

ASSESSMENT SUMMARY SHEET FOR UKAB MEETING ON 16 FEB 2011

Total: 13 Risk A: 0 Risk B: 3 Risk C: 10 Risk D: 0

<u>No</u>	<u>Reporting</u>	<u>Reported</u>	<u>Airspace</u>	<u>Cause</u>	<u>Risk</u>
2010082	A319 (CAT)	PA38 (CIV)	D	Sighting Report (TCAS).	C
2010084	C560XLS (CIV)	Untraced Glider (N/K)	G	A conflict on the boundary of Controlled airspace and Class G airspace.	B
2010099	PA34 (CIV)	PA31T (CIV)	G	Loss of procedural separation.	C
2010101	HS25 (CIV)	A319 (CAT)	A	Liverpool APR inappropriately agreed coordination with Hawarden APR, who turned the HS25 left into conflict with the A319	C
2010120	Pegasus Quik GT450 Flexwing (CIV)	MD900 Explorer (CIV)	G	The MD900 pilot flew through a promulgated and active Microlight Site and into conflict with the Pegasus microlight, which he did not see.	C
2010121	Tornado GR4 (MIL)	PA28 (CIV)	EGD703 (G)	The PA28 pilot entered the Danger Area without permission and flew into conflict with the Tornado GR4s.	C
2010127	Luscombe 8E (CIV)	PA28 (CIV)	G	A non-sighting by the PA28 pilot and effectively a non-sighting by the Luscombe pilot.	B
2010132	Lynx (MIL)	Glider (N/K)	G	Late sighting by the Lynx crew; the glider was untraced and it could not be determined whether or when its pilot saw the Lynx.	B

2010160	Mainair Blade Flexwing M/L (Civ)	PA38 (CIV)	G	Non-sighting by the PA38 pilot and a late sighting by the Mainair Flexwing pilot.	C
2010161	Tucano x 2 (MIL)	Grob Tutor (MIL)	G	A conflict in the DLFS resolved by the Tucano pilots with the assistance of TCAS.	C
2010162	Tornado GR4 (MIL)	PA28 (CIV)	G	Late sightings by the Tornado GR4 crew and the PA28 pilot.	C
2010170	Hawk (MIL)	Gyroplane (CIV)	G	Late sightings by both pilots.	C
2010171	Hawk T Mk1 (MIL)	Hawk T Mk1 (MIL)	G	A conflict in the UKDLFS resolved by Hawk (A) pilots.	C

- end -

AIRPROX REPORT No 2010082

Date/Time: 2 Jul 2010 (Friday) 1506Z

Position: 5316N 00250W
(S Liverpool Airport - elev
81ft)

Airspace: Liverpool CTR (Class: D)

Reporting Ac Reported Ac

Type: A319 PA38

Operator: CAT Civ Trg

Alt/FL: 2000ft 1500ft
(QNH 1010mb) (QNH 1010mb)

Weather: VMC CLOC VMC CLBC

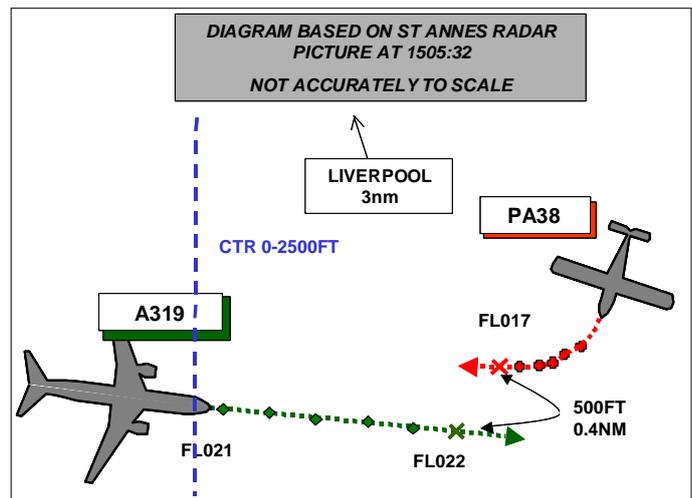
Visibility: 10km 10km

Reported Separation:

300ft V/0m H NR

Recorded Separation:

500ft V/0.4nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE A319 PILOT reports flying a scheduled passenger flight inbound to Liverpool under IFR, squawking 7216 with Modes C and S, while in receipt of a RCS from them. Heading 090° at 220kt they were cleared from 2500ft (QNH 1010mb) down to 2000ft and Liverpool ATC informed of an ac below, VFR not above 1500ft, which they identified on TCAS. The ac did not maintain 1500ft; he thought it had climbed above its cleared altitude and passed 300ft under them as they were reacting to a TCAS RA. They reported the RA to Liverpool APR using standard phraseology, but it was not acknowledged [he thought]. He assessed the risk as being medium and reported the incident to ATC by telephone after landing to ensure that they were aware of it.

THE PA38 PILOT reports that he was informed of the Airprox about 2 weeks after the event so his recollection of events might not be complete. He was the instructor on a VFR CPL training flight returning to Liverpool squawking with Mode C. They entered Liverpool CTR at Tarvin under an ATC clearance of VFR not above 1500ft on the QNH of 1010mb, and his recollection was that ATC routed them to Helsby, which is the aerodrome clearance limit for GA traffic for RW27. After reporting the field in sight he believed that they had been transferred from Liverpool APR to Liverpool TWR. Normally, if the airport is busy, ATC hold GA ac at Helsby while large ac position overhead at 2500ft for LH downwind for RW27; this traffic passes over Helsby Hill, or to the S of it, on the downwind leg. He does not believe that they climbed above their 1500ft clearance at any time.

UKAB Note (1): The Liverpool METAR for 1450 was:

EGGP 021450Z 24012KT 9999 FEW035 22/12 Q1010

UKAB Note (2): The recording of the St Annes radar shows the incident clearly. At the start of the recording at 1505:00 the A319 approaches the CPA from the W tracking 095° level at FL021 (alt 2010ft) with the PA38, squawking 0260 with Mode C in its 11 o'clock Level at FL017 (alt 1610ft), in a wide right-hand orbit. The ac continue to converge with their alts unchanged and at the CPA the A319 has just commenced the TCAS RA response and is climbing through FL022 (alt 2110ft). It passes 0.4nm to the S of the PA38's orbit, on a directly opposing track, the latter still level at FL017 (alt 1610ft).

ATSI reports that the Airprox occurred at 1505:36, 4nm SE of Liverpool Airport, within the Liverpool CTR, which is Class D airspace extending from surface to 2500ft amsl. RW27 was the RW in use. ATSI assessed the controller's workload as moderate.

The PA38 was a locally based ac on a VFR flight from Sleaford Airfield to Liverpool Airport. The PA38 was instructed to enter the Liverpool CTR from the S, routing via Tarvin and Helsby for RW27.

The UK AIP entry AD 2-EGGP-1-11 (8 Apr 10) paragraph 6(g) states:

'In order to integrate VFR flights to/from Liverpool Airport with the IFR traffic flow, standard routes are established along which VFR clearance will be issued subject to the conditions specified above. The routes provide a uni-directional traffic flow, dependant upon the runway in use at Liverpool Airport. The routes are detailed in paragraph 7 below and shown on the chart at AD-2-EGGP-4-1. Non-standard routes may be requested but ATC approval will only be granted if the traffic situation allows. Pilots are reminded of the requirements to remain in VMC at all times and to comply with the relevant parts of the Low Flying Rules, and must advise ATC if at any time they are unable to comply with instructions.'

Paragraph 7 – Standard VFR entry route from the South:

'Enter CTR via Oulton Park, route to the western edge of HELSBY then as directed by ATC – Max Altitude 1500ft.'

The Liverpool MATS Pt 2 (24/01/10), Section 1, Chapter 18, Page 1, Paragraph 2.3, states:

'Mode A code 0260 should be allocated to all locally based VFR flights, except training circuit flights, and other flights as required. This code is used for conspicuity and need not be verified. It is notified as such in the AIP.'

Paragraph 6.3, states:

'Approach Radar Controllers may utilise the SSR filter system on the GUI if necessary to reduce the amount of SSR codes visible around the ATZ.'

The A319 was on an IFR flight to Liverpool Airport and was being vectored downwind left hand for RW27. The Liverpool MATS P2 (24/01/10), Section 4, Chapter 4, page 8, paragraph 8.5, states:

'For vectoring Runway 27 (when Manchester using Runway 23)
.....aircraft can be turned LEFT hand downwind on reaching altitude 3500 ft descending and will comply with altitude profile areas C-E.
AREA E MUST BE ENTERED AT 2000 FEET or BELOW.'

(Note: left base for RW27 lies within area E.)

ATSI had access to the RTF transcript, radar recordings provided by NATS Swanwick, written reports from the pilots and controller. Liverpool ATSU was not immediately aware of an Airprox and reported a TCAS RA event. A time discrepancy of 1min and 15sec was noted between the RTF recording and the Radar recording (certified as correct). An appropriate correction was made to RTF recording and the ATSU has been asked to investigate the discrepancy.

