

ASSESSMENT SUMMARY SHEET FOR UKAB MEETING ON 14 SEPTEMBER 2011

Total: 19	Risk A: 3	Risk B: 5	Risk C: 9	Risk D: 0	Risk E: 2
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<u>No</u>	<u>Reporting</u>	<u>Reported</u>	<u>Airspace</u>	<u>Cause</u>	<u>Risk</u>
2011024	DHC-8 (CAT)	Vulcan (CIV)	D	Late recognition that the Vulcan was not flying in accordance with the controller's expectations.	C
2011030	Tutor (MIL)	PA34 (CIV)	G	A non-sighting by the PA34 crew and effectively a non-sighting by the Tutor pilot.	A
2011036	B737-400 (CAT)	B737-400 (CAT)	A	Gatwick INT DIR vectored B737(B) into conflict with B737(A).	C
2011039	Grob Tutor (A) T Mk 1 (MIL)	Grob Tutor (B) T Mk 1 (MIL)	G	Effectively a non-sighting by Tutor B pilot and a late sighting by Tutor A crew.	A
2011041	PA34-200T (CIV)	C172 (CIV)	G	A late sighting by the C172 pilot.	C
2011043	Hawk T Mk 1 (MIL)	Untraced light ac (NK)	G	Sighting Report.	E

2011044	Magic Laser Flexwing ML (CIV)	MD902 Explorer (CIV)	G	<p>The MD902 flew close enough to cause the Flexwing pilot concern.</p> <p>Follow up: The Board was concerned that there have been a number of incidents in which Microlight ac/para gliders/hang gliders etc appear to have been affected by helicopters at unexpected distances and aspects. Director UKAB undertook to investigate whether there is existing research into the phenomenon.</p>	E
2011045	BAe146 (MIL)	Cirrus SR22 (CIV)	G	In the absence of specific TI, a conflict in Class G airspace resolved by the BAe 146 crew using TCAS.	C
2011046	Vigilant (MIL)	DHC1 (CIV)	G	The DHC1 pilot flew unreasonably close to the Vigilant, causing its pilot concern.	B
2011047	MT03 Gyroplane (CIV)	Grob Tutor T Mk1(MIL)	G	The Tutor pilot flew into conflict with the Gyroplane on final.	B
2011048	Cessna Citation XLS (CIV)	Untraced Glider (NK)	G	A late sighting by the Citation pilot.	C
2011049	Chinook (MIL)	King Air (MIL)	G	The Chinook crew was concerned by the proximity of the King Air formation.	C
2011051	Lynx AH Mk7 (MIL)	Skyranger (CIV)	G (MATZ)	Conflict in Class G airspace resolved by the Talkdown Controller.	C
2011052	Grob Tutor (A) T Mk 1 (MIL)	Grob Tutor (B) T Mk 1 (MIL)	G	In the absence of specific TI, Tutor B crew conducted a non-standard join and did not integrate safely into the circuit pattern.	B

2011056	Discus Glider (CIV)	T6 Harvard (CIV)	G	A non-sighting by the Harvard pilot and effectively a non-sighting by the Discus pilot.	A
2011061	SZD-50 Glider (CIV)	AW139 (NK)	G	<p>The AW139 pilot entered the ATZ without clearance and flew through a notified and active glider launch site below the promulgated maximum height of the launch cable.</p> <p>Follow up action: There were a number of aspects of this Airprox, regarding penetration of ATZs, that warrant further examination. Director UKAB undertook to take these forward with the CAA/MoD.</p>	C
2011066	Ventus Glider (CIV)	OV10 Bronco (CIV)	G	A non-sighting by the Bronco pilot.	C
2011083	Merlin HC3 (MIL)	Untraced light ac (NK)	G	A late sighting by the Merlin crew and probably a late sighting by the untraced light ac pilot.	B
2011085	B757 (CAT)	Discus BT (CIV)	E	A conflict between IFR and VFR traffic in Class E airspace, resolved by the B757 crew.	B

- end -

AIRPROX REPORT No 2011024

Date/Time: 29 Mar 2011 1259Z

Position: 5326N 00103W (3nm SSW
Doncaster/Sheffield - elev 55ft)

Airspace: CTR (Class: D)
Reporting Ac Reported Ac

Type: DHC-8 Vulcan

Operator: CAT Civ Pte

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

Weather: VMC HAZE VMC CLBC

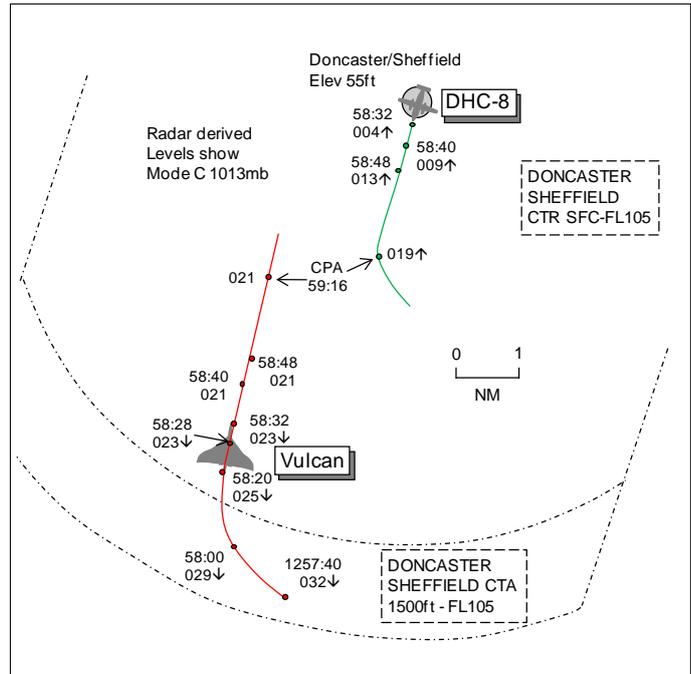
Visibility: 5000m 8km

Reported Separation:

NR Not seen

Recorded Separation:

Nil V/1.9nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE DHC-8 PILOT reports on departure from Doncaster IFR and in communication with Doncaster squawking with Modes S and C. Their departure clearance from RW20 was an UPTON 1A SID squawk 7773 climbing to FL60. The departure involves making a series of R turns shortly after departure based upon ILS/DME distances from Doncaster and using/establishing on radials from GAM VOR, which is 12nm S of Doncaster. Whilst taxiing for departure they heard the Vulcan crew call on the Tower frequency stating the flight was at 4000ft 23nm S of the aerodrome requesting a visual recovery. Tower asked if the crew had called Radar, to which the crew replied, "negative" so the crew was instructed to call Radar. At the hold Tower told them to line up and as they entered the RW whilst awaiting take-off clearance they were given an amendment to their UPTON 1A departure clearance to stop climb at 5000ft QNH 1012mb, which was set and read back. After a pause Tower cleared them for take-off, gave surface wind information and then issued TI on the Vulcan S of the aerodrome joining RH downwind, he thought, for the RW20 cct. The FO asked Tower to confirm their take-off clearance which was confirmed. A normal full power, flap 5 take-off was carried out and on passing 600ft the Tower controller, with an urgent tone in his voice, instructed them to stop climb at 2000ft and to call Radar on 126.225MHz. This was read back and actioned by the PNF (Capt) changing the selected altitude to 2000ft and checking ALTSEL was still armed whilst the FO continued to hand fly correctly. On passing 1060ft, "one to go and acceleration altitude" was called followed by the FO calling, "flap zero" which was actioned by the PNF who changed frequency and called Radar as quickly as possible stating that they were climbing to 2000ft on RW heading. Heading 210° at 170kt they had not reached the first significant R turn on the SID at 1.5DME I-FNL but it was approaching very quickly. As there had been an urgent tone in the Tower controller's instruction and they knew the Vulcan was inbound from the S and the in-flight visibility was 4-6km at best, a developing uneasy feeling made him decide it was better to give their actual heading rather than the SID for speed of identification, clarity and accuracy. Radar instructed them to turn L heading 090° and maintain 2000ft without using any terminology such as 'immediately' or 'avoiding action' but there was a distinct urgent tone to his instruction. The PNF altered the heading bug and read back the instruction, the FO commenced the L turn by hand flying before engaging the AP to complete the turn which took them 160° or more away from the first track turn of the UPTON 1A and 110° off their current heading. Selection of AP also reduced the likelihood of an altitude bust during the level-off and the FO adjusted the power appropriately. The FO reported, from a quick glance to his R once he had commenced the turn, that he had seen the Vulcan pass down their RHS at the

same height and close but because of the poor visibility flying into sun and the physical side profile of the ac, the actual miss distance was difficult to judge. They were then in a position to continue with their normal take-off SOP actions of setting climb power and bleeds to on/normal. This had all happened very quickly owing to their full power, flap 5, 24-Tonne take-off with a 15° pitch-up climb attitude accelerating through 170kt to 200kt+ and a ROC >2500fpm. Radar then instructed them to climb to FL60 and turn L direct to UPTON and to call Scottish Control on 133.8MHz. After establishing with Scottish they were asked to contact Doncaster Radar on Box 2, which PNF did. They were asked if they had seen the Vulcan, how close it was, had they received a TCAS alert and would they be reporting the incident. The Capt confirmed that the FO had seen the Vulcan but owing to poor visibility the distance was difficult to judge and that a report would be submitted. No TCAS alerts had been generated and he assessed the risk as medium. He went on to state that the UPTON 1A and all Doncaster SIDs were not present in the FMS database which meant the departure was flown on raw data using the heading bug, initially hand flown until normally above acceleration altitude. With a normal take-off using FMS the PF asks for the FMS NAV mode to be engaged and he monitors the flightpath which would have, on this occasion, turned the ac R in accordance with the SID towards the oncoming Vulcan. However in this case the PF was actually hands-on controls following raw data and did not follow the SID R turn automatically and was able to react instantly to the L heading 090° instruction given by Radar.

THE VULCAN PILOT reports inbound to Doncaster VFR and in receipt of a TS from Doncaster Radar on 126.55MHz, squawking 6163 with Modes S and C. The visibility was 8km flying 2000ft below cloud in VMC. They were handed over to Doncaster Radar from Wyton and were issued a discrete code before they requested a visual join. They positioned to join downwind LH for RW20 at 180kt and were alerted to a DHC-8 getting airborne and they were told to maintain 2000ft but were not on a radar heading. They heard Radar tell the DHC-8 flight to turn onto 090° but they were not aware of its location relative to their ac and did not see it at any time.

THE DONCASTER/SHEFFIELD APR reports screening a U/T controller when the Vulcan flight requested a VFR joining clearance into the CTA for landing at Doncaster. The flight was issued a 6163 squawk and identified 4nm SE of GAM before being given clearance to enter VFR not above 4000ft. The crew requested to join downwind LH for RW20 and was cleared to do so. Meanwhile the DHC-8 flight had been released on an UPTON 1A departure climbing to 5000ft owing to overflying traffic. The Vulcan squawk was garbling with other traffic operating in the GAM area and when it reappeared it was noticed that the ac had tracked W through the RW20 climbout. At this time he had also taken over from the trainee and was attempting to stop the DHC-8 departure and also to ask the Vulcan flight to maintain 3000ft however, both attempts were unsuccessful. The Vulcan then turned R back towards the aerodrome for a LH cct and the DHC-8 flight, which was now on frequency, was given an immediate L turn and its climb stopped at 2000ft. The Vulcan passed behind the DHC-8 by about 2nm and joined downwind LH; the DHC-8 flight was given further climb once clear.

ATSI reports that the Airprox occurred at 1259:16 UTC, at a position 3nm to the SSW of Doncaster Airport, within the Doncaster CTR, Class D CAS. The Manual of Air Traffic Services (MATS), Part 1, Section 3, Chapter 4, Page 1, for the 'Integration of VFR flights with IFR Traffic in Class D CTR', paragraph 3.2 & 3.3 states:

'Instructions issued to VFR flights in Class D airspace are mandatory. These may comprise routeing instructions, visual holding instructions, level restrictions, and information on collision hazards, in order to establish a safe, orderly and expeditious flow of traffic and to provide for the effective management of overall ATC workload.

Routeing instructions may be issued which will reduce or eliminate points of conflict with other flights, such as final approach tracks and circuit areas, with a consequent reduction in the workload associated with passing extensive traffic information. VRPs may be established to assist in the definition of frequently utilised routes and the avoidance of instrument approach and departure tracks. Where controllers require VFR aircraft to hold at a specific point pending further clearance, this is to be explicitly stated to the pilot.'

The Vulcan was inbound to Doncaster VFR from Lyneham in order to be based at the airfield for the summer season. The arrival of the Vulcan was considered to be a high profile event at the airfield. In this regard the Radar controller had been asked to arrange for the ETA to be notified to the airfield in advance of the Vulcan's arrival.

The DHC-8 was departing IFR from Doncaster Airport on a scheduled flight to Jersey and was cleared for the Standard Instrument Departure (SID) 'UPTON 1A' from RW20. This required a R turn after departure to the SW climbing to altitude of 5000ft.

[UKAB Note (1): The UK AIP states UPTON 1A SID as 'Climb straight ahead to 555 QNH (500 QFE) or I-FNL D0.5 whichever is later, then turn right onto track 210°. At I-FNL D1.5 turn right onto track 250°. When passing GAM VOR R331 turn right to intercept GAM VOR R325. Cross GAM D13 at or above 4000. At GAM D14 turn to intercept GAM VOR R328, cross GAM D18 at FL60, to UPTON. (8%).']

RW20 was the notified RW in use. The Radar controller was providing an Approach RCS, together with a trainee under supervision. The Radar controller indicated that traffic levels were moderate with a number of ac on frequency, including traffic crossing the CTR at FL65 and traffic holding overhead Gamston at 3000ft.

METAR EGCN 291220Z 19006KT 150V240 9000 NSC 15/06 Q1013=

At 1252:25 the Vulcan flight initially contacted the Tower for a visual join. The RT was distorted and required 2 calls to establish two-way communication. Tower instructed the Vulcan flight to contact Radar.

At 1253:04, the Vulcan flight called Doncaster Radar, *"...Vulcan is for recovery we're twenty miles to the southeast at four thousand feet on er one zero zero seven for a visual join."* Doncaster Radar instructed the Vulcan crew to squawk 6163 and passed the QNH 1012. The Vulcan crew did not respond to this transmission and the controller called the Vulcan flight again. The Vulcan crew responded *"er Vulcan is squawking six one six three."* There was no readback of the QNH.

At 1253:54, the Vulcan crew requested a Traffic Service and Radar responded, *"Vulcan roger it's a Traffic Service and you're clear to enter controlled airspace er on track the Foxtrot November Yankee er VFR not above altitude four thousand feet and report field in sight."* The Vulcan crew replied requesting the QNH and QFE. Radar passed the QNH 1012, RW20 and QFE 1011. The Vulcan crew acknowledged, *"One zero one one ???not above four thousand on the er QNH one zero one two Vulcan."* The radar recording shows the Vulcan's position, 18.2nm SSE of Doncaster Airport tracking directly towards the airfield.

The Vulcan's clearance to enter CAS on track the FNY NDB, VFR not above altitude 4000ft, had the potential to conflict with IFR departures from RW20. At this point the Radar controller made a phone call to advise the airport authority of the Vulcan's arrival.

At 1255:36, the radar recording shows the Vulcan at an altitude of 4000ft, crossing the boundary of CAS. Later, when discussed, the Radar controller acknowledged that the pilot was not advised of the change in service from 'Traffic Service' to a 'Radar Control Service'. The Manual of Air Traffic Services, (MATS) Part 1, Section 1, Chapter 5, Page 1, paragraph 1.2.2, states:

- 'Pilots must be advised if a service commences, terminates or changes when:
- a) they are operating outside controlled airspace; or
 - b) they cross the boundary of controlled airspace.'

At 1256:00, Tower coordinated the release of the DHC-8 and Radar issued a clearance to route, "UPTON 1A stop climb at 5000ft on QNH 1022". This required a R turn at an altitude of 555ft.

At 1257:00, the radar recording shows the Vulcan to be 9.8nm S of Doncaster. The Vulcan flight reported, *"Er Vulcan's clear of Gamston and request further descent for a downwind left hand join."* Radar responded, *"Vulcan Roger you can descend at your discretion traffic shortly getting airborne from Doncaster is a Dash Eight er turning er initially southwest bound before turning northeast bound climbing through your level."* The Vulcan crew responded, *"That's copied are we er clear downwind join."* The Radar controller confirmed, *"Vulcan affirm you can expect a downwind lefthand join for Runway two zero."* The Vulcan crew replied, *"Downwind lefthand join approved Vulcan."*

Meanwhile, at 1256:38, Tower cleared the DHC8 flight for take-off and passed TI to the DHC-8 on the Vulcan, *"(DHC8)c/s traffic is a Vulcan eight miles south of the airfield erm to the east of climb out to position downwind lefthand visual."* At 1257:35, the Tower confirmed that the DHC-8 flight was cleared for take-off.

Later the Radar controller indicated that the intended plan, was for the DHC-8 to depart to SW, with the Vulcan remaining E of the airfield to join downwind LH for RW20.

At 1257:40, the radar recording shows the Vulcan crossing the extended C/L for RW20 at a range of 8.2nm and tracking NW. In order to confirm the joining instructions Radar transmitted, *"Vulcan confirm you're looking for a downwind lefthand join for Doncaster."* The Vulcan crew did not respond to this transmission.

The Radar controller explained that the phone call to the aerodrome authority had proved distracting. This had resulted in the late recognition of the developing situation and potential conflict with the DHC-8 departure. The Radar controller contacted Doncaster Tower and instructed them to hold the departing DHC-8. The Tower controller advised Radar that the DHC-8 was already rolling.

Radar instructed the Tower to stop the DHC-8 climb at 2000ft and indicated the Vulcan would stop descent at 3000ft.

The Radar controller took over from the trainee and at 1258:01, instructed the Vulcan flight to stop descent at 3000ft, *"Er V-Vulcan er stop descent altitude three thousand feet."* There was no response from the Vulcan crew and the radar recording shows the Vulcan passing altitude 2900ft.

At 1258:20, the radar recording shows the Vulcan at a range of 7nm, indicating altitude 2500ft. The Radar controller called the Vulcan flight again, *"Vulcan Doncaster."* The Vulcan crew replied, *"Vulcan six miles field in sight to Tower."* Radar responded to the Vulcan, *"Yeah maintain three thousand feet Sir three thousand feet there's traffic just airborne below you climbing one thousand feet below."* The Vulcan crew did not respond to this transmission. The radar recording shows the Vulcan now passing altitude 2300ft at a range of 6.1nm tracking 005° on the western side of RW20 climbout.

Also at 1258:20, Tower instructed the DHC-8, *"...if you stop your climb now at two thousand feet."* This was acknowledged by the DHC-8 crew and at 1258:37, the DHC-8 flight was transferred to Radar. The DHC-8 crew's written report indicated that the urgent tone in the Tower controller's voice had caused an uneasy feeling and this would result in the pilot reporting to radar, RW heading, rather than the SID designator.

Following the lack of response to his last instruction, at 1258.40, Radar called the Vulcan, *"Vulcan did you copy."* The Vulcan crew replied, *"Vulcan Vulcan's levelling at two thousand feet."* The radar recording shows the Vulcan at range of 5.5nm indicating altitude 2100ft.

At 1258:50, the departing DHC-8 flight called Radar, *"(DHC8)c/s with you climbing two thousand feet runway heading at the moment."* Radar responded, *"(DHC8)c/s turn left immediately left please heading zero nine zero maintain two thousand."* The DHC8 pilot replied, *"Maintain two thousand left zero nine zero (DHC8)c/s."* The radar recording shows the range between the 2 ac is 3.8nm with the Vulcan indicating altitude 2100ft and the DHC-8 indicating altitude 1300ft.

At 1259:16 the radar recording shows the 2 ac, at a position 3nm SSW of Doncaster Airport, passing abeam each other at a distance of 1.9nm, with the Vulcan indicating altitude 2100ft and the DHC-8 indicating altitude 1900ft. Radar told the Vulcan flight, *"Vulcan the traffic just airborne in your right two o'clock at two miles turning east."* The Vulcan crew did not respond to the transmission. When the 2 ac had passed abeam, the DHC-8 was instructed to climb to FL60.

The Vulcan was now SW, tracking towards the W side of the airfield. Radar advised the Tower that the Vulcan would now be joining downwind RH. Radar instructed the Vulcan flight, *"and er Vulcan join downwind right hand for Runway two zero the circuits now clear contact the Tower one two eight seven seven five."* The Vulcan crew responded, *"Vulcan was that for us to Tower."* Radar replied, *"Affirm one two eight seven seven five."* There was no readback of the instruction to join downwind RH and the Radar controller did not challenge the Vulcan crew's incomplete readback. The Vulcan then turned R and crossed to the E side of the airfield and joined downwind LH.

The controller was asked if there was any action that might have prevented this incident or similar future occurrence. The controller indicated that the phone call to the airport authority had been distracting and resulted in a delay to the corrective action which would have resolved the situation earlier. The controller indicated that the Vulcan was a heavy, fast ac and considering the type of approach and high profile nature of the arrival, a restriction on all departures would have been appropriate. In addition, with the pilot's agreement, radar vectors to join a LH cct, would have ensured that safety was not compromised.

The controller indicated that the Vulcan pilot's lack of response to various transmissions was frustrating and not helpful in the circumstances. There was some discussion and speculation about the possible reasons. It later became apparent that the Vulcan crew had reported a control problem (Yaw damper) to the Tower on joining the cct. However it was not clear if this may have been a factor and there was not sufficient information to establish a cause for the Vulcan crew's non-response to Radar's transmissions. Rule 30 of the RoA states:

'Subject to Rule 31, whilst flying within Class B, Class C or Class D airspace during the notified hours of watch of the appropriate air traffic control unit, the commander of an aircraft shall:

- (a) cause a continuous watch to be maintained on the notified radio frequency appropriate to the circumstances; and
- (b) comply with any instructions which the appropriate air traffic control unit may give.'

Separation standards are not prescribed for application by ATC between VFR flights or between VFR and IFR flights in Class D airspace. However, ATC has a responsibility to prevent collisions between known flights and to maintain a safe, orderly and expeditious flow of traffic.

The controller had a responsibility to ensure that the Vulcan's routing to join downwind LH was not in conflict with the departing DHC-8. The Radar controller, acting as the OJTI to the trainee, was distracted by the non-operational telephone call. CAA ATSI considered that this resulted in the situation developing, which the controller was unable to resolve in a satisfactory manner and for which the controller must accept some responsibility.

CAA ATSI considered the lack of response from the Vulcan crew on 6 occasions, was a significant contributory factor that caused a delay in resolving the conflict.

The DHC-8 pilot intuitively recognised that there was a problem and elected to report on RW heading, rather than R onto the SID. This significantly contributed to a resolution of the situation.

Recommendation.

CAA ATSI recommends that the ATSU reminds controllers of the requirement to ensure that non-operational conversations must not be permitted to interfere with a controller's operational duties. MATS Part1, Appendix E, Page 2, paragraph 2, states:

'Non-operational and other conversations have the potential to distract a controller from their primary task of providing a safe air traffic service. Examples include telephone conversations with external agencies, such as airline representatives, and discussions between controllers conducted on the telephone, intercom or, in some cases, face to face, following an unplanned traffic situation.

Non-operational conversations must not be permitted to interfere with a controller's operational duties. Procedures at units should ensure that non-urgent telephone calls from external agencies could be accommodated without prejudicing the controller's primary task.'

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.

Several elements highlighted in the comprehensive ATSI report were raised by Members in a lively and lengthy debate. From the initial call to Approach by the Vulcan crew, which was distorted and needed 2 calls to establish 2-way communication, there was a train of events which went unbroken leading to the Airprox. The Vulcan crew did not reply to the instruction to squawk, prompting another transmission from the controller to obtain a read-back but this reply did not include the QNH. The next RT exchange included a clearance to enter CAS, VFR on track to the Doncaster OH, which was answered with an incomplete read-back of the routeing that went unchallenged by the controller. At the time this instruction was issued the Radar controller was not aware of the impending DHC-8 IFR departure. The Radar controller expected the Vulcan would track direct to the OH and be in a position from which its crew would then join the visual cct. It was then that Radar telephoned the Airport Authority. When Tower called for a departure release on the DHC-8, the Radar controller was happy to release the flight on its UPTON 1A departure as he had formulated a plan to allow the Vulcan to join LH downwind which he assumed would keep the ac to the E of the RW20 climbout. So when the Vulcan crew called for further descent he cleared the flight to descend without a level restriction but passed inaccurate TI on the departing DHC-8's routeing once airborne, stating the ac would be turning NE instead of NW after departure before approving the LH downwind join by the Vulcan. Meanwhile the DHC-8 crew had been cleared for take-off by Tower and informed of the Vulcan's expected routeing to the E of the climbout. In passing TI to both flights the controller had discharged his responsibilities with respect to IFR and VFR traffic in Class D airspace; separation standards are not prescribed, and he believed that the ac would not be in conflict if the ac had followed his plan. However, it was apparent to controller Members that even if the Vulcan carried out the Radar controllers plan, flying towards the OH could still conflict with the DHC-8 as the ac could route very close to the extended C/L of the RW before turning R to position downwind LH. Had the controller been more positive with the Vulcan crew by stating that the flight must remain E of the RW20 climbout track and specified a distance, this would have clarified the Vulcan crew's 'air picture' of the traffic situation. When the TI and take-off clearance were issued to the DHC-8 flight, this was the last chance that its crew had to assess the information and elect not to take-off if they were unhappy with the Vulcan's flightpath. The DHC-8 crew was reminded, 1min after the initial take-off clearance and TI were issued, that the flight was cleared for take-off; this delay was thought by Members to have been due to the crew assimilating the traffic situation prior to departing.

From then on the situation deteriorated as the Vulcan did not route direct to the OH but tracked NW, crossing the RW20 climbout at a range of just over 8nm before Radar recognised the situation albeit late. Although the Vulcan's radar return had been garbling with traffic in the GAM area, Members were concerned that Radar allowed himself to be distracted in making the telephone call to the Airport Authority. This led to a late recognition of the Vulcan's flightpath, which was not in accordance with his intended plan, and this had caused the Airprox. He tried to confirm that the Vulcan would be turning R to join downwind LH, however this transmission went unanswered. Radar then tried to stop the DHC-8 departing but the ac was already rolling for take-off so he attempted to apply vertical separation by asking Tower to stop the DHC-8 at 2000ft, advising the ADC that he

would stop the Vulcan at 3000ft. However, when Radar instructed the Vulcan flight to stop descent the ac was already passing 2900ft and the crew did not respond. After another call to the Vulcan flight its crew replied that they were at range 6nm with the airfield in sight and transferring to Tower. Members commented that this call would have been normal had the ac been flying into a military aerodrome but flying into Doncaster within Class D airspace the Vulcan crew should not have expected 'military style' procedures to be acceptable. In the event, however the Vulcan remained on the Radar frequency. Given the METAR visibility value, this sighting is consistent with the in-flight visibilities reported by both crews, the Vulcan crew viewing down-sun and the DHC-8 crew flying into sun. Radar asked the Vulcan crew to maintain 3000ft and informed them of the DHC-8 traffic climbing 1000ft below however there had been no response. By now the Vulcan was W of the climb-out tracking 010° and towards the W side of Doncaster aerodrome. Radar again called the Vulcan flight asking if the crew had copied his last transmission but the crew then reported levelling at 2000ft. Immediately thereafter the DHC-8 flight made its initial call to Radar and was given an immediate L turn onto 090° and was told to maintain 2000ft. As the ac were about to pass at the CPA, Radar passed TI on the DHC-8 to the Vulcan crew but again this transmission was not acknowledged. Radar informed Tower that the Vulcan would be joining RH downwind, then instructed the flight to do so and passed the frequency but the crew queried whether that transmission was for their flight. Radar repeated the frequency but did not challenge the lack of read back to the joining instruction. Thereafter the Vulcan turned R and passed over the aerodrome to the E before turning downwind LH.

Pilot Members agreed that the DHC-8 crew had displayed excellent CRM. During a particularly high workload phase of their flight their SA of the situation was first-rate which had enabled them to execute a L turn immediately when instructed by Radar as the subject ac approached the CPA. Members agreed that the Radar controller's efforts were hampered by the communication difficulties with the Vulcan and were disappointed that the Vulcan crew had missed so many RT calls and repeatedly given incomplete read-backs. However, Members agreed that unless ATC challenged any missing or incomplete read-back there was no agreement reached between both parties. Although the DHC-8 passed the Vulcan unsighted by its crew, the flightpaths flown by both ac combined with the actions taken by Radar and the DHC-8 crew 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: Late recognition that the Vulcan was not flying in accordance with the controller's expectations.

Degree of Risk: C.

AIRPROX REPORT No 2011030

Date/Time: 12 Apr 2011 0839Z

Position: 5059N 00145W (6nm SSE Salisbury)

Airspace: Boscombe ARA (Class: G)

Reporting Ac Reported Ac

Type: Grob Tutor TMk1 PA34

Operator: HQ Air (Trg) Civ Trg

Alt/FL: 5000ft↑ FL50
(RPS 1028mb)

Weather: VMC CLOC VMC CLOC

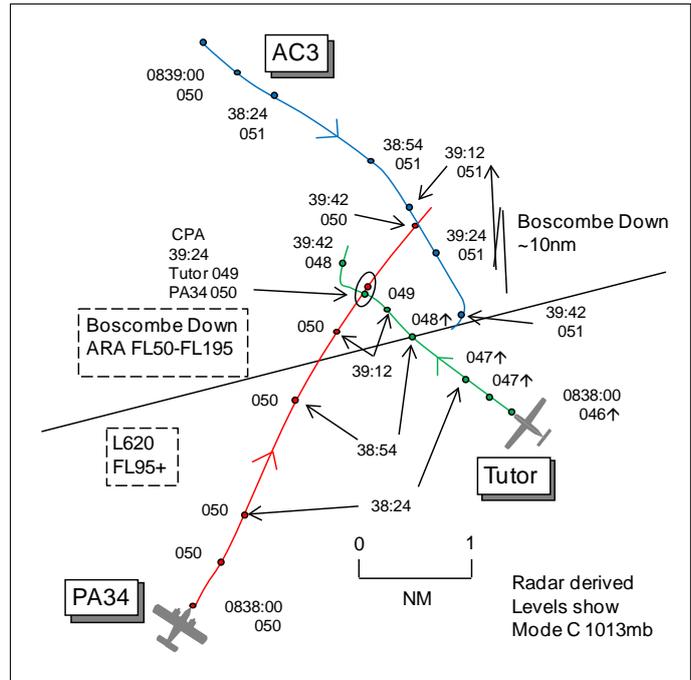
Visibility: 50km 30km

Reported Separation:

100ftV Not seen

Recorded Separation:

100ft V/<0.1nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE TUTOR PILOT reports flying a dual grading sortie from Middle Wallop, VFR and under a 'listening watch' with Boscombe Zone on 233.85MHz, squawking with Modes S and C. The visibility was 50km in VMC and the ac was coloured white. Operating in the SW training area the student was flying the ac straight and level at 5000ft RPS 1028mb and 100kt with a slightly high nose attitude and a small ROC established. Following a lookout scan to the L the required radio frequencies for recovery were selected by the student. A lookout scan was conducted from the ac's nose to the RHS tailplane by the ac Capt and student. During the scan to the L a light twin-piston engine ac was seen passing directly O/H from the 7 o'clock sector passing to the 2 o'clock sector about 100ft above. This sighting was too late to take avoiding action. The Capt took control and levelled the ac; he assessed the risk as medium.

