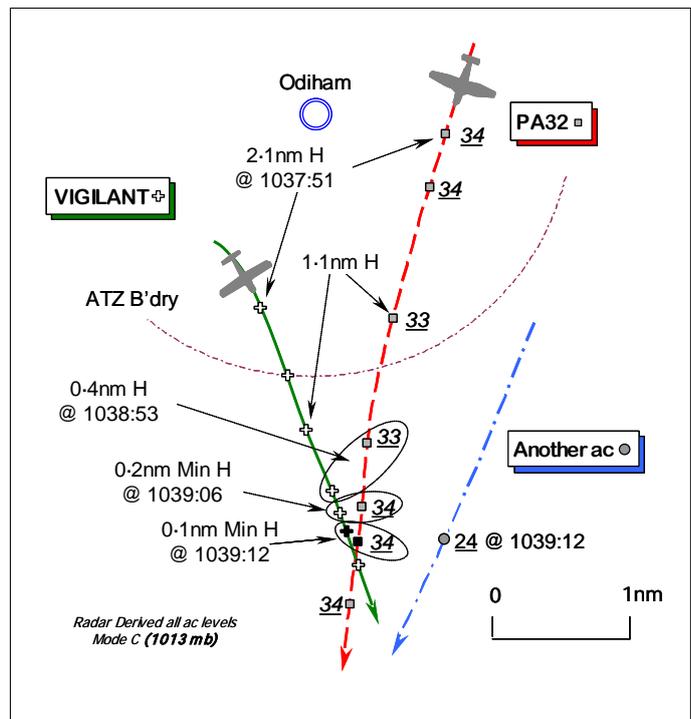
Visibility: 40km NK

Reported Separation:

150ft V/nil H NK

Recorded Separation:

0.1nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE VIGILANT T1 MOTOR GLIDER (MG) PILOT reports that he had departed from Odiham on a local training sortie whilst in communication with Odiham RADIO A/G station on 122.1MHz. A squawk of A3644 was selected; neither Mode C nor Mode S are fitted.

Whilst teaching the lookout scan procedure transiting out of the Odiham MATZ at 60kt, heading 170° in straight and level cruise at 2300ft QFE (1006mb), a low-wing single-engine light ac (LA) coloured dark blue with white decking overtook his glider on a heading of about 180° with minimal separation. The Airprox occurred about 5nm S of Odiham and he estimated the vertical separation was about 150ft as the LA overflew his glider. Due to the close proximity and speed of the LA it was not possible to read its registration but it passed sufficiently close for them to feel its wake.

He added that there was another aeroplane on the same heading which appeared to be about 500ft below the LA's height. This incident was reported to Odiham RADIO on 122.1MHz.

His MG is coloured white with DAY-GLO orange wing panels

THE RAC AT LATCC (MIL) reports that the reported time of the Airprox was given as 1000UTC, at a position 5nm S of Odiham. However, radar recordings did not show any events at this location/time despite the Airprox reportedly occurring in a position of good coverage from the Pease Pottage Radar. To allow for a possible time zone error, radar recordings for 0900Z and 1100Z were examined, but the event was still not seen. The possibility of a whole day error was considered; the radar recording for Sunday 29 Aug was examined for the foregoing timings, but again with no success. Contact was eventually achieved with the reporting pilot who reaffirmed his belief that the date, timings and location he reported for the Airprox were correct. Subsequently, the ATD of the Vigilant was ascertained from the VGS as 1030Z and the ac tracked after its departure from Odiham. This revealed that the Airprox occurred some 3¼nm S of Odiham at 1039Z with an ac squawking A0436, which eventually disappeared from radar in the vicinity of Cherbourg. This ac was subsequently identified as a PA32, which matched the colour-scheme given by the Vigilant pilot.

The PA32 is owned by a syndicate; the pilot flying the aeroplane on the day in question was eventually contacted on 10 Jan 2011, but alas could recall little detail of the flight on 28 Aug 2010 and was not aware of the Airprox. Cognisant that numerous gliders operate in this area, the PA32

pilot said that if he had encountered something unusual, he would have remembered it, having been involved in an Airprox many years ago that he still remembers quite vividly. Unfortunately, therefore, he was unable to provide any further detail.

UKAB Note (1): The UK AIP at ENR 2-2-2-4 promulgates the Odiham ATZ as a circle radius 2nm centred on the longest notified runway 10/28, extending from the surface to 2000ft above the aerodrome elevation of 405ft amsl and active continuously (H24).

UKAB Note (2): The UK AIP at ENR 5-5-1-4 promulgates Odiham Glider Launching Site as active from Sunrise to Sunset (HJ). Launching by Winch and Tug ac may be encountered up to 2500ft above the site elevation of 405ft [2905ft amsl].

UKAB Note (3): At the time of the Airprox, Odiham ATC was closed. Hence, the MATZ was not active. The radar recording shows the Vigilant squawking A3644 (no Mode C fitted) departing from Odiham on a steady SSE'ly course; the ac's reported height of 2300ft QFE (1006mb) equates to an altitude of broadly 2750ft amsl on the extant London QNH (1021mb) and therefore above the ATZ in Class G airspace. The PA32 is shown approaching from the NNE maintaining 3300-3400ft London QNH. The faster PA32 converges with the Vigilant off the latter's port quarter at 3400ft QNH and is shown 0.2nm abeam at 1039:06. The PA32 then starts to draw ahead of the Vigilant, which maintains its course throughout. The CPA of 0.1nm occurs at 1039:12. The third ac mentioned by the reporting pilot maintains 2400ft London QNH – 1000ft below the PA32 – on a steady SSW'ly course throughout.

HQ AIR (TRG) comments that the reported proximity does not correlate precisely with the radar recordings and the PA32 did not directly overfly the glider. However, the miss distance is still within normal minima. Moreover, it appears that the PA32 pilot did not see the glider at all. With the direction of approach of the PA32 being from the rear, the glider pilot had less of a chance of seeing the converging ac and appears not to have been visual until too late to take avoiding action. The Risk of collision must therefore be significant. The need to maintain a lookout scan all around, particularly for a slow ac, is paramount.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included a report from the Vigilant pilot, radar video recordings and comment from the appropriate operating authority.

Unfortunately, through no fault of the PA32 pilot, the protracted tracing action coupled with communication difficulties had denied the Board a timely input from the reported pilot. The Members understood entirely that the PA32 pilot would have been unable to recollect any specific details of his flight so long after the event. However, the recorded radar data shows his PA32 overtaking the Vigilant to port, with the latter reportedly 150ft below his low-wing aeroplane, so it might have been difficult for the PA32 pilot to spot the MG. The Vigilant pilot reported that the PA32 overtook his glider with minimal separation and that he felt its wake. It was not possible for the Board to determine whether the PA32 pilot saw the MG or not, but it seemed improbable that he would have flown this close if he had seen it. The Board could only conclude, therefore, that part of the Cause was an apparent non-sighting by the PA32 pilot. Similarly, the Vigilant pilot would have been unable to see the PA32 easily until it started to draw ahead off his port wing – the radar recording shows this occurred at a range of 0.2nm - and Members noted the Command's sage comments about maintaining an all-round lookout scan. Members agreed unanimously that the other part of the Cause was effectively, a non-sighting by the Vigilant pilot.

Whilst Members did not question the veracity of the Vigilant pilot's account, the radar recording, coupled with his own report, suggested that the vertical separation was somewhat greater than the Vigilant pilot's estimate. His reported transit height was 2300ft QFE (1006mb) and the equivalent altitude broadly 2750ft amsl on the extant London QNH (1021mb). Whilst the tolerance applicable to Mode C of +/-200ft might have placed the PA32 somewhat lower, its indicated altitude of 3400ft as it

drew abeam suggests that vertical separation might have been in the order of 650ft. This was significantly at variance with the Vigilant pilot's minimum separation of 150ft. The Board noted that the other ac seen by the Vigilant pilot that was thought to have been 500ft below the PA32, whereas from that ac's Mode C indications it was actually 1000ft below the PA32. These inconsistencies could not be resolved with certainty because there was no Mode C data from the Vigilant. However, from the information available, the Board concluded that the vertical separation was greater than the reported estimate and that no Risk of a collision had existed.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: An apparent non-sighting by the PA32 pilot and effectively a non-sighting by the Vigilant pilot.

Degree of Risk: C.

AIRPROX REPORT No 2010145

Date/Time: 16 Sep 2010 2255Z (night)

Position: 5314N 00430W (Final
RW31 Valley - elev 36ft)

Airspace: Valley ATZ (Class: G)

Reporting Ac Reported Ac

Type: Hawk Lynx

Operator: HQ AIR (Trg) HQ JHC

Alt/FL: 500ft NK
(QFE) (QFE)

Weather: VMC CLBC VMC CLBC

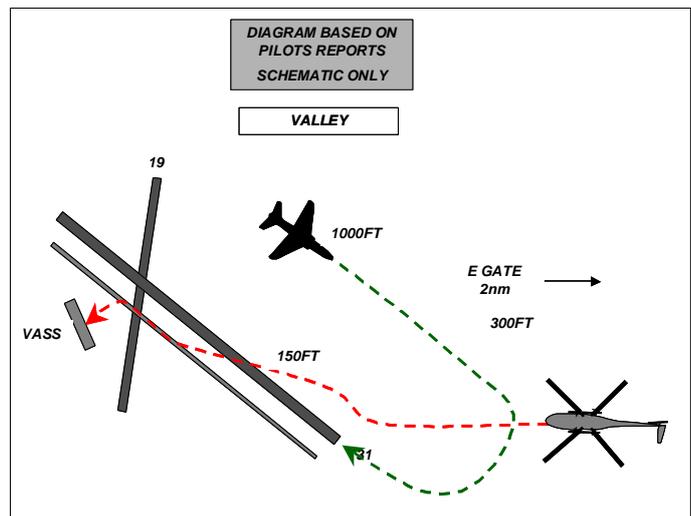
Visibility: 10km 10nm

Reported Separation:

100-200ft V/NR H500ft V/0m H

Recorded Separation:

NR



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE HAWK PILOT reports that he was in the [night] cct for RW31 (RH) with his (red) strobe and nav lights switched on and was in receipt of a BS on UHF, from the Valley ADC on his first night solo on Hawks; TCAS was not fitted. While descending and turning through about 500ft QFE on the final turn at 140kt, while looking into the turn towards the threshold, he saw the red strobe of an ac passing below them. He rolled wings level to line up with the RW and then saw the red strobe level with his ac, on the horizon in his 4 o'clock; at that time he was at 300ft QFE. He called TWR to confirm whether or not there was any traffic on short final and was informed that a Lynx helicopter holding short of RW31. The angle-rate geometry of his observation of the strobe enabled him to accurately assess that the separation between the helicopter and his ac to have been between 100 and 200ft.