At 1455:35, Radar cleared the PA38 to join controlled airspace VFR at Tarvin, not above 1500ft QNH1010, and the pilot acknowledged correctly. (Tarvin is situated 8.5nm to the SSE of Liverpool airport). At 1458:45 the A319 called Radar, "passing FL100 descending FL080 direct KEGUN and speed reducing to 250kt".

At 1459:05 the PA38 was instructed to squawk 0260 and the pilot reported approaching Tarvin. A change of controller then took place and, at 1559:35, Radar transmitted to the PA38, *“(PA38)c/s route to Helsby report field in sight and it’s a Radar Control service”*, and the pilot replied, *“Route to Helsby report field in sight (PA38) c/s”*. (Helsby is situated 5nm SSE of Liverpool airport). The PA38 pilot reported field in sight and was transferred to the TWR frequency. At this point the radar recording showed both ac in the vicinity of Tarvin. The PA38 was indicating FL016 (alt 1510ft) and the A319 was tracking W at FL091. At 1459:42 the A319 was given descent to alt 5000ft QNH 1010 and advised of a left hand pattern, and the pilot acknowledged correctly.

At 1501:52 the A319 was given a right turn heading 360° with descent to an alt of 3500ft QNH 1010 and shortly afterwards a further instruction to turn right heading 090° downwind. At 1500:53, the radar recording showed the PA38 entering the CTR indicating FL017 (alt 1610ft). At 1501:58 the PA38 called the TWR and reported 3nm S of Helsby and they instructed, *“...join left base for runway two seven report crossing the motorway”* and this was acknowledged correctly.

At 1503:58 the PA38 reported crossing the motorway and Tower instructed, *“...on reaching erm left base er for runway two seven take up a right hand orbit.”* (This was to allow an A320 on final to land). At the same time Radar instructed the A319, *“(A319)c/s turn right heading one zero zero degrees descend to altitude two thousand feet.”* The A319 replied, *“Right turn heading one zero zero degrees descend altitude two thousand feet (A319)c/s.”* At 1504:47 Radar advised the A319 about the PA38, *“(A319)c/s traffic in your twelve o’clock a range of four miles in the right hand orbit it’s a V F R Cherokee not above fifteen hundred feet”* and the pilot responded, *“Roger..”*. (It was noted that the Radar controller incorrectly passed the type as a Cherokee).

At this point, radar recording showed the PA38, 3.5nm SE of Liverpool Airport, in a right hand orbit descending to FL014 (alt 1310 ft). At 1504:41 the distance between the ac was 4.2nm and the radar recording showed the PA38 rolling out of the orbit, tracking SW towards the A319. The Mode C then indicated a climb to FL017 (converts to 1610ft QNH 1010); at 1505:16 the A319 was indicating FL021 and the distance between the two ac was 1.6nm on almost reciprocal tracks. At 1505:37 the A319 pilot advised: *“(A319)c/s TA, RA”* and Radar replied, *“(A319) c/s Roger and it’s that previously mentioned Cherokee not above fifteen hundred feet.”* It was noted that the pilot did not use the phrase TCAS but advised, *“ TA”* followed immediately by, *“RA”*. The Radar controller correctly acknowledged the TCAS RA with *“Roger”* and then passed TI on the PA38. MATS Part 1, Section 1, Chapter 9, Page 3, Paragraph 5.3, states:

‘The passing of traffic information by controllers to ac conducting, or affected by a TCAS RA, is not proscribed, but such information has, if provided inappropriately, the potential to be misheard or to distract flight crews during a period of very high workload. Consequently, controllers should not routinely pass traffic information to ac conducting RA manoeuvres, or other ac affected by such manoeuvres, nevertheless, there may be circumstances where the passing of traffic information is justified; consequently, controllers may provide traffic information under the following circumstances:

To ac conducting an RA manoeuvre if it is considered essential for flight safety.’

Radar recordings show the A319 reacting to the RA and climb through FL022 at the CPA [up to FL026] and passing 0.4nm S of the PA38, which was in a right turn away from it. At 1506:27 the A319 pilot advised, *“Radar c/s Clear of Conflict”* and Radar replied, *“(A319)c/s thanks.”* Both ac continued and landed without further incident.

The complexity of the airspace surrounding Liverpool and Manchester, requires that IFR inbounds, vectored left hand for RW27, are at alt 2000ft before entering Area E on base leg while VFR traffic is required to remain not above an alt of 1500ft using the entry/exit lanes.

Liverpool Radar transferred the PA38 to the TWR with an expectation that the ac would be not above alt 1500ft. The Radar controller is normally required to monitor the primary radar returns of VFR traffic and has the option to reduce the number of SSR codes visible around the ATZ using the SSR

filter system. The Radar controller's report indicated that the controller could not recall seeing the PA38 displaying Mode C.

The radar recording shows that when TI was passed to the A319 regarding the PA38 4nm ahead, the PA38 was in a right hand turn indicating FL014 (alt 1310ft) [for 2 sweeps]. Shortly afterwards the PA38 can be seen to track SW and climb to FL017 (alt 1610ft), at a point when the two ac are 1.7nm apart; this resulted in the A319's TCAS RA.

Liverpool ATSU indicated that, within the known Class D environment, IFR traffic at 2000ft is passed TI on VFR traffic operating not above alt 1500ft within the entry/exit lanes. Radar controllers use only the primary radar information on VFR traffic, as conspicuity codes are not validated or verified. The ATSU reported that, historically, [see UKAB post –meeting Note: (1)] there had been no similar incidents and added that controllers have the option to hold VFR traffic or to give tactical vectors to IFR inbounds when appropriate. MATS Pt 1, Section 3. Chapter 4, Page 1, Paragraph 3.4, 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.'

Although the PA38 was locally based, the pilot's report indicated that he believed the IFR traffic downwind would be at an alt of 2500ft. The radar recording showed that whilst the PA38 was holding in a right hand orbit, the ac appeared to lose altitude and then apparently climb 100ft above the level restriction of alt 1500ft when in close proximity to the A319.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

Members noted that the pilots of both ac had been complying with the respective IFR and VFR arrival procedures for Liverpool Airport. Although the altitude of the PA38 on the radar recording appeared about 100ft higher than that instructed by APR, it was within both prescribed Mode C and altimeter tolerances. Members noted that there had been minor altitude deviations during the PA38's orbit but considered these to be reasonable for a student pilot and they did not breach the ATC altitude restriction. That being the case, Members agreed that it had been the very small climb as the PA38 was pointing towards the A319 in the orbit that had triggered the TCAS RA in the A319; controller Members also agreed that in situations where 500ft separation is used, such RAs are not uncommon. A controller Member noted that the Airspace at Liverpool and the procedures are complex, but it was pointed out that this was necessarily so due to the proximity of Manchester and the associated CTA.

The Secretariat informed the Board that they could recall several similar incidents in the Liverpool CTR.

[UKAB Post-Meeting Note (1): A search of the Joint Airprox Reporting System Database showed that there had been 10 Airprox between VFR and IFR traffic in the period 1 Jan 2000 - 31 Dec 2009 in which a TCAS warning had been generated. (Airprox: 2002036, 2003192, 2005125, 2005139, 2005196, 2006142, 2007031, 2008037, 2009118 and 2009143)].

Members agreed however, that the procedures were sound but that TCAS RAs would inevitably result. That being the case, and since all involved had complied with the procedures, Members agreed that there had been no risk of collision.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Sighting report (TCAS).

Degree of Risk: C.

AIRPROX REPORT No 2010084

Date/Time: 3 Jul 2010 1607Z (Saturday)

Position: 5209N 00012E (4nm SSE
Cambridge - elev 47ft)

Airspace: LFIR (Class: G)

Reporting Ac Reported Ac

Type: C560XLS Untraced glider

Operator: Civ Comm N/K

Alt/FL: 5500ft↓
(QNH) (N/K)

Weather: VMC CLBC NK NR

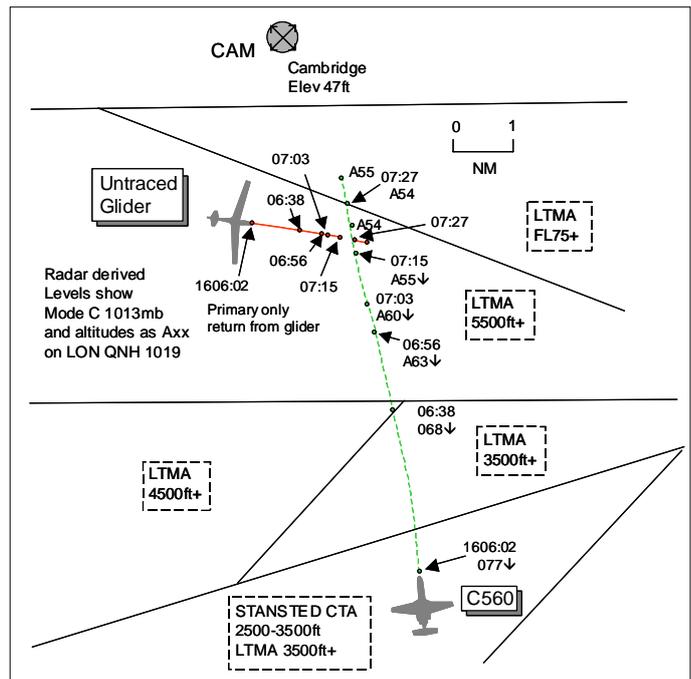
Visibility: >10km NR

Reported Separation:

10ft V/20m H NR

Recorded Separation:

0.1nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE C560XLS PILOT reports heading inbound to Cambridge IFR at 250kt and in communication with London squawking an assigned code with Modes S and C; TCAS was fitted. London instructed them to leave CAS in the descent to Cambridge although he was not sure if this was the cleared point or if a heading was given. They broke a layer of cloud at about 6000ft and, while receiving a call from London stating that they were leaving CAS and that Cambridge was closed, something reflected the sun on his LHS. He looked out of the L window and spotted a glider flying towards his ac very close, 15ft below and 25m away. Touch Control Steering (TCS) was initiated and he rolled to the R and pointed the ac's nose up to break the descent and move away from the glider, estimating separation was 10ft vertically and 20m horizontally at the CPA. After the avoiding action ATC repeated the transmission and he replied. After switching to Cambridge he reported the Airprox but no radar echo was spotted. The flight was continued with no further events.

RAC MIL reports that despite extensive tracing action the identity of the reported glider remains unknown. The glider could not be back-tracked to a departure airfield and it faded from radar 12nm SE of Cambridge. Procedural tracing action was then commenced and, although numerous gliding sites were contacted, no gliders were proffered as being a likely ac so unfortunately the reported ac remains untraced.

THE ESSEX RADAR CONTROLLER reports the C560 flight was descended to altitude 4000ft to leave CAS in the descent for Cambridge. As the ac was just leaving CAS Cambridge telephoned stating that they were closed due to the RW breaking up and that the C560 would have to hold at the CAM NDB. This was relayed to the C560 pilot who didn't reply straight away so the information was passed again and on receipt the flight was transferred to Cambridge.

ATSI reports that the Airprox occurred 3-8nm to the SSE of Cambridge Airport, at or just below altitude 5500ft, the base of London TMA-9, CAS. The LTC Essex Radar controller was operating in banded mode, using the Stansted 10cm radar on a 30nm range. The controller considered traffic levels within the limits considered appropriate for banded operations.

The Cambridge METAR was 031550Z 300/07kt 230V020 9999 SCT047 24/07 Q1018=.

Cambridge is situated in Class G airspace and lies just to the N of the boundary of CAS, London TMA-9 and TMA-18. The C560 was on a flight from Dublin to Cambridge and in receipt of a RCS; the ac was required to leave CAS for the last portion of the flight to Cambridge.

The glider was routeing W to E below the base of CAS. Tracing action after the incident did not identify the glider involved. The C560 pilot's written report stated that the event occurred at altitude 5500ft and 400ft below cloud.

With fine weather conditions on the day, radar recording shows that there was considerable activity outside CAS, with a high density of GA traffic in the area to the NW of Stansted and around Cambridge. Many of these were primary radar contacts, with the probability of a number being gliders.

The Essex Radar controller was experienced and had operated at the unit for a period of 15yr, holding a valid APR competency certificate for both Stansted and Gatwick. The controller had been in position for 30min prior to the incident and reported being fully rested prior to the start of shift. During the period prior to the event the workload was assessed by ATSI as being moderate.

The C560 was transferred to Essex Radar by LTC NE Deps and at 1604:25, the flight contacted Essex Radar, 6-9nm NW of Stansted Airport, in a L turn onto a heading 050° and maintaining FL90. The C560 flight was instructed to descend to altitude 6000ft on QNH 1018mb and was then given a direct routeing to Cambridge and at 1605:43 was given further descent, "*C560 c/s descend to altitude four thousand feet in the descent you will leave controlled airspace.*" The pilot did not acknowledge this and Essex Radar repeated the instruction. At 1606:03, the pilot responded, "*descending altitude four thousand feet and we'll leave controlled airspace in the descent C560 c/s.*" It was noted that the C560 was instructed to descend to an altitude of 4000ft and that may have given the impression of an executive, protected clearance, rather than the MATS 1 phraseology 'Cleared to leave controlled airspace by descent', with an acceptance level from Cambridge. The pilot was not asked what type of service was required outside CAS.

At 1606:02, radar recording shows the C560, passing FL77, 10-5nm N of Stansted in a L turn, with a slow moving primary contact tracking E, 6-5nm NW of the C560. The controller later commented that the glider was not seen.

At 1606:37, a phone call from Cambridge was accepted by the Essex Radar controller. Cambridge reported that the main RW had been closed and would result in the C560 having to divert. It was agreed that the C560 would be routed to the CAM hold whilst diversion arrangements were made. At this point the radar recording shows the C560 passing FL68, with a slow moving primary contact in the ac's 1130 position at range 3-4nm. During the phone conversation, an ac inbound to Stansted twice requested distance to run, without an acknowledgement. At 1606:56, the radar recording shows the C560 passing altitude 6300ft QNH with the unknown contact in its 1130 position at range 2-4nm. Essex Radar then replied, "*Sorry I was on the phone there station calling say again.*" A flight responded and the distance to touchdown was provided.

The C560 pilot's written report indicated the cloud base was 6000ft. At 1607:03, the radar recording shows the C560 passing altitude 6000ft and the glider in its 1130 position at range 1-4nm. The Essex Radar controller informed the C560, "*And C560 c/s the unfortunately Cambridge has just had to close because of a runway deterioration erm so you won't be able to land there but if you wanna contact them now on one two three decimal six and they'll come back to me okay.*" At 1607:16, the C560 pilot replied, "*Standby.*"

[UKAB Note (1): The radar recording at 1607:15 shows the C560 at altitude 5500ft, which is the base of CAS, with the glider in its 10 o'clock range 0-4nm. On the next sweep 6sec later the glider has faded from radar whilst the C560 is seen to level at altitude 5400ft QNH. The glider reappears on the next sweep at 1607:27 in the C560's 6 o'clock range 0-7nm, the C560 still level at altitude 5400ft. The next sweep show the C560's Mode C indicating a climb to 5500ft before it then commences a descent towards Cambridge. The CPA occurs just after the glider fades and, taking into account the

glider's track and speed prior to and post fade, it is estimated the C560 passed about 0.1nm ahead of the glider.]

The controller later explained that the supervisor was informed regarding the situation at Cambridge and then assisted in answering further phone calls.

At 1607:36, the C560 responded, "*Er C560 c/s sorry er we almost hit a glider that's why I had to put you on standby could you please say again last information.*" The controller passed the same message, "*Affirm Cambridge er the runway's had to close er due to runway deterioration er you won't be able to land there if you want to hold at the Charlie Alpha Mike and contact Cambridge one two three decimal six they'll keep you advised.*" The pilot of the C560 replied, "*Okay er we'll enter the hold at Charlie Alpha Mike and er one two three decimal six er C560 c/s.*"

The Essex Radar controller later stated that at no point was he aware of the primary contact and the controller did not hear the pilot reporting that the ac had almost hit a glider. It only became apparent to the controller, who was very surprised, when listening to a replay of events at a later stage. The controller was unable to explain why he had not seen the primary contact and accepted that it must have been visible on radar. It may have been that the contact was one of many, moving very slowly and not very noticeable, compared with the more prominent ac in CAS with SSR labels.

In discussing the sequence of events, the controller explained that he could not recall events exactly, but remembers the phone call from Cambridge being an unusual occurrence and distraction at a point when the C560 was about to leave the base of CAS. The controller described how, after the phone conversation, the supervisor had been informed about the situation at Cambridge, probably at the time when the pilot reported the glider and this may have been a cause for the controller missing a portion of the pilot's transmission.

When asked about the change of service, the controller explained that, because Cambridge is close to the boundary of CAS, ac are routinely transferred and the RCS terminated, at the boundary. The controller recognised that when the C560 left CAS, the radar service had not been terminated or changed. CAP493, Manual of Air Traffic Services, Part 1 (MATS Pt1), 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.'

The controller was asked if, prior to aircraft leaving CAS, it was normal to scan ahead for conflicting traffic operating in the adjacent uncontrolled airspace. The controller confirmed that this was normal practice and could not remember scanning ahead or seeing the slow moving primary contact. The controller added that the radar service would normally have been terminated as the C560 approached the base of CAS and the flight transferred to Cambridge. Had the controller noticed the unknown primary contact, TI would have been passed.

The controller accepted that workload was moderate, but considered traffic levels within the limits for boxed operations however, it is not always possible to predict workload increases due to unusual events.

NATS Swanwick have undertaken a number of actions as a result of this incident, including a review of current safety risks and MATS Pt2 procedures relating to aircraft leaving and joining CAS.

A Safety Notice SIN 002/10 SWN was issued by NATS Swanwick on 16/07/10 to raise awareness of the incident and emphasise the importance of changing service for ac leaving CAS by descent.