THE PA34 PILOT reports flying a dual training sortie from Oxford, IFR and in receipt of a TS from Boscombe Zone on 126.7MHz, squawking with Modes S and C. The visibility was 30km in VMC and the ac was coloured white/blue. About 6nm SE of Boscombe heading 050° at FL50 and 160kt a student seated in the rear seat saw a Tutor about 0.5nm away approaching from his 3-4 o'clock and 300-500ft below. The Tutor then executed a manoeuvre to position itself in their 6-7 o'clock at approximately the same level or slightly below. The student did not think there was a risk of collision. Boscombe informed them of traffic and he saw an ac, AC3, which crossed ahead from L to R and slightly above, but the Tutor was probably hidden beneath the starboard wing. This Tutor was not seen by either of the operating crew. The rear-seated student took pictures of the Tutor when it was positioning behind their ac.

UKAB Note (1): The UKAB received the Boscombe RT transcript on the 1st July which revealed that the Airprox had occurred immediately before the PA34 flight made its initial call to Boscombe Zone. ATSI was requested to contact Bournemouth however the ATSU had returned their RT tapes back into service and owing to the delay the controller would not be able to provide a meaningful report.

HQ 1GP BM SM reports that this Airprox occurred between a PA34 operating IFR in VMC that reported being in receipt of a TS from Boscombe Zone and a Tutor operating VFR in VMC under a "listening watch" with Boscombe Zone. All levels are based upon SSR Mode C except where otherwise stated.

The "listening watch" was introduced for Middle Wallop based Tutor ac conducting GH in the vicinity of Boscombe Down, to facilitate coordination for the latter unit's IFR traffic when required. There is no form of flight following or undertaking to provide an ATS inherent in this "listening watch"; the Tutors simply "check-in" on the ZONE frequency and are acknowledged. However, following the unit's investigation into this occurrence and that of Airprox 2011029, they became concerned that their controller's perception of duty of care had blurred the line between their responsibilities toward ATSOCAS mandated within CAP774 and that of a "Listening Watch." Consequently, this concept has been stopped, with Boscombe applying ATSOCAS iaw CAP774 and a manning study being undertaken at Middle Wallop to facilitate greater provision of ATSOCAS by that unit to their Stn-based ac.

At 0824:40, Bournemouth pre-noted Zone with details of the PA34 routeing toward Oxford. Zone passed Bournemouth a new SSR 3A for the PA34 of 2651 and the conversation ended with Zone instructing Bournemouth to freecall the PA34 to, "126.7...*clean and clear.*" This is acknowledged, with Bournemouth stating, "126.7 *once clear, thanks.*"

At 0838:24 the PA34's SSR 3A changed from Bournemouth's code to a Boscombe Zone SSR 3A of 2651. At this point the Tutor is 2.4nm NE of the PA34 indicating FL047, with the PA34 indicating FL050.

[UKAB Note (2): The radar recording shows the PA34 tracking 030° and Tutor tracking 310° converging on a line of constant bearing, the Tutor in a slow climb reaching FL049 at 0839:11 with the PA34 0.5nm to its SW at FL050. Simultaneously AC3, which was seen by the PA34 crew, was crossing 1.25nm ahead and 100ft above. The CPA occurs at 0839:24 with the Tutor passing just behind and below the PA34 with <0.1nm lateral and 100ft vertical separation existing.]

At 0839:45 the PA34 flight called Zone, "PA34 c/s with you flight level 50". Zone replied, "PA34 c/s Boscombe Zone identified flight level 50 traffic service traffic south west 1 mile similar heading 200ft by the way". The PA34 pilot responded, "Traffic service visual with the traffic PA34 c/s" however, by this stage, the Tutor is 0.8nm SW of the PA34 and no longer a factor.

The PA34 pilot stated that the Tutor was sighted by a student in the rear of the ac, in the 3 to 4 o'clock position, at a range of approximately 0.5nm. Given the relative positions of the ac, this sighting was approximately co-incident with the CPA. The Tutor was not sighted by the handling crew at any point during the incident sequence. Moreover, the PA34 pilot's report makes no mention of having received TI on the Tutor from Bournemouth.

Unfortunately, whilst the unit were informed about the Airprox within 3 days of the occurrence, their incident reports were not completed until just over 2 months after the event. Consequently, the involved Boscombe controllers could not recall any details of the incident and so there is no record, other than the transcript, of Zone's workload.

Although the language used in the prenote between Bournemouth and Boscombe was ambiguous, it is reasonable to argue that the intent behind it was clear; that the PA34 flight could be free-called to Zone once clear of CAS and if clear of confliction. At the point when the Boscombe SSR 3A code was set by the PA34 flight, 2.4nm lateral separation existed between the PA34 and the Tutor, with the confliction evident on the radar replay. While it has not been possible to determine whether Bournemouth provided TI to the PA34 flight on the Tutor prior to releasing them to Boscombe Zone, nor what their taskload or physiological state was, based upon the available evidence it is the contention of BM SM that the PA34 was released by Bournemouth in confliction with the Tutor.

Whilst information to determine the point at which Bournemouth instructed the PA34 to contact Zone was not available to this investigation, the PA34 was squawking the Boscombe assigned SSR3A for 83sec prior to initial contact with Zone. This length of time can be viewed as an aggravating factor to the occurrence, in terms of its effect on delaying the provision of TI to the PA34; however, the source of this delay could not be determined.

These issues notwithstanding, both crews were expected to discharge their responsibilities to “see and avoid” other traffic and, in this instance, neither crews became visual until around the CPA, with providence the only safety barrier.

HQ AIR (TRG) agrees that whilst the Tutor pilot reports the PA34 passing from his 7 o'clock to 2 o'clock, this geometry is not substantiated by the radar data. The radar trace indicates the PA34 passing from the Tutor's 10 to 4 o'clock, almost directly overhead. It is unlikely that he sighted the PA34 before the CPA. The PA34 passenger report is also not consistent with a sighting of the Tutor at 0.5nm assuming that the reported 3-4 o'clock is correct. From the radar trace, the Tutor was only in the 3-4 o'clock at or beyond the CPA, when the range was significantly less. The lookout scans of both crews were therefore ineffective. The hazard posed by recognised weaknesses in the “see and avoid” system are being mitigated by the fitment of Traffic Avoidance System (TAS) to the Tutor fleet, with fleet embodiment expected in Oct 11. Action is also ongoing to provide a more effective ATS either from Boscombe Down or Middle Wallop.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the Boscombe Down RT frequencies, radar video recordings and reports from the appropriate ATC authority.

The Board were disappointed that Boscombe Down ATSU had filed their reports late, which had prevented reports being available from Bournemouth. Without any input from Bournemouth, Members could only assess this Airprox on the limited information available. It was clear that after the pre-note to Boscombe, there had been no radar handover and the PA34 flight had been free-called so the level of service would be established during the initial RT exchange. This first call to Boscombe, however, occurred after the subject ac had passed at the CPA. Both ac were flying in Class G airspace where pilots are responsible for maintaining their separation from other flights through see and avoid. Although the Tutor would have been shielded from view by the PA34's wing and engine configuration during the later stages of the encounter, Members agreed that the Tutor was there to be seen for some considerable time prior to this as it converged from the PA34 crew's front R quarter. However, it appeared to be on a line of constant bearing where the ac would appear as a stationary object in the pilot's field of view with no relative movement making it difficult to visually acquire during a lookout scan. The student seated in the rear of the PA34 saw the Tutor but it passed unsighted to the operating crew, a part cause of the Airprox. Similarly, the PA34 was there to be seen by the Tutor pilot, approaching on a constant bearing from his forward L quarter; however, he saw it only as it passed O/H, effectively a non-sighting and the other part cause of the Airprox.

The TI passed to the PA34 flight on the Tutor to its SW was not assimilated by its crew. They reported 'visual' with the traffic but this was another ac, AC3, that had passed ahead from L to R and slightly above and which was by then to their SE. The Tutor pilot's sighting of the PA34 occurred at the CPA, too late to take avoiding action, but he instinctively levelled-off his ac. These non-sightings by both crews as the ac passed by luck with minimal separation, corroborated by the radar recording, left the Board in no doubt that an actual risk of collision existed during this encounter.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A non-sighting by the PA34 crew and effectively a non-sighting by the Tutor pilot.

Degree of Risk: A.

AIRPROX REPORT No 2011036

Date/Time: 14 Apr 2011 1340Z

Position: 5054N 00002E (16nm SE Gatwick)

Airspace: LTMA (Class: A)

Reporting Ac Reported Ac

Type: B737-400(A) B737-400(B)

Operator: CAT CAT

Alt/FL: FL80 NR

Weather: VMC NR VMC NR

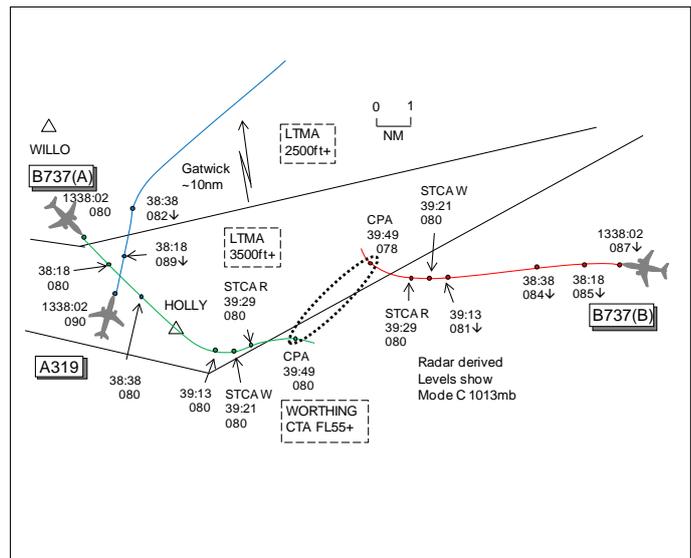
Visibility: 50km NR

Reported Separation:

200ft V/2.5nm H Not seen

Recorded Separation:

200ft V/3nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE B737(A) PILOT reports inbound to Gatwick IFR and entering the WILLO hold via HOLLY at 220kt and FL80. In a L turn at HOLLY opposite direction traffic was noticed also at FL80 descending heading towards WILLO heading 270°. ATC issued an avoiding action heading, reversing their turn. The AP was disconnected and the turn was reversed maintaining FL80; TCAS generated a TA and they saw minimum separation of 200ft/2.5nm. Prior to the TA another flight, an A319, declared a PAN, owing to a medical emergency, at FL100 inbound to HOLLY which was given a N'y heading and immediate descent clearance towards their flight; this incident had raised their awareness.

THE B737(B) PILOT reports that being unaware of an Airprox until being informed post incident. Whilst inbound to Gatwick IFR another flight, an A319, suddenly declared an emergency and was quickly vectored ahead of other traffic, including their ac with associated rapid re-vectoring of various flights. At no time did he feel the safety of his flight was in any doubt nor recollect any TCAS TA or RA alerts.

THE LTC GATWICK INT DIR reports having not long taken over the position when an A319 flight declared a PAN with a pax in need of immediate medical assistance. The off-going controller, who was still at the desk, asked if she wanted to split the sector. She looked at the traffic levels and decided that it would probably be OK; it turned out to be the wrong call. She turned the A319 flight L onto 010°, telephoned the Tower, and then turned an ac, B737(B), at TIMBA L onto 270° to go behind, instead of in front of the A319. She then remembered thinking she had better descend the A319 as it was still at FL90. B737(A) was also on track HOLLY at FL80. Tower wanted more details about the pax so she asked the A319 crew for more details which were passed onto Tower. She had been aware of the ac she turned W to go behind the A319, B737(B), was not descending very quickly and was approaching B737(A) which was nearly at HOLLY and about to turn L. She gave the B737(B) flight a R turn onto 010° and then gave avoiding action R turn onto 120° to the B737(A) flight. Both flights then proceeded to flash white [STCA low severity alert] and then red [high severity] at FL80; she did not know if these two flights lost separation. Prior to being relieved she was unaware that there had been a loss of separation between the A319 and B737(A). She was uncertain how this had occurred.

ATSI reports that the Airprox occurred at 1339:18 UTC, in Class A, CAS, at a position 16.5nm, to the SE of Gatwick Airport.

The Airprox involved 2 Boeing 737-400 ac, B737(A) and B737(B). At the same time an Airbus A319 ac declared a medical PAN. All 3 ac were inbound for Runway 26L at Gatwick with 2 other ac ahead in the traffic sequence. B737(A) was inbound IFR from Glasgow, routeing from the NW to HOLLY. B737(B) was inbound from Cagliari (Sardinia), routeing from the SE to TIMBA.

The Gatwick INT controller had just taken over the position and was operating the sector bandboxed, providing a RCS as radar director. An authorised airline pilot visitor had been plugged into the sector prior to the controller taking over. The visitor and outgoing controller remained in the vicinity of the sector. Traffic levels were assessed by CAA ATSI as medium.

The controller was not initially aware of the Airprox and had reported an ATC Incident with a loss of separation between the A319 aircraft and B737(A).

CAA ATSI had access to RTF and radar recordings, together with the controller, unit and pilot written reports.

METAR EGKK 131020Z 23006KT 190V280 9999 SCT032 SCT040 13/08 1021=

The controller had just taken over the position and had planned a traffic sequence with 5 ac in the traffic pattern.

At 1336:30, 2 ac were already established in the pattern followed by:

B737(B) from the SE, descending to FL080 routeing to TIMBA,

B737(A) from the NW, at FL080 routeing to HOLLY then WILLO

A319 from the SW, descending to FL090 routeing HOLLY then WILLO.

At 1336:55, the B737(B) flight at FL096, 26nm SE of Gatwick, was turned L onto a heading of 290° and given descent to FL070. At this point the range between the 2 B737 ac was 23nm. The projected heading did not ensure separation from the WILLO stack. LTC MATS Part 2, GAT 4.6.1 states:

'If KK [Gatwick] INT vectors an aircraft that is at, or above, the Minimum Stack Level from one holding stack towards the other, the relevant flight progress strip is to be moved to the appropriate stack designator to indicate that it has become traffic to aircraft in that stack. KK SPT is to be kept informed.'

The controller decided not to move the strip of B737(B) from the TIMBA to WILLO stack (or 'cock-out' the strip which was the controllers preferred method). Had this been done it would have highlighted the conflict. The controller intended to monitor the interaction between the 2 B737 ac and planned to turn B737(B) R into the downwind traffic pattern before coming into conflict with B737(A).

The controller confirmed that the Vertical Stack Lists (VSLs) were not displayed and did not feel that the sector was busy enough to warrant them. Had the VSLs been displayed it may have helped to highlight the conflict. LTC MATS Part 2, DAT 8.9.6.1 states:

'...Where stack management is part of the role of the sector,, the appropriate VSL palettes should be displayed at all times,.....'

At 1337:07, the A319 flight declared a medical PAN. The controller elected to change the order of the arrival sequence, giving the A319 priority, ahead of the 2 B737 ac. This changed the dynamics of the earlier plan. The controller removed the A319 fps from the WILLO display and held it, whilst advising the outgoing controller of the PAN. The strip was then moved to the fps display directly in front of the controller (note: this is common practice when ac are no longer in conflict). The outgoing

controller offered to split the position but the INT controller assessed the workload as acceptable for boxed operations and declined the offer. Later, the INT controller acknowledged that this was the wrong decision.

At 1337:49, the distance between the 2 B737 ac was 16nm. B737(B) flight, now passing FL089, was turned L onto a heading 270°. Because of the increased workload and non-standard configuration of the strip management, the conflict between the B737 ac was not highlighted. The ATSU reports that the controller momentarily forgot about the presence of B737(A), most likely because the controller became focused (note: tunnelling effect) on moving the A319 forward in the approach sequence.

At 1338:01, the A319 flight, level at FL090 and converging with B737(A) at FL080, was instructed to descend to an altitude of 4000ft. This resulted in a loss of separation as the 2 ac passed. Because of the ac trajectories and relative positions as the 2 ac diverged, STCA did not activate. The minimum separation was reported as 2nm and 400ft as the ac diverged. The written report from the pilot of B737(A) indicated the crew were aware of the early descent given to the A319, which heightened their situational awareness, as they monitored the A319 on TCAS.

[UKAB Note (1): The CPA between the A319 and B737(A) occurs at 1338:18 with the A319 0.5nm NE of B737(A), 900ft above and descending.]

The controller turned the A319 downwind and requested details of medical emergency. The pilot passed the details and confirmed that the company were aware and had requested an ambulance.

At 1339:13, the distance between the 2 B737 ac was 7nm. B737(B) was passing FL081 in the descent to FL070, with B737(A) maintaining FL080. The controller instructed B737(B) to turn R onto a heading of 010°. At the same time B737(A), on a SE'ly track and approaching HOLLY, was commencing a L turn towards WILLO.

The outgoing controller who was monitoring the situation, alerted the controller to the conflict and at 1339:19, the controller issued avoiding action, "*(B737(A))c/s avoiding action turn right heading one two zero degrees.*" The B737(A), already commencing a L turn towards HOLLY, reversed the direction of turn. At 1339:49 radar recording showed the required minimum separation of 3nm was maintained with vertical separation of 200ft.

The Airprox was attributed to the Gatwick INT controller momentarily forgetting about B737(A), when providing vectors to B737(B), which brought the 2 ac into conflict. The crew of B737(A), already at a heightened state of awareness because of the loss of separation with the A319, became concerned about the proximity of B737(B).

A number of factors were considered to be contributory:

- a) The controller did not accept the offer to split the sector which would have eased the workload and may have prevented the incident.
- b) The medical PAN increased the workload significantly, resulting in the controller's change of plan and caused the controller to request for full details of the medical emergency, when these had already been passed to the company and an ambulance arranged.
- c) The short period of time since the handover and the presence of a visitor in the vicinity of the sector were considered to have been an added distraction.
- d) The controller was not using the vertical stack lists (VSLs) which may have alerted the controller to the potential confliction.
- e) The controller's plan to turn B737(B) towards the WILLO stack, and monitor the separation as the ac descended, did not provide appropriate safeguards once the controller's attention was diverted by the medical PAN.

- f) The controller did not correctly move the B737(B) strip to the WILLO stack in accordance with MATS Pt2 instructions. This would have highlighted the conflict.

The incident was resolved by the action of the outgoing controller, who, aware of the medical PAN, continued to monitor the situation and alerted the controller to the confliction. This showed good team resource management and resulted in avoiding action, which prevented a loss of separation between the 2 B737s.

The crew of B737(A) also monitored, on TCAS, the A319 being given early descent, which resulted in the loss of separation and which raised the level of awareness of the B737(A) crew.

The ATSU has completed a unit investigation and will make appropriate recommendations to:

- 1) Ensure that if a pilot in such circumstances has already arranged medical assistance, they simply advise ATC of the medical PAN.
- 2) Issue an OPNOT reminding controllers of the correct methods of strip moving when vectoring ac from the confines of one hold to another.
- 3) Ensure that the MATS Pt2 guidance for the use of VSLs is amended from 'should' be displayed at all times to 'shall' be displayed at all times.

CAA ATSI is content with the actions and proposed actions of the ATSU provider.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

Members could add little to this report. When INT DIR changed her arrival sequence order, owing to the A319 emergency, she placed B737(B) on a new radar heading of 270° whilst it was descending to FL70, through the level of B737(A). A controller Member familiar with LTC operations noted that B737(B) was descending slowly when it would normally be expected to have descended below an ac in the HOLLY area. However, INT DIR had forgotten about B737(A) when she vectored B737(B) and this had brought the ac into conflict and caused the Airprox.

As she noted in her report, with hindsight the offer to split the sector should have been taken up but at the time the controller believed traffic levels were acceptable. Members applauded the Team Resource Management shown when the off-going controller, who had remained close-by and monitored the situation, pointed out the confliction prior to STCA activating. INT had just issued B737(B) flight a R turn onto 010° for sequencing behind the A319 before she issued an avoiding action turn onto 120° to B737(A). B737(A) crew was already at a heightened state, owing to the A319 flight having descended when it passed O/H their ac. They had noticed the approaching B737(B) and had promptly actioned the avoiding action turn away from it, resulting in no erosion of separation. All of these elements when combined allowed the Board to conclude that any risk of collision had been quickly and effectively removed.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Gatwick INT DIR vectored B737(B) into conflict with B737(A).

Degree of Risk: C.

AIRPROX REPORT No 2011039

Date/Time: 4 May 1125Z

Position: 5224N 00008W (347°
Wyton A/D 2.7nm - elev
135ft)

Airspace: FIR/ATZ (Class: G)

Reporting Ac Reported Ac

Type: Grob Tutor (A) Grob Tutor (B)

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

Alt/FL: ↓3000ft ↑3000ft
QFE (1018mb) RPS

Weather: VMC VMC

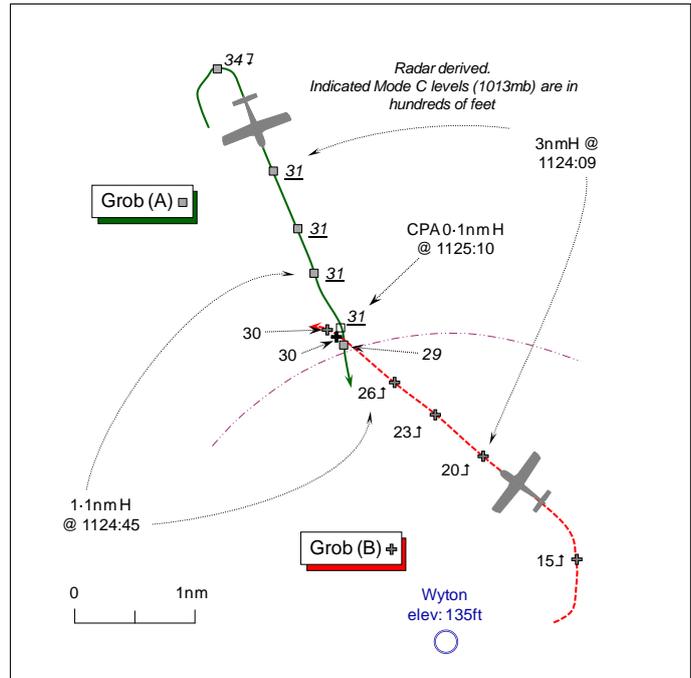
Visibility: 30km >10km

Reported Separation:

Nil V/30-50m NR

Recorded Separation:

100ft V/0.1nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PILOT OF GROB TUTOR (A) reports he was the PIC of a VFR instructional sortie flying the ac from the LH seat, whilst on recovery to Wyton in perfect weather conditions with excellent visibility and no significant cloud. He was in receipt of a BS from Wyton TOWER on 119.975Mhz and a descent and overhead join had been approved.

About 3m N of the aerodrome, the recovery checks had been completed and he had demonstrated a lookout turn before initiating a descent. While teaching the cruise descent to 3000ft QFE (1018mb) heading S at 100kt, with a view to manoeuvring for the overhead join, another Tutor ac [the callsign of Tutor (B) was given] appeared from behind the left canopy bar in their 10-11 o'clock position at a similar height and in a shallow climb from L to R at an estimated range of no more than 100m. He took aggressive avoiding action by executing a descending turn to the L, passing below and 30-50m behind the other Tutor ac. The pilot of the other Tutor ac appeared to take no avoiding action and he assessed the Risk as 'very high'. He spoke with the PIC of Tutor (B) who, before his evasive manoeuvre, had not seen their ac.

A squawk of A7000 was selected with Mode C; Elementary Mode S is fitted, TCAS is not. The ac is predominantly white with a blue fin flash; the HISL and nav lights were on.

THE PILOT OF GROB TUTOR (B) reports he was airborne on a VFR training sortie from Wyton but was in receipt of a TS from Cottesmore ATC on 130.2MHz. Heading 330° in the climb at 80kt, he was informed by Cottesmore ATC of another ac 2nm to the N. Climbing through 3000ft, he thought 4nm N of Wyton but actually at a range of 2.7nm from the A/D, he dropped the right wing to have a good lookout and thought he saw something flash by underneath to starboard, but he could not be sure. He assessed the Risk as 'medium'.

A squawk of A7000 was selected with Mode C; elementary Mode S is fitted, TCAS is not. Although not specified the ac was presumed to have the same colour scheme as Tutor (A) – predominantly white with a blue fin flash. Wing-tip strobes lights, the nose taxi light and nav lights were all on.

THE WYTON AERODROME CONTROLLER (TOWER) reports that the pilot of Tutor (A) reported an Airprox at a position 3nm N of the aerodrome at 3000ft QFE (1018mb). The reported ac was also a Grob Tutor and believed to be another Wyton based ac. The runway-in-use was RW08, the prevailing visibility 30km and the A/D Colour State BLUE.

UKAB Note (1). The UK AIP at ENR-2-2-2-5, notifies the Wyton ATZ as a circle radius 2.5nm centred on RW08/26 extending from the surface to 2000ft above the aerodrome elevation of 135ft and active in Summer from Sunrise to Sunset. Wyton does not have a MATZ.

ATSI reports that the Airprox occurred at 1125:10, in Class G airspace, 2.7nm to the NNW of Wyton A/D and just outside of the Wyton ATZ.

Grob Tutor (A) was operating VFR on a training exercise and returning to Wyton for recovery, in receipt of a BS from Wyton TOWER. Grob Tutor (B) had departed VFR from Wyton on a training exercise, in receipt of a TS from Cottesmore ZONE.

Wyton TOWER and APPROACH (APP) were operating as separate positions without the aid of surveillance equipment.

The Wyton 1050 and 1150 UTC METAR:

1050Z 11009KT 9999 FEW040 SCT250 13/02 Q1023 BLU=
1150Z 14009KT 9999 FEW045 SCT250 14/02 Q1022=

Tutor (B) departed from Wyton's RW08 at 1122:15. The pilot of Tutor (B) reported switching to Wyton APP at 1122:57 and at 1123:50, reported calling Cottesmore.

Five seconds later at 1123:55, the pilot of Tutor (A) contacted Wyton APP for a visual recovery in receipt of information 'Echo' and was transferred to Wyton TOWER. At 1124:20 the pilot of Tutor (A) contacted Wyton TOWER and requested an overhead join. TOWER instructed Tutor (A) to join for RW08, QFE 1018mb, circuit clear. This was correctly acknowledged by the pilot of Tutor (A), in receipt of a BS.

At 1125:12 Tutor (A) reported the Airprox 2nm to the N of Wyton A/D, with another Tutor.

The written report from the pilot of Tutor (B), indicated that whilst climbing on a northwesterly track and in receipt of a TS, Cottesmore ATC informed him of another aircraft 2nm to the N.

The Wyton TOWER controller had advised Tutor (A) that the circuit was clear. The situational awareness of the pilot of Tutor (A) could have been aided if the Wyton TOWER or Wyton APP controllers had passed TI in general terms regarding the recent departure of Tutor (B). However, it is likely that the positions and routeings of both ac were unknown to Wyton and the pilot of Tutor (B) had quickly switched from TOWER to Wyton APP and then to Cottesmore ZONE.

At the time of the Airprox Tutor (A) was in receipt of a BS from Wyton TOWER operating to the N of the Wyton ATZ. The Manual of Air Traffic Services, Part 1, Section 1, Chapter 11, Page 4, paragraph 3.5.1, states:

'Pilots should not expect any form of traffic information from a controller, as there is no such obligation placed on the controller under a Basic Service outside an Aerodrome Traffic Zone (ATZ), and the pilot remains responsible for collision avoidance at all times. However, on initial contact the controller may provide traffic information in general terms to assist with the pilot's situational awareness. This will not normally be updated by the controller unless the situation has changed markedly, or the pilot requests an update. A controller with access to surveillance derived information shall avoid the routine provision of traffic information on specific aircraft, and a pilot who considers that he requires such a regular flow of specific traffic information

shall request a Traffic Service. However, if a controller considers that a definite risk of collision exists, a warning may be issued to the pilot.'

HQ 1GP BM SM reports that Tutor (B) was outbound from Wyton VFR and was calling for a TS from Cottesmore ZONE, when Tutor (A) was positioning for an overhead join at Wyton, in receipt of a BS from Wyton.

The Airprox was not declared to Cottesmore at the time and with the length of time that elapsed between the submission of Tutor (B)'s report, the Cottesmore ATC personnel involved could not recall the incident. Consequently, this investigation is based upon the reports of the aircrew involved, the Cottesmore RT tape transcript and the retrospective recollection of Cottesmore ZONE.

Although Cottesmore airfield has closed, the LARS/ZONE task and Wittering APP tasks remain at Cottesmore ATC. Both control positions are manned throughout their notified operating hours and where it is identified that ZONE is busy, Wyton Tutor crews are pre-briefed to contact APP on UHF. In this case, the pilot of Tutor (B) called Zone on VHF at 1124:14 but was instructed to standby. At 1125:02, ZONE passed accurate TI to the pilot of Tutor (B) stating, "*traffic believed to be you has traffic 12 o'clock, half a mile, similar height*" which was acknowledged by Tutor (B).

Between 1124:14 and 1125:02, ZONE was called by 2 other flights, both being instructed to standby. Although the individual controllers involved in the occurrence were unable to recall any detail, subsequent analysis of the audio tapes by the unit identified that the control position was in the process of being handed over. The handover was completed at some point after 1129:23, with the new controller's voice evident at 1130:23. However, the off-going controller felt that the handover was commenced at around 11:24, almost co-incident with the pilot of Tutor (B)'s initial call, but they could not recall this with any clarity. Moreover, as there is no 'live-mic' recording, no details of the handover were recorded.