He reported the incident to ATC and assessed the risk of collision to be high.

THE LYNX PILOT reports that Valley Ops informed them of the incident one month after the event. They were flying an Exercise sortie and conducting a planned NVG assisted recovery to RAF Valley, in receipt of a BS from TWR on VHF and with standard night lighting displayed. On approaching the airfield, initially at 100kt, they were instructed to continue to 'East Gate' [2.0nm E of the threshold of RW31 – See UKAB Note (1)] at which point they were informed of circuit traffic using RW31 RH. They were initially instructed to hold at the Gate, not above 500ft QFE and at this stage he became visual with the Hawk (due to its lighting). The Hawk was on the downwind leg for RW31 and at that point they were cleared to the airfield remaining NE of RW31 (the area referred to as the 'Golf Course') so they proceeded as instructed, descending as they did so. The pilot watched the Hawk closely and was content with the separation. On the transit to the 'Golf Course' at 300ft agl, the Hawk was on the downwind leg and passed over them about 400-500ft above. They were then given clearance to cross the RW and land at VAS. Once clear of RW31 at 150ft agl they made their final approach to the parallel taxiway [SE of the RW] at the intersection point of RW19/01 and they then air taxied to VAS and landed.

The pilot was not made aware either by radio or telephone that an Airprox had been declared (iaw JSP 551 Vol 1) nor did he consider that any risk had existed as he had the benefit of NVG. The Lynx

remained at RAF Valley for about an hour before returning to RAF Leeming during which time the pilot heard nothing.

These details as much as the crew can remember given the significant passage of time between the date of the event and notification of the Airprox report by telephone from the RAC towards the end of October.

UKAB Note (1): The UK Mil AIP – EGOV 1-16, Special Procedures (2) Copter Note (3) states:

‘SE Route via EAST GATE.

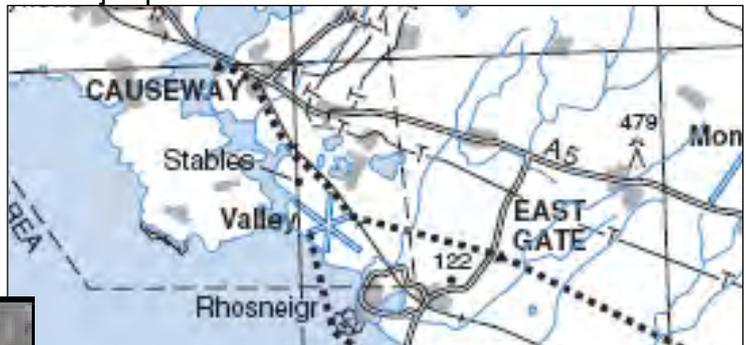
- a. For landing at Visiting Aircraft Dispersal, SARTU or 22 Sqn.
- b. B. Flight between Menai Strait & PONT MARQUIS (SH 434698) max 500ft QFE (200ft msd). Flight between PONT MARQUIS and EAST GATE (SH355744) max 500ft QFE (200ft msd). Flight between EAST GATE and RW19 or 31 THR max 250ft QFE. Report over EAST GATE inbound and outbound.’

HQ 1GP BM SM reports that SATCO RAF Valley confirmed that the Lynx pilot had previously been briefed by the units ATC staff and was being treated as a locally based ac. No radar replay was available to conduct the investigation; hence it is based on the reports of the pilots, the ADC and the tape transcript. However, there is an inconsistency with the tape transcript, highlighted below, which has been impossible to resolve as the original tape was inadvertently returned to service.

During the occurrence, the Lynx was operating on VHF and the Hawk UHF. At 2255:31 the transcript recorded that 2 different transmissions were made simultaneously, one on UHF and the other VHF with the Hawk being cleared to touch and go and the Lynx being cleared to cross the active RW. Clearly, the timing of the transmission is impossible and the clearance to the Lynx makes no sense in the context of the situation and the subsequent RT exchanges. At 2256:31 however, the transcript has a further transmission to the Lynx clearing them to cross. Given this, HQ Air BM SM contends that the 2255:31 transmission to the Lynx is a transcription error and did not actually take place and the investigation has been conducted on that basis.

As stated at UKAB Note (1), the Mil AIP states that for ac inbound ‘Flight between East Gate and Rwy 19 or 31 THR **max 250ft QFE**. [Pilots are to] report over East Gate inbound and outbound.’

The following diagrams show East Gate and the railway line in relation to the airfield, and the area known as the ‘Golf Course’ which is bounded by the NE fence of the railway line, then the two fence lines running E-W and N-S forming the other 2 sides of the green triangle marked on the photograph.

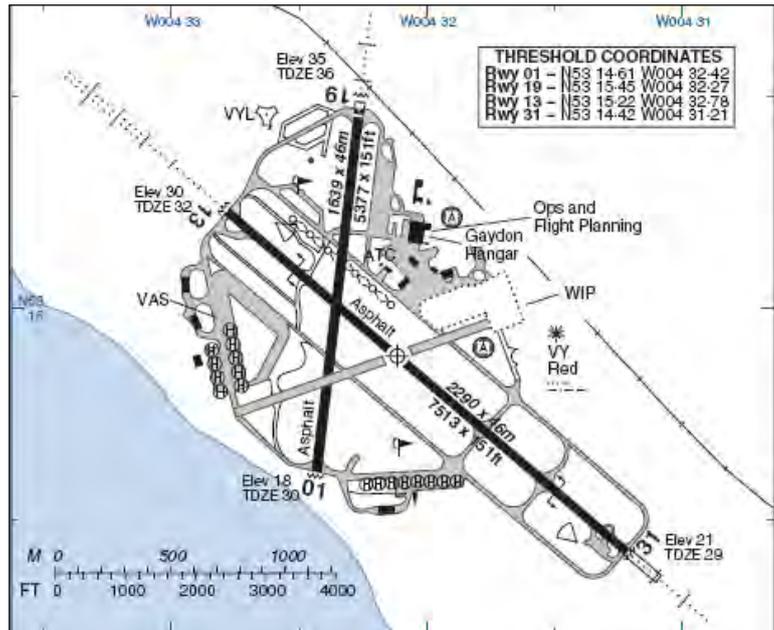


At the point that the Lynx called requesting a visual join at 2254:04, the Hawk was completing its first cct having rejoined through initials. The Lynx pilot reported that they were visual with the Hawk prior to calling for join and that they remained visual throughout. At 2255:03 the Lynx reports that they were approaching the airfield boundary; TWR acknowledged and instructed them to “hold short RW 31”; the controller reported that he saw the Lynx holding abeam RW31 threshold in the vicinity of the railway track. The Lynx pilot reported that as

they transited to the Golf Course from East Gate at 300ft agl (QFE), the Hawk was downwind and passed about 400-500ft above them but the Hawk pilot reported that as they descended through about 500ft in the final turn, he saw “a red strobe pass underneath the aircraft.”

Without a radar replay it is not possible to be certain, but from the descriptions given it is probable that the Lynx was routing through the South-Eastern corner of the Golf Course, which is roughly the same position as late-downwind or early finals for the Hawk.

Although the ADC did not reiterate the height at which that the Lynx was required to operate, given that the Lynx crew had received an ATC brief and that they were considered to be familiar with the airfield, the ADC reasonably assumed that the crew would fly in accordance with the locally published procedures. Although it is impossible to be certain, it is possible that the Lynx was flying higher than stated in the published procedure.



The ADC reported that he did not inform the Hawk pilot about the helicopter as it was below 250ft QFE (in accordance with the FOB), however, the unit FOB actually states that “when Rwy 31/13 is in use, Tower is to inform any ac flying a low level circuit of any rotary traffic on the golf course; all such rotary traffic is to remain below 250ft QFE.” Given that frequency separation existed between the Hawk and the Lynx, the provision of TI to the Hawk on the Lynx would have improved the pilot’s situational awareness. That said, from an ATM perspective, the ADC fulfilled his obligations to sequence the visual circuit traffic correctly and he was at all times aware of the location of both ac.

It appears that the height of the Lynx and its proximity to the RW31 threshold caused concern to the Hawk pilot and moreover, if the heights reported by the respective pilots are accurate, then only about 200ft vertical separation might have existed, supporting the Hawk pilot’s assessment of the separation. However, the Lynx crew was visual with the Hawk from early in their recovery, they remained so throughout and were content that adequate separation existed at all times.

UKAB Note (2): The transcript (see HQ 1GP BM SM report) shows that the Lynx reported “approaching airfield boundary” at 2255:03 and was instructed to “hold short of RW31” and he acknowledged he was holding short 2 sec later; the Hawk called finals at 2255:28 and was cleared for a touch and go; at 2256:40 the Lynx was cleared “cross runway 31 with one climbing out”. The Lynx is recorded as landing at 2259.