A Supplementary Instruction SI 139/10 LTC, was issued by NATS Swanwick on 14/12/10, making the following addition to TC MATS Pt 2, GEN section:

'A pilots ultimate responsibility to avoid collisions within Class F and G airspace is detailed in MATS Part 1, Section 1, Chapter 11 Page 1. According to MATS Part 1, Section 1, Chapter 5, controllers must advise a pilot if a service terminates or changes when they cross the boundary of CAS. If due to workload or other factors the exact point at which the aircraft leaves CAS cannot be monitored, controllers must advise the pilot what type of service will be provided outside CAS before the aircraft has left CAS. If the anticipated service is passed to the pilot before the aircraft leaves CAS, the point at which the service will change should be stated with reference to a FL/Alt or distance.'

The Essex Radar controller instructed the C560 to descend to 4000ft, leaving CAS in the descent. The pilot was not advised of the point at which the radar service would be terminated and therefore may not have been fully aware of the transition into Class G airspace. MATS Pt1, Section 1, Chapter 11 page 1, Paragraph 2.2.1, states:

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

At the crucial point when the C560 was approaching the base of CAS, with the glider displayed on the radar, (albeit as a slow moving, less prominent radar return), the Essex controller's attention was concentrated on the ILS traffic and phone call from Cambridge.

The Essex Radar controller considered traffic levels to be within the limits for bandboxed operations. It is recognised that it is not always possible to predict in advance unforeseen events or factors that can quickly generate additional workload. However, CAA ATSI assesses that the workload and distraction were factors which diverted the controller's attention away from the C560 as it left CAS and resulted in:

- a) the controller not detecting the radar return of the slow moving glider and consequently not passing a warning or avoiding action.
- b) the controller not hearing the pilot's transmission concerning the gliders proximity.

The C560 left CAS by descent and the Essex Radar controller did not properly terminate or change the level of service. In examining MATS Pt1, CAA ATSI considered that little guidance is provided to controllers with regard to duty of care and the changing responsibilities of pilots and controllers when ac transition from controlled to uncontrolled airspace or vice versa.

ATSI RECOMMENDATIONS.

It is recommended that:

The CAA review the guidance, phraseology and procedures for air traffic controllers and pilots with regard to aircraft leaving and joining controlled airspace, with particular reference to the changing responsibilities of pilots and controllers when aircraft transition from uncontrolled to controlled airspace and vice versa.

NATS Swanwick LTC review their procedures for bandboxed operations.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of the C560, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC authorities.

Although the Essex Radar controller had informed the C560 crew that they would be leaving CAS in descent, it was not stated when this would occur. Airspace boundary levels are depicted on en-route charts and would normally be shown on a moving map display if the ac was EFIS equipped.

However, it would not always be obvious to the crew from their Approach charts. Therefore best practice would be for the controller to inform a flight precisely when/where it will cross the boundary or pass through the level when the ac transitions into Class G airspace, and whether the ATS will be changed or terminated. This information would alert or remind the crew about their impending change of responsibilities. Nevertheless, the Board was satisfied that the pilot had assimilated the message that he was leaving CAS and that he understood the implications.

Owing to the short track distance to the airport Members thought that it was unlikely that Essex Radar intended to provide ATSOCAS, the controller just releasing Cambridge inbound traffic early by terminating the service and transferring communication and control to Cambridge Approach. This did not occur in this Airprox owing to the RW closure message and subsequent coordinated course of action being agreed on the telephone between both ATSU's. Consequently by the time the Essex controller had returned his attention to the C560 and passed the message, the Airprox was occurring. An early transfer of flights leaving CAS does allow the receiving ATSU to establish and agree the ATSOCAS with the ac's crew in good time.

The glider was flying just below the base level of CAS in VMC when the C560 broke cloud at 6000ft, 500ft above the base level. This would have only allowed the C560 crew about 10sec to visually acquire the glider, which they did as they transitioned through 5500ft into Class G. Mindful of this, a CAT Member stated that had Essex seen the glider's primary only contact and passed TI or a warning, it would have alerted the C560 crew to the conflict but would probably not have affected the outcome. Without a report from the glider pilot, it was not known whether he saw the C560 in the limited time available before the CPA. Members agreed that the C560 crew had no opportunity to see the glider any earlier and that this Airprox had been a conflict on the boundary of CAS and Class G airspace.

Turning to risk, with only one viewpoint of the incident quoting minimal separation distances, Members looked closely at the recorded radar data for the geometry of this close encounter. The C560 pilot seated on the LHS saw the glider on his L very close and instinctively rolled R and pointed the ac's nose up to avoid a collision, estimating separation as 15ft vertically and 25m horizontally. Although the glider's radar return faded as the ac passed, the CPA was within 0.1nm (185m): a close call. Members were acutely aware of the difficulty in accurately judging separation by eye, particularly when faced with a sudden surprise situation. On the balance of probability, taking the radar distances into account, it was thought that the distances, although close, might have been underestimated. From the information available, the Board believed that the actions taken by the C560 crew had been enough to remove the actual risk of collision but the ac had passed with margins significantly reduced such that safety had not been assured.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Conflict on the boundary of CAS and Class G airspace.

Degree of Risk: B.

AIRPROX REPORT No 2010099

Date/Time: 23 Jul 2010 0857Z

Position: 5151N 00121W (1.5 nm NW Oxford - elev 270ft)

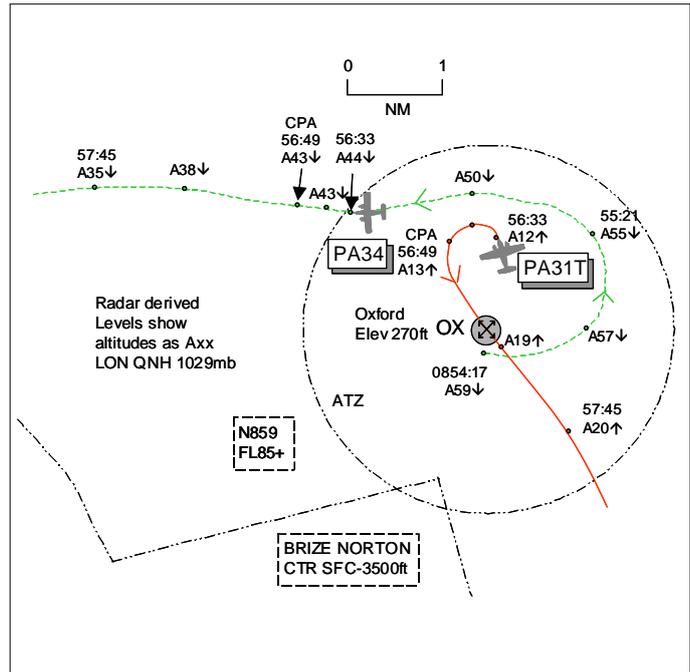
Airspace: ATZ/Oxford AIAA (Class: G)

Reporter: Oxford ADC

	<u>1st Ac</u>	<u>2nd Ac</u>
<u>Type:</u>	PA34	PA31T
<u>Operator:</u>	Civ Trg	Civ Comm
<u>Alt/FL:</u>	3500ft↓ (QNH)	↑2500ft (QNH)
<u>Weather:</u>	IMC KLWD	IMC KLWD
<u>Visibility:</u>		

<u>Reported Separation:</u>	Not seen	Not seen
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Recorded Separation:
3000ft V/1.6nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE OXFORD ADC reports that there was a quiet traffic situation with IMC above altitude 1500ft, 1 ac departing VFR and the subject PA31T taxiing to the hold for an IFR CPT airways departure. APP was working 2 IFR inbound ac and made comment that one of the inbounds, the subject PA34 flight, was requesting an Expected Approach Time (EAT). ADC was not sure of the significance of this until later discovering that the flight had been 'held-off' in the WCO NDB area at FL60 for some time. The PA31T pilot requested departure clearance and was passed the instructions given by APP, "PA31T c/s cleared standard CPT departure hold at Botly climb FL50 remain outside CAS squawk 2234 onward frequency London Control 120.475". The flight was released subject to APP so the ac was kept on the ground awaiting release. APP then advised that the PA34 was "Beacon outbound NDB100 procedure" which placed the IFR ac to the NW of the OX descending. APP then told the ADC to change the outbound clearance on the PA31T to climb to 2500ft QNH 1020mb, making comment to suggest that a form of non-standard separation was being used. APP then released the flight which the ADC queried owing to the IFR NDB100 traffic (the PA34) but APP confirmed again that the PA31T was released. ADC was unaware of APP's traffic situation i.e. had any descent restrictions been applied to the PA34, so ADC carried out the APP's instruction and cleared the PA31T for take-off before transferring the flight to APP once airborne. As the PA31T flight contacted APP the relieving ATCO for that position was told by APP "not to take over until it was sorted out".