MAA RA 3003(2), through MMATM Ch 3 Para 4, states that:

'A change of controller should not be attempted until a suitable point is reached during the recovery of aircraft under control.'

The pilot of Tutor (A) reports that Tutor (B) "*appeared from behind the left canopy bar in our 10-11 o'clock position.*" The radar replay depicts the Tutors on a constant relative bearing, in the position described by Tutor (A), until the range had decreased to 0.7nm at 1124:54. Shortly after this both Tutors turn, maintaining the confliction, with the CPA of 0.1nm occurring at 1125:10.

Based upon the tape transcript, there appears to be a burst of a higher taskload for ZONE at the point that the pilot of Tutor (B) calls at 1124:14. Moreover, given ZONE's response to Tutor (B) and the other 2 ac to, "*standby*", it is reasonable to argue that they were engaged in another task that is not evident on the tapes. This would support ZONE's recollection that they had just commenced the handover of the control position.

It is clear from the controller's subsequent actions that they correctly maintained control of the position in accordance with the regulation. Moreover, despite having not yet been able to identify Tutor (B) as it departed Wyton, ZONE passed TI to the pilot of Tutor (B) about Tutor (A) in as timely a manner as could be expected given the RT loading on the frequency.

Based upon Tutor (A) pilot's report, their late sighting of Tutor (B) appears to be as a result of the ac's constant relative bearing and position behind Tutor (A)'s canopy arch. It is likely that a similar explanation underlies the effective non-sighting of Tutor (A) by the pilot of Tutor (B). The ongoing embodiment of TAS to the Tutor fleet will serve as an effective additional safety barrier to similar recurrences.

HQ AIR (TRG) comments that the application of deconfliction plans at Wyton is under review by HQ 22 (Trg) Gp. Notwithstanding this, the pilot of Tutor (B) received accurate TI on Tutor (A), but at very

close range, without any indication of whether it was on a converging heading. Whilst TAS may make such incidents less likely in the future, units still need to ensure they apply robust deconfliction systems, particularly around the airfield. With the known hazard of blind spots in the Tutor, an active lookout scan is required in order to cover these areas.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

Members noted that the pilot of Tutor (B) had promptly left the Wyton APP frequency, called Cottesmore ZONE as soon as he passed the upper limit of the Wyton ATZ and that the crew of Tutor (A) had called 5sec after Tutor (B) had switched to ZONE. It was suggested that both pilots, who were equally responsible for avoiding each other's ac, might have potentially gained better SA on other aerodrome traffic from the pilots RT calls to APP, or possibly from a warning by the controller about the inbound ac, but such information might well have been incomplete without the benefit of radar data. Notwithstanding the completion of the Wyton Tutor fleet TAS embodiment programme, the HQ Air Ops Member stated that the review of the Unit's deconfliction plans was still in progress. He also emphasised that the pilot of Tutor (B) might not necessarily have received any additional warning if he had stayed with Wyton APP whilst in the immediate vicinity of the ATZ. Nevertheless, as soon as the controller was able to do so, Tutor (B) had been given TI by ZONE and Members commended the Cottesmore controller for this prompt call. Unfortunately, Tutor (B) pilot was unable to make use of this TI before he caught a fleeting glimpse of Tutor (A) as it flashed by underneath to starboard. Therefore, in the Board's view the first part of the Cause was effectively a non-sighting by the pilot of Tutor (B).

Fortunately, the crew in Tutor (A) had spotted the other ac just in time, as it appeared from behind the canopy bar in their 10-11 o'clock but only 100m away in a shallow climb, and took aggressive avoiding action, descending and turning to the L to pass below and 30-50m behind Tutor (B). The radar recording reflected that Tutor (B) was beneath Tutor (A)'s nose and closing on a steady relative bearing immediately before the Airprox occurred. All this led Members to conclude that a late sighting by the crew of Tutor (A) was the other part of the Cause.

The descending L turn had enabled the pilot of Tutor (A) to manoeuvre away he reports, but the radar recording reflected that horizontal separation was no more than 0.1nm – 185m – and from his account was a lot less at an estimated 30-50m. A test pilot Member commented that at these distances this class of aeroplane does not have a rate of roll high enough to facilitate swift avoiding action by turning away. Such aeroplanes take time to respond to a pilot's control inputs and change their flight path to a significant extent; another pilot Member added that an instinctive bunt might be all that could be achieved at very close quarters. Although Tutor (A) had descended 200ft in one sweep of the radar (4sec data update rate), only 100ft of vertical separation had resulted against Tutor (B) as it levelled: one CAT pilot Member considered this was sufficient to avert an actual Risk of collision, however, this was a solitary view. The overwhelming majority of the Members perceived that, although the pilot of Tutor (A) had managed to react in the short time available at these close quarters, it was barely effective and the Board concluded that an actual Risk of collision had existed in the circumstances reported here.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Effectively a non-sighting by Tutor (B) pilot and a late sighting by Tutor (A) crew.

Degree of Risk: A.

AIRPROX REPORT No 2011041

Date/Time: 13 May 2011 1022Z

Position: 5045N 00316W (5.8nm
E of Exeter - elev 102ft)

Airspace: London FIR (Class: G)

Reporter: Exeter ATC

1st Ac PA34-200T
2nd Ac C172

Operator: Civ Trg Civ Club

Alt/FL: 2200ft 2300ft
QNH (1021mb) (N/K)

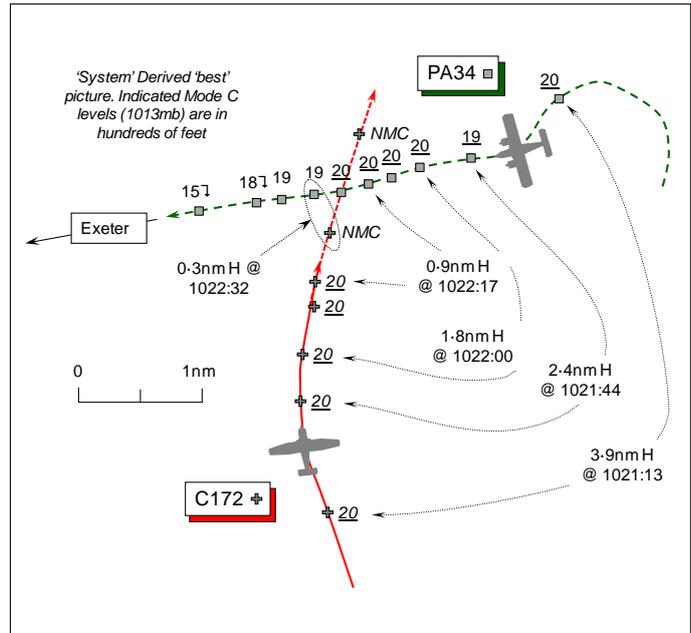
Weather: VMC CLBC VMC
Visibility: 10km >10km

Reported Separation:

100-200ft V/1/2nm H 100ft V/300-400m H

Recorded Separation:

0.3nm H



CONTROLLER REPORTED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE EXETER APPROACH RADAR CONTROLLER (RADAR) reports that he liaised with Plymouth MILITARY (MIL) [a LARS ATCRU] regarding the intentions of an A4540 squawk observed 7nm SE of Exeter. [UKAB Note (1): This was reported to be an Apache helicopter at the time, but the reported ac was subsequently positively identified by the RAC as the subject C172.] Plymouth MIL advised that they were no longer providing an ATS; the pilot had been instructed to squawk A7000 and leave the frequency. However, the ac continued to squawk A4540 and tracked northbound towards the final approach to RW26 at the same level as the PA34 which was at 8nm Final on an ILS approach. Two calls were made on 128.975MHz in an attempt to raise the pilot but neither met with a response. The PA34 crew was passed TI twice about the unknown ac and after the second call the pilot reported visual with an aeroplane. The PA34 Examiner subsequently telephoned to advise he believed the reported ac was a C172.

The squawk was lost as it tracked through the RW26 FAT, before a contact appeared squawking A7000 continuing towards Dunkeswell. Further investigation lead to a possibility of the ac being a C172 based at a local aerodrome.

The 1020UTC Exeter METAR: 230°/6kt 190°V280°; >10km Nil Wx; SCT 032, SCT040 QNH1021. Wessex RPS 1015mb; Portland RPS 1017mb.

THE PIPER PA34-200T PILOT, reports he was the PIC conducting an Instrument Rating examination of a candidate, executing an ILS approach to Exeter's RW26 under IFR in VMC, but with IF screens in place. They were in receipt of a TS from Exeter RADAR on 128.975MHz and the assigned squawk was selected with Mode C; neither TCAS nor Mode S are fitted.

RADAR had advised them of unknown traffic from about 8nm Final on the ILS. At about 6nm Final to RW26, heading 260° at 120kt, level at 2200ft Exeter QNH (1021mb) flying about 200ft below cloud, they obtained visual contact with the other ac about 1nm to the S. It was a high-wing single-engine aeroplane - probably a C172 – approaching from their 10 o'clock, 1nm away at a similar altitude and crossing obliquely astern from their 10 o'clock into their 5 o'clock. The pilot under examination

continued to fly the approach whilst he as PIC monitored the other ac visually as it passed about 100-200ft below his ac and ½nm astern at the closest point. No avoiding action was taken as none was necessary following the visual sighting. He assessed the Risk as 'low' in the prevailing conditions, but highlighted the lack of protection given to published instrument approaches in the 'Open FIR'. His ac is coloured white with black detailing; the HISLs and landing lights were on.

THE REIMS CESSNA-F172M PILOT (C172) reports that at the reported time of the Airprox, he was returning to Dunkeswell from a local VFR solo sightseeing flight with 2 passengers. He had been in receipt of a BS from Plymouth MIL but could not recall the squawk assigned; Mode C was on. Neither TCAS nor Mode S are fitted. The ac is coloured white and blue; the wingtip HISLs were on.

His route had taken him westbound along the coast from Lyme Regis to overhead Sidmouth before turning N for Dunkeswell. About 2-3nm due N of Sidmouth, heading N in a level cruise at 2300ft at 100kt, some 500ft below and 10km clear of cloud, he saw the other ac late about 300-400m away, crossing ahead from R – L. At the closest point the other ac – a cream coloured PA34 – passed about 100ft above his ac 300-400m away with a 'low' Risk. He did not consider that any avoiding action was necessary to maintain flight safety and none was taken.

In retrospect, given their proximity to Exeter Airport, it would have been appropriate to have called Exeter RADAR earlier on 128.975MHz before calling Dunkeswell RADIO to join their cct.

ATSI reports that the Airprox occurred in Class G airspace, 5.8nm to the ENE of Exeter Airport. The PA34 was an IFR training flight, making an ILS approach to Exeter's RW26 in receipt of a TS from Exeter RADAR. The C172 was a VFR flight operating from Dunkeswell A/D, routing along the coast from Lyme Regis to Sidmouth, before turning N.

At 1017:55, the radar recording shows an unknown contact [the C172] 10nm to the SE of Exeter Airport, squawking A4540 [Plymouth (Mil)], tracking W along the coastline, indicating 2000ft (1013mb) (converts to an altitude of 2216ft Exeter QNH (1021mb) at 1mb/27ft). The PA34, squawking A0422, is 3.5nm NE of Exeter Airport, tracking eastbound and outbound for an ILS approach to RW26.

At 1020:30 the radar recording shows the C172 7.2nm SE of Exeter, turning R onto a northerly track towards the final approach for RW26 and still displaying a Plymouth (Mil) squawk of A4540. RADAR liaised with Plymouth Mil and the controller's report indicated that Plymouth Mil advised that the ac had left their frequency and been told to squawk A7000.

At 1021:14, RADAR passed TI to the PA34 crew about the C172, "*...unknown traffic 10 o'clock range 3 miles intentions unknown appears to be crossing left to right indicating same level at the moment descending.*" The PA34 pilot replied, "*keeping a good lookout [PA34 C/S].*" The radar recording shows the PA34 on an 8nm Final indicating 2000ft (1013mb) [2216ft QNH] and the unknown C172 in the PA34's 10 o'clock at a range of 4nm indicating 2100ft (1013mb) [2316ft QNH]. The PA34 pilot reported localiser established at 6.8 DME.

At 1021:45, RADAR updated the TI, "[PA34C/S] *the unknown traffic [C172] again now in your 11 o'clock range 2 miles appears to be crossing left to right indicating 2 thousand 2 hundred feet same level.*" At 1022:00, RADAR tried unsuccessfully to establish RT contact with the unknown ac; however, at this point the PA34 pilot reported visual with the unknown C172.

[UKAB Note: The radar recording shows the C172, in the PA34's 10 o'clock at 1.8nm, both ac indicating 2000ft (1013mb) (2216ft QNH) at about the point the PA34 pilot reported visual contact. The SSR label of the C172 disappears at 1022:17, leaving only intermittent primary radar returns until the pilot selected A7000 after the ac had passed. The CPA occurred at 1022:32, when the C172 is shown passing 0.3nm to port of the PA34 before drawing astern, the PA34 indicating 1900ft (1013mb) – about 2116ft QNH.]

The PA34 was in receipt of a TS from Exeter RADAR. When it became apparent that the unknown traffic, squawking A4540 was likely to come into conflict with the PA34, the Exeter RADAR controller tried to obtain the ac's intentions from Plymouth Mil. RADAR passed TI to the PA34 crew on the unknown traffic. When this TI was updated, the PA34 pilot sighted the C172 and continued to monitor the ac until it had passed.

The Manual of Air Traffic Services (MATS) Part 1, Section 1, Chapter 11, Page 5, paragraph 4.1.1 and 4.5.1, 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 controller shall pass traffic information on relevant traffic, and shall update the traffic information if it continues to constitute a definite hazard, or if requested by the pilot. However, high controller workload and RTF loading may reduce the ability of the controller to pass traffic information, and the timeliness of such information.'

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

It was evident that RADAR had detected the potential for a conflict with the unknown ac and passed comprehensive TI to the PA34 crew twice. After the controller's second transmission of TI at a range of 2nm, the PA34 PIC reported visual contact with the C172; the radar recording reflects this was when the conflicting ac was 1.8nm away and slightly more distant than the PA34 pilot's estimate of 1nm. The Board noted that the PIC of the PA34 was content to allow the pilot under examination to continue to fly the approach, whilst he monitored the other aeroplane visually and watched as the C172 crossed obliquely astern from their 10 o'clock into their 5 o'clock, at a similar altitude, before the twin was descended on final approach. Whilst in this situation the C172 pilot was required by the 'Rules of the Air' to 'give way' to the PA34 on his right he reports that he had not seen the twin until it was about 300-400m away, crossing ahead from R – L, and somewhat later than the PA34 P-i-C. The Members agreed unanimously that the late sighting by the C172 pilot of the PA34 was the Cause of this Airprox.

Recorded radar data shows that before their tracks crossed both ac were at the same altitude – 2216ft amsl. Although the Board recognised that this Airprox occurred in Class G airspace, where both pilots were operating legitimately in accordance with the ANO, Members considered it unwise that the C172 pilot flew at pattern altitude through a promulgated IFR approach 'feather' that is clearly marked on VFR charts. Plainly the C172 pilot had to cross through the extended centre-line to reach his home base at Dunkeswell at some stage, but pilot Members concurred with his own expressed view that it would have been better airmanship to have done so whilst in communication with Exeter RADAR who could have provided an earlier warning about the PA34 in their ILS pattern.

The radar recording shows the separation at the CPA was 0.3nm and although the C172 pilot saw the PA34 late, it seems he saw the PA34 in time to ensure that he passed clear astern. Neither the PA34 pilot, nor the C172 pilot considered that avoiding action was warranted. Furthermore pilot Members considered the PA34 PIC was always in a position to take control and effect robust avoiding action if need be. Therefore, in these circumstances, the Board concluded that no Risk of a collision had existed.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A late sighting by the C172 pilot.

Degree of Risk: C.

AIRPROX REPORT No 2011043

Date/Time: 17 May 2011 1410Z

Position: 5408N 00031W
(25nm E LINTON)

Airspace: London FIR (Class: G)

Reporting Ac Reported Ac

Type: Hawk T Mk1 Untraced Light ac

Operator: HQ AIR (Ops) NK

Alt/FL: 2000ft NK
(RPS 1011mb)

Weather: VMC CLBC NK

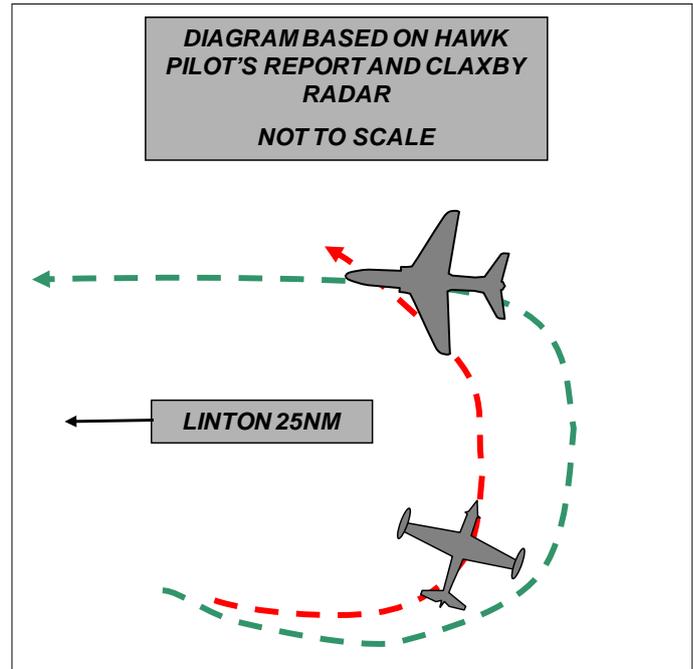
Visibility: 20km NK

Reported Separation:

0ft V /1000ft H NK

Recorded Separation:

NK



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE HAWK T MK1 PILOT reports flying a dual Forward Air Controller (FAC) training sortie in a NOTAMed area in the Yorkshire Wolds [see UKAB Note (2)] in a black ac with all lights switched on, squawking 7001 with Mode C; TCAS and Mode S were not fitted. Following the completion of a simulated ground-directed target attack profile at low level, the ac was repositioned overhead the target area in a steady level left turn at 2000ft amsl and 300kt in order to complete a high workload RT debrief for the student FAC. After one orbit the rear seat pilot made the captain aware of a white light ac with 'podded wingtips' and displaying white strobes, 1000ft away, co-altitude and maintaining a constant 'nose on' attitude towards them. He attempted to change the geometry between the two ac but it had no effect and he thought that the ac was deliberately following their flight profile.

In order to terminate the conflict he was forced to level the wings and accelerate his ac away from the following ac and, once safe separation between the two ac was established, the debrief was continued. The light ac was then seen to depart to the NW whereupon a waggle of the wings was observed.

He reported the incident by telephone and ASIMS on landing and assessed the risk as being medium.

THE HAWK UNIT station commander commented that the light ac pilot displayed poor airmanship, through apparently deliberate penetration of a correctly promulgated NOTAM.

UKAB Note (1): The Hawk shows on the radar throughout the incident manoeuvring aggressively in the target area. The light ac does not show at any time and could not be traced.

UKAB Note (2): The exercise was NOTAMed as follows:

H1637/11 NOTAMN

Q) EGTT/QWELW/IV/BO /W /000/190/5406N00035W005

A) EGTT B) 1105170800 C) 1105171530 E) FORWARD AIR CTL EXER. FAST JET ACFT WILL CONDUCT HIGH ENERGY MANOEUVRES WI 5NM RADIUS 5406N 00035W (YORK

WOLDS, N YORKS). MAJORITY OF ACTIVITY BLW 5000FT. NON-EXER MIL CREWS CTC JACKPOT CONTROL ON 297.725MHZ OR 137.075MHZ. CTC 01677 456161. 11-05-0462/AS 3 F) SFC G) 19000FT AMSL)

HQ AIR (OPS) comments that without input from the untraced aircraft it is difficult to assess its intentions. However, it would appear that it was visual throughout and there was no actual risk of collision. A warning about the activity and its location was issued and it is disappointing that this appears to have been deliberately ignored. The Hawk pilot was wise to use his superior performance to separate from the subject traffic.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the Hawk pilot, radar recordings, and a report from the Hawk operating authorities.

It was unfortunate that the second ac (ac 2) could not be traced as a pilot's report would have facilitated a fuller investigation of this incident. Members opined that there are not many ac types (with tip tanks/pods and a bubble canopy) that fit the reported description of the untraced ac as amplified by the Hawk pilot by telephone to the UKAB; further in order to fly the profile reported the ac 2 must have been capable of fairly high performance. Members also noted that the ac had not been squawking, which most likely excluded military ac; also that it did not even show as a primary contact in an area where radar performance is fairly good, thus also probably excluding ac such as a (red and white) Jet Provost which is otherwise similar to the description. There is one fairly high performance light training ac on the UK register with a colour scheme that matches that reported but it is based well away from Yorkshire and it was established that it was not airborne on the day of the incident.

Members agreed that it was disappointing that the pilot of the ac 2 had apparently deliberately disregarded the military NOTAM; although the NOTAMed area was not an 'exclusion', Members considered that it would have been good airmanship to treat it as such.

Although the pilot of the ac 2 apparently considered his manoeuvres safe as he had probably deliberately 'tracked' the Hawk, Members again agreed that this had been most unwise although, not in contravention of the ANO [although probably in breach of military regulations if they applied]. Since the pilot of ac 2 had selected the separation and had the Hawk in sight throughout, most Members agreed that, while he had been unwise and probably too close, there had been no conflict and that this incident was a sighting report with no risk of the ac colliding; one pilot Member however, disagreed and suggested that there had been a conflict and that the Hawk pilot had resolved it.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Sighting report.

Degree of Risk: E.

AIRPROX REPORT No 2011044

Date/Time: 20 May 2011 0952Z

Position: 5159N 00103W (5nm E of Croughton)

Airspace: London FIR (Class: G)

Reporting Ac Reported Ac

Type: Magic Laser MD902 Explorer
Flexwing ML

Operator: Civ Pte Civ Comm

Alt/FL: 2000ft <1000ft
amsl amsl

Weather: VMC CLBC VMC CLBC

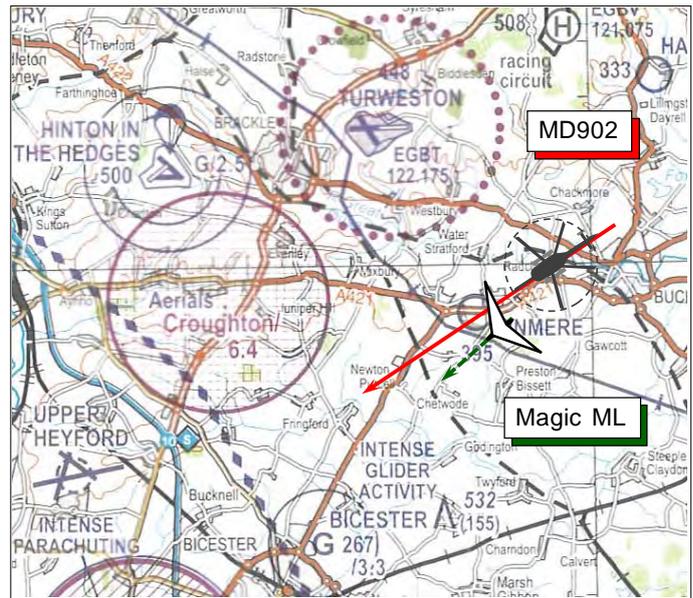
Visibility: 50nm >10km

Reported Separation:

300ft V/nil H 500ft V/100ft H

Recorded Separation:

Not recorded



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE MAGIC LASER FLEXWING MICROLIGHT PILOT (MAGIC ML) reports that he had departed from a private strip at Buttermilk Hall Farm [about 5nm SSW of Northampton] for Oaklands [N of the Brize CTR] and was flying a level cruise at 2000ft, some 2000ft clear below cloud with an in-flight visibility of 50nm. In transit, passing about 5nm E of Croughton aerials heading 230° at 45kt, a dark blue and white helicopter passed 300ft directly beneath his Magic ML on the same heading. The helicopter – the MD902 – passed so close that the severe turbulence from the blades caused his ML to dive almost vertically down and turn to the R; an immense effort was required to resume level flight after descending about 200ft during the recovery. He assessed the Risk of collision as ‘medium’ but the risk to his life was ‘very high’. He stated that the severe turbulence from the helicopter needed extreme corrective measures to escape from an almost irrecoverable position.

His Magic ML’s wing has a white top surface and yellow under surface. He was not in communication with any ATSU.

THE MD902 EXPLORER HELICOPTER PILOT (MD902) reports that he was in transit from Wyton to a field location within the Brize Norton CTR under VFR and in receipt of a BS from Brize ZONE on 124.275MHz. The assigned squawk was selected with Modes C and S; TCAS is fitted.

In level flight in VMC, not above 1000ft and more likely 500-600ft, on a direct track passing E of Croughton aerial farm at 125kt with the A/P engaged, both he and his front-seat observer saw the ML ahead at the same time, late, some 15sec before passing 100ft horizontally and 500ft vertically clear beneath the ML.

They had approached the ML from astern and it looked to be in a level cruise, flying straight and level, but he added candidly that the late visual sighting could only be attributed to its static position in the upper windscreen. Their heading was the same as the ML’s but he assessed that they were slightly to the side of the ML, well below and clear of it and so continued to pass it.

He could not recall any other specific details as they simply continued their flight and he had not expected that their flight path would cause undue alarm. Once ahead, in acknowledgement of their

proximity he may have 'waggled his wings' as he would generally do to indicate they had sighted the other traffic, but he cannot recall in this instance if he did so.

He assessed the Risk as 'none' and stated their transit altitude had been chosen to remain clear of extensive light fixed-wing & glider traffic that day.

THE BRIZE NORTON ZONE CONTROLLER reports that he was operating 119.00MHz at the reported time of the Airprox, but because of the intervening period between the occurrence and when he was told about it, he could recall nothing of significance. From the FPS the MD902 helicopter pilot was under a BS outside the Brize CTR, when he called on the frequency at 0948Z; the flight was transferred to Brize TOWER at 1003Z. No report of an Airprox was made on the frequency.

UKAB Note (1): The RT transcript reveals that the MD902 pilot reported in transit "...not above 1 thousand feet.." and was subsequently "...cleared to enter Brize controlled airspace not above height 1 thousand feet on the Brize Q-F-E 1-0-0-9".

UKAB Note (2): Analysis of the LATCC (Mil) Clee Hill Radar recording shows the MD902 as an SSR contact only, identified by its discrete squawk, transiting the Airprox location near Finmere (elev: 395ft amsl), however, the Magic ML is not evident at all. The MD902 maintains a transit altitude of 900-1000ft throughout and is shown at 0952:56, at a position 5nm E of Croughton tracking 235° level at an altitude of 1000ft London QNH (1019mb) – equating to a height of broadly 600ft agl.

HQ 1GP BM SM reports that this Airprox occurred east of Croughton and approximately 25nm ENE of Brize Norton.

Although the MD902 is visible on the radar recording, the ML is not. Moreover, no mention is made on the Brize ZONE RT transcript of the MD902 crew being visual with a ML. Whilst the Clee Hill Radar is available to Brize controllers and was the source of the radar recording, it is a selectable option, rather than a composite radar picture together with the Brize Norton ASR/MSSR. It has not been possible to determine which radar source ZONE was utilising at the time of the Airprox.

The Brize ZONE controller involved was wholly unaware that an incident had occurred at the time and could not recall any events when made aware of the Airprox.

From an ATM perspective, ZONE was providing a BS to an ac that was likely to be operating at or below the vertical limits of their radar coverage and had no reason to suspect that a collision risk existed. Moreover, whilst the MD902 pilot was visual with the ML, it is clear that the Magic ML pilot was concerned about the rotor blade turbulence, rather than the physical position of the MD902.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The ML pilot reports he was flying at an altitude of 2000ft whereas the MD902 pilot was maintaining a level cruise at an altitude not above 1000ft – as indicated on Mode C from the recorded radar data. The ML pilot estimated the vertical separation at 300ft before he was affected by turbulence and the MD902 pilot estimated 500ft. A Member suggested that the helicopter pilot might have been better placed to judge the separation from below and helicopter Members agreed that the MD902 pilot would not have thought that 500ft separation could have posed a hazard to the ML; furthermore the MD902 pilot reports a slight lateral offset as he overtook the ML. By the time the ML pilot had recovered to level flight he had lost 200ft putting him between 100ft and 300ft above and behind the helicopter and in a position where he was more likely to be affected by its wake. Whilst the recorded radar data suggested that the vertical separation might have been somewhat more than either of the

pilots' estimates, without a comparable indication from the ML, which was not fitted with a transponder, this could not be resolved with any degree of certainty.

The ML was seen by the helicopter pilot late he reports, 15sec before he flew under it – a sighting range of about 0.33nm away at a closing speed of 80kt. However, the ML would have remained on a constant bearing with no crossing motion to draw attention to it as the MD902 approached from astern. With the yellow wing under-surface of the ML possibly quite difficult to see against a background cloudscape, the MD902 pilot probably saw the ML as soon as was feasible in these circumstances.

Instances of ML and ultra-light pilots being concerned by the wake vortex/turbulence created by passing helicopters are not new to the Board. What was unusual in this case, however, was that the MD902 had under-flown the flexwing ML with its pilot reporting that the severe turbulence from the helicopter needed extreme corrective measures to escape from an almost irrecoverable position. The wake turbulence associated with downwash and rotor blade tip vortices are known hazards to ac flying behind and below helicopters, but at these distances any detrimental effects on the aerodynamic lift properties of a flexwing ML flying above the MD902 were thought by some pilot Members to be negligible. The Board counts within its Membership several highly experienced fixed-wing test pilots and military and civilian helicopter pilots, who understood fully the dangers inherent in passing close to a ML. However, the effects of helicopter rotor downdraught on MLs passing above the rotor 'disc' was not clear to them at all as it was generally accepted, rightly or wrongly, that there was 'clean' air above the rotor disc with significantly disrupted air below, astern and flowing to either side. Therefore, whilst not doubting the sincerity of the ML pilot's report in any way, Members considered alternative causes for the effect described by the ML pilot. It seemed feasible that the startling effect of hearing and then seeing the under-flying helicopter at close quarters could have distracted the ML pilot to such an extent that he almost lost control of his aircraft. Alternatively, coincidental atmospheric turbulence might have caused the effects reported. However, the Board was concerned that there have been a number of incidents in which ML ac/para gliders/hang gliders etc appear to have been affected by helicopters at unexpected distances and aspects. A test pilot Member was keen to ensure that this was resolved and with this in mind the Chairman undertook to investigate whether there is any existing research into the phenomenon.