HQ AIR (Trg) comments that this incident was undoubtedly alarming for the student pilot and notes that the incident report is welcomed. Whilst it is disappointing that the Airprox report was not made immediately a significant amount of detail has been gathered. However, timely follow-up on landing might have allayed the pilot’s concerns and enabled the Airprox report to have been withdrawn. Busy, mixed circuits such as that at RAF Valley rely significantly on robust procedural deconfliction. However, these apparent conflicts can always occur. In this case it appears that the Lynx pilot flew slightly above the required height, producing a closer pass than necessary. Despite the Hawk pilot’s estimation of the vertical separation, the exact vertical separation it is not clear. Indeed, the Lynx would have needed to be considerably south of the routing from East Gate to have been under the Hawk at its 500ft point (this would be in the second half of the final turn for a correctly flown normal circuit). From the Hawk pilot’s comment that the Lynx was in his 4 o’clock on rollout, and the fact that the Lynx was holding at this point, geometry places the Lynx more in the first half of the

finals turn. The Hawk's height here would have been 700 – 800ft which, coincidentally, equates to the 400 – 500ft separation noted by the Lynx pilot. This, and the fact that the Lynx crew reports being visual throughout reduces the level of concern over this incident, but the fact remains that the Lynx reduced the separation unnecessarily. HQ Air is content that the RAF Valley procedures are robust.

HQ JHC did not provide a comment.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

Members noted the two different impressions of the incident by the respective pilots; the inexperienced Hawk pilot was concerned by the proximity of the Lynx whose experienced crew were unconcerned by the flightpath of the Hawk. Although there was no confirmatory information to supplement the pilots' reported separation, Members agreed that the Lynx had under-flown the Hawk but could only deduce from the estimates and relative ac positions that the vertical separation had been of the order of 300ft. (The HQ Air Ops Member informed the Board that on a normal circuit the Hawk would have been at 650-700ft half way round the final turn). While the separation was perhaps less than ideal, Members agreed that there had been no risk of collision as the Lynx crew had been visual (on NVGs) with the Hawk throughout.

There was concern however, that the ADC had not provided the level of service that Controller Members would have expected. While supporting the Hawk pilot's decision to report the incident, Members suggested that, had the ADC provided TI to the Hawk pilot regarding the Lynx, the incident would probably not have been reported as an Airprox. Further, they considered that the ADC's instruction to the Lynx pilot to "*hold short of RW31*" was open to interpretation and, since the Lynx crew was familiar with Valley, a more precise instruction or a direction to hold/orbit at a specific point should have ensured better separation. Additionally the route stipulated in the FOB from East Gate to the threshold of RW31 takes ac very close to the final approach track.

The HQ JHC Member, who was familiar with both the incident and the type of Lynx involved, informed Members that the Lynx involved was UHF-equipped and there were no obvious factors precluding it operating on a UHF frequency in the cct. Members agreed that had this been the case, the Hawk pilot would have not only been aware of the Lynx but also its position and the pilot's intentions thus probably alleviating his concern that prompted him (the Hawk pilot) to ask if the ADC was aware of any other ac in the cct area. Members did not agree with HQ Air Trg's view that the RAF Valley procedures were sound and recommended that they be reviewed particularly regarding the co-ordination of helicopter movements and the passing of TI. Members also directed that a recommendation be made regarding ac operating in the visual circuit on different frequencies.

UKAB Post Meeting Note: After the meeting it was noted that the following recommendation was made in Mar 2010 with respect to Airprox 2009117:

'The MoD is recommended to direct that, whenever possible to do so, aircraft in the visual circuit operate on the same frequency'.

The recommendation was agreed by MoD and ATSU's were advised accordingly; the recommendation was then considered closed.

That being the case, RAF Valley ATC should have been complying with this directive unless there were other factors that prevented them from doing so.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Lack of TI led the Hawk pilot to believe there was a conflict with the Lynx

Degree of Risk: C.

Recommendation: 1. It is recommended that RAF Valley reviews its procedures for co-ordinating helicopter movements under fixed-wing circuit traffic.

AIRPROX REPORT No 2010146

Date/Time: 24 Sep 2010 1533Z

Position: 5432N 00231W (3nm SW Appleby)

Airspace: LFIR (Class: G)

Reporting Ac Reporting Ac

Type: 3x Hawk Ventus B Turbo

Operator: HQ AIR (OPS) Civ Club

Alt/FL: FL75 8095ft (QFE)

Weather: VMC CLAC VMC CLAC

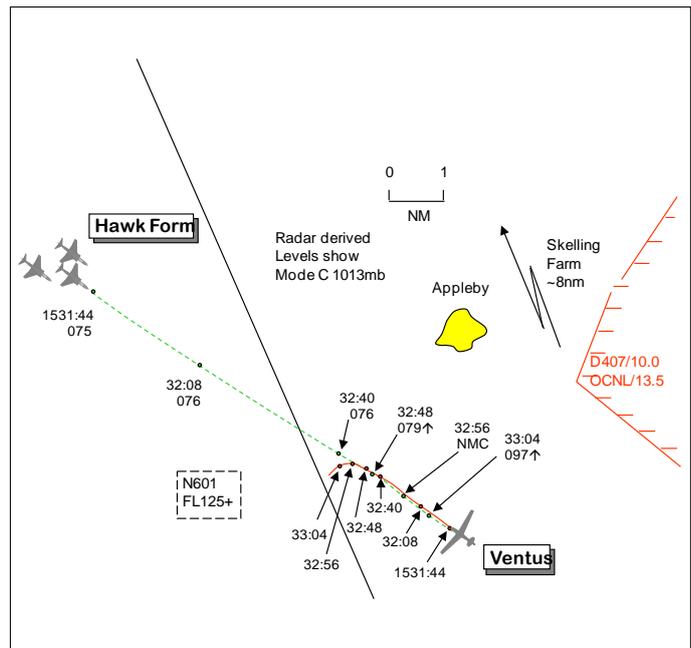
Visibility: 20km 50km

Reported Separation:

>50ft 50-100ft

Recorded Separation:

Nil H



BOTH PILOTS FILED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE HAWK LEAD PILOT reports the formation pulled up from low-level through a gap in the cloud in the Penrith area post a low-level 2v1 evasion sortie. A recovery to Leeming was initiated and the formation changed frequency to Leeming Approach 386.575MHz to acquire a radar service, squawking 7000 with Modes S and C. The cloud tops were 5000ft and FL75 was selected for transit owing to fuel considerations whilst remaining below CAS in good VMC at the correct quadrantal. The visibility was 20km and the ac were coloured black with landing-lights and HISLs switched on. The formation was established in the cruise heading 130° at 300kt in loose arrow, heavy side R with No2 swept slightly low and 50m L of the lead. The WSO of the lead ac was still attempting to get the formation identified when the lead pilot saw a glider about 0.5nm away head-on slightly low and just L of the nose. Concerned about the collision risk for his No2 the lead pilot immediately commanded the formation to "pull-up, pull-up" on the VHF formation chat frequency. All ac pulled up to avoid the glider. The incident occurred too quickly to assess if the glider pilot had taken any avoiding action. The pilots of No2 and No3 ac both saw the glider during the avoidance; No2 assessed that his original flightpath would have taken him to within 50ft of it. He assessed the risk as high commenting that the white glider against the white background nose-on presented a very thin cross-section that contributed to a late spot.

THE VENTUS B TURBO PILOT reports flying solo on a local sortie from Skelling Farm heading 315° at 60kt and 8000ft and listening out on Glider Common on 129.975MHz. The visibility was good, 50km, in clear air flying in wave lift about 4000ft above lenticular wave clouds but he could see the ground with clear skies above. When S of Appleby, all of a sudden 3 Hawks in formation appeared about 300m straight ahead at the same level. Within a second they had split in front of him, the centre jet flew straight up and over between 50 and 100ft above, close enough to see joins in the riveted panels where the wings are attached to the fuselage, whilst the other 2 jets broke diagonally up and outwards passing each side. He was not alarmed by this; seeing each other head-on is very difficult and he thought the Hawk pilots did well to see his ac and take avoiding action. He had no time to take avoiding action and he assessed the risk as high.

HQ 1GP BM SM reports that this Airprox involved a formation of 3 Hawks in the process of pulling-up from low-level and recovering to their base, and a glider. Due to a problem with the PC controlling

the unit's RT and landline recording, there was a discrepancy between the timing of the radar replay and tape transcript.

At 1532:26 (transcript timings) Leeming Approach (APP) states that the formation is identified and it is reasonable to argue that this will have occurred no more than 5sec after the SSR Mode 3A code was displayed on the Watchman radar display. On the radar replay, the Hawk formation's SSR Mode 3A assigned code appears at 1533:50, which allows us to approximate APP's identification of them as being at 1533:55 (replay timings). This provides a difference between the transcript and replay timings of 1min 29sec, which means that the formation's initial call to APP occurred at approximately 1533:04.

On the radar replay, the reported ac is clearly visible, with the CPA occurring at 1532:47. Although there is a little leeway in the calculated timings, it is clear that the Hawk formation had probably not yet initiated comms with APP, or, if they had, it may have been during the initial call. Consequently, there is no BM SM input required.

HQ AIR (OPS) comments that that this is another example that highlights the limitations of the see and avoid principle as the sole means of deconfliction. If both ac had been IFF and TCAS equipped a greater separation distance may have been achieved. It was a good spot by the Hawk leader who calmly and swiftly directed effective avoiding action.

UKAB Note (1): The radar recording clearly captures the incident. At 1531:44 the Hawk Formation is seen 6.5nm W of Appleby tracking 125° squawking 7001 and indicating FL075 with a primary only contact, believed to be the Ventus glider, 3.5nm S of Appleby in its 12 o'clock range 7.5nm. The subject ac continue on opposite direction head-on tracks, the Hawk Formation showing level at FL076, when just under 1min later at 1532:40 the ac are head-on with 0.8nm separation. The next sweep 8sec later at 1532:48 shows the ac having just passed, the Ventus now in the Hawk Formation's 6 o'clock range 0.2nm, with the Hawk's Mode C indicating FL079 and climbing. It is estimated that at the CPA the ac passed with no lateral displacement. The ac now rapidly diverge and on the next sweep the Hawk Formation shows NMC before reappearing on the next sweep at 1533:04 indicating FL097 climbing. By now the Ventus is seen to be turning L 1.9nm to the NW of the Hawk 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 video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC authorities.