The Oxford METAR shows EGTK0730 02007KT 9000 FEW013 BKN016 BKN019 14/11 Q1020=

THE OXFORD APP reports that the PA34 flight routed to the OX at FL60 to enable departure of the PA31T to CPT climbing FL50. The PA34 pilot asked for an EAT and was given 0913. For expediency the outbound PA31T was told to climb to altitude 2500ft initially and to report S of Oxford. Visibility was such that the PA31T was clearly visible from the end of RW to 2500ft and the PA34 flight was asked if they were happy to commence the NDB100 procedure from FL60. This was agreed and the flight was descended initially to altitude 3500ft and asked to report beacon outbound. With the PA31T continuously visible his plan was to hold the PA34 at 3500ft if necessary as it went outbound, as it would not descend below 3500ft until 1min later. The PA34 flight reported outbound and the PA31T flight called APP. As the PA34 was turning N and then W from OX and the PA31T

was already S of OX en-route to CPT, the PA31T flight was climbed to FL50 and transferred to LACC.

THE PA34 PILOT reports returning from a local IFR training sortie and being instructed by Brize Radar to climb to FL60 for the NDB100 hold at Oxford. About 7DME E of Oxford they were handed over to Oxford Approach. At 0852 they entered the hold at FL60 and 115kt and shortly after this they requested an EAT, which was given as 0913. They were then asked by APP if they were operating IFR or VFR but considering the Wx they had no other choice than to maintain IFR. Within 2min they were asked if they could fly beacon outbound promptly to which he replied that they were able and that they were 1.5D on the inbound axis. They were subsequently cleared for the NDB DME 100 approach for landing RW01. They reported beacon outbound and were requested to report passing altitude 3500ft. To his surprise, as he was about to report passing 3500ft he heard another pilot make his initial call to APP announcing he was on a standard CPT departure climbing FL50. Owing to IMC he was not able to see this ac and owing to the conflicting tracks of the NDB100 procedure and the CPT departure and the similar altitudes of both ac he felt safety was at risk.

THE PA31T PILOT reports being unaware of being involved in an Airprox until contacted by UKAB post incident. He was outbound from Oxford IFR and had been cleared initially to 2500ft and then FL50 but the point at which the amended clearance was given was unknown.

ATSI reports that the Airprox occurred at 0857:38 (UTC), in the vicinity of Oxford Airport, which is situated in Class G airspace. Oxford Tower (TWR) and Oxford Approach (APP) were operating as split positions, without the aid of surveillance equipment. Traffic levels and workload were assessed as light to medium.

The PA34 was operating IFR, on a training flight returning to Oxford from the W whilst the PA31T was on an IFR flight, from Oxford to Cannes. Both flights were in receipt of a PS from Oxford APP.

CAP493 Manual of Air Traffic Services (MATS Pt1), 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.'

At 0846:52, on release from Brize Radar, the PA34 flight called Oxford Approach, *"PA34 c/s we er maintain flight level six zero."* Approach replied, *"PA34 c/s Oxford Approach Weston on the Green Danger Area one nine two active to flight level one two zero are you operating IFR or VFR."* The PA34 pilot responded, *"er we're IFR PA34 c/s."* Approach then passed a clearance, *"PA34 c/s roger at the instructors discretion route to the Oscar Xray at flight level six zero report entering the hold for the NDB one hundred procedure landing runway zero one."* The PA34 pilot responded, *"Flight level six ????? PA34 c/s."*

For ac in the hold, where the inbound heading is 100°, the alternative NDB 100 procedure is:

'From overhead NDB(L) OX(IAF) at 3500, extend outbound leg of holding pattern, after passing abeam NDB(L) OX descend to 1900(1630). At I-OXF DME6.5 turn left onto extended FAT. When established continue as for main procedure.'

At 0849:37, the TWR passed departure instructions to the outbound PA31T flight, *"PA31T c/s hold at the holding point after departure left turn standard Compton departure hold at BOTLY climb flight level five zero squawk two two three four remaining outside controlled airspace London when instructed one two zero decimal four seven five."* The pilot gave a correct read-back.

At 0850:53, the PA34 pilot reported entering the hold and APP instructed the flight to maintain FL60. This was acknowledged by the pilot of the PA34, who subsequently requested an EAT. The pilot was asked to standby and at 0851:34 an EAT of 0913 was passed and acknowledged by the pilot.

APP later explained that the plan was then changed in order to improve the EAT and provide a more expeditious approach for the PA34. At 0853:22, APP asked the PA34 flight, *"PA34 c/s if I can give you descent can you go er straight outbound."* The pilot replied, *"Affirm PA34 c/s we're er just er one er point five miles from the beacon inbound."* APP instructed the pilot, *"PA34 c/s thank you in which case descend to altitude three thousand five hundred feet on the QNH one zero two zero report beacon outbound for the NDB one hundred procedure landing runway zero one."* The PA34 pilot replied, *"Three thousand five hundred feet one zero two zero wilco PA34 c/s."*

APP then issued a revised clearance for the outbound and, at 0854:15, this was passed to the PA31 by TWR, *"PA31T c/s hold at BOTLY altitude two thousand five hundred feet and to contact Oxford Approach er when instructed before London for further climb one two five three two five."* The pilot replied, *"Okay hold at BOTLY two thousand five hundred feet and to approach initially one two five three two five PA31T c/s."*

The PA34 pilot reported beacon outbound at 0854:19 and Approach responded, *"PA34 c/s report passing altitude three thousand five hundred feet."* This was acknowledged by the PA34 pilot. Allowing the PA34 to descend below 3500ft would result in a loss of the 1000ft deconfliction minima against the outbound PA31T, restricted to 2500ft.

At 0855 the PA31T departed from RW01. APP later stated that the PA31T was monitored visually as it passed O/H the airfield and then routed to the SE of the airfield in the climb to 2500ft.

[UKAB Note (1): The PA31T first appears on recorded radar at 0856:33 1nm N of Oxford in a L turn passing through heading 350° and climbing through altitude 1200ft QNH with the PA34 1.6nm to its W tracking W'ly descending through altitude 4400ft QNH. The horizontal separation distance of 1.6nm remains the same for the next 2 sweeps, the second of which is the CPA, at 0856:49, when vertical separation has decreased to 3000ft, the PA34 descending through 4300ft with the PA31T turning through a SW'ly heading climbing through 1300ft.]

At 0857:45, the radar recording shows the PA31T to be 1.5nm SE of the airfield indicating altitude 2000ft. At this point the PA31T called Approach, *"Approach hello PA31T c/s with you passing two thousand for two thousand five hundred feet towards BOTLY."* APP replied, *"PA31T c/s Oxford Approach er good morning to you continue climb flight level five zero report passing altitude two thousand five hundred feet."* This was acknowledged, *"Continue climb flight level five zero and Wilco PA31T c/s."* APP later explained that he considered separation existed between the 2 ac, as the PA31T was visual to the SE and direction finding (D/F), indicated the PA34T to be WNW of the airfield.

Almost immediately, at 0857:58, the PA34 flight called, *"PA34 c/s passing altitude three thousand five hundred feet."* APP responded with, *"PA34 c/s roger report base turn complete"* which was acknowledged by the pilot.

At 0858:20, the PA31T pilot reported passing 2500ft and was transferred to London control. The PA34 pilot reported base turn complete and was transferred to the Tower.

APP later explained that the intention was to monitor visually the departing PA31T as it turned L off RW01 and passed through the O/H not above 2500ft. An aerodrome controller may apply reduced separation in the vicinity of an aerodrome when each ac is continuously visible to the controller; however, this does not apply to an Approach controller providing a PS. The Oxford MATS Part 2 does not have any additional provision for a reduction in the separation minima or for any form of deemed separation.

The PA34 was above cloud and cleared for the procedure without any restriction on the descent. The controller had an expectation that the PA34 would maintain 3500ft until NW of the airfield, passing abeam the OX in accordance with the published procedure and intended to use D/F to establish a form of geographical separation.

APP did not have access to surveillance equipment and was not sure of the exact position of the PA34. No TI or details of the plan were conveyed to the pilots. APP recognised that the procedure adopted was non-standard and resulted in the technical loss of the 1000ft deconfliction minima. This caused the pilot of the PA34 to be concerned that the safety of his ac might have been compromised. MATS Pt1, Section 1, Chapter 2, page 11, paragraph 1.3, states:

'In Class G airspace, separation between aircraft is ultimately the responsibility of the pilot; however, in providing a Deconfliction Service or a Procedural Service, controllers will provide information and advice aimed at achieving a defined deconfliction minima.'

Although there was a technical and procedural loss of the deconfliction minima, the radar recording shows that, at the point when the PA31T was SE of the airfield and cleared to climb above 2500ft, the distance between the ac was 6nm horizontal with 1500ft vertical separation.

The Oxford Approach controller applied a non-standard procedure that was not approved in the Oxford MATS Part 2 and that did not properly take into account any attendant risk of error. This resulted in a loss of procedural separation that reduced the required deconfliction minima to be technically less than 1000ft between the two IFR ac participating in the PS.