[Post Meeting Note: Enquiries with the CAA's Fluid Dynamics specialists raised doubts that such a 'suck down' effect would exist, but they continue to look into this possibility in some detail and will submit their views to the Board.]

Following on from previous Airprox where helicopters had over flown MLs and para gliders, Members were keenly aware that the Board was charged with assessing the Risk of a collision between the two ac and not the risk associated with the helicopter's rotor downwash. This was not in any way meant to diminish important safety lessons - but it was not strictly within the Board's remit when assessing the inherent Risk of a collision. Moreover, the Board only considered what had actually occurred and not what might have happened if circumstances had been slightly different. After a wide-ranging debate, Members concluded that the Cause of this Airprox was that the MD902 pilot flew close enough to cause the flexwing ML pilot concern. Whilst Members recognised that the safety of the ML had not been assured until he regained controlled flight, in so far as the collision risk was concerned both pilots had operated in accordance with normal rules and parameters.

PART C: ASSESSMENT OF CAUSE AND RISK

- Cause: The MD902 pilot flew close enough to cause the flexwing ML pilot concern.
- Degree of Risk: E.
- Recommendation: The Board was concerned that there have been a number of incidents in which Microlight/para gliders/hang gliders etc appear to have been affected by helicopters at unexpected distances and aspects. Director UKAB was

charged to investigate whether there is any existing research into the phenomenon.

AIRPROX REPORT No 2011045

Date/Time: 19 May 2011 0906Z

Position: 5208N 00003E (5½nm SW of Cambridge)

Airspace: London FIR (Class: G)

Reporting Ac Reported Ac

Type: BAe146 Cirrus SR22

Operator: HQ Air (Ops) Civ Pte

Alt/FL: 4000ft 4000ft
QNH (1018mb) QNH (1018mb)

Weather: IMC CLBL VMC NK

Visibility: 30km >10km

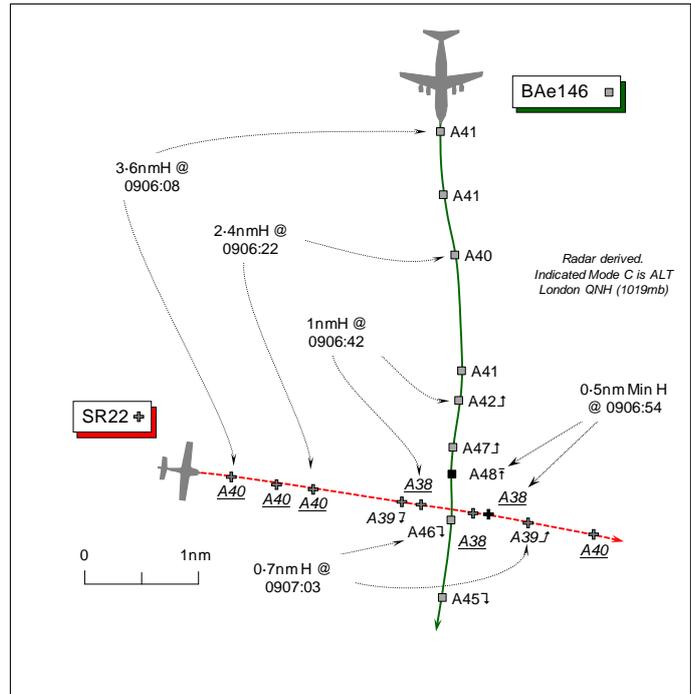
Reported Separation:

400ft V/<1nm NK

Recorded Separation:

Nil V @ 2.4nm H

0.5nm Min H @ 1000ft V



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE BAe146 PILOT reports he was in transit to Northolt on an IFR flight, routing SIVDA to BARKWAY (BKY), and had descended wings level at 230kt from FL100 to 4000ft London QNH (1018mb) into cloud with London MILITARY [LJAO E-TACTICAL] under a TS. A squawk of A4671 was selected following a handover to Luton RADAR, but before two-way RT was established with the Luton controller, heading 200° 10nm N of BARKWAY (BKY), TCAS showed traffic at the same altitude of 4000ft moving R to L. Flying in between cloud layers with FEW at 5000ft, TCAS enunciated a CLIMB RA and the guidance was followed, ascending to an altitude of about 4600ft, before returning to their previously 'cleared' level. The other ac – a white civilian low-wing single-engine propeller driven aeroplane - passed less than 1nm in front and 400ft below their ac with a 'high' Risk of collision. No TI had been given by London MIL. Once they had established RT comms, Luton RADAR asked whether details of the other ac had been passed to them on handover. Luton stated they would complete a report on the incident. The recovery to Northolt was completed without further incident.

THE CIRRUS SR22 PILOT reports he was had departed from Gloucestershire Airport under VFR and was in receipt of a BS from Cambridge. A squawk of A7000 was selected with Mode C. TCAS is not fitted; elementary Mode S is fitted.

Flying an E'ly heading at 150kt, established in a level cruise at 4000ft QNH, below cloud in VMC, ATC had advised of other traffic but it was not seen.

His ac has a white colour-scheme; the HISLs and nav lights were on.

THE LATCC (MIL) LJAO EAST TACTICAL CONTROLLER (E-TAC) reports screening a UT whilst controlling the BAe146 inbound to Northolt under a TS, with a PLANNER in situ. As far as could be recalled everything was normal, with timely calls of TI. As the event took place over 24hr ago he could not recall any other detail.

THE LATCC (MIL) LJAO EAST PLANNER CONTROLLER (E-PLAN) could not recall the event.

THE LUTON INTERMEDIATE RADAR CONTROLLER (RADAR) reports that a radar hand-over was given by London MIL who were providing a TS to the BAe146 inbound to Northolt; it was agreed that it would be accepted at 4000ft London QNH. London MIL was asked if TI had been passed on 2 contacts ahead and he was told that it had. One of those contacts was tracking eastbound indicating 4000ft QNH. The BAe146 pilot called and declared that he had responded to a TCAS RA against the unknown ac and was now returning to 4000ft from 4600ft. There was traffic inbound to Luton tracking W to go through the Luton 'gate', but this traffic was still descending through 6500ft QNH and so unaffected.

The BAe146 pilot was later asked if London MIL had passed TI, he said that they had not but as they were IMC he had reacted to the RA. He also said that they got a late visual sighting of the ac through a gap in the cloud.

He opined that as TI had not been passed when providing a TS, coupled with the instruction to change frequency so close to an unknown ac, this seemed very dangerous. Especially as this could have led to a loss of separation with other Luton traffic. The pilot advised that he would be filing a report.

ATSI endorsed the report provided by NATS Ltd relating to the involvement of Luton RADAR in this Airprox, an abridged version of which is included below.

NATS LTD reports that the BAe146, had been operating outside CAS under the control of London MILITARY (LJAO E-TAC) and at 0858 was pre-noted to Luton RADAR for a 'Charlie' arrival inbound to Northolt. Luton RADAR was being operated by a trainee monitored by an instructor. At this time the BAe146 was outside the range at which Luton RADAR was operating so the controller asked for the ac to be handed over later, when it was within 30nm of Luton.

At 0904:21, the BAe146 was seen on radar to change from the LJAO East squawk to A4671 - the Luton RADAR squawk. Shortly afterwards, Luton RADAR answered a telephone call from LJAO but was interrupted by the RT. The telephone call continued at 0905:03 with LJAO E-PLAN offering a handover of the BAe146:

Luton RADAR: *"Roger, I've got the details..."*

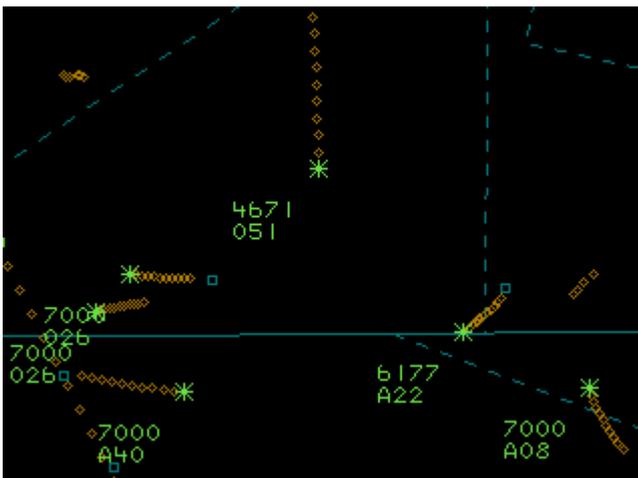
LJAO E-PLAN: *"He's [the BAe146] currently Cambridge, North West, 7 miles, tracking south, squawking 4-6-7-1"*

Luton RADAR: *"Identified"*

LJAO E-PLAN: *"Descending Flight Level 4-0, traffic service"*

Luton RADAR: *"..OK have you called the traffic in his 1 o'clock and 10 o'clock?"*

The traffic visible to Luton RADAR at this time is shown on the radar snapshot below:



LJAO E-PLAN: *"Affirm all traffic around that area called"*.

Luton RADAR: *"Roger OK traffic service, 1-2-9 decimal 5-5-0 Q-N-H 1-0-1-8"*.

LJAO E-PLAN: *"1-2-9 decimal 5-5-0 and QNH was what sorry"*

Luton RADAR: *"1-0-1-8 millibars"*.

LJAO E-PLAN: *"1-0-1-8 do you want him on that now?"*

Luton RADAR: *"yes please 4 thousand feet"*.

LJAO E-PLAN: *"Roger 4 thousand feet 1-0-1-8."*

Luton RADAR: *"Thank you, co-ordinated"*.

At 0906:08 while the Luton RADAR controller was speaking to Luton TOWER a high severity STCA warning was generated. This downgraded to a low severity warning at 0906:12 before almost immediately upgrading again to a high severity alert at 0906:18

The pilot of the BAe146 made his initial report on the frequency at 0907:04:

BAe146 pilot: *"Luton [BAe146 C/S] with you...just had a T..traffic R-A..4 thousand 5 hundred feet at this moment in time recovering to 4 thousand feet 1-0-1-8"*.

Luton RADAR: *"From radar you appear to be clear of that traffic now and Q-N-H 1-0-1-8 millibars it's a traffic service."*

This was acknowledged by the pilot of the BAe146 before instructions for a 'Charlie' arrival for Northolt were passed and acknowledged.

At 0914:25, the Luton RADAR Instructor enquired, *"[BAe146 C/S] just out of interest, on your handover when you got transferred from the military, had they passed the traffic that you had the TCAS with?"* The pilot of the BAe146 replied, *"Negative...we'll file a report... (unintelligible), they offered 4 thousand feet and we were I-M-C although we did see the traffic in a gap in the cloud. It passed below us and we got within 600ft over the top."* The Luton RADAR Instructor acknowledged *"..roger I'll do the same because they said they were going to pass the traffic so I'll file as well."* The BAe146 pilot was then instructed to contact Northolt APPROACH.

From both the radar recording and the Airprox report from the BAe146 pilot, it is clear that having been handed over from London MILITARY, but before establishing contact with Luton RADAR, the BAe146 pilot had received and responded to a TCAS RA. Radar shows the maximum level reached by the BAe146 was 4800ft.

The decision of the BAe146 pilot to accept a TS whilst flying in IMC outside Controlled Airspace rather than a DS may have had an effect. CAP774 Chapter 3 para 3 states:

'Pilots should be aware that a Traffic Service might not be appropriate for flight in IMC when other services are available.'

HQ 1GP BM SM reports that this Airprox occurred approximately 10nm N of BKY between a BAe146 flying IFR in IMC and an SR22 operating VFR in VMC, in receipt of a BS from Cambridge. Although at the time of the Airprox the BAe146 was switching to Luton RADAR, the incident sequence starts whilst the ac was in receipt of a TS from LJAO E-TAC, 51 sec prior to the CPA.

On completion of an air test, the BAe146 began to route towards BKY via SIVDA descending to 4000ft London QNH and, at 0859:00, was pre-noted by E-TAC to Luton RADAR. E-TAC was under training with two other ac pre-noted to them but only the BAe146 was on frequency at the time of the occurrence.

At 0904:40, E-TAC passed TI to the BAe146 crew on an unrelated ac squawking A7000, calling, *“multiple contacts..right 1 o'clock..range of 5 [7.3nm] and 6 miles [8.7nm], indicating 3 thousand feet and below.”* The BAe146 crew replied that they were, *“looking..those contacts on TCAS.”* At this point the SR22 is 2nm S of the 2 unrelated ac.

At 0905:03, E-PLAN commenced a handover on the BAe146 to Luton APP during which, at 0905:10, E-TAC passed TI to the BAe146 on unrelated traffic descending into Luton.

All ac in receipt of an ATS from LJAO, LAC, TC or PC are depicted as “foreground tracks” with full data blocks, whilst other ac are displayed as “background tracks” with limited data blocks showing only the SSR Mode C. There is no colour or brightness change between foreground or background tracks on the LJAO surveillance displays. The Unit investigation states that the SR22’s data block was obstructed from E-TAC’s view by the data block of high-level GAT. Analysis of the radar replay demonstrates that 0905:10 is the latest point at which the data block from the high-level GAT ac could have obscured this view, taking into account the possible variations of label orientation on the E-TAC surveillance display.

As the handover between E-PLAN and Luton RADAR drew to a conclusion at 0905:18, Luton asked, *“have you... called the traffic in his 1 o'clock and 10 o'clock?”* E-PLAN replied, *“affirm, all traffic around that area has been called.”* At that point the unrelated ac squawking A7000 on which TI had been passed were approximately in a 2 o'clock position. The SR22 is in the BAe146’s 1 o'clock at 7.7 nm with 1300ft of vertical separation existing; a second ac inbound to Luton is in the BAe146’s 10 o'clock position. At this point, TI had not been passed on either the SR22 or the second Luton inbound.

At 0905:30, E-TAC passed TI to the BAe146 on the second Luton inbound, with the handover of the BAe146 between the E-PLAN and Luton terminated at 0905:39. At this point, 6-7nm lateral and 1000ft of vertical separation exist between the SR22 and BAe146. At 0906:07, the BAe146 crew acknowledged E-TAC’s instruction to contact Luton RADAR, at which point 3-6nm lateral and 100ft vertical separation exist.

At 0906:42, with lateral separation reducing to 1nm but vertical separation increasing from 400ft as the BAe146 climbed through 4200ft London QNH, the BAe146 pilot’s response to the TCAS RA CLIMB can be seen. Minimum horizontal separation occurred at 0906:54 with 0-5nm lateral and 1000ft vertical separation established after the tracks had crossed.

[UKAB Note: The BAe146 contacted Luton RADAR at 0907:04; however, this occurred after the SR22 had crossed ahead of the BAe146 and after the CPA.]

There are two causal/contributory aspects to this Airprox: those of the provision of an ATS and the BAe146 pilot’s decision to fly in IMC in receipt of a TS, through airspace that the Unit acknowledges as being “congested.” This report will assess the former.

LATCC (Mil)’s investigation identified that E-TAC’s view of the SR22’s SSR data block was obstructed by the data block of an overflying GAT ac. Furthermore, the range scale used on the surveillance display will have reduced the “on-screen” angular difference between the SR22 and the unrelated SSR 3A 7000 traffic, on which the BAe146 was passed TI, to the point that the ability of E-TAC to differentiate the traffic was compromised. However, analysis of the radar replay suggests that E-TAC would have had an un-obstructed view of the SR22’s data label from 0905:10, some 54 sec before E-TAC transferred control of the BAe146 to Luton. Given the proximity of the SR22 at 0904:40 to the un-related ac squawking A7000 on which E-TAC passed TI, it is possible that E-TAC sub-consciously later discounted the SR22 as a conflict, believing that they had passed TI on it. This perception may have been reinforced by the statement from the BAe146 crew that they could see those contacts on TCAS. This hypothesis is given weight by the absence of TI on the SR22 to the BAe146 from 0904:40, despite the fact that the confliction is evident. Although only 24-hours had elapsed between the incident and completion of their DFSOR, E-TAC was unable to recall any detail

of the occurrence. Consequently, whilst we can draw the conclusion that from E-TAC's perspective nothing untoward occurred, we are unable to prove conclusively that E-TAC believed that they had passed TI on the SR22. However, as E-TAC was manned by a trainee and instructor, the fact that the cognitive error was not picked up by the instructor suggests either that the instructor also suffered the same error or that their ability to monitor the trainee was impaired - no information was available to determine which of these hypotheses is correct.

Another aspect that requires assessment is the radar handover conducted between the E-PLAN and Luton RADAR. The phraseology used by Luton at 0905:18 when asking whether TI had been passed is ambiguous, in that it does not specifically identify to which traffic he is referring. However, it is reasonable to argue that it did contain enough information for E-PLAN to have been able to deduce which ac Luton were referring to. Based upon the available evidence, it seems reasonable to argue that the E-PLAN, having heard E-TAC pass TI to the BAe146 crew, assumed that all the relevant traffic had been called.

Given the absence of TI from E-TAC on the SR22, the remaining ATM related safety barrier was penetrated when the E-PLAN assumed that E-TAC had passed all relevant TI. Following this, the remaining safety barriers were 'see and avoid' - that had been prejudiced by flight in IMC – and TCAS, which subsequently enabled the BAe146 pilot to resolve the confliction.

This Airprox represents a confliction in Class G airspace that was resolved by the pilot of the BAe146 [responding to the TCAS RA]. The lack of TI from E-TAC to the BAe146 crew about the SR22, compounded by the assumption by the E-PLAN that all relevant TI had been passed, should be considered as contributory factors.

HQ AIR (OPS) comments that whilst the SR22 contact was not specifically called, the TI passed advised of multiple traffic within a few miles of it. The TI contained no information regarding the direction of travel or speed of the contacts so it is unclear why further detail or updates were not requested. This would have been required for the crew to reliably discharge their responsibility to avoid a collision. In the event, reliance was placed on following TCAS warnings to prevent a collision rather than:

- a) gaining visual contact and self-separating (not possible IMC).
- b) taking positive separation in azimuth or altitude based on a mental air picture formed from TI (not possible without detailed TI and continued updates).
- c) requesting a Deconfliction Service to allow ATC to provide separation based on their air picture.

By being in receipt of a radar service, the crew had complied with guidance in MRP RA 2307, para 26, although this is worded as a directive. The advice in CAP 774 is valid but it is not clear whether the BAe146 crew considered the use of a DS. Such advice, and greater guidance on actions required to safely operate in IMC under a TS could usefully be included in the MRP.

HQ Air will use this and other Airprox examples to highlight the reasoning behind the CAP774 advice to adopt a DS in IMC where possible, to highlight the difficulties of collision avoidance based solely on TI, and particularly to highlight the limited responsibilities of ATC when providing TI.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, transcripts of the LATCC (Mil) and Luton RADAR RT frequencies, radar video recordings, reports from the three air traffic controllers involved and reports from the appropriate ATC and operating authorities.

It seemed to the Members that the cloud base in the vicinity of this Airprox was somewhat patchy, but evidently close to 4000ft, as the reporting BAe146 pilot flying IFR reports being in cloud at this altitude, whereas he subsequently saw the SR22, whose pilot was operating below cloud under VFR. Although the BAe146 was not seen by the SR22 pilot, the radar recording illustrated a slight descent by the SR22 as the tracks crossed, which suggested to some that the pilot might have descended slightly to maintain VMC. Whilst coincidentally this had increased the vertical separation at a critical point, a GA pilot Member observed that it was always preferable to maintain good clearance below the cloud base so that traffic descending through cloud might be detected in good time, especially when flying relatively fast aeroplanes such as the SR22.

It was explained that the BAe146 pilot's Unit invariably attempts to route via CAS whenever possible and the Command had highlighted the advantages of a DS to assist crews in discharging their responsibilities to avoid other ac when flying IMC in Class G airspace. However, controller Members who regularly control traffic in this environment explained that, given the intensity of traffic operating in the 'Open FIR' beneath the London TMA, it can be difficult to achieve the specified deconfliction minima when threading ac through areas of high density traffic. Nevertheless, crews should still ask for a DS where appropriate. The HQ 1 Gp BM SM Advisor added that reductions of service specifically cater for situations where a controller, in endeavouring to provide the best radar service possible in a high intensity situation, is unable to achieve the desired minima against every observed contact. The CAA Standards and Policy Advisor stressed that avoiding action instructions issued under a DS by controllers are provided as 'advice', aimed at achieving specified deconfliction minima; this 'advice' can be accepted or not as the case may be.

Whilst the general consensus was that a DS might have been more appropriate here for an airliner operating in Class G airspace, the BAe146 crew had requested and was in receipt of a TS with LJO E-TAC with the reasonable expectation of having conflicting traffic in the vicinity pointed out to them. Although the BAe146 crew had not been appraised specifically about the presence of the SR22 within the TI provided earlier, they had been told about, "*multiple contacts..indicating 3 thousand feet and below*". Notwithstanding the Command's view that the BAe146 crew could have asked for further detail or updates, given E-TAC's descent instruction to 4000ft QNH, thereby providing 1000ft above the traffic reported at 3000ft and below, the BAe146 crew might well have been content to track the ac reported by E-TAC on TCAS, unaware of the SR22 themselves at that stage. Evidently E-TAC had not specifically identified the threat of the SR22 that was plainly indicating level flight at 4000ft QNH before the BAe146 was switched to Luton RADAR. Controller Members focused on the prompt given by Luton RADAR to E-PLAN during the handover; the military Area controller Member perceived there was an unfounded assumption on the part of E-PLAN that the SR22 had been called within the TI about the multiple contacts. Members accepted that the terminology used by Luton RADAR, who had done their best to point out the conflicting traffic, should have readily identified the SR22 at the same altitude as the BAe146 to E-PLAN, who should have taken stock of what had and had not been called, so it was unfortunate that the latter did not react more positively or ask E-TAC to simply call it in, which did not occur. Consequently, specific TI had not been given to the BAe146 crew about the SR22 before E-TAC switched the flight to Luton RADAR. The Board agreed that the absence of specific TI from E-TAC about the SR22 was part of the Cause of this conflict in Class G airspace.

The BAe146 crew switched frequency at the critical moment, just as STCA activated, thus they were denied any further input from ATC until TCAS alerted them to the presence of the SR22 and prompted them to take their own avoiding action by responding to the CLIMB RA. This enabled them to resolve the conflict and achieve 900ft of vertical separation above the SR22 during the manoeuvre as the latter crossed ahead and drew to port which, assisted by the slight descent of the SR22, increased to 1000ft at the closest point. Moreover, it was clear from the Luton RADAR RT transcript that the BAe146 crew had managed to spot the SR22 through a gap in the cloud during the occurrence. After weighing all these factors carefully the Cause of this Airprox was unanimously agreed by the Members to be, in the absence of specific TI, a conflict in Class G airspace resolved by the BAe 146 crew using TCAS; the crew's prompt response to the TCAS RA, coupled with the visual sighting, effectively removed any Risk of a collision.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: In the absence of specific TI, a conflict in Class G airspace resolved by the BAe 146 crew using TCAS.

Degree of Risk: C.

AIRPROX REPORT No 2011046

Date/Time: 21 May 2011 1447Z (Saturday)

Position: 5114N 00058W (1nm W
Odiham - elev 405ft)

Airspace: ATZ (Class: G)

Reporting Ac Reported Ac

Type: Vigilant DHC1

Operator: HQ Air (Trg) Civ Club

Alt/FL: 750ft 1000ft
(QFE 1003mb) (QFE 1004mb)

Weather: VMC CLBC VMC CLBC

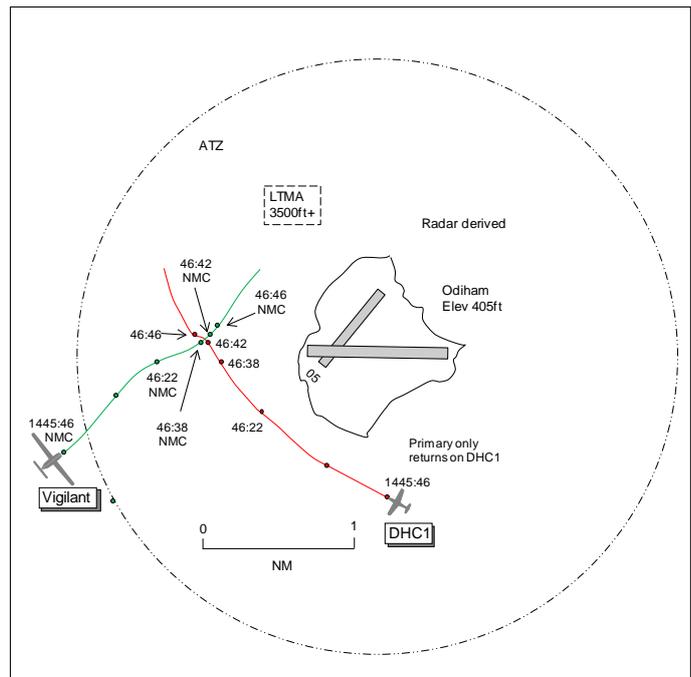
Visibility: 30km 10km

Reported Separation:

20ft V/100m H NR

Recorded Separation:

<0.1nm



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE VIGILANT PILOT reports flying dual training sortie from Odiham VFR and in communication with Odiham Radio on 122.1MHz, squawking 3647 with NMC. The visibility was 30km flying 2000ft below cloud in VMC and the ac was coloured white/dayglo orange with HISLs and landing light switched on. He was a 'B' Category instructor tasked to complete a Gliding Induction Course (GIC) with a Trainee Cadet. The RW in use was RW23 with a RH cct. The RAF Gliding and Soaring Association (RAFGSA), using conventional gliders, were operating from the grass with a LH cct. The RAFGSA DHC1 was using the RW for aerotow operations, departing in the LH cct and rejoining to land from a RH cct. On completion of the GIC exercise a downwind rejoin was planned. He approached Odiham from the NW abeam Old Basing town where a 2min to rejoin call was made to Odiham Radio before he then joined the Vigilant cct through an extended downwind. He was slightly upwind of the normal downwind radio call position heading 050° at 60kt at 750ft QFE 1003mb, owing to thermic conditions, when he then heard another ac's pilot transmit "downwind to land". He was not visual at the time and he immediately made a transmission of "downwind not visual one ahead" for better SA of the other ac. He completed a lookout scan and a red and white coloured DHC1 appeared from below and behind the starboard wing approximately in his 3 o'clock range 100m and 100ft below. The DHC1 had a tow rope attached and was seen to be manoeuvring sharply L to avoid his ac by passing behind. Both he and DHC1 then completed the cct and landed in turn. He assessed the risk as medium.

THE DHC1 PILOT reports flying a local sortie from Odiham, VFR and in communication with Odiham Radio on 122.1MHz; no transponder was fitted. The visibility was >10km flying 2000ft below cloud in VMC and the ac was coloured red/black with nav and strobe lights switched on. Having completed a tug release detail he rejoined the powered cct for RW23 RH cct from the deadside onto the crosswind leg from the upwind end of the RW, as per SOPs. As is normal, whilst complying with the ANO Rule 12, he used the time on the deadside to identify other traffic and conform to the current cct pattern. Before entering crosswind he identified all cct traffic including the reporting Vigilant flight, never losing sight of it. The Vigilant was observed to be on what appeared to be a very wide downwind leg in the process of correcting course to reach the normal downwind position at the start of the upwind end of the RW, not on a reciprocal RW track but tracking nose-in towards the RW. When he levelled his ac to enter crosswind he could see the Vigilant still some way off flying level upwind of the RW slightly L of his ac's nose but at least 100ft below his level. As he had the ac fully

in sight before he entered crosswind there was never any risk of collision. His track and position was entirely consistent with entering the crosswind for joining the cct, as illustrated in CAP413, namely across the upwind end of the RW, tight in and perpendicular to it. He progressed along the crosswind leg at 1000ft QFE at 80kt, adhering to the CAP413 guidance to 'Watch for existing circuit traffic and adjust your flightpath to sequence safely' whilst keeping the reporting ac in sight. He had to judge whether such an ac that is on the downwind leg but not yet abeam the upwind end of the RW is sufficiently far upwind that he could sequence safely by turning downwind well ahead of it from his crosswind leg or whether such a manoeuvre would cause a conflict in which case it would be normal and safe to give way and fit in behind the ac and enter downwind behind it. This latter case was exactly what he did by altering course behind the reporting ac. He believed that there was no Airprox and that as he was watching the other ac at all times from before entering the live side of the cct and was taking sensible actions to ensure separation, there was no risk of collision. He went on to say that because the reporting ac was on the downwind leg but in the process of establishing a more normal distance from the RW by the upwind end, both ac were not at the usual 90° closing angle. This he believed would have given the other pilot an illusion that there was something odd when he altered course to widen his crosswind leg further upwind to position behind the other ac.

UKAB Note(1): The UK Mil AIP at ENR AD 2-EGVO-17 Para 2.17 promulgates the Odiham ATZ as a circle 2nm radius centred on mid-point RW09/27 N511402.90 W0005634.17 from SFC to 2000ft aal; aerodrome elevation 405ft. Para 2.23 Additional Information Para 1 states 'Glider flying during daylight hours (outside ATC Ops hrs contact Odiham Radio or Kestrel Base on 122.1MHz). Special Procedures Para 3 states 'Rwy 05/23. Use restricted to ground and hover manoeuvres by Odiham hel and light ac only.'

UKAB Note (2): Odiham ATC was closed at the time of the Airprox. Frequency 122.1MHz was not recorded.