An experienced glider pilot Member stated that this was a known wave area situated over the Pennine chain where gliders could be operating, in the right conditions (particularly in W'ly and E'ly winds), up to FL195. Within this Class G airspace all crews were responsible for maintaining their own separation from other ac through 'see and avoid'. Members agreed with the HQ 1Gp Advisor's comment that the Hawk leader had done well to spot the white glider against a white background in a head-on encounter, seeing it probably as soon as was reasonably possible given the circumstances. The Ventus pilot saw the Hawk formation later but he too had been faced with sighting 3 ac, with known small target aspect qualities, head-on, albeit the Hawks nose light frequently facilitates earlier sightings. After sighting the glider 0.5nm ahead the Hawk Leader was able to warn his colleagues on the VHF 'chat' frequency and the formation pulled-up to avoid, the Ventus pilot estimating the closest Hawk passed 50-100ft above. Bearing all of these elements in mind, the Board believed that this Airprox had been a conflict in Class G airspace where the Hawk formation leader had done enough to remove the actual risk of collision but safety had not been assured during the encounter.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict in Class G airspace resolved by the Hawk formation leader.

Degree of Risk: B.

AIRPROX REPORT No 2010151

Date/Time: 5 Oct 2010 2004Z

Position: 5421N 00218W
(13nm E Kendal)

Airspace: UKNLFS (Class: G)

Reporting Ac Reported Ac

Type: Harrier T8 MC130H

Operator: HQ AIR (Ops) HQ 3 AF

Alt/FL: 250ft agl NK
(RPS 991mb) (NK)

Weather: VMC CLBC NK

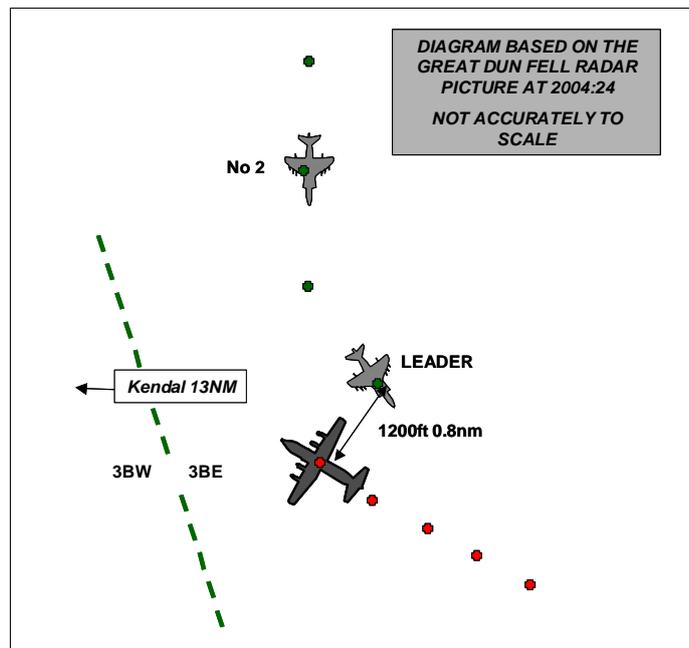
Visibility: 10km NK

Reported Separation:

500ft V / 0.5nm H NR

Recorded Separation:

1200ft V / 0.8nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE HARRIER PILOT reports that he was flying dual as leader of a 2 ship of Harriers conducting a VFR night low level training sortie, booked into Night Low Flying Areas (NLFA) 3BE and 3BW. They were flying in 1.5nm trail heading 170° at 420kt and 250ft agl [using Night Vision Devices] when he saw a large multi-engine ac 2nm away at about 800ft agl, tracking N (the opposite direction) down the right hand side of their formation, about 0.5nm to the W of them. He made an information call to his wingman while breaking left to avoid the other ac; his wingman was also visual with the ac and turned left to avoid it. The ac was displaying standard strobe and nav lights.

While the risk of collision was not considered significant due to the lateral displacement and the difference in altitude, they were concerned to see another ac at low level in the same low flying area. The multi-engine aircraft was perceived visually to be at approximately 800ft agl.

THE MC130H PILOT did not provide a report. When followed up by HQ 3AF the crew had been posted to another theatre.

UKAB Note (1): Initially, the incident was thought to have taken place at 2004BST and this was passed to the MC130H Sqn. It was later discovered that the incident took place at 2004Z. The corrected incident time was then passed to MC130H Sqn but the error resulted in the Sqn initially identifying the wrong ac. Although the MC130H was displaying intermittent Mode S data, it was not displaying the correct callsign, but this was not revealed until NATS did a complete radar trace of the ac involved, from takeoff to landing. It is thought that this might have been as a result of a late airframe change for the flight.

THE MC130H UNIT stated that they have no reason to doubt the validity of the radar recording that indicates that a MC-130H was flying in airspace into which it was not allocated/booked. They had never previously encountered a crew/unit making such an error. All bookings are made in GMT, and the unit always operates in Zulu, regardless of whether or not BST is in effect. Although they consider it almost impossible that this could occur, the information available appears conclusive. The only possible explanation would be that the crew applied a BST correction to the booking sheet and entered into the low-level structure at 2030L (1930Z).

UKAB Note (2): The incident took place in NLFA 3BE at 2004Z. The C130 was tracking from 3BE to 3BW. Both 3BE and 3BW were allocated to RAF Cottesmore (the Harriers' Stn) from 1930-2030Z. The actual Low Level Booking showed the areas being used by the Harrier formation from 1930-2008Z. The Areas were allocated to the MC130H base from 1730-1930Z and again from 2030-2200Z.

UKAB Note (3): The incident shows clearly on the recording of the Great Dun Fell radar. The Harriers are squawking 7001 with Mode C, tracking 170° towards the CPA; the C130 is also squawking 7001 with Mode C and very intermittent Mode S and tracks about 300° towards the CPA. The CPA is at 2004:25 when the C130 (at FL032) passes 0.8nm to the SW of Harrier leader who is indicating FL020 in a level break to the left.

UKAB Note (4): The nearest Met reporting station to the incident position is Blackpool; the 1950 METAR was:

METAR EGNH 051950Z 16009KT 9999 FEW029 13/09 Q0999

HQ AIR (Ops) comments that the Harriers were visual in good time and avoided the MC130 by a safe margin. However, it is disappointing that the MC130 was operating within the NLFS outwith its booked time; equally disappointing is the lack of response to requests for information following the event.

HQ 3 AF comments that the absence of a report from the aircraft commander is regretted. That said, the evidence indicates that either there was a misunderstanding over which area was booked and when, or that an error was made BST vs Zulu.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the lead Harrier pilot, radar recordings and reports from the ac operating authorities.

The Secretariat briefed the Board on the difficulties that led to the delay in identifying the MC130H involved in the incident. The HQ 3 AF Advisor informed the Board that he had spoken to the officer who was Sqn Cdr at the time of the incident and due to the time period that had elapsed since the incident and that the crew involved had been posted to another theatre so he was unable to provide any further information. He did however, believe that the flight might have been delayed or otherwise changed and that the crew had made a human error regarding their low flying allocation and booking. He was confident that the crew had been fully conversant with UK Night Low Flying regulations. The MoD Low Flying Advisor stated that an incorrect or conflicting booking would normally be picked up by his staff, but in this case, possibly due to the callsign confusion, they had no information whatsoever on the flight and had most likely assumed that it had not been flown; they had no record of a low flying booking being made for NLFA 3 for either correct or incorrect MC130H callsigns.

Members noted, however, deconfliction between users of the NLFS is purely procedural (time) and this is totally dependent on ac complying with the allocation and booking system in the UK Low Flying Handbook. Despite the procedures in place the UK NFLS lies in Class G Airspace where the 'see and avoid' principle applies; in this incident the Harrier Lead crew saw the MC130H with the aid of NVGs, early enough to determine that only modest avoidance was required, but it could not be determined if the MC130H cockpit crew, who were also using NVGs, had seen the Harriers.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: 1. Conflict in the UKNLFS resolved by the lead Harrier pilot.
 2. The MC130H was low flying in an area not allocated to it.

Degree of Risk: C.

AIRPROX REPORT No 2010154

Date/Time: 5 Oct 2010 1141Z

Position: 5422N 00320W (21nm
S of DEAN CROSS VOR)

Airspace: UAR (Class: C)

Reporter: LAC Sector 4

1st Ac 2nd Ac

Type: Airbus A320 Hawk T1

Operator: CAT HQ Air (Trg)

Alt/FL: FL370 ↑FL350

Weather: NR NR

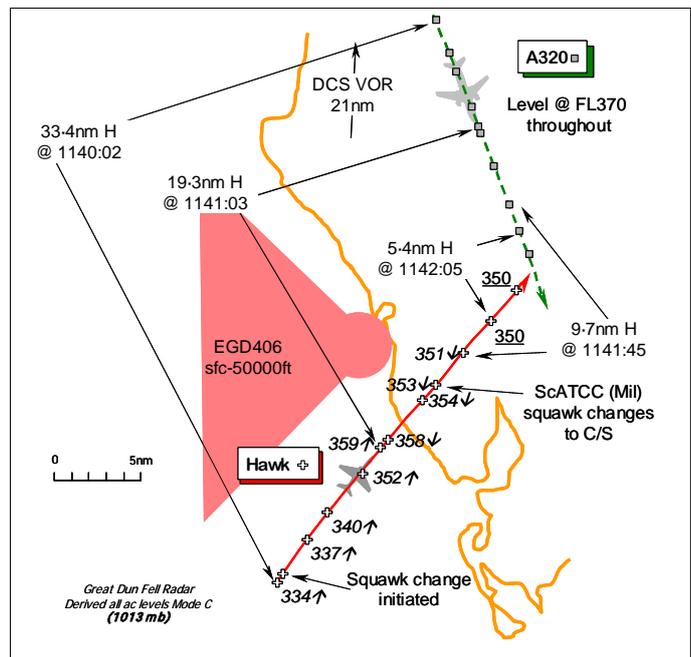
Visibility: NK NR

Reported Separation:

NR NR

Recorded Separation:

1100ft min V @ 19.3nm H



CONTROLLER REPORTED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE LACC SECTOR 4 TACTICAL CONTROLLER (S4 TAC) reports that they had received the A320 from DEAN CROSS (DCS) Sector outbound from Edinburgh and climbed it to FL370 under a RCS. The Hawk had been co-ordinated by LJAO with his PLANNER (S4 PLAN) to climb beneath the A320 to FL350 as it was non-RVSM compliant [Reduced Vertical Separation Minima could not be applied thereby requiring 2000ft vertical separation against GAT]. S4 PLAN noticed the Hawk had climbed through FL350. The Hawk was seen to climb to FL358 so he gave TI to the A320 crew, selected the climb rate button whilst talking and saw that the Hawk was now descending. He explained to the A320 crew that the other ac was a military jet and that it was now descending, but was non-RVSM compliant. No avoiding action was issued. The geometry was such that the A320 would have had to be turned R into an active Danger Area – EGD406 – to avoid the Hawk if the climb button had revealed the Hawk was level or climbing. Prescribed separation was not eroded.