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 incident. Without any procedures for reduced separation or deemed separation available to the APP in the procedural environment, his non-standard technique employed had led to a loss of procedural separation. The exact position of the PA34 was not known, so that when he allowed PA34 to descend below 3500ft separation was lost and this was exacerbated when the PA31T was cleared to FL50. Although this had had the potential to have been a more serious incident, it was clear from the radar recording that the actual flightpaths flown by both ac - the PA34 was high in the NDB100 procedure whilst the PA31T's low ROC whilst turning to the S – had resulted in the ac diverging rapidly as the PA31T turned through a S'ly heading back towards the O/H, 3000ft below and 1.6nm clear of the PA34. This allowed the Board to conclude unanimously that there had not been any risk of collision during this occurrence.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Loss of procedural separation.

Degree of Risk: C.

AIRPROX REPORT No 2010101

Date/Time: 14 Jul 2010 1106Z

Position: 5308N 00317W (11nm WSW
Hawarden - elev 45ft)

Airspace: N864 (Class: A)

Reporter: Hawarden APR

1st Ac 2nd Ac
Type: HS25 A319

Operator: Civ Comm CAT

Alt/FL: 8000ft↓ ↓
(QNH 999mb)

Weather: IMC KLWD NK NR

Visibility: NR NR

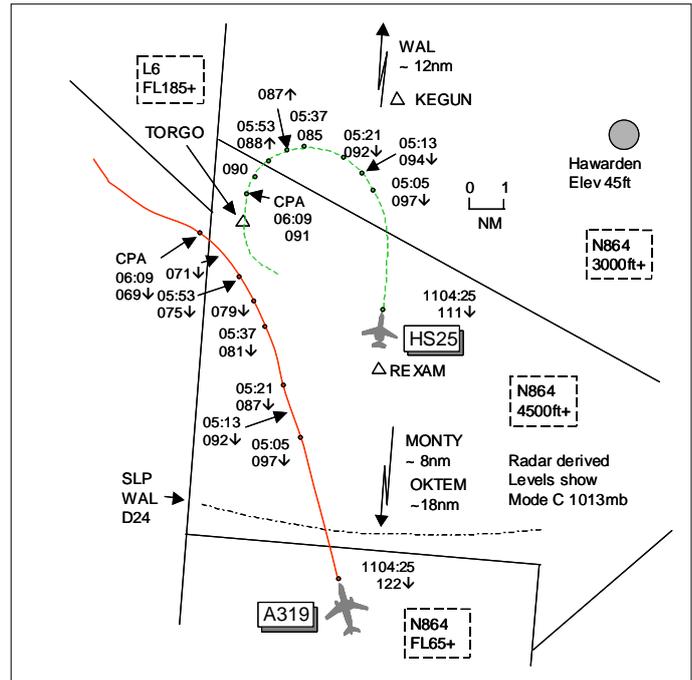
Reported Separation:

APR 200ft V/3nm H

300ft V/4nm H NR

Recorded Separation:

2200ft V/1.8nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE HAWARDEN APR reports he was the relief radar controller and took over the position at 1042. At approximately 1055 the Liverpool Radar Controller (RC) telephoned with a release on the HS25 descending to FL70 released passing FL80 straight from ScACC. Also, Liverpool RC told him about traffic 10nm behind the HS25 which was inbound to Liverpool squawking 7455 that would be descended on top of the HS25; both ac were much higher than normal. He was about to ring ScACC to confirm that he could turn the HS25 early when Liverpool RC telephoned to say that ScACC had apologised for the level of the 2 ac and asked what he was doing with the HS25. Believing that Liverpool were working the second ac he proposed to turn the HS25 L heading 090° and descend it to 3500ft. The Liverpool RC asked if it could turn R but soon realised that this course of action would not achieve the descent profile; he agreed to the L turn and confirmed that the ac had clearance into Liverpool airspace. Now believing that the HS25 was now no longer restricted to a FL80 release he turned the HS25 L onto 090°. The second ac then began to descend very rapidly and it became clear that this ac was not going to remain above the HS25 as previously agreed with Liverpool. He warned the HS25 crew, stopped the flight's descent and then tried to speak to the Liverpool RC to ask what was happening. The Liverpool Radar Assistant answered the telephone and stated that the RC was busy so Hawarden APR told the Assistant that he had stopped the HS25 at FL90 and to inform the RC. ScACC then telephoned stating that they were continuing N with the 7455 traffic having seen that the HS25 had stopped at FL90. It was only at this point that he realised that the second ac had been working ScACC throughout.

THE LIVERPOOL APR reports receiving 2 releases from Scottish, the first being the HS25 descending to FL70 and released passing 80. Approximately 10nm behind was the A319 descending to FL80 and released passing FL90. Scottish was advised to pass the HS25 straight to Hawarden, as it was the APR's intention to descend the A319 on top. The release details were passed to Hawarden along with the squawk and position of the A319 as well as the APR's intention to descend the A319 on top of the HS25. Scottish called to ask whether, as the HS25 was not descending very well, the APR would like the A319 on a heading to save putting the flight into the hold. The APR asked Scottish to pass both flights over so that the APR could deal with it; however, Scottish stated

that the HS25 had already been transferred to Hawarden. The APR then asked Scottish to put the A319 on a heading of 350° to widen it out a little bit as it was still high and told Scottish that Hawarden would be informed. Hawarden were called and they advised that they were going to turn the HS25 L all the way around onto 090° and descend to 3500ft. The APR initially asked Hawarden to turn the ac R, as this would have vectored it away from the RH base leg for Liverpool RW09, but as the A319 was still high anyway and the HS25 had not yet reached its release point, the original plan to turn it L was acknowledged. Whilst waiting for the A319 to come over from Scottish it was noticed that the HS25 was commencing its L turn before its release point but it was assumed it was descending to 3500ft. The APR immediately called Scottish to advise them to stop the descent of the A319 and to inform them of what Hawarden were believed to be doing with the HS25. Scottish issued avoiding action to the A319 and then Hawarden called stating they were climbing the HS25 against the A319.

THE SCACC W/OM RADAR CONTROLLER reports that 2 ac were routeing to KEGUN. The first was an HS25 for Hawarden released to FL70 out of FL80, which was transferred to Hawarden through about FL140. The HS25 flight was instructed to expedite descent but in his opinion did not. The second ac was an A319 flight inbound to Liverpool which was constantly asking for descent and it was initially descending on top of the HS25. He turned the A319 L and descended it to FL80 believing that his Planner had told him to, following further coordination with Liverpool Radar. The HS25 turned L passing FL100 so he turned the A319 a further 20° L. As the HS25 kept turning L and the A319 was already just through the level of the HS25 he instructed the A319 flight to descend to FL60 and expedite. He then saw that avoiding action was necessary and gave the A319 an avoiding action L turn onto 270°. Separation was regained and he continued until he was relieved shortly afterwards.

THE SCACC W/OM PLANNER CONTROLLER reports she released the HS25 to FL70 to KEGUN out of FL80 and the A319 to FL80 out of FL90 to Liverpool. Liverpool advised that the HS25 could be transferred straight to Hawarden and she wrote this on the fps. From the radar display she could see both ac were running high so she called Liverpool to inform them and they said that they were happy and to transfer both flights to them. She told Liverpool that the HS25 had already been transferred to Hawarden and so to prevent the A319 having to enter the hold could they accept the A319 on a heading. Liverpool agreed and asked them to put the flight on heading 350°. She conveyed this to the Tactical controller who said, "that was good as that was the heading he had just put the ac onto". At this point she saw that the A319's Mode S SFL indicated FL80; although the A319 flight had been requesting further descent from Tactical, she was surprised to see that it had been given. At 1105 Liverpool called and said, "watch the descent on the 'A319 company' as Hawarden were turning the 'HS25 company' left onto 090° (both before reaching KEGUN and contrary to the RH holding pattern) and descending to altitude 3500". The HS25 was passing through approximately FL98 and the A319 FL96 at this point. She told Tactical to stop the A319's descent and informed him what Hawarden were doing with the HS25. She told Tactical that he should give avoiding action to the A319. Tactical gave avoiding action but said that as the A319 was below the HS25 he gave further descent; STCA was activating red. She telephoned Hawarden and, at the same time saw that the HS25 was climbing, told Hawarden that they were avoiding and that the A319 was also descending to FL60. She next called Liverpool and re-released the A319 when it was clear of the HS25 before informing the LAS that a loss of separation had occurred. She believed that Liverpool and Hawarden agreed an amendment to the original releases issued without her authority.

THE HS25 PILOT reports inbound to Hawarden IFR, routeing EXMOR OKTEM for a KEGUN 2D arrival, squawking an assigned code with Modes S and C. He was unsure of the frequency he was on at the time; the last frequency noted was Scottish on 119.025MHz [actually Hawarden 123.35MHz] but he thought he was under a TS. On initial descent towards Hawarden at 230kt they were cleared to 6000ft QNH inbound KEGUN before they were told to start a L turn to a S'ly heading; they were under control and IMC at the time. On passing 8000ft they received a call to, "stop descent FL90". The AP was disconnected and the ac was transitioned from a 1500fpm descent to a steep climb – pitch 10° nose up. With QNH 999mb they were approximately FL84 at the transition to climb. A couple of seconds after transitioning to the climb they received a TCAS TA which lasted a couple of seconds before clearing, the other ac appearing in their 10 o'clock range 4nm and about 300ft low.