HQ AIR (TRG) comments that despite the DHC1 pilot's comprehensive report, there is no mention of an initial joining report call iaw CAP413. This would have aided the Vigilant pilot's awareness of other joining traffic. However, without a transcript it is not possible to say that one was not made. Joining a cct at an uncontrolled airfield requires sound lookout and self positioning of traffic and is complicated when ac join unannounced from different directions. The Vigilants are confined to the cct side because of conventional gliders operating on what would otherwise be the 'deadside'. As such, they cannot fly overhead joins and will join the downwind leg either from upwind or at 90 degrees. It is disappointing to note that the DHC1 pilot, with the Vigilant in sight, whilst reportedly trying to assess whether to fit in ahead or behind the Vigilant, continued to a point where separation was reduced to a degree that alarmed the Vigilant pilot. An early turn to position ahead or behind the other joining ac would have avoided the situation. Whilst the DHC1 pilot called 'downwind' he never was according to the Vigilant pilot's report and the radar trace, and the call was therefore contrary to CAP413, being neither on the downwind leg or abeam the upwind threshold. The call did, however, alert the Vigilant pilot to his presence, albeit rather later than necessary. It is unclear which ac, if either, was technically established in the cct at the point the Airprox was called. This incident is probably a conflict between 2 ac joining the visual cct on differing profiles, not aided by incomplete comms. Air Cmd are engaging with RAF Odiham to ensure that cct procedures between Vigilant and Gliding Club ac are robust and to ensure that Club ac conform to the standard RT procedures in the cct.

UKAB Note (3): The Heathrow radar recording at 1445:46 shows the Vigilant 2.2nm WSW of Odiham tracking 050° squawking 3647 NMC. At the same time a primary only return is seen, believed to be the DHC1, 0.9nm S of Odiham tracking 305°. The Vigilant then enters the ATZ on a steady track with the DHC1 converging from its 2 o'clock position. At 1446:22 the Vigilant is seen to have turned R approximately 20° whilst the DHC1 converges from its 0130 position range 0.75nm whilst crossing the extended C/L RW 05/23 onto a crosswind leg. Sixteen seconds later, 1446:38, the Vigilant is seen to have turned L onto a downwind track and is about to pass through the DHC1's 12 o'clock range 0.2nm. The next sweep at 1446:42 shows the DHC1 passing <0.1nm behind the Vigilant and turning sharply L before regaining a NW'ly track.

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.

The HQ AIR Trg Member informed the Board that the Flying Order Book did not include details of the glider-tug operations, hence the dialogue between HQ AIR and Odiham. An experienced GA/Gliding Member commented that at any airfield where non-standard ccts are flown, the documentation/orders/instructions should make it clear exactly how ac are segregated or how pilots are expected to integrate. Tug ac pilots are renowned for executing tight ccts on recovery as their overall goal is to climb to 2000ft to drop off a glider and then descend to land as quickly as possible in order to collect the next glider. At other gliding sites tug operations are normally carried out on the same side as the gliders with other traffic flying ccts on the opposite side of the airfield. Although the primary means of integrating into the cct is visually, RT calls by pilots improves the SA of other pilots on frequency, hence the need for timely and accurate position reports. In this Airprox, both flights were returning to join the cct, the Vigilant flight joining downwind and the DHC1 crosswind. Without an RT transcript it was unclear what transmissions were made by either pilot; however, it was clear the Vigilant pilot was unaware of the DHC1's presence until a very late stage. His first knowledge of the DHC1 was when its pilot called downwind and, as he was unable to see it, he broadcast his own downwind position. He then visually acquired the DHC1 in his 3 o'clock range 100m and 100ft below when it was apparently still crosswind and about to turn downwind. The DHC1 then turned L and manoeuvred behind his ac. Meanwhile the DHC1 pilot had visually acquired the Vigilant during his rejoin and had continued with his intended cct pattern whilst monitoring the Vigilant's progress. It appeared to Members that the DHC1 pilot had 'pressed on' with his chosen flightpath leaving it until the last minute before manoeuvring his ac to avoid the Vigilant which was effectively in the piece of airspace that he had intended to use. Members agreed that the DHC1 pilot should have altered his flightpath earlier and that he had flown unreasonably close to the Vigilant causing its pilot concern. Although the visual sighting and actions taken by the DHC1 pilot were enough to remove the actual collision risk, the Board concluded that the ac had passed with margins reduced to such an extent that safety had been compromised during this encounter.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The DHC1 pilot flew unreasonably close to the Vigilant, causing its pilot concern.

Degree of Risk: B.

AIRPROX REPORT No 2011047

Date/Time: 8 May 2011 1431Z (Sunday)

Position: 5138N 00105W (1nm NNE
Benson - elev 203ft)

Airspace: ATZ (Class: G)

Reporting Ac Reported Ac

Type: MT03 Gyroplane Grob Tutor T Mk 1

Operator: Civ Trg HQ Air (Trg)

Alt/FL: 500ft 800ft
(QFE) (QFE)

Weather: VMC CLOC VMC NR

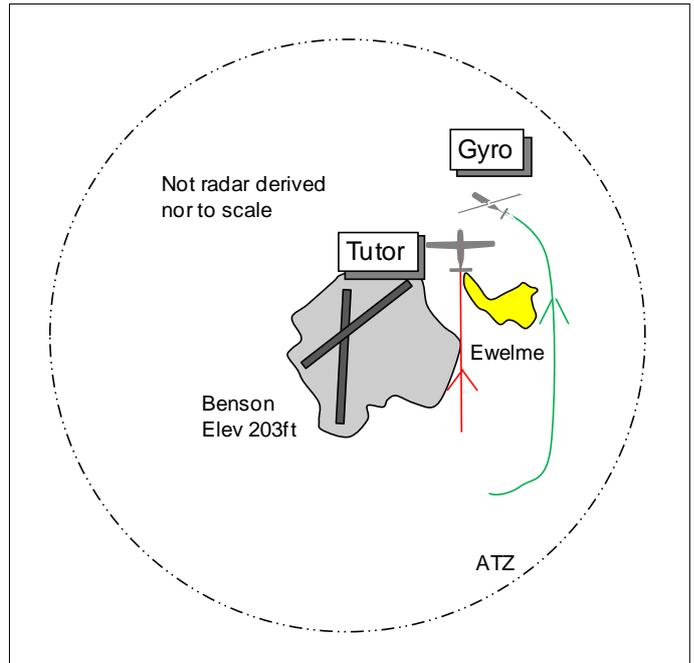
Visibility: >10km 30km

Reported Separation:

20-30m 30ft V/100yd H

Recorded Separation:

NR



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE MT03 GYROPLANE PILOT reports flying a dual local sortie from Benson, VFR and in receipt of an Aerodrome Control Service from Benson Tower on 127.15MHz, squawking 7000 with Modes S and C. The visibility was >10km in VMC and the ac was coloured yellow/blue with nav and strobe lights switched on. He was flying with a fully qualified gyro pilot, who was seated in the front, with himself as Capt in the rear. They had previously carried out 1 cct with a touch and go RW19 and whilst downwind they called for a further touch and go. They were flying the wide 'flying club' cct and once they had passed to the E of Ewelme and were directly O/H a wood to the NE of Ewelme he called final for a touch and go. ATC responded "clear to land" and he started a gentle L turn and descent. He was aware that a Tutor had called downwind but could not remember ATC's response and would have thought ATC would have indicated "one ahead". He continued with his gentle L turn adhering to the oval cct doctrine. When he was adjacent to what would have been the old narrow cct his crewmate stated that they had an ac approaching from their L. Turning through heading 300° at 500ft QFE and 80mph he looked L and saw an ac, not the reported Tutor, in the downwind position on the flying club cct and at the same time saw the shadow of an ac approaching directly from his L. His crewman became more animated, informing him that it was getting closer. His crewman shouted that it was very close before taking control and commencing a steep diving turn to the R. At this point he, the Capt, spotted the Tutor closing at a similar height before it passed 20-30m above and to their L. He broadcast on the radio "he's just missed us" and believed the Tutor pilot made some response, possibly an apology. ATC then informed them that their permission to land had been revoked and he called going around, allowing the Tutor to land ahead of them. He carried out a short orbit before landing. He had not heard radio calls from the Tutor pilot when the ac was downwind asking for confirmation of his gyroplane's position and no deconfliction advice from ATC. He assessed the risk as high.

THE TUTOR PILOT reports flying a dual training sortie from Benson and in receipt of a BS from Benson Tower on 127.15MHz; the ac's transponder was switched off. The visibility was 30km in VMC and the ac was coloured white; no lighting was mentioned. The student was flying a low level cct LH RW19 and in reply to their downwind call they were told "one ahead". He then heard another ac's pilot call "final" and be cleared by ATC. By the bottom end of the downwind leg heading 010° level at 800ft QFE, despite looking intently into the expected area for the other ac, (down to the L, up the extended approach and dead ahead) neither he nor his student had him in sight. He looked R in

his 2 o'clock position and saw a blue/yellow autogyro about 100yd away and 30ft below, belly-up to him banking and descending sharply to the R, already taking avoiding action. The autogyro was operating from the Benson Flying Club in accordance with the FOB which requires an extremely wide cct for noise abatement. The ac is very slow and small, hence difficult to see. He, the Tutor Instructor, was flying a low level cct as per Tutor Instructor's/Student's Study Guide. Although both ac carried transponders, his was switched off iaw Benson SOPs whilst the autogyro pilot reported his transponder was switched on. Also his Tutor's TAS was off iaw current advice for cct work.

THE BENSON AERODROME CONTROLLER reports the Ground and Tower frequencies were bandboxed. At 1420 the Gyro pilot called for a L base rejoin to RW19 having been operating in the vicinity of Benson listening out on frequency. At the time the subject Tutor flight on was frequency conducting visual ccts and another Tutor was at the hold. The Tutor pilot called "final" for a touch and go prior to the Gyro reaching L base and was given clearance. The Gyro pilot was initially unable to see the Tutor so he orbited clear of L base and when visual, integrated into the cct L base. The Gyro pilot was given clearance for a touch and go after the Tutor finished its approach. The Tutor climbed to glide downwind and the other Tutor was lined-up for departure awaiting the Gyro to turn downwind whilst 2 other Tutors taxied. After being issued with take-off clearance, the departing Tutor's pilot asked what the Gyroplane's intentions were, to which he said that he believed it to be doing at least 1 cct. The subject Tutor's pilot called final for touch and go and was told to continue, owing to the departing Tutor pilot asking about the Gyroplane's intentions, but was then given clearance shortly thereafter. As the departing Tutor flight transferred to Approach the Gyroplane pilot called downwind to touch and go and then taxi to dispersal. Another Tutor flight at the hold was then cleared for take-off whilst the subject Tutor flight, which was about to turn downwind, requested a low-level cct which was approved. The Tutor pilot called downwind low-level for a full-stop and was told 1 ahead and a few seconds later the Gyroplane pilot called final but was briefly told to continue for a vehicle to cross the RW. About 30sec later the Tutor pilot called final and was told to continue for the Gyroplane which was still on final. A few seconds later the Gyroplane pilot called asking for confirmation of who had right of way and was told that it was him. It then became apparent that the Tutor had got close to or ahead of the Gyroplane although he was unable to determine this straightaway from their visual aspects from the Tower. The Tutor pilot apologised and asked if he could continue. The controller asked the Gyroplane pilot if he wanted to finish his approach or go around to which he replied "whatever is the easiest". By now he could see that the Tutor was ahead so he revoked the Gyroplane flight's clearance to ultimately go around and allow the Tutor make its approach. Both flights eventually made their respective approaches and taxied back.

HQ 1GP BM SM reports that this Airprox occurred at RAF Benson between a Stn-based Grob Tutor operating in the low-level visual cct and a Gyroplane, operated by the RAF Benson Flying Club, on final to RW19.

Given the low altitude of the Airprox, no radar replay was available.

Wx conditions were appropriate for visual circuit operations with VMC, 30km visibility in nil weather and FEW at 4200ft.

At 1429:05 the Gyro pilot reported, "*(Gyro c/s) downwind one nine touch and go and er then er taxi for dispersal*", which was acknowledged by TWR with, "*(Gyro c/s) surface wind one nine zero one six knots*". At 1430:09 the Tutor reported, "*(Tutor c/s) downwind, low, full-stop*" and TWR replied, "*(Tutor c/s) one ahead surface wind one nine zero one six knots*", which was acknowledged.

Shortly afterwards at 1430:24 the Gyro pilot reported, "*...final one nine touch and go*" and, after being briefly continued due to a vehicle crossing the RW, was, "*...cleared touch and go and taxi back*" at 1430:45.

The Tutor pilot reported that as they reached the end of the downwind leg, "despite looking intently into the expected area for the other ac (down to the left, up the extended approach and dead ahead), neither of us had seen him. I looked out to the right two o'clock position and saw a blue and yellow autogyro."

At 1431:18 the Tutor pilot reported final and was instructed by TWR to, "...continue approach", which was acknowledged. In reply, at 1431:38 the Gyro pilot stated on freq that they were, "...bit confused now, does that er, Tutor got right of way?" which suggested that the Gyro pilot believed that the instruction to the Tutor to "continue approach" has placed it ahead of the Gyro. TWR replied, "(Gyro c/s) negative you're number one." Immediately after at 1431:45 the Gyro pilot is heard to say on freq, "yeah we're just missing" which, according to their report, was just after the CPA.

Both the Tutor and the Gyro pilots make reference to distinctive visual circuit patterns. However, the Stn Flying Order Book (FOB) only states that visual ccts are to be conducted to the E of the airfield for noise abatement, avoiding direct overflight of specific villages and that when the airfield is open 'oval (military) patterns are to be flown' by flying club ac. No mention is made of different visual cct patterns for different ac types and there is no graphical representation of any visual cct pattern within the FOB. Subsequent conversation with ATC at RAF Benson has found that the AEF/UAS operate a circuit inside Ewelme, whereas Rotary Wing and the Stn Flying Club operate a wider cct, outside Ewelme.

After the Gyro pilot's, "just missing" transmission the Tutor pilot then transmitted "Tutor c/s in that case apologies err am I allowed to continue to land." At 1431:55, the TWR controller is heard to transmit, "Gyro c/s where are you are you happy to go first Gyro c/s or are you going to go-around." The Gyro pilot replied, "Yeah I think so I'll slow down as I believe there's one behind me as well I'll do whatever you want me to." Subsequent investigation has found that given the small size and low speed of the Gyro it is known amongst ATC personnel to be incredibly difficult to see within the visual cct, more so in certain Wx/light conditions. This point is also highlighted by the Tutor pilot.

Given that both ac are station-based, it is reasonable to argue that TWR could have expected the Tutor pilot to be aware of the Gyro's cct pattern. Moreover, given that both ac had been established within the visual circuit for 10min 22sec prior to the Airprox and that they were both operating on the same freq, it is reasonable to argue that TWR could have expected the Tutor to be both aware of the Gyro and, given the circuit priorities stated on the freq, visual with the Gyro prior to turning finals. Finally, although the Hi-Brite display was available to TWR, nothing in the incident sequence would have prompted them to use it until the transmission by the Gyro at 1431:38. Given that the CPA occurred at around 1431:43, no time existed to allow them to view the Hi-Brite, assimilate the information and provide a timely warning. On the basis of these arguments and given the difficulty of the visual acquisition task for TWR in sighting the Gyro, there was no opportunity for TWR to have affected the outcome of the Airprox.

In terms of the active shortcomings within this Airprox, although the Tutor pilot knew that the Gyro was ahead of them in terms of cct priority and that they were unsighted of it, they committed their ac to the final turn. However, there are a number of latent conditions and contributory factors that can also be identified, one of which may have contributed directly to the Tutor being unable to sight the Gyro.

Akin to Airprox 085/10 between a Hawk and Tutor at RAF Leeming, a lack of graphical representation within the FOB of the disparate visual ccts may have contributed to a lack of awareness by both pilots of each other's visual cct pattern. This hypothesis is supported by the description of the Tutor pilot's visual scan immediately preceding the Airprox, which appears to have excluded the area to the R of the nose.

Notwithstanding that this appears to be an isolated incident, the operation of 2 distinct cct patterns, one inside the other, was a further latent condition and, allied with the Tutor pilot's restricted visual scan, a direct causal factor. Whilst RAF Benson has taken immediate action to stop simultaneous Tutor and flying club operations, this has not addressed the issue of the disparate cct pattern between the Tutors and rotary wing ac; consequently, a possible re-occurrence of this incident has not been prevented.

Finally, all ac types are mandated to operate to the E of the airfield for noise abatement, rather than, arguably, operational necessity or safety. This is the final latent condition which can be seen as a causal factor.

This Airprox resulted from the decision of the Tutor pilot to commit to a final turn without being visual with the Gyro ahead, which was operating in a different cct pattern.

RECOMMENDATIONS

BM SM has requested that HQ 22 (Trg) Gp provides guidance to operators on mixed cct patterns with differing ground tracks.

BM SM has requested that RAF Benson, through JHC, conducts a Stn-level review of visual cct operations including, but not limited to, the operation of dis-similar ac types and the imperative to operate solely to the E of the airfield.

SATCO BENSON reports that whilst a graphical representation of the RAF Benson visual ccts is now included within the FOB to raise awareness amongst the aircrews, ATC remain concerned that the point of conflict on the base-leg/final turn remains due to the cct.

HQ AIR (TRG) agrees that the potential for conflict caused by the fact that the dissimilar ccts overlap make them unacceptable. Lapses in lookout are inevitable so deconfliction plans based solely on maintaining visual contact between dissimilar types (speeds or patterns) are not robust. That said, the FOB did require flying club ac to conform to 'oval (military) patterns'. It would appear that the flying club pattern conformed to the letter if not the spirit of the order, which would have been included to avoid just this sort of conflict. The safe integration of Stn-based ac is an implicit responsibility of the Stn Cdr, which he discharges through the FOB. Thus, SATCO's concerns should be staffed to the Stn Cdr for resolution of safety concerns and to ensure that operational, training and other priorities are balanced appropriately.

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 agreed that the underlying factor of this incident was the 2 different cct patterns which overlapped causing potential conflict in the base-leg/final area. The Gyroplane pilot was flying a wider 'oval' cct, in accordance with the procedures for Flying Club ac, and ATC had correctly issued the sequence to the Tutor pilot, "...one ahead...", when he called downwind. The Gyroplane pilot then called 'final' as he turned onto base-leg, which is normal when flying the military 'oval cct'. The Tutor pilot heard this call but did not assimilate that the flightpath flown by the Gyroplane would place the ac outside of, but turning towards, his tighter cct inside Ewelme. The Tutor pilot then flew into conflict with the Gyroplane on final which caused the Airprox.

The Gyroplane pilot was cognisant of the Tutor in the cct behind him and saw its shadow but was unable to see it immediately. The pilot seated in the front took control and flew a steep diving turn to the R as the Tutor passed about 20-30m away above and to their L. The Tutor pilot only saw the Gyroplane in his 2 o'clock as it was taking avoiding action, he estimated 100yd away and 30ft below. Members acknowledged that ATC had difficulty seeing the Gyroplane owing to its size and the ongoing problems with the Tutor ac showing intermittently on the Hi-Brite display. The ADC only became aware of the problem when it was brought to his attention by the Gyroplane pilot querying who had right of way after the Tutor pilot called final and was told to continue approach. Taking all of these elements into account, the Board believed that the visual sighting and prompt action taken by the Gyroplane flight was enough to remove the actual risk of collision but the ac had passed with separation margins reduced such that safety was compromised during this encounter.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Tutor pilot flew into conflict with the Gyroplane on final.

Degree of Risk: B.

AIRPROX REPORT No 2011048

Date/Time: 31 May 2011 1214Z

Position: 5209N 00011E (4nm SW of Cambridge A/D - elev 47ft)

Airspace: London FIR (Class: G)

Reporting Ac Reported Ac

Type: Citation XLS Untraced Glider

Operator: Civ Comm NK

Alt/FL: 2400ft↓ NK
QNH (1019mb)

Weather: VMC CLBC NK

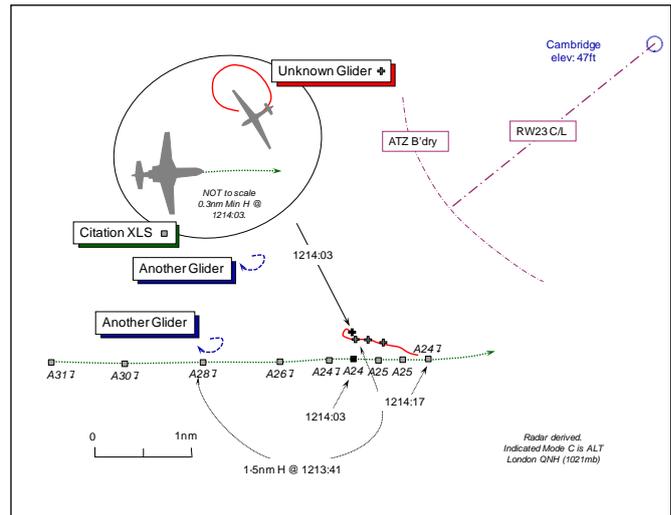
Visibility: >10km NK

Reported Separation:

100ft-200ft V/200yd H NK

Recorded Separation:

0-3nm H - see Note (3)



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE CESSNA CITATION CE-560XLS (C56X) PILOT reports he was inbound to Cambridge from Oxford under IFR in VMC; his ac was crewed with two pilots. Cambridge APPROACH instructed them to contact TOWER and they had been cleared to join the visual cct to RW23, LH downwind for a visual approach. As they established contact with TOWER, about 4nm SW of the A/D heading 120° at 200kt passing 2400ft QNH (1019mb) in a shallow descent, he spotted a white glider thermalling in his L 10:30 position 0-2nm away nose-on at a similar altitude. The mid-wing single-seat glider was in a RH turn and climbing gently in a thermal. Disconnecting the A/P, he hand flew the ac, making a very gentle turn to the R away from the glider, passing 200yd to the S and 100-200ft above it. Had he done nothing they would not have collided because of their relative flight paths, they would have flown closer than his estimated 200yd horizontally. He does not believe the glider pilot saw his Citation until it was too late as the glider made a distinct wing-wobble at the point he believes the glider pilot might have gained visual contact. At this point he was already positioning his Citation away from the glider that he thought was on the edge of the lateral ATZ boundary, virtually aligned with the centreline of RW23. [UKAB Note (1): Albeit that at an altitude of 2200ft the glider would have been about 150ft above the upper limit of the ATZ.] It was obvious that Cambridge ATC was unaware of the glider's presence and was not in communication with it. The lack of any TCAS warning suggests the glider was either not equipped with a transponder or was simply not squawking.

In his view, it was pure good fortune that placed his Citation in a position that did not require violent avoiding action, hence his assessment of the Risk as 'medium-to-high'.

THE RADAR ANALYSIS CELL (RAC) LATCC (MIL) report that despite extensive tracing action the reported glider could not be traced.

THE CAMBRIDGE AERODROME CONTROLLER (ADC) reports that the Citation XLS had been cleared for a visual approach to join LH downwind for RW23. The pilot reported passing a glider at the start of the downwind leg, which was acknowledged. The Airprox occurred outside the ATZ and the glider was not visible from the VCR. Radar was not available.

ATSI reports that the Airprox occurred in class G airspace at 1214:03, 4.2nm SW of Cambridge A/D. This position is outside the Cambridge ATZ, which extends to a height of 2000ft aal above the A/D elevation of 47ft and is bounded by a circle 2½nm radius centred on the mid-point of RW23.

It is not clear where the glider – which remains untraced - was operating from. A gliding site is situated at Gransden Lodge, which is notified in the UK AIP as a Glider Launching Site, active from sunrise to sunset, with a vertical limit of 3000ft above ground level (altitude 3300ft). Gliders operate daily from Gransden Lodge subject to weather conditions. Cambridge MATS Part 2, Section 1, Page 29, paragraph 10.4 Gliding Sites, states:

‘Gliding takes place at Gransden Lodge 10nm SW of Cambridge. Gransden shall be considered always active although details are usually faxed to ATC when gliding events are scheduled.’

No information or NOTAM had been received regarding any additional gliding event at Gransden Lodge. [UKAB Note (2): RAC’s enquiries through Gransden Lodge did not identify any glider pilots who might have been involved in the Airprox reported by the C56X pilot.]

The Airprox occurred on a Tuesday and the UK AIP promulgates the hours of Cambridge Radar, in Summer, as 0800-1700 UTC and by arrangement . The ATSU reported that the provision of a radar service is subject to the availability of suitably qualified staff. No withdrawal of radar service had been promulgated by AIS NOTAM.

Cambridge APPROACH (APP) was providing an Approach (Procedural) Control Service, without the aid of surveillance radar. The ATSU reports that the APPROACH controller on duty was not radar rated and was therefore only able to provide an Approach Procedural Service.

The 1150 UTC Cambridge METAR: 26014KT 230V300 9999 SCT040 15/07 Q1019=

At 1211:40, the C56X crew called Cambridge APP, “..*Cambridge RADAR good afternoon [C56X C/S] in the descent 3 thousand feet Q-N-H 1-0-1-9 information Echo Citation Excel.*” APP responded, “[C56X C/S] *Cambridge APPROACH unfortunately non radar this afternoon latest information Echo current Q-N-H correct clear to the Charlie Alpha Mike 3 thousand feet for the no delay procedural I-L-S approach runway 2-3.*” This was acknowledged correctly by the C56X crew.

At 1212:13, the C56X crew indicated that a visual approach was acceptable. The C56X crew reported field in sight at 1212:40, and was cleared for a visual approach to join downwind LH RW23, initially not below 1600ft. APP passed TI to the C56X crew on a formation of two Cessna ac W of Cambridge, routeing around the city, not above 1300ft. This was acknowledged by the C56X crew and the flight transferred to Cambridge TOWER at 1213:10.

At 1213:30, the C56X crew called TOWER, “...*in the descent 2 thousand feet just crossing the extended...centreline to the..west.*” The TOWER controller instructed the C56X crew to report downwind and confirmed the QNH as 1019mb.

At 1214:16, the C56X pilot reported, “..*TOWER [C56X C/S] we just passed a glider probably within 3 hundred feet..altitude 2 thousand 2 hundred extended centreline to the west*”, which was acknowledged by TOWER. At 1217:12, the C56X pilot confirmed that the glider was just outside the Cambridge ATZ. The TOWER controller’s written report indicates that the glider was not visible from the VCR.

The C56X was in receipt of a Procedural Service. The Manual of Air Traffic Services, Section 1, Chapter 11, Page 10, paragraph 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.'

ATSI Recommendations:

CAA ATSI recommends that Cambridge ATSU promulgates any withdrawal of the radar service outside of the notified hours of operation by NOTAM.

CAA ATSI recommends that Cambridge ATSU, in the absence of radar, and during the notified of hours of gliding activity, remind pilots, that the Gransden Lodge Gliding Site is active.

[UKAB Note (3): An analysis of several recorded radar sources shows four intermittent contacts likely to be gliders operating just prior to the Airprox to the W and SW of Cambridge. At 1213:41, the C56X is shown descending through an altitude of 2800ft London QNH (1021mb), 5.2nm SW of Cambridge A/D and passing the last known location of a glider that had faded from radar 30sec earlier. The radar recording shows the C56X levelling at 2400ft at 1214:03, the altitude the Airprox occurred, some 4.2nm SW of the A/D whilst passing a contact in the C56X's 9 o'clock at a range of 0.3nm and believed to be glider reported by the C56X pilot, which had previously been tracking W but is shown in a R turn as reported. The glider then fades from radar.]

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included solely a report from the C56X Citation pilot, transcripts of the relevant RT frequencies, radar video recordings together with reports from the air traffic controller involved and the appropriate ATC authority.

It was unfortunate, despite the best endeavours of the RAC at LATCC (Mil), that the glider pilot could not be traced. Although Gransden Lodge is the closest gliding site (GS) to the position of the Airprox, there was no suggestion that the glider emanated from this GS; it could have come from much further afield. However, it is unfortunate that the assessment of this Airprox clearly lacks the glider pilot's perspective of the occurrence and is thus not comprehensive.

The Board noted the unavailability of the Cambridge ASR during the period of this Airprox but controller Members recognised the difficulties of maintaining radar services, especially the training of controllers. The Board was briefed that whilst the CAA is keen to see improvements in the availability of radar services at Cambridge, the unit's own aspiration is to provide a radar service throughout their operating hours and endeavours to do so where possible. The Board endorsed the ATSI recommendations. That said, gliders, with a composite structure are extremely difficult to detect and track on primary radar. The Board appreciated that even if a radar controller had been on watch there was no guarantee that the glider would have been continuously displayed and a warning provided by the controller. As it was in the prevailing good weather conditions the C56X pilot had elected to continue with a visual approach.

The C56X pilot reported that the glider pilot might have seen his ac, based on the latter's perceived wing wobble, but a glider pilot Member thought this unlikely and it was not feasible to draw definite conclusions on that aspect. The Member explained that glider pilots are quite used to flying in close proximity to other gliders in thermals and if the approaching C56X had been seen in good time the pilot might not be at all concerned – even at the minimal distances reported here. Whilst others might consider that the glider was operating without due regard for Powered A/D traffic – on the climb-out to RW23 and at the start of the Downwind leg near the ATZ - the recorded radar data reflects that the glider pilot was operating quite legitimately, some 1½nm clear of the Cambridge ATZ boundary, in Class G airspace where 'see and avoid' prevails and not in close proximity to the ATZ as the C56X thought. Moreover, the C56X pilot was required by the Rules of the Air to give way and avoid the glider in these circumstances, which he did successfully with appropriate regard for the glider pilots limited ability to manoeuvre, albeit that he had spotted the thermalling white glider at a

similar altitude only 0.2nm away nose-on. Nevertheless, pilot Members understood that such ac with a small cross-sectional area, viewed head-on co-alt, are difficult to spot. Therefore, based on the limited information available, the Members agreed unanimously that while this Airprox had stemmed from a late sighting by the C56X Citation pilot, he had seen the glider in sufficient time to manoeuvre away from it in a manner that did not require a robust response. The radar recording suggesting that the horizontal separation he afforded was a little more than the 200yd to the S he reported. Moreover, Members noted his comment that 'had he done nothing they would not have collided', all of which led the Board to conclude that no actual Risk of collision had existed.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A late sighting by the Citation pilot.

Degree of Risk: C.