THE LACC S4 PLANNER CONTROLLER (S4 PLAN) reports that LJAO NW rang to co-ordinate the Hawk, non-RVSM, against two ac on their frequency. The LJAO controller accepted FL350 for the Hawk, 2000ft underneath the A320 cruising at FL370. The Hawk was then observed climbing through FL355 with the STCA flashing. She immediately shouted across to LJAO NW to ask what they were doing and was told that they had transferred the Hawk to ScATCC (Mil). She asked LJAO NW to ring ScATCC (Mil) but at the same time could see the Hawk's Mode C was indicating it was now descending.

UKAB Note (1): Despite repeated attempts by the UKAB to establish contact with the company and obtain a report from the A320 pilot, no contact has been achieved, therefore no report is available.

THE HAWK T1 PILOT reports that whilst in transit to Dunbar on a solo navigational training sortie he was handed over to LONDON MILITARY and during a stepped climb was given clearance to climb to FL350. At some point between FL300 - FL330 he was issued with a new squawk and a frequency change to ScATCC (Mil). Whilst doing this, his height checks 'dropped out of the scan' due to a high workload within the cockpit: i.e. the frequency change, squawk change, navigating to an intersection and working out timeline changes etc. He had already switched from LONDON MILITARY's [LJAO

NW TAC] frequency at the point that he climbed through FL350 and he started the bunt at FL356; the highest level he saw at any time was FL357. As he had no two-way RT comms with anyone at that point, his next action was to get in contact with SCOTTISH MILITARY. When he established communication with the controller they confirmed the level he was cleared to and he descended back down to FL350. Minutes later, an airliner that had been coordinated 2000ft above him at FL370 flew directly overhead. However, by then, he had descended and had been maintaining FL350 for about 2min before it overflew his ac. He thought, incorrectly, that he might have set off their TCAS and the Airprox had been filed as a result; the Risk was assessed as 'low'.

THE LJAO NORTHWEST TACTICAL CONTROLLER (NW TAC) reports the Hawk pilot was flying a LAKEY to SHAPP profile from Valley looking to descend to low-level in the Dunbar area. The Hawk pilot had been instructed to climb to FL350. A Cleared Flight Path (CFP) [a co-ordinated cleared level on a specified track] was requested from S4 PLAN for the Hawk at FL350, maintaining the current heading - non-RVSM, which was approved. Furthermore, S4 PLAN was advised that an electronic CFP would be sent and that the Hawk would be changing to a squawk of A4627 for ScATCC (Mil). The handover, with co-ordination, was conducted in accordance with JSP552 and the receiving ScATCC (Mil) controller read back the instruction 'traffic you're handing me not above FL350 negative RVSM.' The Hawk pilot was instructed to contact SCOTTISH MIL on the frequency given and at this point the ac was passing about FL338 Mode C. Although he had seen the A320 he had not called the co-ordinated traffic to the Hawk pilot on RT, as at this stage it was still about 20nm to the NE. The Hawk was then observed to carry on climbing through its assigned level of FL350 Mode C. At this point he was on the landline to ScATCC (Mil) receiving a prenote when S4 PLAN asked, across the room, what the Hawk was doing. He asked the ScATCC (Mil) controller to transfer him to the controller working the Hawk having advised S4 PLAN that the Hawk was no longer under his control. The Hawk was observed to climb to FL358 Mode C before descending again to FL350 – he thought the A320 was about 12nm away from the Hawk at this point. The ScATCC (Mil) controller informed him that the Hawk pilot had continued its climb before contacting ScATCC (Mil) – as soon as the Hawk pilot had called on the RT the controller had instructed him to descend to FL350.

ATSI reports that the Airprox occurred in Class C airspace S of Dean Cross (DCS). The A320 was in contact with S4 on 132.860 MHz under a RCS. S4 was being operated by a Tactical controller - S4 TAC - and Planner controller - S4 PLAN.

At 1134:10, the A320 crew called S4 TAC maintaining FL350. The pilot requested FL370 for the cruise. S4 TAC instructed the A320 to climb to FL370 and route direct to Goodwood. The LJAO NW controller called S4 PLAN at 1137:45 and requested co-ordination on the Hawk. The Hawk was 60nm SW of DCS passing FL270 in the climb and displaying a SSR code-converted to callsign. S4 PLAN identified the Hawk and LJAO requested, "*looking for flight level 3-5-0 negative R V S M*". In accordance with CAP493 (MATS Part 1) Section 1 Chapter 3 paragraph 5.1.1, the required vertical separation standard for non-RVSM aircraft above FL290 is 2000ft. S4 PLAN pointed out an MD11 maintaining FL370 and the A320, which was climbing to FL370. A B777 at POL at FL360 was also pointed out by S4 PLAN and both parties agreed that the Hawk would pass ahead of this ac. At 1138:15, S4 PLAN stated, "... yeah okay yeah so 3-5-0 underneath [the MD11] and the [A320] then". LJAO replied, "...thanks I'll send you the electronics" and, "*it's [Hawk C/S] changing to 4-6-4-1 going to Scottish now.*" At 1140:25, the SSR code-converted callsign of the Hawk changed to a squawk of A4641, a code allocated to ScATCC (Mil). The Hawk was 36nm SSW of DCS, passing FL337, having reduced its ROC from approximately 4500ft/min to 1500ft/min.

The Hawk passed FL351 Mode C at 1140:56; subsequent Mode C level reports indicated that the ac was still climbing. The LAC Multi Radar Tracking recording shows that at 1141:07, the Hawk reached a maximum level of FL359 before starting to descend. Between 1141:17 and 1141:29 the Hawk's Mode C indicated FL355 for three consecutive updates. CAP493 Section 1 Chapter 5 paragraph 10.3.1 d) states: 'An aircraft may be considered to have reached an assigned level when three successive Mode C readouts indicate 200 feet or less from that level'.

At 1141:30, S4 TAC passed TI to the A320 crew, "*...3 o'clock range of about er 15 miles you'll see military crossing traffic 2 thousand feet below your level*". At 1141:40 the A320 pilot reported having

acquired the traffic on TCAS but not visually. Both S4 TAC and S4 PLAN reported activation of the STCA on their situation displays; S4 TAC reported feeling unable to give avoiding action because, '...the angle was such that the [A320] would have had to have been turned right into an active mil danger area...'. EG D406 was active to the W of the A320. The S4 PLAN reported shouting across to LJAO NW and asking them what they were doing, only to be told that LJAO NW had transferred the Hawk to ScATCC (Mil). By 1141:54 the Hawk was indicating FL350 Mode C 8.3nm SSW of the A320. The tracks crossed at 1142:29, 21nm S of DCS, the A320 was level at FL370 Mode C and the Hawk indicated FL350. At 1152:00, the A320 was transferred to the next en-route sector.

Co-ordination of the Hawk's transit of S4 airspace was made in accordance with the required vertical separation standard for non-RVSM aircraft above FL290. At the end of the co-ordination process LJAO NW informed S4 PLAN that the Hawk was about to change its squawk and be transferred to ScATCC (Mil). The SSR code of the Hawk was observed to change shortly thereafter as the aircraft was passing FL337. At the time of the SSR code change at 1140:25, the Hawk pilot had reduced his ROC but the ac was still climbing with 1300ft to go to the assigned level of FL350. The Hawk passed FL351 26sec later at 1140:56. The S4 controllers were alerted to a potential loss of separation as the Hawk's Mode C indicated it was continuing its climb above FL350. STCA acted to amplify the controllers' belief that a potential loss of separation was about to occur. Whilst descending back to FL350 the Hawk's Mode C remained level at FL355 for 3 updates of the display. This would further reinforce the S4 controlling team's belief that separation was about to be lost between the Hawk and A320. Appropriate TI was passed to the A320 crew by S4 TAC. S4 PLAN's ability to contact the Hawk's controller was limited as it was no longer in communication with LJAO NW controllers proximately located to S4. Separation was not lost as the Hawk established level at FL350, 8.3nm before the tracks of the two ac crossed.

It is concluded that:

The Hawk pilot received his cleared level, an SSR code change and frequency change over a short period of time causing the pilot to omit monitoring his ac's level.

The S4 controlling team received various indications that there was potential for a loss of separation to occur: Mode C of the Hawk climbing, STCA activation, inability to communicate with the Hawk's controlling authority, Mode C of the Hawk remaining constant at FL355 for 3 data updates.

The required vertical separation of 2000ft was achieved before the ac were less than 5nm apart laterally.