They notified ATC of their level and ATC responded apologising for a 'mix up with Liverpool ATC'. At no point did they visually acquire the other ac owing to IMC in cloud, assessing the risk of collision, based on TCAS, as low. He did not report an Airprox as they did not feel an Airprox occurred. It was clear to them that a communication issue between ATSU's had led to a clearance that was not intended but which was aggressively rectified by them at the time.

THE A319 PILOT reports inbound to Liverpool IFR and in communication with Scottish, squawking an assigned code with Modes S and C. In the EXMOR area another flight – the HS25 – was ahead of them on the same route. They were receiving delayed descent clearances owing to the HS25 ahead apparently not complying with ATC requests. On at least 3 occasions they heard the HS25 flight being asked to expedite descents but to no avail. Consequently they were receiving limited descents and level-offs, going high on profile. Finally they were asked to reduce speed to an unusually slow 220kt (FL200ish) to help the situation. He made comment to the FO that this was unusual and that he was beginning to feel uncomfortable. To make a point they told ATC they were getting close to minimum 'clean' speed and didn't want further speed reductions at height. They couldn't understand why the HS25 was reluctant to lose height, as they were high for Liverpool so the HS25 must have been very high for Hawarden. Eventually the HS25 changed to another frequency and they were put on a heading L of their track to KEGUN. They continued their descent and shortly after received a further 30° L turn owing to conflicting traffic. They complied with ATC instructions with AP 'in' and, of note, did not receive a TCAS RA but neither he nor the FO can remember if a TA was generated. He assessed the risk as low.

ATSI reports that at the time of the Airprox, the HS25 was under the control of the Hawarden APR. The A319 had not yet been transferred to Liverpool but had remained with the Prestwick Control (PC) Wallasey/IOM Sector. In accordance with local procedures, the Liverpool APR had received the inbound releases for both ac from PC and had advised Hawarden accordingly.

Both the Liverpool and Hawarden Controllers described their respective workload as light and the Wallasey/IOM Tactical Controller reported his as light to moderate.

The procedures for Airways flights into Hawarden and Liverpool from the S via Airway N864 are stated in the UK AIP (i.e. KEGUN 1D STAR: 'Arrival via N864 to **MONTY** continue on **WAL VOR** R186 to **KEGUN** then turn left to **TORGO**, then turn left to intercept **WAL VOR** R186 to **KEGUN**'). The only level restriction is FL200 before **OKTEM**. Additionally, a separate box within the arrival chart, which is titled 'DESCENT PLANNING – ATC REQUIREMENTS,' states: "When determining top of descent point, pilots should anticipate possible descent clearance to the level shown in the table above (i.e. FL200) and possible clearance to FL70 by the SLPs (Speed Limit Points). Pilots unable to comply must notify ATC as soon as possible.' The KEGUN 1D SLP is WAL D24.

The subject ac were routing N'bound on Airway N864, in communication with the Wallasey/IOM Sector. The Sector Planner telephoned Liverpool Approach at 1100, in accordance with agreed procedures, to pass inbound releases for the 2 ac (i.e. HS25 "At KEGUN we'll do Seven Zero erm out of Eight Zero followed by"). Liverpool acknowledged only with, "Yeah", then, "A319 c/s Eight out of Nine". The Liverpool APR read back, "eight out of nine," and continued, "the er HS25 operator can go straight to Hawarden", which was acknowledged by the Planner. Flights inbound to Hawarden from the S via N864 (as described previously in paragraph above) follow the same routing as Liverpool inbounds. The Liverpool APR later commented that there was no requirement to work the HS25, as it was ahead and below the A319 and there were no other ac likely to conflict with it. The intention was to provide separation between the 2 ac by descending the A319, when in contact, on top of the HS25, ensuring that the required 1000ft vertical separation was maintained. When the releases were passed by PC, the HS25 was approximately 26nm S of KEGUN, passing FL179 for FL90 and the A319 was 9.6nm behind, passing FL206 for FL160. The Wallasey/IOM Planner stated in her report that she could see that the 2 ac were "running high", which reportedly is not an unusual occurrence for ac being transferred on that route from Swanwick Centre.

The Liverpool APR informed Hawarden, by telephone, of the HS25's release, "Seven released out of eight", which the Hawarden Controller read back correctly. Additionally, Liverpool passed information

about the A319, stating it would, *“descend on top”*. The RW in use at Hawarden was RW22. Instrument approaches to RW22 require entry into the Liverpool CTR. A section of the CTR is delegated to Hawarden for instrument approaches, (when coordinated with Liverpool). This is the Hawarden Radar Manoeuvring Area (HRMA), which stretches from the surface to 2500ft. Hawarden inbound traffic vectored for RW22, should be descended to 2000ft and must be at or below 2500ft upon entering the HRMA. In order to avoid conflicting with Manchester SID traffic, Hawarden shall not vector inbound traffic E of a line drawn N/S through Liverpool Airport, at levels above 3500ft. At 1101:35, Hawarden requested permission to enter the HRMA but were asked to check again later.

At 1102:37, in accordance with its release, the Wallasey/IOM Tactical Controller instructed the HS25 flight to, *“descend Flight Level Seven Zero expedite your descent all the way down please”*. The pilot replied, *“Okay we’ll expedite down to Seven Zero”*. The HS25 was passing FL149; the A319 was 8-9nm behind, passing FL166, having been cleared to FL140 after requesting further descent. The HS25 was then transferred to Hawarden Approach as had been agreed; no “level by” restriction was issued to the flight before transfer. On first contact with Hawarden, the HS25 flight was instructed to descend to altitude 3500ft and at the pilot’s request, the Hawarden weather was passed, *“surface wind One Six Zero degrees at One Two knots visibility in excess of ten kilometres the cloud is few at One Thousand feet scattered One Thousand Five Hundred feet...”*. At about the same time, the A319 again requested further descent with PC. The controller explained to the pilot that there was slow descending Hawarden traffic ahead. The pilot responded, *“Yeah we can see that erm we’re just er got a bit of a tail wind as well about six thousand feet high at the minute”*. The controller replied, *“in that case then turn left ten degrees and descend Flight Level Eight Zero”*. The Wallasey/IOM Tactical explained later that he believed that the Planner had agreed FL80 for the A319 with Liverpool, although, with hindsight, he realised that no coordination had taken place between him and the Planner. It is possible he overheard the discussion between the Planner and Liverpool and noted FL80 on the A319’s fps, which had been annotated at the time of its release. His assumption was that Hawarden would route the HS25 to the E after it had passed its release level (FL80). Depending on its descent profile, this would be either before, or after, it had passed KEGUN. Consequently, by positioning the A319 to the W of the traffic, he assessed that it was not necessary to maintain vertical separation of 1000ft between the 2 ac. He confirmed that he was aware of the Hawarden vectoring restrictions and the direction of the KEGUN holding procedure.

[UKAB Note (1): In the 2min prior to the Wallasey/IOM Tactical clearing the HS25 flight to expedite descent to FL70, the ac’s ROD averaged 1750fpm which increased to 2200fpm over the period of the next 3min.]

Whilst the Tactical Controller was instructing the A319 to descend and turn (1103:35), the Planner was in discussion with Liverpool about the traffic situation with the subject ac, especially the slow descent of the HS25. Liverpool offered to work both flights but was informed that the HS25 had already been transferred to Hawarden. The Planner asked if the A319 should be placed on a heading to avoid entering the hold at KEGUN. Liverpool suggested heading 350°, which was accepted. Liverpool said they would talk to Hawarden. Incidentally, this was the heading already issued by the Tactical Controller, which reinforced his belief that the HS25 would be routing to the E of KEGUN, away from the A319’s track.

Liverpool telephoned Hawarden, saying that Scottish had apologised for the ac being high. Hawarden were asked, *“What are you intending to do with your HS25 c/s”*. The call continued, Hawarden: *“er well if you’re happy I’ll turn him now left long way round and turn him on to a heading of about Zero Nine Zero”*.

Liverpool: *“Can you turn him right”*.

Hawarden: *“Right”*.

Liverpool: *“Awe well you want to turn him le- no that’s fine you know Manch-er Scot-he’s have you given him further descent”*.

Hawarden: *“Er down to three and a half yeah”*.

Liverpool: *“Yeah that’ll be great thanks left on Zero Nine Zero’s fine and the R M A’s yours”*.

Hawarden: *“Thanks very much”*.

Shortly afterwards, at 1104:29, Hawarden instructed the HS25 flight to, *“turn left long way round heading Zero Nine Zero degrees”*. The radar shows the HS25 passing FL110, approximately 5nm from KEGUN. The A319 is passing FL122 descending to FL80, on heading 350°, 7.6nm to its SSW. The turn issued to the HS25 would result in it turning back towards the A319, with no provision of vertical separation.