AIRPROX REPORT No 2011049

Date/Time: 31 May 2011 1237Z

Position: 5155N 00215W
(Gloucestershire Airport-
elev 101ft)

Airspace: Lon FIR (Class: G)

Reporting Ac Reported Ac

Type: Chinook King Air

Operator: HQ JHC HQ AIR (Trg)

Alt/FL: 3000ft 3000ft
(QNH 1021mb) (QFE 1003mb)

Weather: VMC CLBC VMC CLBC

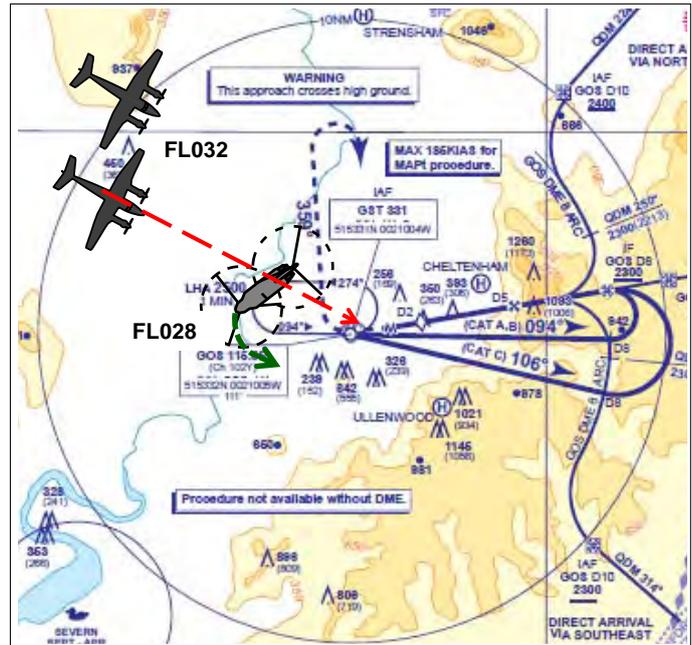
Visibility: 40km 20km

Reported Separation:

150ft V/500m H 400ft V/0m H

Recorded Separation:

400ft V/ 0.1nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE CHINOOK PILOT reports flying an IFR approach to Gloucestershire on a training flight in receipt of a BS from them, squawking 7000 with Mode C and S in a green ac with all appropriate lights switched on but TCAS was not fitted. While established in the GST NDB hold for RW27 at 3000ft, heading 274° at 120kt, on the Gloucestershire QNH of 1021mb, a two-ship [blue and white, military] King Air formation flew over the top of their ac in straight and level flight. They were spotted initially by the HP and then the Crewman, shortly before they flew O/H and they were estimated to be less than 200ft above the ac. They tightened their left hand turn to avoid them and reported the incident on landing, assessing the risk as being high.

THE KING AIR PILOT reports leading a formation of two blue and white ac with all lights on, on a training flight from Cranwell to Lyneham, squawking as directed with Modes C and S and in receipt of a TS from Lyneham APP. They were heading 100° at 170kt, 5nm NW of GST, as a formation (2x King Airs) had just effected a join-up at 3000ft (QFE) utilising the TS from Lyneham and had just informed Lyneham that they were ready for radar vectors for recovery. Lyneham App called traffic in their 10 o'clock slightly below to the formation and almost immediately they received a TCAS TA from the reported traffic [see Mil ACC report below] which they quickly identified as a Chinook, estimating it to be 1.5nm away. They monitored the Chinook visually, and on TCAS, as it passed below them, the TCAS indicating that it was 4-500ft below, so he decided that the best course of action was to maintain track and altitude, as he perceived there to be no risk of collision. They then recovered to Lyneham with no further incident. He was informed of the Airprox by London Mil and assessed the risk as being low.

ATSI reports that this Airprox occurred at 1236:40 UTC, in Class G airspace, 2.8nm to the NW of Gloucestershire Airport (Gloster).

The Chinook was carrying out a VFR training flight and was entering the GST (Gloucestershire) NDB hold, prior to commencing an NDB approach. An Airprox report was not received by Gloucestershire until later in the day when the Chinook pilot rang ATC to report that a formation of two King Air ac had passed in close proximity while he was in the hold.

The controller was providing a combined Aerodrome and Approach Control Procedural service without the aid of surveillance equipment. The UK AIP entry for Gloucestershire, Page AD 2-EGBJ-1-6 (8 Apr 10), Paragraph 2.18, states:

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

CAA ATSI had access to radar and RTF recording, controller and pilot written reports.

METAR EGBJ: 311220Z RWY27 29010KT 9999 FEW030 16/02 Q1021=

At 1226:05, the Chinook pilot called Gloster Approach, reporting 13nm on the GLS 245 radial, climbing to 3000ft on the QNH of 1016; the pilot requested a transit through the overhead and a BS was [initially] agreed.

At 1226:31, the Chinook advised, *....change of intention we'd actually like to pick up the procedure NDB DME for runway two seven with one time hold if that's possible*"; App responded, *"(Chinook) c/s affirm still under a Basic Service IFR traffic outbound just airborne from the southwest three thousand feet is a twin squirrel"*, the pilot acknowledged and requested a TS. Approach offered a Procedural Service either at a higher level at the Beacon or, for the Chinook to provide own deconfliction against the Twin Squirrel; the pilot replied, *"er Chinook) c/s er no problem we'll remain VFR and er take a Basic Service off you."*

At 1227:11, App instructed, *"(Chinook) c/s report approaching the Golf Seirra Tango at altitude three thousand feet under a Basic Service"* and this was acknowledged.

At 1234:00, the radar recording showed the Chinook crossing the GST (NDB), tracking NE, indicating FL027 prior to commencing a left turn to enter the hold. The recording also showed two ac (later reported as the King Airs) displaying SSR codes 4501 and 4502 (Lyneham). The King Air pilot's report indicated that they were in receipt of a TS service from Lyneham App.

The two ac were indicating FL033 and FL043 respectively and the radar recording showed the ac converging; the ac squawking 4502 descended to FL027 and its transponder is turned off at 1235:00 as the ac formatted.

At 1235:22, the controller advised, *"(Chinook) c/s and erm IFR traffic is clear now er you're under a Procedural Service"*; this was acknowledged by the Chinook pilot.

At 1235:39 the radar recording showed the Chinook, 1.6nm N of GST, tracking W, indicating FL026 (converting to an alt of 2816 ft, with QNH 1021 and 1mb equating to 27ft). The recording also showed the formation 6.3nm NW of GST, indicating FL033 (converting to 3516ft) and converging with the Chinook.

At 1236:10, radar recording showed the Chinook maintaining FL028 (3016ft) and the formation indicating FL033 (3516ft) with the distance between the ac as 2.6nm.

The radar recording showed the Chinook commencing a left turn in the hold at 1236:36, with the distance between the ac being 0.5nm and with 500ft vertical separation; it was not possible to determine the level of the non-squawking ac. The last radar derived level at 1235:00, indicated FL27 (2916ft).

The ac tracks crossed at 1236:43 at a position 2.7nm NW of GST, with the vertical separation indicated as 500ft [400ft on the Clee Hill radar recording]. Radar then showed the ac tracks diverging with no change in the indicated Mode C level.

The Chinook was in receipt of a Procedural Service and the formation was unknown to the Gloster App controller. The Manual of Air Traffic Services (MATS) Part 1, Section 1, Chapter 11, Page 10, states:

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

HQ 1GP BM SM reports that the Chinook was operating VFR, in VMC, on an NDB approach in receipt of a PS from Gloucester App. The King Airs were operating VFR, completing a formation rejoin prior to a visual recovery to Lyneham in receipt of a TS, reduced due to poor radar performance from Lyneham App.

The King Air formation was at 3000ft on Lyneham QFE 1003mb, whilst the Chinook reports operating within the GST NDB hold at 3000ft Gloucester QNH 1021mb (equating to 540ft vertical separation).

APP was operating band-boxed as APP and Zone and providing an ATS to 5-speaking units on 2 VHF frequencies.

At 1234:24, APP passed TI to King Air leader on a primary-only contact stating "*pop-up traffic err your 12 o'clock, 3 miles, similar heading, no height information*" which was acknowledged [this related to a primary only contact about 7nm NW of the Chinook]. At that point, the reporting Chinook was 10.5nm ESE of the formation and King Air (B) was 1.1nm NE of leader on a parallel track, 400ft above but descending to rejoin him. No further TI was passed to either member of the King Air formation throughout the remainder of the incident sequence.

King Air A stated in his report however that APP passed them TI on 'traffic in our 10 o'clock, slightly below [and that] almost immediately we received a TCAS TA from the same traffic which we quickly identified as a Chinook'.

At 1236:12 King Air leader reported "*holding hands, ready to accept vectors*" and at that point the Chinook was 1.2nm E of them.

The CPA occurred at 1236:41, 26.3 nm NW of Lyneham (2.7nm NW of GST), with the Chinook crossing from left to right 0.1nm in front of the King Airs.

In terms of the Airprox itself, it appears reasonable to argue that through the action of confirmation bias and because the subject of the TI passed at 1234:24 was non-squawking, the pilot of King Air (A) miss-perceived that the TI related to the contact that they could see on the TCAS display. Notwithstanding this, the King Air pilot was able to visually acquire the Chinook in sufficient time to assess that they had adequate separation and that no avoiding action was required.

Notwithstanding the distance of the CPA from Lyneham, given that the King Air formation was in receipt of a TS they were, therefore displayed on the Lyneham radar display. Moreover, it is reasonable to assume that the Chinook was also displayed on the Lyneham surveillance display given that it was only 540ft below the formation. It has not been possible to determine why APP did not pass TI to the King Airs regarding the Chinook.

In his report, SATCO Lyneham raised a significant issue by highlighting the limitations of the radar service provided by Gloster and questioning the appreciation by many crews of the level of awareness of Gloucestershire traffic not in receipt of an [App] service. In this instance, the Chinook was operating IFR in receipt of a BS, it would not have been afforded any protection whilst flying the NDB procedure, other than that provided under 'see and avoid'.

Although the result was not intended, the TI passed by Lyneham App, in association with TCAS information, allowed the King Air formation to 'see and avoid' the Chinook.

HQ JHC comments that it is apparent that the Chinook pilot misjudged the separation between the ac; from the radar report and the TCAS information, the vertical separation was likely to have been in the region of 400ft. However, the Chinook pilot reports that they took avoiding action and assessed the risk of collision as high. It is possible that the Chinook crew did not appreciate that a Procedural Service only gives information that, if complied with, achieves deconfliction minima on other ac participating in the Procedural Service – and does not provide deconfliction minima with all ac.

HQ AIR (TRG) comments that the availability of TCAS aided the King Air crew in visually acquiring the Chinook. Whilst it was assessed visually that there was no risk of collision, and it appears that the crew felt they could maintain the separation which existed, it might have been prudent to increase the vertical separation or create some lateral separation. TCAS RA was not selected, which is in accordance with 22 (Trg) Gp and local TCAS orders and SOPs, because of the relative poor manoeuvrability of a close formation. The apparent confusion over the TI called and the traffic that was actually sighted highlights the potential for any TI to be misinterpreted and for an incorrect mental air picture to be formed; apparently, the subject of the TI was not sighted. This incident highlights the importance of a continued and comprehensive visual scan in order to pick up those aircraft that may not appear on TCAS or on the controllers radar, or which may not be passed for whatever reason. The ultimate responsibility for collision avoidance remains with the ac crews.

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 observed that Gloucestershire instrument pattern is frequently very busy with procedural, mainly training traffic, and that Gloster Radar is only available by prior arrangement and has no SSR. They agreed that it is wise to avoid the area of the approach and hold even if in receipt of a radar service from another unit; if this is not possible, pilots should call Gloster App who will advise them of the traffic situation (as they know it). Controller Members added that this advice should also be noted by controllers at adjacent units who should, if possible, route traffic away from the hold and advise that it is active.

Notwithstanding that the Chinook was arguably IFR and the King Airs were VFR, the incident took place in Class G airspace where the normal 'see and avoid' principle applies. In this encounter the opposing ac were almost head-on and both were required to give way under the RoA. The Chinook had just commenced a left turn inbound to the beacon and the pilot tightened that turn. The King Air leader recognised that he was also required to give way but considered that adequate vertical separation already existed and so he 'stood on'. While the vertical separation might seem to have been adequate, had the King Air formation made, even a small track alteration and not overflowed the Chinook, it would have signalled to its crew that the King Air crews had seen it and thus most likely removed any concern that they had. In common with most other ac, the visibility from the Chinook above and behind is limited, and therefore the ability of the crew to judge safe separation is equally limited; even more so when in a turn. It was the view of one experienced pilot Member that, despite that the King Air formation leader considered the vertical separation adequate, they had flown unnecessarily close to the Chinook.

It was observed that (anecdotally) there seemed to be widespread misunderstanding by pilots of their responsibilities when operating under a Procedural Service in Class G airspace - whether IFR or VFR in both IMC and VMC (although they may be separated from other participating traffic) pilots are wholly responsible for collision avoidance.

Controller Members endorsed the HQ 1Gp BM SM view that in the circumstances prevailing, Lyneham App should have provided TI to the King Airs regarding the Chinook, since it should have been apparent to the controller that it was in conflict, both laterally and vertically. It was fortunate however, that the TI that the controller passed regarding the other (non-squawking) contact enabled the King Air crew to acquire the Chinook visually (but apparently not the contact to which the TI referred). Notwithstanding the limitations of a TS, Members thought that Lyneham could have provided the King Airs with a better service.

The HQ Air (Trg) Member observed that there had been a number of incidents recently where military crews had not used all the information available to them (including TI and TCAS) to avoid conflicting traffic by greater margins. He informed the Board that HQ Air would be conducting an education programme to improve awareness.

The ATSI Advisor pointed out that the post incident procedure would have been much smoother had the Chinook pilot reported the incident to Gloster App on the frequency in use at the time.

When considering the risk, a majority of Members considered the normal safety standards had been maintained and therefore there was no risk of collision.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Chinook crew was concerned by the proximity of the King Air formation.

Degree of Risk: C.

AIRPROX REPORT No 2011051

Date/Time: 2 June 2011 1459Z

Position: 5133N 00106W (3½nm
S of Benson - elev 203ft)

Airspace: Benson MATZ (Class: G)

Reporting Ac Reported Ac

Type: Lynx AH Mk7 Skyranger ML

Operator: HQ JHC Civ Pte

Alt/FL: 900ft↓ 400ft
QFE (1027mb) QFE

Weather: VMC CLBC VMC CAVOK

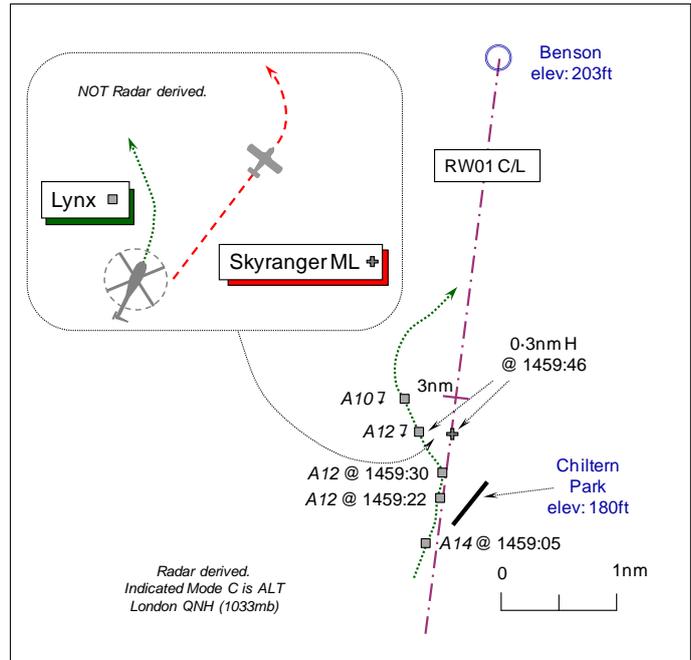
Visibility: 25km 10km

Reported Separation:

NR NR

Recorded Separation:

Not recorded



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE WESTLAND LYNX AH Mk7 PILOT reports flying a training sortie from Odiham and was conducting an SRA at Benson to RW01RHC in VMC. He was in receipt of a TS from Benson TALKDOWN (TD) on 277.675MHz. A squawk of A3617 was selected with Mode C; neither Mode S nor TCAS is fitted.

Established on the centre-line at 100kt, heading 020° whilst approaching 900ft QFE (1027mb) in the descent under terminal guidance, a small civilian ac – the Skyranger Microlight (ML) that had been spotted from about 4nm Final – was seen to line up on a private strip [Chiltern Park] about 3nm S of the A/D. He saw the ML roll and take off and, as he was visual with it at this point, it was not a problem. As it lifted off, the TD controller called traffic in their 1 o'clock, slow moving; the ML then executed a L turn which would have brought it into conflict with them, but at the same time the controller issued a 40° avoiding action L turn. He saw the ML pass behind with a 'medium' Risk but did not report the separation. The SRA was completed and after returning to base he contacted Benson ATC and discussed the incident with the controller.

His helicopter had a grey/green camouflage scheme; ac lighting was not specified.

THE SKYRANGER 912S MICROLIGHT PILOT reports he was departing from Chiltern Park aerodrome for a local VFR flight. His ML is coloured red and white and the strobe lights were on. Their normal procedure is to telephone Benson ATC to inform them of their operational status prior to any take-off from Chiltern Park, but because of a misunderstanding, Benson had not been informed of their active status.

After take-off from RW04 at Chiltern Park, he turned L onto the crosswind leg of a standard LH cct at 70mph, ascending to an intermediate height of about 400ft QFE. Soon after take-off he was contacted on the radio by the Chiltern Park aerodrome manager, who advised him that he had passed close to a helicopter on final approach to Benson. The Manager wanted to ascertain if he had contacted Benson to advise them of their active status, but he had to acknowledge that he had not done so and immediately radioed Benson ZONE on 120.9MHz to apologise for the omission.

The Lynx helicopter had turned away from its original path before he had turned onto the downwind leg, and, being camouflaged, was not seen. The Downwind leg of RW04/22 at Chiltern Park runs close to the FAT for Benson's RW01, about 3.5nm from the touchdown point of RW01. Military helicopters are known to approach Benson at low-level, often below Chiltern Park's cct height of 700ft, and, on occasion, after Chiltern Park has notified Benson as being 'active'.

Due to an increase in incidents involving military ac recently, the current arrangements with Benson, which are detailed in a LOA, are being reviewed. Changes have been proposed to the Chiltern Park cct pattern to deconflict traffic and other measures are under consideration by Chiltern Park management, for discussion with Benson in the near future.

He suggests he shall now call Benson ZONE on the RT- or TOWER if ZONE is closed - at the holding point to request information on current traffic movements before returning to the Chiltern Park frequency, as is required by the Chiltern Park Flying Orders.

THE BENSON TALKDOWN CONTROLLER (TD) reports he was conducting a SRA to RW 01RH for the Lynx AH Mk7. The meteorological conditions were good - sfc wind 040°/8kt, 25km visibility and FEW cloud at 3800ft. As the ac was approaching the 4nm point he noticed a primary radar return that had just 'painted' to the E of the centreline at the 3½nm point. Immediately, he called the radar return to the Lynx pilot as, in his judgement, it indicated that the primary return could be an ac climbing out of Chiltern Park, situated to the S of Benson A/D. The Lynx pilot did not call visual at that point; in the controller's view, as the unknown ac turned straight towards the Lynx on the centreline at the 3½nm point, there was a definite risk of collision. Avoiding action was given to the Lynx pilot of a L turn onto a heading of 330° to ensure that the risk of collision would be avoided. The Lynx pilot then called visual with the unknown ac and he was then able to continue with the SRA and complete the approach.

THE BENSON SUPERVISOR (SUP) reports that all positions in the ACR were reasonably busy with APP/DIR bandboxed. Whilst facilitating an internal pre-note between APP and ZONE he observed a 'non-squawker' relatively close to the A3617 Benson squawk which he knew to be the Lynx conducting an SRA. He immediately moved to a position behind TD who was conducting the SRA to increase his own situational awareness and quickly ascertained that the Lynx pilot had not reported visual with the non-squawker and observed it taking controller initiated avoiding action to maintain separation. The Lynx was then easily vectored back towards the centre-line and a clearance obtained at 3nm.

Praising TD for his actions, he then followed the non-squawker on ZONE's display whilst trying to ascertain if Chiltern Park had called active at any point. Shortly thereafter a VDF trace was observed passing through the non-squawker; the pilot identified himself with the Skyraanger ML's registration having just climbed out of Chiltern Park without 'activating' the airfield IAW local agreements. The ZONE controller acknowledged an apology from the ML pilot and reminded him of the necessity to call. A few minutes after this, the ATC assistant in the VCR relayed a message that Chiltern Park was now 'active' and the person that had called in had apologised for how close the Skyraanger ML got to the Lynx, something he had observed from the ground.

HQ 1GP BM SM reports that this Airprox occurred between a Lynx conducting an SRA at Benson in receipt of a TS from Benson TALKDOWN (TD) and a ML departing Chiltern Park airfield VFR.

This Airprox does not appear on the LATCC (Mil) radar recording, although the Lynx is visible throughout the incident sequence. [UKAB Note (1): A primary radar contact appears on the Heathrow Radar recording at 1459:46, 0.3nm E of the Lynx which may or may not be the reported Skyraanger ML. At this point the Lynx is indicating 1200ft London QNH (1033mb), which broadly equates to 1020ft Benson QFE (1027mb) - about 1040ft above Chiltern Park aerodrome's elevation of 180ft.]

TD was manned by a relatively inexperienced first tourist controller who had been awarded their SRA endorsement that morning. The controller states that as the Lynx "was approaching the 4nm point I

noticed a primary radar return with no height information that painted just to the east of the centre-line at the 3½nm point.” At 1459:04, TD passed TI to the Lynx stating, “...*traffic right 1 o'clock 1 mile manoeuvring, no height information*”, which was not acknowledged by the Lynx pilot.

TD then goes on to state that in their opinion, as the ML turned into confliction with the Lynx, there was a definite risk of collision and, at 1459:20, instructed the Lynx crew, “*avoiding action, turn left immediately heading 3-4-0 degrees, traffic right 1 o'clock 1 mile crossing right - left no height.*” At 1459:31 the Lynx pilot reported visual, with the avoiding action turn becoming evident on the radar replay at 1459:33.

Neither pilot provided an estimate of the minimum separation, with the ML pilot stating that they had not been visual with the Lynx until after the CPA.

JSP 552 405.135.20 provides regulation for the separation and avoidance of other contacts whilst providing a PAR. It specifies that irrespective of ATS, when a collision risk is apparent in both elements of the PAR display involving an un-notified radar contact:

‘advice on suitable action for collision avoidance together with information on conflicting traffic [is to be given].’

There is no comparable regulation contained within JSP 552 405.125 which pertains to the conduct of an SRA.

In this instance TD provided relevant and accurate TI to the Lynx pilot and, when the controller perceived a risk of collision to exist, provided deconfliction advice to the Lynx pilot. Although the Lynx pilot was visual with the ML throughout the incident sequence, TD fulfilled their perceived duty of care by offering deconfliction advice.

In terms of the regulatory difference between the provision of a PAR and a SRA, the absence of comparable regulation, whether consciously or unconsciously, caused TD to apply an incorrect regulation. In this instance, this transfer of training had a positive outcome; however, a different set of contextual conditions or a different interpretation of the regulations may have produced a different, negative outcome. Following a procedure which has not been designed for the specific situation could have unforeseeable and undesirable results, with deficiencies or differences in regulation or procedure being identified as causal or contributory factors in many air accidents and incidents.

Consequently a recommendation has been made to the MAA Op Gp – ATM Division – relating to a review of JSP 552 405.135.20 and JSP 552 405.125 and the provision of additional guidance; a reply is awaited.

HQ JHC comments that despite the fact that there is an absence of regulation for an apparent collision risk whilst on an SRA, when the controller passed relevant TI to the Lynx, it is disappointing that it was not acknowledged by the Lynx pilot. Whilst the avoiding action was successful, it is not considered good airmanship for a pilot to be visual with an aircraft of concern but not relay this information to the controller, although it is acknowledged that the final stages of an instrument approach creates a high workload in the cockpit. It is probable that the Lynx pilot would have taken avoiding action himself at the same point should the controller not have given avoiding action advice so promptly.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The Board noted the recommendations made by HQ 1GP BM SM to the MAA Op Gp – ATM Division – relating to a review of JSP 552 and the provision of additional guidance for SRA controllers. The CAA SRG Strategy and Standards Advisor considered there was sufficient guidance for controllers about collision avoidance action when providing a TS or DS within CAP774, which details air traffic services outside CAS. However, controller Members opined that at military A/Ds the Talkdown controller might not, in some cases, also be validated on Radar Director or Radar Approach and agreed that a review of the guidance applicable to Talkdown controllers conducting SRAs would be worthwhile, which the MAA Advisor confirmed was being undertaken.

Notwithstanding any lack of official advice, the Board commended the Benson TALKDOWN controller for his swift appreciation of the situation and appropriate reaction to the conflict through the transmission of avoiding action to the Lynx crew, in this instance all the more so because of the controller's inexperience. Nevertheless, it was apparent from the Lynx pilot's report that in the prevailing good weather he had spotted the Skyranger just before it took off and watched it turn L downwind. This was before the controller spotted the aeroplane on radar himself and issued the avoiding action L turn away from the Skyranger, which was promptly complied with by the Lynx crew.

The Skyranger pilot's frank admission that he had not notified Benson ATC that he would be flying at Chiltern Park, as is normal procedure in accordance with their LoA, was plainly a significant omission. This denied Benson ATC any prior warning that might have been taken into account during the Lynx's approach. The absence of prior notification was to some a significant factor, and discussed at length in terms of airmanship; one Member suggested that the Skyranger pilot took off into conflict with the Lynx. However, the Skyranger pilot's omission did not finally figure in the Board's determination of the Cause of the Airprox. Within the MATZ, where specific rules apply to military pilots, but outside the ATZ, where Rule 45 of the Rules of the Air applies within, it is all Class G airspace where the VFR entreat civilian pilots to 'see and avoid' other ac. There is no national requirement for civilian flights to be in communication with Benson ATC within the MATZ, albeit that good airmanship dictates close observance of the guidance within the UK AIP relating to MATZ crossings. It is, therefore, not a 'known traffic environment' and under the TS afforded to the Lynx crew no stipulated deconfliction minima apply. Clearly, observance of the LoA with Benson ATC engenders a safe and harmonious working relationship between these two closely located facilities and good airmanship necessitates compliance. However, the Board concluded the fundamental Cause of this Airprox was a conflict in Class G airspace resolved by the Talkdown Controller.

The Skyranger pilot had not spotted the Lynx, either before take-off or during his cct, and was only aware of the conflict from the A/D Manager's RT call. This was not a warning of the helicopters approach it would seem and occurred after the event. Members warned against alarming or distracting pilots in the air and it was far better to talk about it on the ground rather than provoke concern whilst airborne. Conversely, the Lynx pilot had the aeroplane in view throughout until it drew astern. Prompted by the controllers avoiding action, the Lynx was steered away from it and then back onto the SRA with little difficulty the controller reported and the Lynx crew could have taken more robust action if need be. The Board concluded, therefore, that no Risk of a collision had existed in these circumstances.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Conflict in Class G airspace resolved by the Talkdown Controller.

Degree of Risk: C.

AIRPROX REPORT No 2011052

Date/Time: 2 Jun 2011 1322Z (Saturday)

Position: 5137N 00105W (0.5nm ESE Benson - elev 203ft)

Airspace: ATZ (Class: G)

Reporting Ac Reported Ac

Type: Tutor(A) Tutor(B)

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

Alt/FL: 800ft 850ft↓
(QFE) (QFE)

Weather: VMC CLBC VMC CLBC

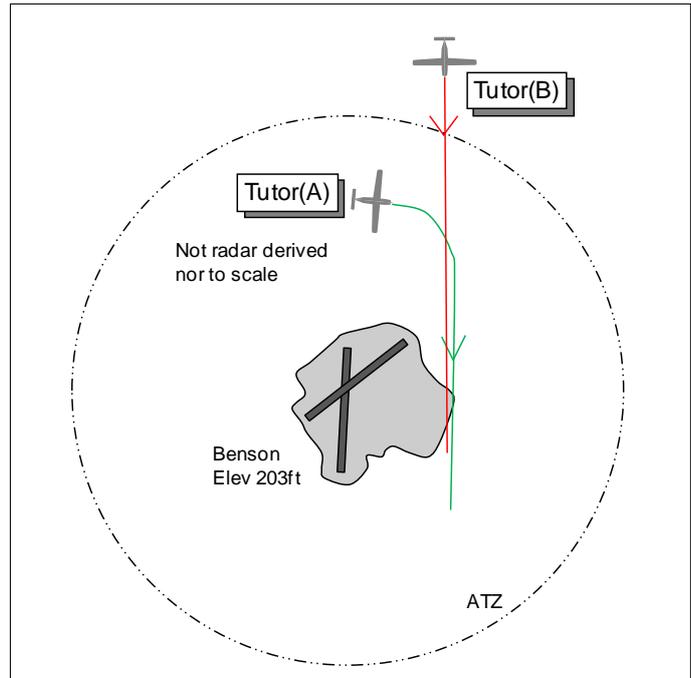
Visibility: 10km 10km

Reported Separation:

100ft V/150ft H 50ft V/75m H

Recorded Separation:

NR



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE TUTOR(A) PILOT reports flying a solo cct consolidation exercise at Benson, VFR and in communication with Benson Tower on 127.15MHz; the ac's transponder was switched off. The visibility was 10km below cloud in VMC and the ac was coloured white with HISLs and nav lights switched on. He was late making a downwind call on RW01 because when he was ready, about a third of the way down the RW, he was unable to call owing to other traffic communicating with ATC. Heading 190° at 800ft QFE and 80kt he made a routine lookout to the R, by now he was two-thirds of the way down the RW, he noticed another Tutor, Tutor(B), about 100ft higher and 150ft away in his 4 o'clock. He believed that both he and the Tutor(B)'s pilot saw each other at the same time because the other Tutor initially broke R as its pilot called ATC before then conducting a LH orbit. During this period he maintained straight and level flight and watched to see what Tutor(B) was doing. Once Tutor(B) was clear he was able to call "downwind" and was cleared for a touch and go after another Tutor, Tutor(C) that was already on final. He assessed the risk as high.