UKAB Note (2): The Great Dun Fell Radar (GDF) single source recording was used by UKAB as the basis of the diagram above and as such exhibits minor variations in time, range and level when compared to the LAC Multi-Radar Tracking recording available to ATSI. The GDF shows the maximum indicated level of the Hawk was FL359 at 1141:03, at a range of 19.3nm from the A320. The Hawk achieved level flight at FL350 on the GDF recording at 1142:05, at a range of 5.4nm from the A320.

HQ 1GP BM SM reports that the Hawk crew was routeing LAKEY-SHAPP under IFR, climbing to FL350 and in receipt of a RCS from the LJAO NW TAC controller, with the intention of descending to low-level in the vicinity of Dunbar.

LJAO completed a thorough investigation of this occurrence, confirming that the Hawk pilot was instructed to climb to FL350 and co-ordinated against the A320 at FL370. The controller was cognisant that the point of conflict was shortly after the point where they would be required to transfer the Hawk to the next ATCRU - ScATCC (Mil); therefore, NW TAC passed the SSR code issued by ScATCC (Mil) to LACC S4 in order that the S4 controllers could retain track identity and maintain their SA.

NW TAC handed over the Hawk to ScATCC (Mil), including the co-ordination with S4, in accordance with SOPs. NW TAC noted that the Hawk's SSR Mode C was indicating a climb through FL338, as they instructed the Hawk crew to contact ScATCC (Mil).

The Hawk pilot states that the excursion above his assigned level occurred after they had switched from NW TAC's frequency, but before he had established RT contact with ScATCC (Mil). The highest level indicated by the Hawk was FL359 Mode C at 1141:03, when the A320 was level at FL370, with horizontal separation of 19.3nm. The Hawk levelled at FL351 some 35sec later, with approximately 9.7nm horizontal separation extant, the A320 remaining level at FL370. At no stage does the A320 appear to take any avoiding action, either as a result of a TCAS RA or instruction from S4 TAC.

The Hawk pilot states that due to high cockpit workload, his height checks had dropped out of his scan and consequently the level-bust occurred. Given the timing of this, with the pilot switching between ATCRUs, it was not possible for either LJAO NW TAC or ScATCC (Mil) to take any corrective action earlier than they did.

HQ AIR (TRG) comments that it was unfortunate that the pilot was given a frequency change so close to his level-off altitude. It appears that this contributed to his distraction from the priority task of levelling at the assigned level. The Hawk T1 is a rudimentary ac with no autopilot or altitude warning system and so maintenance of cleared levels requires a high degree of concentration and task prioritisation. This event appears to be more of a level bust than an Airprox.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included a report from the Hawk pilot, transcripts of the relevant LAC and LATCC (Mil) RT frequencies, radar video recordings, reports from the controllers involved and reports from the appropriate ATC and ac operating authorities.

The Board noted the absence of a report from the A320 pilot, which did not show the company in a good light and denied the Board the A320 pilot's perspective. However, Members accepted that the A320 crew had virtually no impact whatsoever on the outcome of this incident and in the Board's view, their assessment was no less valid without it.

The reports from ATSI and HQ 1GP BM SM confirm that co-ordination had been agreed between LJAO NW and LAC S4 to ensure that the stipulated vertical separation of 2000ft would be maintained between the Hawk climbing to FL350 and the A320 maintaining a level cruise at FL370. Having been instructed to climb to this co-ordinated level and switch to ScATCC (Mil), the Hawk pilot reports candidly that he then became distracted by a number of in-cockpit tasks and did not monitor his level effectively. This resulted in the Hawk pilot climbing above his assigned level of FL350 to a maximum of FL359 Mode C, the GDF radar recording revealed. Members commended the Hawk pilot for his frank account and accepted that his altimeter had indicated that his ac had only ascended to FL357, which was within the allowable tolerance for verified Mode C of +/-200ft. When he realised what had occurred, the Hawk pilot reaffirmed his cleared level with ScATCC (Mil) and descended to FL350, which Members recognised was achieved well before the stipulated horizontal separation of 5nm against the A320 could have been breached. It was clear that the S4 controllers had spotted the Hawk's excursion above FL350 in good time and were also alerted by the activation of STCA. Unfortunately, this occurred whilst the Hawk pilot was switching between the LJAO NW and ScATCC (Mil) frequencies, therefore it was not until the Hawk pilot established contact that the ScATCC (Mil) controller could interject; by that stage, however, the Hawk pilot had already realised the situation. This switch between controllers also impinged on S4's ability to check what was happening. For their part S4 TAC had wisely passed TI to the A320 crew beforehand, who had acquired the Hawk on their TCAS display. Thus despite S4 being justifiably concerned about what the Hawk pilot was doing, the situation was quickly resolved before any erosion of separation occurred. The Board agreed unanimously that this Airprox had resulted because the Hawk pilot climbed above his co-ordinated level giving the LAC S4 controllers cause for concern. However, as vertical separation was not less than 1100ft based on the ac's Mode C indications and potentially slightly more, which increased as

the extant horizontal separation decreased, the Members agreed unanimously that no Risk of a collision had existed.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Hawk pilot climbed above his co-ordinated level giving the LAC S4 controllers cause for concern.

Degree of Risk: C.

AIRPROX REPORT No 2010155

Date/Time: 6 Oct 2010 1501Z

Position: 5641N 00230W (3nm SW Montrose)

Airspace: SFIR (Class: G)

Reporting Ac Reported Ac

Type: PA28 GR4

Operator: Civ Trg HQ AIR (OPS)

Alt/FL: 2000ft NR
(QNH) (RPS)

Weather: VMC CLBC VMC NR

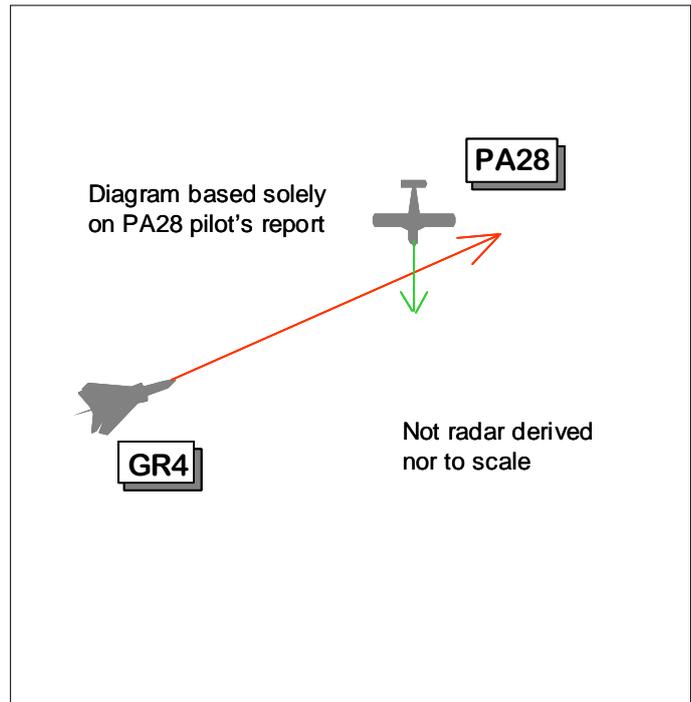
Visibility: >10km NR

Reported Separation:

150ft V Not seen

Recorded Separation:

NR



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PA28 PILOT reports flying a dual training sortie from Dundee, VFR and in receipt of a BS from Dundee on 122.9MHz, squawking 7000 with Mode C. The visibility was >10km flying 1000ft below cloud in VMC and the ac was coloured white with black/red/blue stripes; nav, landing and strobe lights were all switched on. Whilst in the area close to Kinnell [disused aerodrome 7nm SW of Montrose] at 2000ft QNH he rolled out from a L turn onto heading 180° at 100kt and saw a Tornado GR4 at the same level in his 2 o'clock range 1-1.5nm closing quickly on a crossing track. He took control and initiated an avoiding action descent, levelling at 1400ft after the traffic had passed about 100-150ft above. The GR4 was remaining constant in the window initially until the avoiding action was taken. He assessed the risk as high.

THE GR4 PILOT reports being made aware of the Airprox 6 weeks post incident. At the time he was leading a formation of 2 ac on a pairs low-level conversion sortie. None of the formation members reported seeing any light ac in the vicinity of Montrose where the Airprox occurred. The formation did route through the area autonomously, operating at 250ft MSD although they routinely climb to 1000ft agl when crossing coasts.

UKAB Note (1): The GR4 was traced by the RAC but the pilot involved was away on exercise, which led to the delay in completing a report.

ATSI reports that the Airprox was reported by the pilot of a PA28 and occurred at 1500 UTC, in Class G airspace, at a position reported as 6nm to the SSE of Montrose.

The pilot of the PA28 reported being in receipt of a BS from Dundee Tower. Dundee ATC were operating combined Tower and Approach control positions without the aid of surveillance equipment. METAR EGPN 061450Z 23018KT 9999 -SHRA FEW030 SCT045 13/09 Q0997=

The PA28 was operating from Dundee airport on a local VFR flight to the E of the airfield and before departure was passed QNH & QFE 997 and advised that Danger Area D604 was active up to 2000ft. The PA28 departed from Dundee RW27 at 1431 and was in receipt of a BS. The Manual of Air Traffic Services Part 1, Section 1, Chapter 11, Page 4, Paragraph 3.1.1, states:

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

The ATSU were not immediately aware that an Airprox had occurred and no RT reports were made by the pilot of the PA28. At 1520:25 the PA28 pilot called Dundee Tower and requested rejoin. The PA28 landed on RW27 at 1531.

HQ AIR (OPS) comments that without comprehensive radar coverage and any knowledge of the incident by the GR4 the actual separation is hard to assess. There are known limitations with see and avoid operations in Class G airspace and this may well be another example where 2 ac came quite close without both being visual. As the PA28 was squawking the fitment of a CWS to the GR4 could have improved situational awareness and separation.