THE TUTOR(B) PILOT reports flying a dual sortie from Benson VFR and in communication with Benson Tower on 127.15MHz, squawking 3611 with Modes S and C, he thought. The visibility was 10km below cloud in VMC and the ac was coloured white with HISLs and nav lights switched on. He was recovering to the visual cct RW01 RH from the N at 2000ft and 110kt. He called Tower about 3nm N of Benson and requested a high downwind join (for noise abatement) which was approved. The frequency was busy initially and it took him a short while before he could make the call so it may have been a bit closer. On reaching the visual cct the only ac he saw was a helicopter hovering over the RW on final approach. Another AEF Tutor flight, Tutor(C), then called long final for a straight-in approach which was approved. Very shortly afterwards he called high downwind, abeam the upwind threshold at 2000ft and a little wider than normal, and was told by Tower "one ahead". He asked Tower if that was the straight-in approach traffic on long final and was told affirmative. He commenced a gentle idle power descent on the downwind leg heading 190° at 80kt. At this point no mention had been made by ATC of any other cct traffic and no other calls were heard to indicate that there were any other ac present in the visual cct. He had the Traffic Advisory System (TAS) on and there were no contacts showing apart from the 2 ac he already knew about. As he descended downwind his main attention was therefore in the direction of the aerodrome and towards the approach area to try and make visual contact with Tutor(C) in order to turn final, positioning at a correct distance behind it. Approaching 800ft at 80kt and just before the abeam point with the RW

threshold his cadet alerted him to an ac on his (L) side and out to the front (in his blind spot- 11 o'clock slightly low). He immediately manoeuvred his ac to make visual contact and saw Tutor(A) in very close proximity, 75m ahead, slightly to the L and 50ft below. He turned hard L and made an S turn to fit in behind Tutor(A). As he did this ATC asked if it was his ac breaking L, and he responded that he was positioning behind another Tutor he hadn't known was there. This was greeted by silence from ATC followed by the solo student in Tutor(A) calling "late downwind" and the student was told to go-around. He continued downwind normally and landed after Tutor(C). Later on during a conversation, Tutor(C) pilot told him that he also had no idea that a Tutor flown by a solo student was in the cct downwind when the incident occurred. He assessed the risk as medium.

UKAB Note (1): Tutor(B)'s SSR disappears as the ac enters the ATZ 2nm NNE of Benson before the ac fades from primary whilst in the downwind leg, passing 0.5nm E of the aerodrome.

THE BENSON TOWER CONTROLLER reports that at the time of the incident Tower was bandboxed with Ground owing to a brief lull in traffic. The instructor for the solo student in Tutor(A) was observing his performance from the VCR. The cct rapidly became busy with station-based helicopter departures, fixed-wing arrivals and the Helimed on scramble. Tutor(A) flight elected to go around from an approach and climbed on the deadside. Tutor(B) flight called to join declaring it would be a high and wide downwind join and was informed of the 2 ac in the cct [Tutor(A) and helicopter departing]. A further Tutor flight, Tutor(C), called to join through initials, requesting a straight-in approach which was approved. Tutor(B) flight called wide downwind and was advised of 1 ahead (Tutor(C) on a straight-in approach) as he believed Tutor(B) to be the 1st Tutor downwind. After descending downwind Tutor(B) pilot became visual with another Tutor in close proximity, which was identified as Tutor(A), and conducted an orbit. Tutor(B) pilot was asked if he was in the Tutor which had conducted the orbit so as to establish the new order of the Tutors downwind. Tutor(B) pilot was then told there were now 2 ac ahead; both Tutor(A) and Tutor(B) completed their ccts safely.

HQ 1GP BM SM reports that this Airprox occurred downwind in the visual cct at RAF Benson between 2 Tutors. Tutor(A) was flown by a student established within the cct, with Tutor(B) flown by a QFI recovering from a high, wide downwind position, following an air experience flight.

Given the height at which the Airprox occurred, no radar replay was available; consequently, the investigation has been based upon the reports of those involved and a transcript of the audio-tapes.

All stated heights are based on the RAF Benson QFE of 1027mb published at the time of the incident.

The relatively inexperienced ADC reported that he had been operating in the GRD position for approximately 70min prior to giving a trainee ADC and instructor a break "due to a brief lull in traffic." He then operated in the bandboxed TWR and GRD position for approximately 20min prior to the occurrence. The trainee's instructor had also been scheduled to conduct a standardisation check on the subject ADC later in the week but took the opportunity of the increasing traffic load to conduct the ADC's check. On the DFSOR, the Supervisor had assessed the ADC's workload as medium to low; however, the Supervisor was not present within the VCR during the incident sequence and the controller has subsequently stated that he would assess their workload as having been medium to high. The ADC reported the Wx as being unlimited visibility in nil weather and FEW cloud at 3800ft.

At 1319:06, Tutor(B) pilot called to join the visual cct and was informed that there were 2 ac in the cct – one was Tutor(A) and the other a Rotary Wing ac departing the airfield. Tutor(B) pilot then stated that he was positioning for a "*high wide downwind join*" which was acknowledged by TWR. There is no recognised procedure at RAF Benson for a "high wide downwind join"; the light ac visual cct is at 800ft.

At the time of the Airprox, regulation and guidance for the conduct of visual joins was contained in JSP 552.320.105.4, which has since been carried forward into MAA RA 3020 and associated MAA MATM Chapter 20 Para 11. These documents state that the 'NATO standard visual aerodrome cct

and landing patterns ‘...are to be implemented, except for the authorised single-Service procedures’ and that ‘clearance from ATC for the aircraft to enter the pattern **should** include items of essential information regarding the circuit direction, runway in use and number and position of all aircraft ahead which have not touched down.’ That said, there are no single-Service variations contained within either JSP 552.320.105 or MAA RA 3020 and associated MAA MATM Chapter 20 Para 11. Moreover, the only UK variation to the NATO procedure that is germane to the current investigation is that the ‘downwind call is required to be made when abeam the upwind threshold of the RW in use.’ No variation is listed for the operation of an oval cct. Whilst the NATO cct pattern at Figure 1 is predicated on a rectangular cct, rather than the oval cct in common use by the UK military, the information relating to downwind join ground tracks and the ATM aspects appear to be able to be carried across to UK mil ATM procedure. However, based upon a quick straw-poll, current mil ATM practice sees controllers pass position information to ac joining through Initial, rather than all ac conducting a visual join.

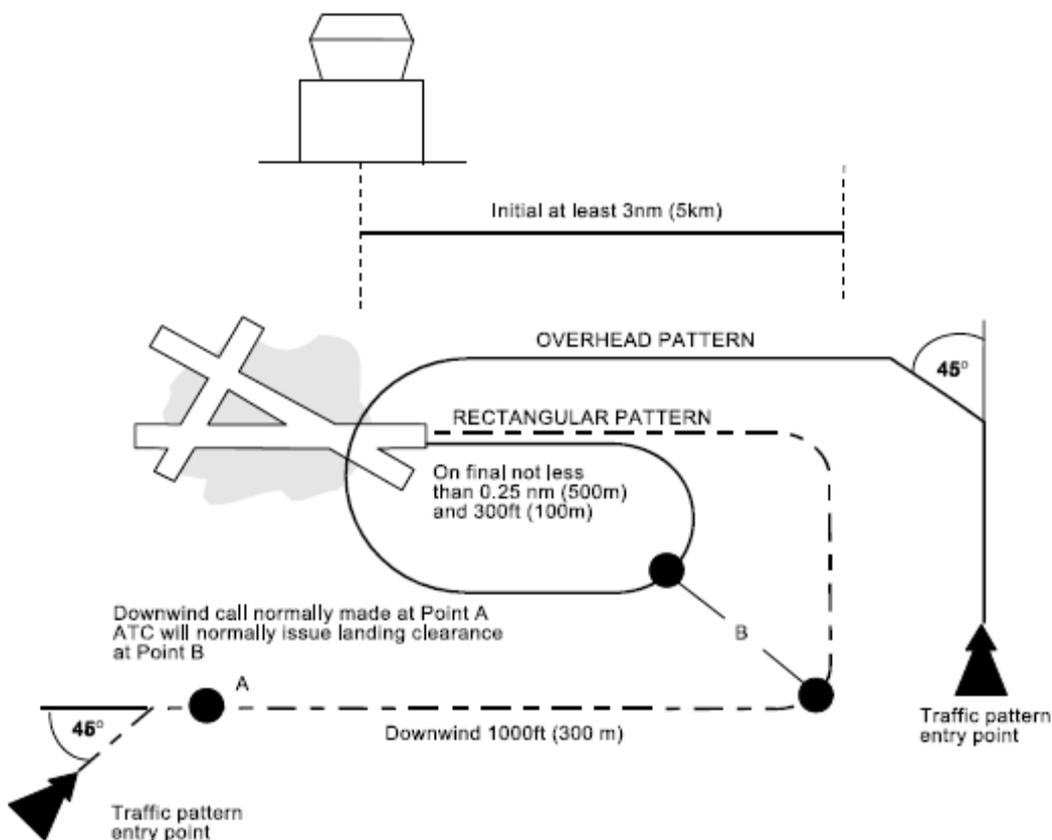


Figure 1: NATO Standard VFR Traffic Landing Pattern – Fixed Wing

At 1319:22 the departing Rotary Wing ac left the frequency. At 1319:29, a third, unrelated Tutor flight, Tutor(C), called to join and at 1320:28 declared his intention to make a straight-in approach to land. Thirty-seven seconds later at 1321:05, Tutor(B) flight reported being, “abeam the upwind threshold at 2000ft and a little wider than normal” and transmitted, “*high downwind full stop.*” This was acknowledged by TWR who replied that there was “*one ahead*” of Tutor(B). Tutor(B)’s pilot then requested clarification as to whether the “*one ahead*” was Tutor(C), which was confirmed by TWR. At this point, TWR was speaking to 4-speaking units; 3 Tutors operating in the visual cct and one air ambulance on start for a scramble departure. It was also at around this point that Tutor(B) commenced their gentle idle descent from 2000ft to cct height of 800ft. The ADC later stated that he observed Tutor(B) descending on the downwind leg with what appeared to be a relatively “*high rate of descent for a Tutor.*” The pilot of Tutor(B) reported that as he descended downwind, his “main attention was...in the direction of the airfield and towards the approach area to try to make visual contact with” Tutor(C).

Tutor(A) pilot reported that, at the point when he would routinely report downwind, he was unable to make the transmission due to frequency congestion. This is borne out by the transcript with the only breaks in the R/T being between 1320:02 to 1320:28 and 1321:15 to 1321:24. Whilst it has not been possible to determine where Tutor(A) was in the cct between these times, based on Tutor(B) pilot's transmissions and subsequent events, it is reasonable to suggest that Tutor(A) was crosswind between 1320:02 and 1320:28 and downwind between 1321:15 and 1321:24.

The ADC later stated that from the point when Tutor(B) called downwind neither he nor the QFI for the pilot of Tutor(A), nor the controller conducting the standardisation check, nor the TWR assistant were able to sight Tutor(A) as a result of background cloud and the Tutor's colour scheme.

At 1321:37, Tutor(A) pilot reported late downwind with TWR replying that there are 2 ac ahead of them; these being Tutor(B) and Tutor(C). At 1321:58 TWR asked Tutor(B) flight whether they were conducting an orbit, which accorded roughly with the pilot's report of their actions following the CPA. Moreover, the pilot of Tutor(B) reported that they first became visual with Tutor(A) "just before the abeam point with the runway threshold" as they approached cct height and that Tutor(A) was in their "visual blind spot: eleven o'clock, slightly low."

Tutor(A)'s pilot reported that their SSR transponder was turned off. Tutor(B)'s pilot reported that both their transponder and TAS were turned on and that there were "no contacts showing apart from the 2 that I knew about."

DSATCO RAF Benson has stated that the Tutors' colour scheme makes them difficult to sight and track whilst within the visual cct. Moreover, SATCO RAF Benson has stated that it is impossible to utilise the Hi-Brite VRD to provide information on the position of Tutors within the visual cct because they do not paint satisfactorily on primary radar. Whilst there has been discussion at RAF Benson about mandating that Tutor ac squawk SSR Mode 3A and C whilst within the visual cct, to both aid controllers in sighting the ac and to facilitate the operation of the Tutor's TAS, this has not yet been implemented.

There are 3 distinct aspects to this incident which require assessment: the actions and decision making of the pilot of Tutor(B); the actions of the ADC and regulation regarding the provision of TI whilst in the cct.

At the time that Tutor(B) joined the cct at 1319:06, he was correctly advised that there were 2 ac in the visual cct and, based upon his report and the transcript, was aware of Tutor(C) when he reported downwind. The purpose of the RT transmissions made by all speaking units operating within a visual cct environment is to maintain situational awareness. On the basis that the pilot of Tutor(B) stated that he was not aware of Tutor(A), it appears reasonable to suggest that he had not assimilated the cct state information given to him. This caused Tutor(B) to descend into the cct, without being visual with all known traffic, specifically Tutor(A). Moreover, his decision to join high downwind warrants further attention.

Based upon the report of the pilot of Tutor(B) and the transcript (loss of 1200ft in 53sec between 1321:05 and 1321:58), Tutor(B) averaged an approximate ROD of 1300fpm from abeam the upwind threshold to abeam the RW threshold, which does not seem to accord with the reported "gentle idle descent." This is supported by the statement made by the ADC about the Tutor's ROD. During this descent, the pilot of Tutor(B) focussed his attention towards the airfield, arguably to maintain the correct lateral spacing for their height relative to the airfield, and towards the approach area to facilitate their sequencing behind Tutor(C). Whilst his incorrect mental picture of the cct state will have lulled him into solely focussing his visual scan in these areas, this focus specifically excluded the area beneath the ac, which is contrary to the CFS taught procedure for the visual scan whilst descending. Furthermore, the purpose of a downwind join is to facilitate the expeditious recovery of an ac, whilst simplifying the task of sequencing into the cct. Routinely, an ac joining downwind would be expected to be at cct height by a position abeam the crosswind position, thereby simplifying the pilot's visual acquisition task. In this case by joining 1200ft above cct height, the pilot of Tutor(B) was

increasing the difficulty of his task to visually acquire the other cct traffic and reducing the possibility of being able to safely integrate himself into the cct.

The key ATM aspect to this Airprox is the transmission made by TWR at 1321:08 to Tutor(B) flight that there was 1 ac ahead of them, confirmed by TWR at 1321:12 as being Tutor(C). ADCs are trained to utilise eyesight to maintain track of all ac within the visual cct and to reinforce this using a "pin board." In this case, the ADC has stated that whilst he was utilising a visual scan to acquire and track the ac, his ability to do this was compromised by the Wx conditions and the Tutor's colour scheme. "Best-practice" might suggest that the Hi-Brite VRD could have been utilised to assess the position of Tutor(A) at the time that Tutor(B) flight called downwind; however, the ADC was unable to do this as the Tutor does not paint consistently on primary radar. Moreover, it is also reasonable to argue that the ADC should have expected that Tutor(B) flight would sequence itself with the existing visual cct traffic, given that he was aware of the number of ac within the cct.

This Airprox has highlighted that the provision of more specific cct TI to the pilot of Tutor(B), on the positions of all ac operating within the cct, may have facilitated his integration and thus mitigated against this Airprox. However, the details of regulation pertaining to this are not well known nor, seemingly, practised within the mil ATM community. Moreover, the examples given in CAP413 of phraseology to be used for visual joins only include guidance for joins through the O/H and initials, with only the latter example providing cct position information.

In conclusion, the pilot of Tutor(B) flew a join which compromised his ability to sequence his ac with the existing cct pattern, having not assimilated the cct state information passed to him which, as a result, reduced the separation between his ac and that of Tutor(A) significantly. Moreover, the ATM related safety barrier was compromised by the ADC's inability to sight Tutor(A) and to identify it on the Hi-Brite VRD.

RECOMMENDATION

BM SM has requested that MAA review the regulation regarding the provision of TI to ac joining the visual cct.

OUTCOME

RAF Benson has instigated a requirement for Tutor ac operating within the RAF Benson visual cct to squawk on SSR.

HQ AIR (TRG) comments that whilst there is a paucity of regulation of cct procedures within the MRP and ANO, there is much sensible guidance within the Take-off, Circuit, Approach and Landing chapter of the Airmanship section of AP 3456 (Vol 5-2-1-2 pages 6-8). This states:

"To reduce congestion and the risk of collision, aircraft should enter the airfield circuit in a planned and systematic manner. To achieve this, a standard circuit procedure is taught."

Circuit joining procedures detailed in the AP aim to allow ac to join 'without causing any disturbance to other circuit traffic' but they are not totally prescriptive. In this case the standard joining procedures were not followed, but the plan to join "wide" downwind should still have been safe had it been flown sufficiently wide to remain clear of any potential cct traffic. The AP goes on to emphasise the importance of lookout during any join, but it is also made clear that the standard joins are designed to facilitate good lookout, which remains the primary means of avoiding collisions in the visual cct.

The execution of Tutor(B)'s non-standard plan did not provide enough separation to allow an effective lookout to be carried out. Equally, the solo student in Tutor(A) does not appear to have assimilated Tutor(B)'s intentions or his potential as a threat; indeed, he is likely to have been approaching from high and behind. Events conspired to create a false impression for Tutor(B) pilot of the position of the cct traffic, thus removing another potential means of avoiding this incident. The

inability of the controllers and supervisors in the tower to see both ac removed another mitigation, as did the lack of a timely downwind call from Tutor(A) flight, and the lack of consistency over the use of IFF and TAS. In the sure knowledge that these safety measures are not infallible, emphasis on lookout at all stages, in order to discharge pilots' responsibilities for avoiding collisions, must be emphasised. The use of standard joining procedures can only aid lookout but Airfield Operators are also free to be more directive about joining procedures in their station flying order books (and AIP entries) if they so wish.

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.

Tutor(B) crew had requested to join 'high and wide' downwind and was told by ATC of 2 ac in the cct: Tutor(A) and a helicopter departing. Had the pilot of Tutor(B) positioned the ac high and wide this would have allowed the crew to see other ac that were in the visual cct during their descent. However, the radar recording revealed Tutor(B) tracking just 0.5nm E of the aerodrome before fading O/H the normal Tutor cct. The Tutor(B) crew did not assimilate the cct state information as they reported seeing the helicopter but did not mention the other ac, Tutor(A), 'in' the cct. After calling 'downwind', the ADC passed inaccurate TI to Tutor(B) crew advising that there was "one ahead", Tutor(C) flight that had, shortly before, declared its intention to join for a straight-in approach. ADC was cognisant of Tutor(A) being in the cct but could not see it when Tutor(B) crew called "downwind", so he had moved Tutor(B) up the sequence order. Meanwhile Tutor(A) pilot had been unable to make his call downwind, owing to frequency congestion, and had not assimilated Tutor(B)'s presence or intentions from the RT exchanges. Military Members agreed that when Tutor(B) flight called for join, the ADC should have given it specific TI on the position of cct traffic to help build the pilot's SA. Tutor(B) crew was unaware of Tutor(A)'s position but was responsible for integrating safely into the cct. Members agreed that Tutor(B) crew had not discharged their responsibilities and their non-standard join placed Tutor(B) into conflict with Tutor(A) causing the Airprox.

Turning to risk, Tutor(A) pilot only saw Tutor(B) when late downwind, immediately prior to making his position report, as it was behind his ac in his 4 o'clock. Tutor(B) student saw Tutor(A) and alerted his instructor to its presence, in their 11 o'clock low. Tutor(B) instructor manoeuvred his ac and after visually acquiring Tutor(A), he turned sharply L to pass behind it before following it in the cct to land. The Board agreed that this sighting and subsequent robust avoiding action taken by Tutor(B) flight had been enough to prevent the ac colliding; however, the 2 Tutors had passed in such close proximity that safety had not been assured.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: In the absence of specific TI, Tutor(B) crew conducted a non-standard join and did not integrate safely into the cct pattern.

Degree of Risk: B.

AIRPROX REPORT No 2011056

Date/Time: 11 June 2011 1258Z (Saturday)

Position: 5215N 00057W
(7nm SW Sywell)

Airspace: London FIR (Class: G)

Reporting Ac Reported Ac

Type: Discus Glider T6 Harvard

Operator: Civ Club Civ Trg

Alt/FL: 4300ft NK
(QNH 1007mb) (QNH)

Weather: VMC CLBC VMC CLBC

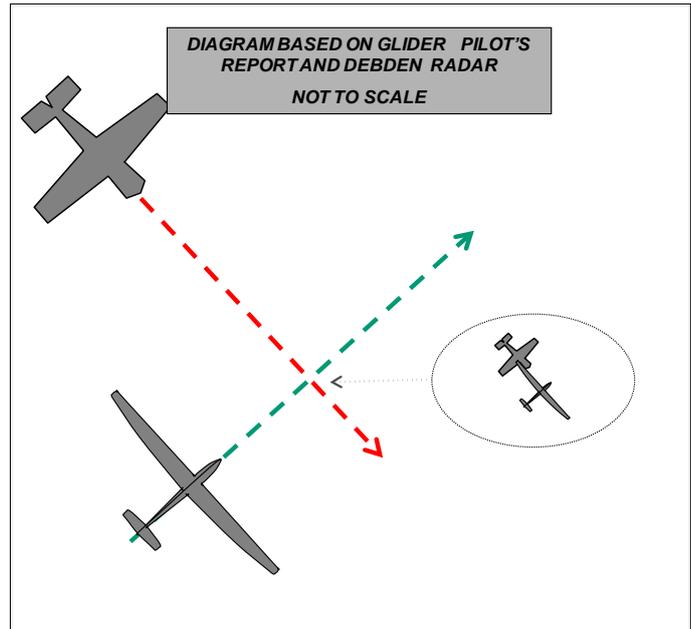
Visibility: 20km >10km

Reported Separation:

20ft V/0m H Not Seen

Recorded Separation:

NR



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE DISCUS 15M GLIDER PILOT reports soaring at 70kt in a white single-seat glider with orange hi-visibility flashes on the wings and fin. He was 7nm SW of Sywell and listening out on a gliding common frequency when he had a close encounter at 4300ft (QNH) with a single-engine GA ac, believed to be low wing or mid-wing configuration, mostly white with some blue and possibly a yellow flash [actually silver with a yellow band]; the registration was not seen. He was not equipped with SSR or TCAS; FLARM was fitted and serviceable but did not indicate any contacts.

While heading 050°, in the cruise between thermals, the other ac appeared from behind and below his L wing tip and passed overhead with no more than 20ft clearance. He was aware only of a very sudden movement in his peripheral vision, a very rapid expansion of the size of the ac and a loud engine noise with Doppler Effect; from first sighting to the ac passing overhead was 1sec or less. He instinctively pushed the stick forward but the other ac had already passed overhead before his glider responded. He was unable to see the direction taken by the ac after the Airprox as he was a little disoriented. After a few minutes consideration he decided to continue with his planned flight which was a cross-country task from Leighton Buzzard/Moreton-in-Marsh/Corby South/Grafham Water/Newport Pagnell/Dunstable.

He assessed the risk as being high and reported the incident to the CFI on landing.

There was a NOTAM in force for aerobatics at Sywell but he was well outside the promulgated area.

THE T6 HARVARD 4 PILOT reports that he submitted a report in response to an Airprox filed against him. He was flying local training flights (one of eight that day) from Sywell, in receipt of a BS from them, in a silver ac with a yellow band but with SSR switched off and no lights fitted; at the time he was in the vicinity of the reported position.

On the day of the incident he saw numerous gliders but none that he considered close enough to generate an Airprox; he suspects, however, that the encounter might have been with one of these. There was one encounter with a white glider, possibly with red markings, which was closer than the

rest, however, he had the ac continuously in sight as he crossed in front of it about ½nm away and he did not consider there was a risk of collision.

UKAB Note (1): There are several primary only contacts in the area of the incident; at 1258:44 two primary only contacts, almost certainly the Harvard and the glider, (from radar tracking and Datalogger information) can be seen 0.3nm apart in the reported position; since the glider disappeared from radar as the Harvard continued towards its last seen position the actual CPA cannot be measured. It is assessed that the CPA was most likely on the radar sweep (8 sec) after the glider disappeared from radar.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The Board agreed that this was a straightforward but serious incident. The Gliding Member noted that the glider pilot was aware of the increased activity at Sywell and sensibly avoided the immediate area; due to the nature of the flight however, the Harvard was slightly further away from the field and outside the NOTAMed area. Members accepted that due to the number of flights he flew on that day, the Harvard pilot would not have been able to recall precise details of each flight, critically the ac alt at the incident time [the glider was at 4154ft datalogger]. Although the radar picture was open to interpretation, bearing in mind the vivid description, the diagram and the Datalogger information provided by the glider pilot, Members were satisfied that the geometry of the incident was as portrayed in the diagram above. However, with no alt information regarding the Harvard, Members could not verify the glider pilot's estimate of 20ft. Further, again based solely on the glider pilot's report, Members agreed that the vertical separation had been small and his sighting had been too late for his avoidance to have been effective. Although there was no radar evidence to substantiate the theory, Members thought that the ac might have been closing on a line of constant bearing or that the Harvard might have been closing from the 8 or 9 o'clock and its head-on aspect would make it hard for the glider pilot to see.

Members also suggested that the glider might have been slightly below the Harvard and therefore obscured to the pilot by its large nose.

Whatever the reason, the ac had come very close to one another, neither pilot had seen the opposing ac in time to take effective avoiding action, despite the glider pilot's last second and instinctive bunt, and the separation had been by good fortune. Since there was no corroborating information, the Board had only the glider pilot's vivid description and estimate of 20ft to inform their decision; although Members agreed that the separation would probably have been slightly larger, they also agreed that there had been an actual risk of collision.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A non-sighting by the Harvard pilot and effectively a non-sighting by the Discus pilot.

Degree of Risk: A.

AIRPROX REPORT No 2011061

Date/Time: 19 Jun 2011 1355Z (Sunday)

Position: 5101N 00238W (RNAS
Yeovilton - elev 75ft)

Airspace: ATZ (Class: G)

Reporting Ac Reported Ac

Type: SZD-50 Glider AW139

Operator: Civ Club NK

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

Weather: VMC CLBC VMC CLBC

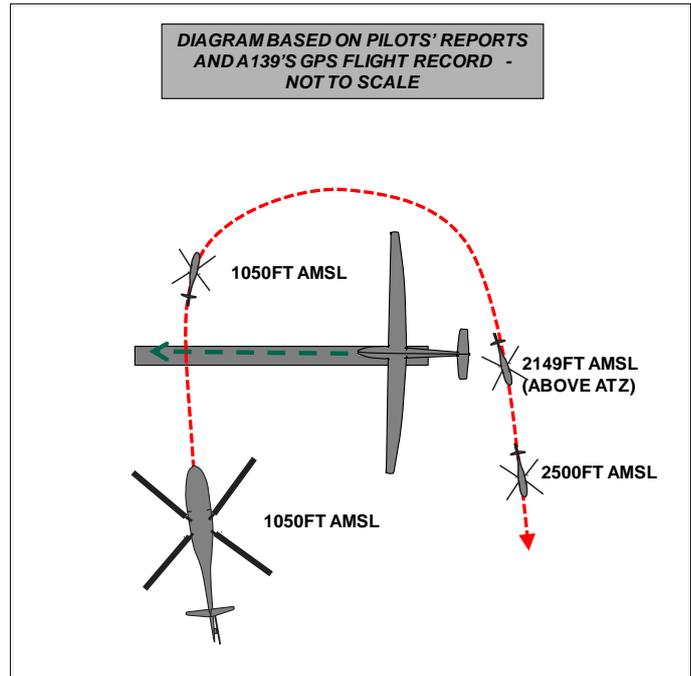
Visibility: >5nm 10km

Reported Separation:

500ft V/0.5nm H NK

Recorded Separation:

Est 800ft V/NR H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PUCHACZ GLIDER PILOT reports flying the second of two check flights for the handling pilot in a white glider listening out on the [unmanned] TWR VHF frequency [120.8]. The ac was launched by wire auto-tow from RW27 and they were in the initial climb at about 300ft and 55kt when the instructor aborted the launch to simulate a launch failure/cable break. As the handling pilot lowered the nose of the glider a red and white helicopter was seen in their 11 o'clock position heading slightly towards them, crossing from L to R. The instructor took control and commenced a descent to land straight ahead. The helicopter maintained its height of about 1500ft and turned about 030° left crossing ahead of them before turning R on the N side of airfield over the technical site. Thereafter, the helicopter turned R and flew away from the airfield to the SE.

Glider control on the ground reported that they saw the helicopter enter the circuit area from the SW crossing over the threshold of RW09 before turning R to the N of the airfield and R again and depart to the SE.

He thought that the other ac was an AW139, possibly Coastguard.

He discussed the incident on the ground and the CFI reported it to Commander Flying, assessing the risk to be Medium.

THE AW139 PILOT reports that they were scrambled by ARCC Kinloss and were en-route from Portland to the site of a helicopter crash S of Glastonbury, heading 344° at 157 kt, squawking 0023 with Modes C and S; TCAS was fitted.

They made a blind call on Yeovilton Radar frequency 127.35 transiting the airfield S to N but no response from any other station was heard. No ac were seen in the vicinity although there was TCAS activity to the N of Yeovilton, presumably in the vicinity of the helicopter crash site, caused by other rescue helicopters at the scene.

Prior to arrival at Glastonbury, they were stood down to return to base as other helicopter rescue assets were already at the scene so he reversed course to RTB.

They provided information from their 'Skytrac' system showing altitude track and speed heading towards Glastonbury and return to Portland. At the time of the reported incident, (1355) the A139 was tracking 166° at 3199ft in the climb to FL55 on their return to Portland in good VMC conditions.

If this was an accurate time then the pilot recalls discussing a TCAS return with the crew and asking that they maintain a good lookout; however, there was no relative height information associated with it and with clear skies above and broken cloud below it was not considered a threat.

UKAB Note (1): Yeovilton is promulgated in the UKAIP ENR 2-2-2-5 as an ATZ (Government Aerodrome 2.5nm up to 2075ft amsl) and is active H24. The ANO, RoA 45 (1), (2) and (3) require that:

'If the aerodrome has an air traffic control unit the commander shall obtain the permission of the air traffic control unit to enable the flight to be conducted safely within the zone'.

UKAB Note (2): Yeovilton is promulgated in the UKAIP ENR 5-5-1-7 as a glider launch site (winch ground tow and tug aircraft/motor glider) HJ listed up to 2000ft aal (2075ft).

UKAB Note (3): The recording of their flight data helpfully provided by the A139 crew shows the helicopter turning right to RTB almost over Yeovilton airfield at 1352 and commence a slow climb from 1000ft amsl to FL55. This correlates with the respective pilots' description of events but the incident is not shown on the radar recordings.

HQ Navy Command at the time of this Airprox the ATC Tower at RNAS Yeovilton was closed and unmanned, although the airfield is often open for operational flying during periods over a weekend. Yeovilton has an active Gliding Club which takes every opportunity to conduct glider flying whilst the airfield is closed and has been doing so for many years. Yeovilton Gliding Club Orders dictate that they must listen out on the ATC Tower frequency in order to deconflict their activity with station flying and that of the Yeovilton Flying Club (civil registered light aircraft) which also operates whilst the airfield is closed. Glider control is not required in local orders to monitor the LARS frequency (127.35) and would anticipate any ac wishing to penetrate the ATZ to call on the Tower frequency.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, radar recordings, and the A139 route data log.

The Gliding Member pointed out that it was very fortunate that the glider instructor had decided that the flight should consist of a simulated cable break drill early in the launch sequence from a low height, requiring a landing straight ahead. Since this was the case, the glider was separated vertically from the A139 by about 800ft which increased as the helicopter climbed immediately after it was stood down from SAROPS, just to the N of Yeovilton. Notwithstanding this however, Yeovilton is a published and well-known glider launching site and flying across the RW below max cable height is, in normal circumstances, very hazardous for both gliders and 'infringers'. That the A139 flew through the ATZ without clearance, at that stage still deploying to the crash site, was considered less significant by Members than flying over the promulgated and active ground launching glider site, which needlessly placed his ac and therefore his important mission at risk.

Members observed that the purpose of an ATZ is to offer some protection to [fixed wing and rotary] ac operating therein; is not meant to be 'barrier' to other ac and there should be some means of allowing safe penetration by transiting ac. Further, glider sites are not offered ATZ status but are notified in the UKAIP as hazards. It was noted Yeovilton was correctly promulgated in the AIP as a Glider Launch Site but, in common with many other military airfields promulgated as active 'H24', there is no means of allowing ac to transit the ATZ when ATC is closed. Several Members considered this unsatisfactory and unnecessarily restrictive particularly for HEMS/SAR/Police etc. Members also considered that this probably warranted a formal safety recommendation but since the

situation was so complex the Board charged the Director with discussing the problem with the appropriate military and civil agencies with a view to agreeing a resolution; the Director agreed, and undertook to report back to the Board. Further, a Member familiar with emergency helicopter operations observed that, since it is not annotated on charts, there is no quick and easy means of determining whether an ATZ is H24 or not.

[Post Meeting Note: This information is published in the Military En-Route Supplement - 'the Red Book' which is available to non military aviators.]

Members observed that there is a common misapprehension, even among some professional pilots, that if there is no response to a call to ATC requesting an ATZ penetration, that they can then fly through the ATZ assuming it to be closed; while this is correct for a MATZ it is not the case for the embedded ATZ which must be avoided if no clearance to enter is obtained. In this case despite that it would have added a few track miles to his otherwise direct flight, Members agreed that the A139 should have avoided the ATZ and by doing so he would also have avoided the glider launch site.

Members observed that had the A139 pilot called on the TWR frequency, which is monitored by glider control, the gliding activity would have been notified to him; however, current procedures for MATZ crossings are that pilots call on the Radar frequency (as printed on VFR charts) and that is what the A139 pilot did.

When considering the degree of risk Members noted that, although potentially serious, in the event there had been more than adequate vertical separation and therefore in their view, no risk of collision.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The A139 pilot entered the ATZ without permission and flew through a notified and active glider site below the promulgated height of the launch cable.

Degree of Risk: C.

AIRPROX REPORT No 2011066

Date/Time: 3 Jul 2011 1626Z (Sunday)

Position: 5229N 00018E
(2nm N Littleport)

Airspace: Lon FIR (Class: G)

Reporting Ac Reported Ac

Type: Ventus Glider OV10 Bronco

Operator: Civ Pte Civ Pte

Alt/FL: 3400ft(see Note (1)) 4000ft
(QFE 1020mb) (QNH 1016mb)

Weather: VMC CLBC VMC CLBC

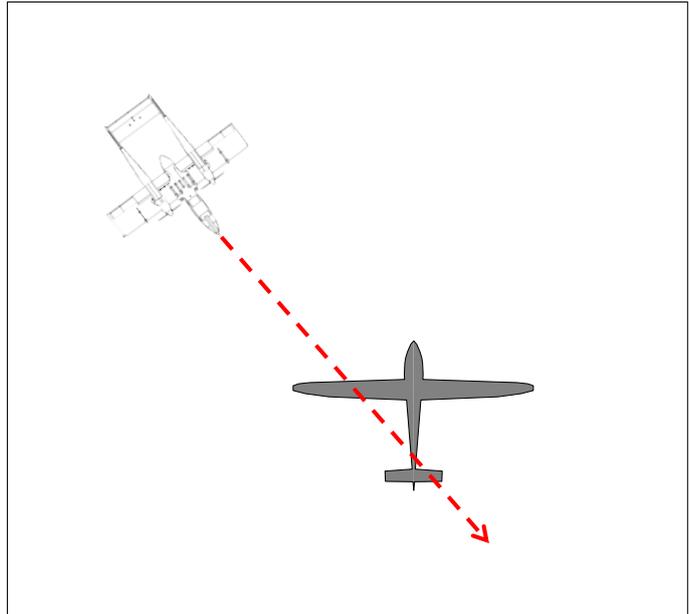
Visibility: 5nm CAVOK

Reported Separation:

0ft V/100ft H NK

Recorded Separation:

NK



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE VENTUS GLIDER PILOT reports soaring at 50kt on the Marham QFE of 1020mb [see UKAB Note (1)] in dark, overcast conditions in a white glider with no SSR fitted but listening out on Marham Ground when he saw a dark camouflage green, twin tail boom Bronco type ac with day glo panels, ½ nm away and approaching him. He rocked the wings of his ac to attract attention of the other pilot and then flew away from the other ac.

He assessed the risk as high and reported the incident to Lakenheath Radar.

UKAB Note (1): The Marham METAR was:

EGYM 031550Z 08004K 9999 BKN050 /// 23/11 1017mb

THE OV10 BRONCO PILOT reports during the cruise from Waddington to Kortrijk, 400ft below cloud at 4000ft, on the Lakenheath QNH of 1016mb and in receipt of a BS from Lakenheath Radar when he heard a glider pilot report that he had an Airprox with an ac fitting the description of his OV10 Bronco (twin boom with orange tips) reported to them. At the time of the incident he was heading 135° at 200kt at an alt of 4000ft, the glider pilot reported that he was at a height of 4700ft and that his ac had passed 100m away.

He did not see the glider despite that the visibility was unlimited, probably due to their vertical and lateral separation.

The pilot opined that while his Bronco is highly conspicuous, gliders are usually not, being white and with narrow fuselages and wings. Nevertheless a good look out in VMC had been maintained throughout and he thought that the reason that the glider was not seen could be attributed to: the vertical separation of at least 700ft; lateral separation (est at 100m by glider pilot); low conspicuity of glider ac in general.

THE LAKENHEATH RADAR CONTROLLER reports that the controller on duty was initially confused about which ac the glider pilot was referring to and at one point the glider pilot attempted to talk to

the OV10. The controller thought an aircraft callsign XXX may have been the one the glider was referring to but it turned out not to be the case. In any event, the transcript is somewhat vague but the RT tapes were retained should they be required.

UKAB Note (2): A transcript of the Lakenheath RT was provided but it showed that, although there were several primary only contacts in the area, the glider was not identified by the controller. The transcript does, however, show that the glider pilot reported that, at the time of the incident, he was at 4100ft and the OV10 pilot reported level at 4000ft.

UKAB Note (3): The recording of the Debden Radar shows the OV10 squawking 0452 with Modes C and S tracking 140° towards a position 3nm N of Littleport where an intermittent primary only contact disappeared from cover at 1625:38. The OV10 passes through the point at 1626.11 at an alt of 4020ft.

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, and reports from the air traffic controllers involved.

The Board noted that the reporting Ventus pilot's report was less than comprehensive, resulting in some aspects of the geometry of the incident being open to interpretation.

The gliding Member opined that the Ventus pilot could have considered operating on a frequency that would have provided him with more useful information; while Marham Gnd may be their SOP they are not in a position to provide any TI while clearly Lakenheath Radar might have been able to provide him a service and he would have heard other units operating on the same frequency.

Both ac were operating legitimately in Class G airspace where the RoA and the 'See and Avoid' principle apply. The glider pilot saw the Bronco in sufficient time to rock his wings and change direction to fly away from it and thus increase the separation (from the information available Members could not determine what heading he took up). Since the transcript revealed that the glider had entered a thermal immediately after the incident, climbing from 4100ft to 5100ft (Marham – elev 77ft – QFE 1017mb), the Board assumed that the pilot did not take vertical avoidance; the Bronco was at 4000ft (QNH 1016mb). Assuming the reports to be correct, the minimum vertical separation would have been just over 100ft increasing as the glider climbed. The Board agreed that the horizontal separation of 100ft reported by the glider pilot was probably an underestimate bearing in mind that he had time to take effective avoiding action; they could not however agree on an estimate.

A majority of Members considered that the Glider pilot's avoidance had removed any risk of collision.

Apart from the poor light conditions, Members could not explain why the Bronco pilot did not see the glider.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A non-sighting by the Bronco pilot.

Degree of Risk: C.

AIRPROX REPORT No 2011083

Date/Time: 1 Jul 1432

Position: 5208N 00012W (3nm SE of Tempsford)

Airspace: FIR/UKLFS (Class: G)

Reporting Ac Reported Ac

Type: Merlin HC3 Untraced Light ac

Operator: HQ JHC N/K

Alt/FL: 1000ft N/K
QNH (1026mb)

Weather: VMC CLBC NK

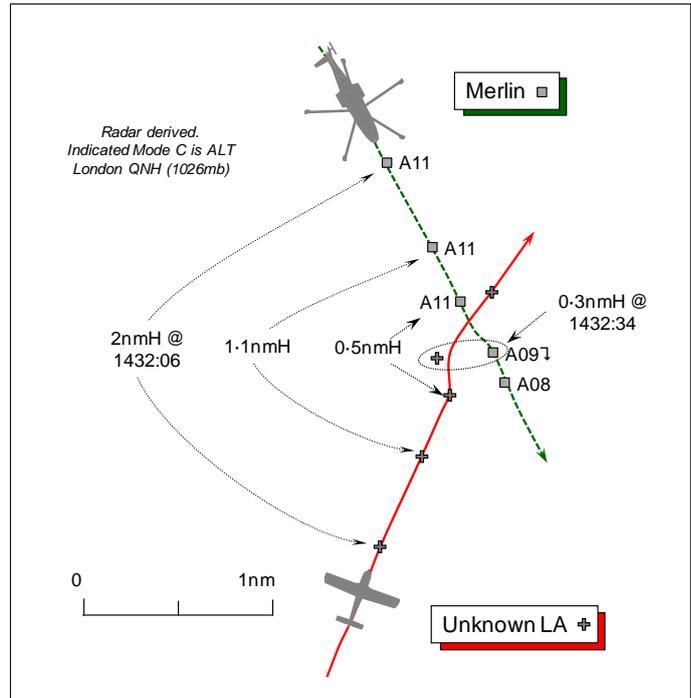
Visibility: 30km N/K

Reported Separation:

100m N/K

Recorded Separation:

<0.3nmH – See UKAB Note (1)



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE MERLIN HC3 HELICOPTER PILOT, a QHI, reports he was conducting a conversion training sortie and was in transit under VFR from Linton-on-Ouse to Benson, whilst monitoring the LFS frequency. He was not under an ATIS; a squawk of A7000 was selected with Mode C; neither TCAS nor Mode S is fitted.

Approaching a position 3nm SE of Tempsford heading 160° at 130kt, flying a level cruise at 1000ft QNH (1026mb), a low-wing single-engine blue and white light ac (LA) was spotted 1km away [0.54nm] to starboard on a closing course. The LA was executing a high AOB R turn [sic] that appeared to be in excess of 90°. Avoiding action had to be taken by descending to avoid a collision with the LA, which passed 100m away at the closest point with a 'high' Risk of collision. The sortie was then continued as planned. The Airprox was subsequently reported by telephone. He added that visibility from the Merlin cockpit was good, but assessed the crew workload as 'relatively high whilst preparing to enter the London Helicopter Route structure.

THE RADAR ANALYSIS CELL (RAC) LATCC (MIL) report that despite extensive tracing action the reported LA could not be traced.

UKAB Note (1): The Stansted Radar recording shows the Merlin helicopter maintaining a steady course in a level cruise indicating 1100ft London QNH (1026mb). The untraced LA is shown as a primary contact only, maintaining a steady NE'y track for some miles as the two ac close on a steady relative bearing to one another. The relative geometry remains unchanged until 1432:34, when the LA's primary contact swerves to the L and thence astern of the Merlin, which simultaneously descends 200ft, before levelling on the next sweep at 800ft London QNH. The minimum horizontal separation evinced by the radar recording of 0.3nm (556m) is significantly more than the 100m reported by the Merlin pilot, which might have been caused by plot extracted 'track jitter' at these low altitudes.

HQ JHC comments that the Merlin pilot's report indicates a particularly close call. The lookout of the Merlin did not pick up the untraced LA soon enough to avoid an Airprox but it is impossible to say when the LA picked up the Merlin. The Merlin pilot assessed the cockpit workload as high and

therefore distraction almost certainly played a part. The difficulty of visually acquiring a LA on a constant bearing is significant and relies on a meticulous scan of the particular airspace in question. In this case, the Merlin took avoiding action as soon as the LA was acquired and whilst successful, safety margins had clearly been eroded.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

Despite the best endeavours of the RAC at LATCC (Mil), the LA pilot could not be traced. Consequently, the Board assessed this Airprox based on the information provided in the Merlin pilot's account and data provided by the radar recording.

In this situation the Merlin pilot was required to 'give way' in accordance with the 'Rules of the Air', but plainly the 'Rules' can only work effectively when the other ac is seen in sufficient time for the pilot 'giving way' to take appropriate action to remain well clear. The Merlin pilot reports the untraced LA was spotted 1km away [0.54nm] approaching from his 1 o'clock at a similar altitude; because of the close proximity of the LA when first seen avoiding action was necessary to avoid a collision, which was apparently quite robust. Nevertheless, the radar recording illustrates that the LA had been closing on a steady course and bearing from some distance away and was indeed there to be seen by the Merlin crew. Although the Board recognised that a white LA of small cross-sectional area approaching on a constant relative bearing would be difficult to spot, despite the reported good visibility from the helicopter's flight deck, the Board concluded that, for their part, this was a late sighting by the Merlin crew.

Because the LA was in a high AoB turn when first seen by the Merlin pilot, it seems that the LA pilot might have spotted the large Merlin helicopter slightly earlier and was already effecting his own avoiding action turn to the L. Whilst the Board was unable to draw definite conclusions on this aspect, the robust nature of the LA's turn, which is evident on the radar recording, suggests that this was, in all probability, also a late sighting by its pilot. In the absence of an account from the LA pilot, the Board could only conclude that the Cause of the Airprox was a late sighting by the Merlin crew and probably a late sighting by the untraced LA pilot.

Turning to the inherent Risk, it was suggested that the LA pilot, unaware that his LA had not been spotted at the time, might have 'stood on' his course anticipating the Merlin pilot would take earlier action to remain clear, but thereby leaving his own avoiding action to a late stage. Nevertheless, the resultant close quarters situation could have been prevented if the confliction had been recognised earlier and robust action taken by either pilot. The radar recording suggested the horizontal separation was slightly more than that the 100m reported by the Merlin pilot as the LA passed astern of the helicopter, as simultaneously, the latter descended. Notwithstanding any Mode C lag associated with the radar recording, the Board agreed that the Merlin pilot's avoiding action descent had been actioned at a relatively late stage, just as the LA started to draw astern, which convinced the Members that the safety of these two ac had not been assured.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A late sighting by the Merlin crew and probably a late sighting by the untraced LA pilot.

Degree of Risk: B.

AIRPROX REPORT No 2011085

Date/Time: 23 Jul 2011 1356Z (Saturday)

Position: 5551N 00405W (12nm E
Glasgow - elev 26ft)

Airspace: Glasgow CTA (Class: E)

Reporting Ac Reported Ac

Type: B757 Discus BT

Operator: CAT Civ Pte

Alt/FL: ↓3000ft 3450ft↑
(QNH 1013mb) (QNH 1013mb)

Weather: VMC CAVOK VMC CLBC

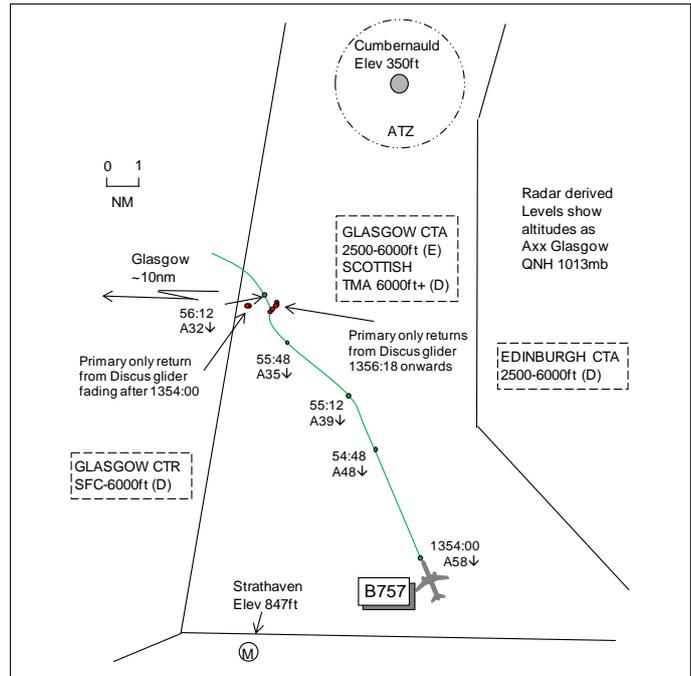
Visibility: >10km 30km

Reported Separation:

Nil V/100m H 20ft V/300m H

Recorded Separation:

NR



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE B757 PILOT reports inbound to Glasgow IFR and in receipt of a RCS from Glasgow Approach on 128.75MHz, squawking 2746 with Modes S and C. They were operating in excellent visibility below scattered cloud and had requested and received clearance for a visual approach but not to descend below 3000ft. Radar had advised that a primary return had been seen in the area previously but had now disappeared, having believed that the ac had descended below radar cover. About 12nm SE Glasgow heading 300° at 230kt, level at 3000ft, he thought, he saw a glider directly ahead range 1.5nm and at the same level. The A/P was disconnected and a R turn was commenced. The glider appeared to fly straight and level in the opposite direction passing 100m to their L at the CPA. ATC was informed and the approach was continued normally. He assessed the risk as high.

THE DISCUS BT PILOT reports returning N towards Portmoak, VFR on a cross-country flight and listening out on frequency 120.6MHz [Cumbernauld]; no transponder was fitted. The visibility was 30km flying 1500ft below cloud in VMC and the ac was coloured white. He was heading for a gap between the Glasgow CTR and the Cumbernauld ATZ as with a NW'ly wind he wanted to avoid any likelihood of being drifted onto the Edinburgh Class D CTA if he tracked E of Cumbernauld. His over-riding concern was to avoid the Class D airspace to the E and W; however, this funnels one towards the Cumbernauld ATZ and, with every possibility of getting low in that area (as he had during his track S), he was monitoring their frequency. At about 1352 he commenced a climb in a thermal to the R with about 40° of bank and whilst turning he was scanning as normal but was not conscious of any other traffic. After several turns while turning through approximately an E'ly heading at 50kt and 3450ft QNH he suddenly became aware of an ac, a low-wing twin-jet, passing at high speed from R to L range 300m banking away from him about 20ft above and descending. He took no avoiding action as at that point there could have been no further conflict. The other ac continued descending to the N and turning L. He assessed the risk as medium. He went on to say that he had flown gliders through this particular stretch of Class E airspace in VMC over quite a few years without any conflict. He was concerned that in spite of ensuring his flightpath stayed out of the surrounding and O/H Class D airspace, fast CAT ac were descending out of the upper Class D into the Class E airspace, cutting the corner before entering the Glasgow CTR.

THE GLASGOW APR reports operating as the FIN DIR and, although the traffic loading, in terms of inbound, was only medium, there were a number of VFR ac operating in and around the CTR. He had been observing a primary only return in the vicinity of Strathclyde Country Park for some minutes, initially suspecting that the return might be spurious. However, having watched it turn towards the edge of the CTR and then track the CTR boundary he elected to vector his inbound traffic around it. Subsequently he watched the return turn 180° to the S and then fade from radar entirely. Prior to it fading he called Scottish FIR at Prestwick Centre to see if the flight was in contact with them but it wasn't. In addition INT made a blind transmission to see the flight was listening out on 119.1MHz. The B757 crew reported visual with Glasgow and initially he was reluctant to release the flight, partly for traffic reasons and partly because he had concerns about this unknown ac/return. A short time later, with the unknown return having faded from radar and the B757 flight having been instructed to reduce its speed for traffic reasons, he elected to release the B757 for a visual approach. There was no return showing on radar at this time and, as it was a nice day, it seemed preferable that the crew was flying by visual reference clear of cloud. He then informed the B757 crew that there had been a primary only return in the vicinity through which they were flying but that it had now faded from radar and was last observed turning to the S. Previous experience of popular ac routes and radar performance suggested that the ac had probably turned towards Strathaven and descended. The B757 crew then reported that they were turning to the N from a W'yly heading to avoid a glider at the same level which was described as being "scarily close".

ATSI reports that the Airprox occurred at 1555:50 UTC, in Class E CAS, 11.7nm to the E of Glasgow Airport. The Airprox was reported by the pilot of a B757, inbound to Glasgow, IFR from Verona. The other aircraft was a Discus BT glider, operating on a VFR flight from Portmoak, which lies 44nm NE of Glasgow Airport and 14nm N of Edinburgh Airport.

The Glasgow and Edinburgh Control Zones (CTRs), Class D CAS, extend from the surface to an altitude of 6000ft. The Glasgow Control Area (CTA), Class E CAS connects the 2 CTRs and extends from an altitude of 2500 (or 700ft agl if higher) to an altitude of 6000ft. VFR flight is permitted within Class E CAS without an ATC clearance although pilots are encouraged to contact ATC. Radio is not mandatory. The ATC watch log did not show any record of notification, nor was any activity promulgated by AIS NOTAM, regarding gliding activity at or from Portmoak.

NATS Glasgow had previously submitted an Airspace Change Proposal seeking re-classification of the Glasgow CTA, from Class E to Class D and believed that this would enhance safety by establishing the airspace as a known traffic environment where all ac are required to be in contact with ATC.

The radar controller's written report indicated that a number of VFR ac were operating in and around the zone with a number of primary contacts in the vicinity of Strathclyde Country Park, situated 14.5nm SE of Glasgow Airport.

The Glasgow controller was operating as Glasgow FIN (Director) and assessed traffic levels as medium.

CAA ATSI had access to radar and RTF recording, together with controller and pilot written reports.

METAR EGPF 231350Z 29006KT 260V350 9999 FEW042 19/09 Q1013=

At 1347:18, the radar recording shows an unknown primary contact, at a position 12.5nm E of Glasgow Airport. This contact is a steady return slowly tracking NW. Director was vectoring an A319 and DHC-8, ahead of the B757 and to the E of the unknown contact.

At 1349:32, the B757 flight contacted Glasgow Radar and reported descending to FL080, with information 'Oscar'. Director advised the B757 to expect vectors for ILS approach to RW23 and updated the B757 crew with information 'Papa'. The radar recording shows the unknown primary contact turn onto a N'yly track 11nm E of Glasgow Airport.

At 1351:10, Director advised preceding inbound DHC-8, *"...just to keep you in the picture I'm going to keep you slightly wide today I've got er unknown traffic following the eastern edge of the zone so just want to give you a bit of a wide berth."* Shortly afterwards the controller reported the unknown traffic had turned onto S.

At 1351:41, the radar recording shows the primary contact turning R, 12.7nm E of Glasgow Airport and become stationary. The track history then starts to fade. The controller's written report indicates that the contact was observed turning onto S before fading from radar and attempts were made to try and identify or make contact with the unknown ac. The controller considered that from previous experience and radar performance, the profile was consistent with an ac descending inbound to Strathaven.

At 1352:16, the B757 was 24nm SE of the airfield. The radar recording shows the track history of the unknown contact, fading from radar, 14nm ahead of the B757. Director turned the B757 flight onto a heading of 335°; this heading was adjusted to 340° and the B757 flight was descended to 3000ft QNH 1013mb.

At 1354:01, the B757 crew reported, *"...we are visual requesting visual contact approach."* Director replied, *"(B757)c/s roger er for the moment stay on the vector and I'll release you very shortly."* Shortly afterwards the B757 crew was asked to start reducing speed to 200kt. The radar recording shows a spurious return in the last known vicinity of the unknown traffic, which fades.

The controller's written report indicates that there was no return showing on radar and considered it preferable that the B757 flight continued with visual reference and clear of cloud. At 1554:47, Radar advised, *"(B757)c/s you're clear visual approach Runway two three route via five mile final not below three thousand feet until advised."* The B757 crew gave a correct readback.

At 1555:11, the B757 was 3.5nm from the last known location of the unknown traffic. Director passed TI, *"(B757)c/s er I did have a primary only return in your approximate vicinity until very recently it's faded from radar now so I believe it to be low level and probably gone even lower but suggest you keep a good lookout"*. The B757 pilot replied, *"er (B757)c/s."*

At 1555:49, the radar recording shows the B757 passing an altitude of 3500ft and 1nm from the last known location of the unknown ac. The pilot reported, *"and (B757)c/s we've got a glider just ahead of us we're deviating right to avoid."* Radar acknowledged and shortly afterwards the B757 crew reported, *"er that was scarily close."*

At 1356:10, the radar recording shows the B757 passing an altitude of 3200ft. The B757 crew advised, *"and (B757)c/s now clear of that traffic and er returning to er so – towards a five mile final."* Director responded, *"(B757)c/s roger you say it was a glider was he at the same level as you."* The B757 crew responded, *"Affirm."* Director then reported that the contact had reappeared on radar.

At 1356:18, the radar recording shows an unknown primary contact appear, coincident with the track history of the B757 and 2nm behind, at a position 11.7nm E of Glasgow Airport. The radar recording shows this slow moving contact tracking NNE.

The B757 crew confirmed an intention to make a report and was then transferred to the Tower.

The glider was subsequently traced and the written report from the pilot indicated operating on a cross country flight from Portmoak and listening out on frequency 120.6MHz.

As a result of the Airprox the CAA Director of Airspace Policy (DAP) considered that a safety critical risk existed within the existing Glasgow Class E CTA. Consequently an interim reclassification of the airspace from Class E to Class D will take effect on 16th September 2011.

Once the primary contact had faded, Director would not have been aware of the exact location of the unknown ac and had an expectation that it had turned S and descended to low level.

The radar controller passed TI to the B757 flight on the last known position of the unknown traffic and advised the B757 crew, that the ac had probably descended to low level. MATS Part 1, Section 1, Chapter 5, Page 13, paragraph 15.2 states:

‘The action to be taken by controllers when they observe an unknown aircraft, which they consider to be in unsafe proximity to traffic under their control, in various types of airspace is as follows:

Class E:

Pass traffic information unless the controller’s primary function of sequencing and separating IFR flights is likely to be compromised. If a pilot requests avoiding action it shall be provided to the extent determined by the controller. Give avoiding action if radar derived or other information indicates that an aircraft is lost or has experienced a radio failure.’

VFR flight is permitted within Class E CAS, without an ATC clearance, however pilots are encouraged to contact ATC. The glider pilot was listening out on frequency 120.6 MHz. It is not clear if the glider pilot had attempted to contact ATC either before or during the flight.

The interim measures taken by CAA DAP will prevent the re-occurrence of any similar event by ensuring that the airspace becomes a known traffic environment, where all ac are required to be in contact with 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.

While it is recognised that traffic inbound from the SE for a visual approach will enter the Glasgow CTA Class E, a CAT pilot Member wondered why the B757 flight was flying at an altitude that was well below that needed for a continuous descent approach (CDA) into Glasgow. The normal inbound routing is via LANAK (20nm SE of Glasgow) at FL70 before receiving radar vectors towards the FAT. With CAVOK Wx at Glasgow, it was thought the B757 flight may have descended through the cloud base early in the initial approach phase with its crew anticipating clearance for a visual approach with its associated reduced track miles to touchdown. The Board was briefed that some cockpit navigation displays do not show the airspace boundaries and Members wondered if CAT crews, in general, would be aware of the airspace classification in which they were flying. It is incumbent on pilots to recognise the airspace classification which dictates the level of ATS and the responsibilities of pilots with respect to other traffic. Within Class E airspace, IFR traffic is separated from other IFR flights whereas pilots have equal responsibility to ‘see and avoid’ when IFR and VFR traffic are involved. The Radar controller had been vectoring traffic ahead of the B757 in the sequence around the Discus glider as it was unknown traffic in the CTA. This was more than was required by MATS Part 1 but was judged by Members to be good practice in the circumstances. However when the radar return from the Discus faded the controller released the B757 flight for a visual approach. The B757 crew turned L towards Glasgow and was told that the (Discus) radar return had faded in the area they were about to fly through and for them to keep a good lookout. This turned out to be a good call as they spotted the glider about 1.5nm ahead at the same level and executed a R turn to avoid it, estimating separation as 100m.

The Discus pilot was cognisant of the airspace and was attempting to gain height for his transit N’bound. This piece of airspace is in effect a N-S corridor between the Glasgow and Edinburgh Class D airspace through which GA ac can transit VFR. It was thought best practice by Members for pilots to follow the guidance in the AIP where they are encouraged to contact ATC when flying through the Class E airspace. The Discus pilot had elected to listen out on the Cumbernauld frequency as a precaution as he had encountered loss of lift earlier when transiting S’bound. Whilst

orbiting R he saw the B757, albeit late, crossing from R to L, he estimated about 300m away and slightly above but descending. Members acknowledged that ultimately the Discus glider had right of way under the Rules of the Air but thought the Discus pilot should have been able to see the approaching airliner sooner.

Members agreed that all parties had fully discharged their responsibilities which led the Board to classify this a conflict between IFR and VFR traffic in Class E airspace which was resolved by the B757 crew. Although the B757 crew had taken positive action to avoid the Discus glider and remove the actual collision risk, the Board agreed that the ac passed with separation margins reduced and that safety had been compromised during this encounter.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict between IFR and VFR traffic in Class E airspace, resolved by the B757 crew.

Degree of Risk: B.