UKAB Note (2): The radar recording for the period does not capture the Airprox owing to poor radar coverage. From 1450-1458 a 7000 squawk is seen manoeuvring between Kinnell disused aerodrome, the coast to the E and Montrose to the N. This is believed to be the PA28, its Mode C indicating a maximum of FL037 (approximately 3200ft QNH 997mb) and a minimum of FL024 (1900ft QNH). During the same period a 7001 squawk, the GR4 Lead ac, and an intermittent primary only return are seen manoeuvring off-shore, well to the SE of the PA28, the 7001 squawk showing a similar height band. Then between 1458 and 1501 the PA28 manoeuvres between FL026 and FL024, turning on a S'yly track before fading from radar. Meanwhile the GR4 lead ac tracks NWly before fading as it coasts in, Mode C showing FL019 (1400ft QNH) on track to pass about 4nm S of the PA28. A primary only return pops up 6nm astern of the GR4 Lead ac also tracking NW but fades 40sec later 3nm before the coast. Just over 1min later the PA28 reappears level at FL025 (2000ft QNH) manoeuvring to the E of Kinnell disused aerodrome before fading again 1min later tracking NW. Twenty seconds later the GR4 Lead ac reappears, 2nm NW of the position where the PA28 faded, tracking SE climbing through FL022 (1700ft QNH) before coasting out and turning NW'ly and changing to a Scottish Mil assigned code at FL50.

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.

Members could add little to this incident. The radar recording shows the 2 GR4s operating off-shore before turning towards the Kinnell area and descending; however, neither of the subject ac show at the same time to capture the incident. As the Airprox occurred in Class G airspace, both crews were responsible for maintaining their own separation from other ac through 'see and avoid'. The PA28 instructor had seen a single GR4 approaching 1-1.5nm and taken action; however, the GR4 crew did not recall seeing a light ac in the area and Members agreed that it was this non-sighting that had caused the Airprox.

Turning to risk, the PA28 instructor had limited options open to him to avoid the GR4, owing to the limited performance compared with the fast moving jet. He had elected to descend, estimating the GR4 passed 100-150ft above, and his presence had gone unnoticed by its crew. Taking these elements into account, the Board concluded that safety had been compromised during this incident.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A non-sighting by the GR4 crew.

Degree of Risk: B.

AIRPROX REPORT No 2010159

Date/Time: 12 Oct 2010 1445Z

Position: 5205N 00026W
(3nm SSW Bedford
Airfield)

Airspace: Lon FIR (Class: G)

Reporting Ac Reported Ac

Type: Grob Tutor DA40

Operator: HQ AIR (Trg) Civ Pte

Alt/FL: 1800ft 2500ft
(RPS 1014mb) (NK)

Weather: VMC HZBC VMC CAVOK

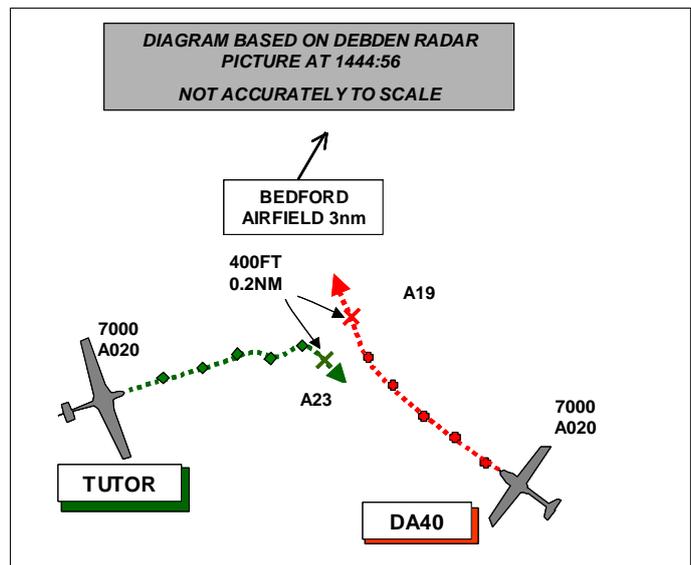
Visibility: 20km >10km

Reported Separation:

50ft V / 200m H 0 V/400m H

Recorded Separation:

400ft V / 0.2nm (370m) H (See UKAB Note (1))



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE GROB TUTOR PILOT reports flying a dual navigation training flight in receipt of a BS from Cottesmore, squawking 7000 with Modes C and S; TCAS was not fitted. They were heading 100°, out of sun, at 120kt and at 1800ft on the RPS conducting a teaching exercise when the captain saw a white, low-winged, single-engined ac, with a T tail, 300m away in their 12 o'clock position, crossing from R to L at a similar level. He immediately initiated a climbing break to the right to pass behind the ac, which was not seen to manoeuvre.

He assessed the risk as being Medium and reported the incident to Cottesmore Zone.

THE DA40 PILOT reports flying solo on the return leg of a private, VFR flight from North Weald to Sywell, in receipt of a BS from Farnborough North and squawking as directed with Modes C&S; PCAS was carried. Approaching Bedford, Farnborough terminated the radar service due to his approaching the edge of their radar cover and instructed him to change squawk from 5036 to 7000. He was heading 305° at 118kt and no immediate traffic had been advised but almost immediately on changing to 122.7 (Sywell) and squawking 7000, he saw a low-wing single-engine ac, 400m away in shallow climb (nose high) in his 10 o'clock. No PCAS warning or alert was given but he disconnected the autopilot and initiated a descending R turn; after a few seconds other ac made a hard R turn and passed behind him. He estimated that the ac passed about 400-500 metres away. He thought that had both ac not reacted there could have been a collision but due to the reaction the risk was low.

ATSI reported that the DA40 had left the Farnborough frequency at the time of the incident.

HQ 1GP BM SM reports that the Tutor was in receipt of a BS from Cottesmore Zone at 1800ft, around 3nm SSW of Bedford airfield and the Airprox was declared on their frequency. The Cottesmore investigation showed that although both the reported and reporting ac might have been operating on Zone frequency both ac were operating below the base of Cottesmore radar coverage; consequently, Zone were unable to provide TI.

UKAB Note (1): The recording of the Debden radar shows the incident as depicted above. Both ac are squawking 7000 with Mode C, both are showing an alt of 2000ft in the lead up to the CPA and the ac are on a collision course. The Tutor's right, upwards break and the DA40's descending right turn are both evident on the radar recording and generated a miss-distance of 0.2nm and 400ft.

UKAB Note (2): Since the Grob was squawking with Mode C throughout, it cannot be explained why no PCAS warning was enunciated.

HQ AIR (Trg) comments that this was a conflict in Class G resolved by both pilots but contributed to by late sightings. It is noted that the DA40 pilot appears to have expected that his BS would have provided him with TI on the Tutor. As such, he may have had a false expectation that there was no traffic to affect and not prioritised lookout so highly as a result; this may have applied equally to the Tutor crew who were also under a BS from another unit. It is disappointing that the Tutor crew only spotted the conflict when it was in their 12 o'clock, probably after the conflict had been resolved by the DA40.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The Board noted that both pilots were operating legitimately in Class G airspace where the 'see and avoid' principle applies; the Tutor was in receipt of a BS from Cottesmore and, until no longer practicable, the DA40 had been in receipt of a BS from Farnborough. The Airprox occurred shortly after the DA40 left the Farnborough frequency and, in the absence of a RT transcript, the Board could not know what, if anything, had been said by the controller about traffic to affect when he cleared the DA40 en-route. It was unclear whether the Farnborough controller could see the Tutor on radar; although the Tutor's squawk is visible on the recorded radar, it did not generate a warning on the DA40's PCAS. If there was a reference to traffic, Members thought that the DA40 pilot might have misconstrued the departing call from Farnborough to mean that there was no traffic in the vicinity rather than no traffic showing on the radar in his location, as intended. A pilot Member considered that the DA40 pilot's report could be interpreted to mean that he had an expectation of TI under a BS, but the CAA SRG ATS Standards advisor disagreed. However, in the event both pilots saw the conflicting traffic, although later than optimum, in time to take effective avoiding action thus ensuring that there was no risk of collision. The Board was evenly split regarding the cause, half considering that it was late sightings and the other half a conflict in Class G airspace; the Chairman opted for the latter since the pilots' sightings were such that the resulting avoiding action they took was in time to be effective.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict in Class G Airspace resolved by both pilots.

Degree of Risk: C.

AIRPROX REPORT No 2010165

Date/Time: 16 Oct 2010 1437Z (Saturday)

Position: 5113N 00146W (2.25nm S
Netheravon - elev 455ft)

Airspace: D126/Para DZ (Class: G)

Reporting Ac Reported Ac

Type: BN2T C208

Operator: Civ Comm Civ Club

Alt/FL: 2000ft ↓cct
(RPS)

Weather: VMC CLBC VMC CLOC

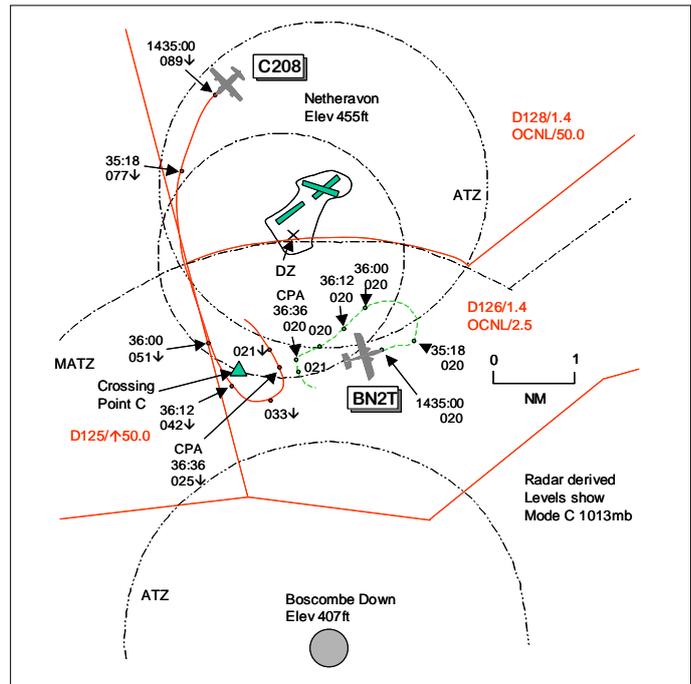
Visibility: >10km 10km

Reported Separation:

Nil V/200m H Not seen

Recorded Separation:

500ft V/0.2nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE BN2T PILOT reports flying a sortie in support of an Army training exercise in Salisbury Plain DA complex squawking 7002 with Modes S and C. The visibility was >10km flying 500ft below cloud in VMC and the ac was coloured white/blue with anti-collision, nav and strobe lights all switched on. They had been cleared into the areas by Salisbury Ops on the previous day and D126 and D128 were active from the surface to 6000ft on the Portland RPS for their operations. The adjacent D125 was their Western limit as live firing was taking place. They had also been briefed by Salisbury Ops that parachuting would be going on at Netheravon and gliding at Upavon. Prior to departure he confirmed this information by listening to the Salisbury Ops recorded activity bulletin by telephone, as Salisbury Ops was not usually manned at weekends, as was the case on the day of the incident. The task was to monitor a proposed surface convoy route from the E of D126 to the W along the Southern transit route up to crossing point C [3000m/1.5nm SW of DZ centre]. In order to achieve this they were flying below cloud cover to maintain good camera contact with the proposed targets. On entering the range he established communications with Netheravon both to establish their movements and inform them of theirs. Netheravon stated that it was quiet and that only 1 ac was in use. He asked Netheravon to inform them prior to each drop, which they did as part of their 'clear to drop' procedure. Most of the time the BN2T was sufficiently S of Netheravon not to need to take evasive action. Twice the Army asked for them to look at areas closer to the airfield but before proceeding closer he confirmed with Netheravon that he was clear to do so. On one occasion when they were tasked to look at a crossing N of crossing point C, they had to make a number of moves S to avoid the paradrops as and when required. The paradrop ac [the C208] took-off in an E'ly direction and was never a threat, climbing out of sight to the E. On returning from the drop the ac would descend rapidly to the E and its pilot announced when it was passing 4000ft, at which point they would all start looking for the drop ac as its route was a wide downwind leg to R base for RW06. This route brought the drop ac close to their operational area but on most occasions the paradrop pilot would announce that he was visual with their ac first and then they would reciprocate when visual. The paradrop ac did not stay confined to the ATZ and would roam freely through the active Danger Area. He heard some chat on the radio between Netheravon and the drop ac pilot about, "its XXXX's turn now, you can change over soon". Shortly afterwards whilst heading 270° close to crossing point C at 90kt and 2000ft RPS they were looking for the paradrop ac after a drop as a call was made by its pilot at 4000ft seconds before the C208 appeared 800m away, high and to their L heading straight at them; the ac had descended to the W and was making a straight-in approach.

He immediately turned L to avoid it; the C208 then passed to their R by 200m as it descended through their level. He asked the C208 pilot if he was visual with his ac at the time and its pilot replied, "who are you?" He stated his c/s and informed the C208 pilot that he had just missed his BN2T. The C208 pilot then said that the BN2T should not have been there as it was an active Danger Area. He informed the C208 pilot that it was active for his ac working with the Army and that he had been in contact with Netheravon and the drop ac all morning. The C208 pilot apologised and landed thereafter. They finished their tasking about 10min later and departed for their final destination. He assessed the risk as low.

THE C208 PILOT reports flying for parachuting duties during the afternoon on the day of the incident and in communication with DZ Control on 128.3MHZ, squawking 0033 with Mode C. The visibility was 10km in VMC and the ac was coloured white/blue/red with nav and strobe lights switched on. Before commencing his duty he went to the Drop Zone (DZ) control bus as normal and spoke with the DZ controllers but they did not mention that there was or would be any other traffic operating in the vicinity of the DZ to affect. He took over from the morning pilot who briefed him on the run-in to use and suggested RW in use. He listened to the ATIS where he heard that there may be activity in D126 during his shift and was aware that there may be traffic S and W of the DZ up to 6000ft. With this in mind the final part of his descent at 150kt was on the delineation line between D126 and D128, making his base leg turn N up the Pewsey Valley along the boundary of D125 for a R turn onto RW06. He was unsure how many sorties he had completed on the day before the BN2T pilot spoke to him on the radio but on timings it must have been either his first or second sortie. At the time he was positioned RH downwind, he thought, and was asked whether he had seen the BN2T to which he replied he hadn't. There was also a short conversation where he mentioned his surprise that the BN2T was operating so close to the Netheravon DZ and thereafter he agreed to give position reports to keep adequate separation on future sorties during the rest of the day. He had not seen the BN2T and its pilot did not seem concerned at the time so he was surprised to hear the next day that an Airprox had been filed. Also, he learned that there had been an agreement for the BN2T flight to operate in conjunction with the parachute operation which was agreed on the previous evening but which he was not privy to.

UKAB Note (1): The MIL AIP at AD 2-EGDN-1-6 Para 2.17 promulgates Netheravon ATZ as a circle 2nm radius centred on N511449.66 W0014515.33 from SFC to 2000ft aal; elevation 455ft. The aerodrome is active 0800-1700 Mon-Fri, other times available to meet operational requirements. AFIS or A/G service is available to meet operational requirements. Intensive parachuting takes place seven days a week during daylight hours. RW06/24 is an unlicensed grass strip on the western side which may be used by parachuting and Netheravon Flying Club ac only when there is no FISO service and is entirely at pilot's discretion.

UKAB Note (2): The UK AIP at ENR 5-5-3-3 promulgates Netheravon as a Free-fall Drop Zone circle 1.5nm radius centred on 5111423N 0014615W from FL150 active normally during daylight hours. Activity notified on the day to Salisbury Operations or alternatively on 128.3MHZ.

UKAB Note (3): The DZ is approximately 1200m SSW of the Netheravon ARP. The unlicensed RW06/24 is 300m N of the DZ Reference Point.

UKAB Note (4): The SPTA Airspace Allocation for the weekend 16/17th October promulgates the BN2T activity in SPTA areas 17/18/19 between 1230-1530; no operating height was shown. Areas 17/19 are within D126 either side of a N/S dividing line through the Netheravon E airfield boundary. D125 was active with live firing 0830-0030; D126 and D128 were not firing. Netheravon JSPC/APA was promulgated active during daylight hours. The Airspace Allocation sheet and an Information and NOTAM sheet for SPTA and Netheravon is created by Netheravon Stanops on the Friday at 1200Z prior to the weekend activity and is faxed to various units including the JSPC/APA. These 2 sheets are also attached to the OPS room window for viewing by airfield users.

UKAB Note (5): Boscombe Down was active 0730-1500Z. The Boscombe METAR was 1450Z AUTO 02015KT 9999 FEW029 13/06 Q1021=

UKAB Note (6): AIS provided a copy of the Pre-Flight Information Bulletin (PIB) for the 16th October which included a NOTAM for the BN2T activity within D128: -

EGTT/QRDCA/IV/BO/W/000/060/5116N00144W005
DANGER AREA EG D128 EVERLEIGH ACTIVATED ABOVE NORMAL LVL. FIXED WING
ACTIVITY
LOWER: SFC
UPPER: 6000FT AMSL
FROM: 16 OCT 2010 06:00 **TO:** 16 OCT 2010 16:00 F3351/10

UKAB Note (7): The Pease Pottage radar recording clearly captures the incident. At 1435:00 the BN2T is seen 2.25nm S of Netheravon tracking 080° following a LH racetrack pattern, squawking 7002 [Danger Areas General] and indicating FL020 (2240ft QNH 1021mb) with a G/S 80kt. At the same time the C208 is seen 1.7nm NW of Netheravon in a slow L turn passing through heading 210° squawking 0033 [Aircraft Paradropping] indicating FL089 descending, ROD 4000fpm and G/S 190kt. Eighteen seconds later at 1435:18 the BN2T commences a L turn whilst the C208 is turning through heading 190° 1.8nm W of Netheravon, descending through FL077. The BN2T rolls out on a SW'y track at 1436:00 level at FL020 whilst the C208 is steady on a track of 170° on the E boundary of D125 passing FL051 in the descent, 2nm to its W. The C208 commences a L turn towards Netheravon at 1436:12 descending through FL042, in the BN2T's 12 o'clock range 1.5nm. Twenty four seconds later the CPA occurs; the C208 is now steady on a NW'y track descending through FL025 passing through the BN2T's 12 o'clock from L to R range 0.2nm, which is 500ft below at FL020. The next sweep shows the BN2T having turned L, which accords with the BN2T pilot's reported avoiding action, onto a S'y heading at FL021 with the C208 diverging to the NW descending through FL020.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, radar video recordings and reports from the appropriate operating authorities.

It appeared to Members that the C208 pilot had noted, from the ATIS, the BN2T's activity to the S and W but its proximity to the DZ, known to the previous BN2T pilot, had not been assimilated. That said, the C208 pilot's chosen flightpath, post paradrop, had taken his ac into the BN2T's notified activity area so, with the Airprox occurring in Class G airspace, there was equal responsibility on both pilots to maintain their own separation from other traffic through 'see and avoid'. However, for whatever reason, he had not seen the BN2T, which was in the airspace into which he was turning, and this was a part cause of the Airprox. The BN2T pilot had established an accord with the previous C208 pilot but had been surprised when he saw the C208 approaching from a different direction, late, as it descended towards Netheravon; this was the other part cause of the Airprox. Members agreed that better communication between the pilots concerned of their relative positions during each paradrop evolution would have improved their SA immensely.

Looking at the risk element, although the C208 pilot did not see the BN2T, the BN2T pilot saw the C208, 800m away above and descending, and took prompt and robust avoiding action to the S; the radar recording showing 500ft and 0.3nm at the CPA. This was enough to persuade the Board that any risk of collision had been quickly and effectively removed.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A non-sighting by the C208 pilot and a late sighting by the BN2T pilot.

Degree of Risk: C.