Later the Hawarden APR admitted that he had turned the HS25 before it was released (i.e. before it passed FL80). He explained that, when he was discussing his plan for the HS25's arrival routing with Liverpool, he believed that they were controlling the A319. Consequently, he believed that they were agreeing with his plan, allowing him to turn the HS25 early, especially as he had stated his intention to turn the ac *“now”* (see paragraph above). However, the Wallasey/IOM Sector had still not transferred the A319 to Liverpool. The Hawarden APR's decision to turn the HS25 L was to allow him to comply with the altitude restrictions as the ac was vectored downwind. Additionally, it also followed the direction of turn of the KEGUN hold, although any hold at KEGUN would need to be coordinated with PC, as well as Liverpool. The Liverpool APR did not believe that Hawarden were intending to turn the HS25 straight away, expecting the controller to comply with its release and probably turn it at KEGUN. The Liverpool APR commented that if a change of its release with PC had been coordinated, the APR would have informed Hawarden accordingly. The Liverpool APR did suggest a R turn initially, as that would result in it turning away from the A319, which was positioning to the NW for Liverpool's RW09. Initially, both controllers believed that the Wallasey/IOM Sector was descending the A319 on top of the HS25, maintaining a vertical separation of 1000ft. If this had been the case, the direction of turn would not have affected the separation between the 2 ac.

At 1105:09, the Hawarden APR realised that vertical separation was not being maintained between the 2 ac; his initial reaction was to instruct the HS25 flight to expedite descent. The radar shows the HS25 descending through FL97, 7.2nm N of the A319, which is also passing FL97. After trying, unsuccessfully, to contact Liverpool to establish the cleared level of the A319 (he still believed it was under Liverpool's control), he changed his plan. Observing that the A319 was descending quicker than the HS25, he instructed the pilot of the HS25 (1105:20) to stop its descent at FL90; he recollected that the Mode C SSR return of the ac showed it was passing FL92 at the time. The radar recordings at 1105:37 reveal that the pilot was unable to stop the ac's descent until it reached FL85. The pilot did comment that he was climbing back to FL90. By this time, the HS25 was 5nm N of the A319, which was passing FL81. At 1105:47, the Hawarden APR telephoned Liverpool to inform them that he had climbed the HS25 back to FL90. The call was taken by the Liverpool Radar Assistant, who was asked to pass the message to the controller.

At 1105:17, the Liverpool APR, also realising the potential confliction between the 2 ac, telephoned the Wallasey/IOM Sector to request them to stop the A319's descent. The Tactical Controller had just instructed the A319 flight to turn L heading 330°. The radar shows the HS25 in its L turn passing through a NW'ly heading, 6.8nm N of the A319. The HS25 is passing FL94 and the A319 FL92. Liverpool advised the Wallasey/IOM Planner that Hawarden were turning the HS25 L heading 090° and descending to 3500ft. The background of the RTF recording reveals that the Planner advised the Tactical Controller, *“You'll have to stop the descent on the (A319 company)”*. The Planner then realised that Hawarden were climbing the HS25 and made a comment off telephone to the Tactical Controller, *“They they're going to Three and a Half Three Thousand feet with that HS25 company you'll have to do avoiding action and go”*. *“Stop descent stop descent”*. The Planner then telephoned Hawarden to inform the controller of the action taken by the Wallasey/IOM Sector.

As soon as the Tactical Controller had received a read back from the pilot of the A319 of the instruction to turn L heading 330°, he instructed the flight to, *“expedite through FL60”* (NB: At the time it had been cleared to descend to FL80). The pilot replied, *“Descend Flight Level Six Zero and expediting all the way”*. Immediately afterwards avoiding action was issued (1105:35), *“A319 c/s in fact avoiding action turn left now heading Two Seven Zero degrees the traffic's in your one o'clock range five miles”*. The pilot read back the revised heading. Shortly afterwards the pilot was informed that he was clear of the traffic and was instructed to turn R heading 030°. Having resolved the confliction, the Planner coordinated with Hawarden and Liverpool the further course of action for the 2 ac. During the discussion with Hawarden, the latter controller realised (for the first time) that Scottish

were working the A319 and not Liverpool. In the event, as a result of the avoiding action issued, the A319 left CAS, although the pilot was not informed, there was no observed traffic in its vicinity at the time.

[UKAB Note (2): After the HS25 arrests its descent at FL85 it commences a climb whilst the A319 continues its descent. Although lateral separation continues to decrease, vertical separation increases, the sweep at 1105:53 showing 3-4nm and 1300ft. The CPA occurs at 1106:09 as the HS25 turns through S at FL91 with the A319 1.8nm to its SW turning L through heading 310° and passing FL69 in descent.]

Discussion took place with all of the controllers concerned, about the action that should have been taken to prevent an Airprox and/or a loss of separation occurring. There is no requirement for Liverpool to control traffic to Hawarden when there are no other conflicting ac. Accordingly, there is no criticism of the Liverpool Controller for deciding not to work the HS25; however, if this had occurred, then the incident would probably not have happened. Having stated this factor, the situation could still have been resolved if coordination with the Wallasey/IOM Sector had taken place. The inbound release for the HS25 could have been agreed to allow an early turn or use of the hold at KEGUN in order to lose the height. The operational requirements for Hawarden traffic approaching KEGUN includes informing Liverpool APP and the Wallasey Sector whenever they are required to hold ac at KEGUN. Additionally, Hawarden will not vector traffic N of KEGUN, unless specifically coordinated. Notwithstanding any of the comments above, if the Wallasey/IOM Tactical had maintained 1000ft vertical separation above the HS25 as originally intended, separation would not have been lost.

Albeit, that if the current procedures had been followed, the incident would probably not have occurred, the ATC Units involved are reviewing their procedures to ascertain whether they need to be improved.

The initial factor, which led to the Airprox, was the higher than optimum level of the subject ac inbound to KEGUN. Thereafter, a number of erroneous beliefs and assumptions were made by the controllers involved. The Hawarden APR believed throughout that the Liverpool APR was controlling the A319; accordingly, when he was discussing his routeing plan for the HS25 with the Liverpool APR, he believed that coordination had been agreed to turn it L early (i.e. before its release level). He had been informed by Liverpool that the A319 would be descended 1000ft vertically above his traffic, so assumed that vertical separation would be maintained as the HS25 turned towards the A319. With hindsight, it is possible to understand why he may have made the assumption that the early L turn had been approved, especially when the Liverpool APR said, *“yeah that’ll be great thanks left on Zero Nine Zero’s fine”*. However, Hawarden should have realised that the Liverpool Controller was not able to change the release issued by the Wallasey/IOM Sector, without coordination with the sector. The Wallasey/IOM Tactical did not maintain vertical separation of 1000ft between the 2 ac as originally intended and descended the A319 to a level not vacated by the HS25. Consequently, it is assessed that the Hawarden APR and the Wallasey/IOM Tactical share the responsibility for this Airprox occurring. Additionally, the poor phraseology used by the Liverpool controller was considered a contributory factor. If the Liverpool APR had been more careful in the phraseology used during the coordination communication with Hawarden (i.e. when saying the L turn for the HS25 was *“fine”*), the incident may not have occurred.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The comprehensive ATSI report was commended by Members, noting that the whole incident had occurred over a relatively short period of 6min. Pilot Members wondered why the HS25 crew had not expedited their descent. The A319 was 6000ft high for Liverpool so the HS25 was very high owing to

the fewer track miles for Hawarden. For whatever reason, the HS25 had ended up higher than the preferred descent profile which had led to the A319 been held up following behind. The releases from ScACC had been given to Liverpool who passed the HS25 release to Hawarden as well as TI on the A319, stating that it would be descending on top. The Wallasey/IOM Tactical had then descended the HS25 to FL70 but had not given the flight any 'level by' restriction; such a restriction, stating the level was to be achieved by a designated fix (SLP), would have put an onus on the crew to inform the controller if they could not comply with the clearance. Notwithstanding, the clearance did include the phrase "...expedite your descent all the way down" which had elicited a slight increase in the ac's ROD, up to 2200fpm. After the HS25 flight had been transferred to Hawarden, the A319 crew had asked for further descent. The Wallasey/IOM Tactical had assimilated the A319 crew's "...6000ft high..." message and elected to turn the flight L 10° to create more track distance for a RW09 approach and descend it to FL80, the previously accepted level agreed with Liverpool. Members noted that the Wallasey/IOM Tactical had dispensed with vertical separation, which he was entitled to do as both the HS25 and A319 were still within his airspace and subject to releases, as he would have expected the HS25 to continue on its track until it passed FL80. However, it was clear to controller Members that the crux of the Airprox was the coordination carried out between Liverpool and Hawarden. Although there had been numerous assumptions made by all parties, the Liverpool APR had led the Hawarden APR to believe that the L turn onto 090° by the HS25 was approved when, clearly from the ATSI investigation report, it was inappropriate and beyond the remit of the Liverpool controller. This had led the Hawarden APR to turn the HS25 early and into conflict with the A319 which had caused the Airprox. Liverpool APR knew that the ScACC releases could only be amended following further coordination with the Wallasey/IOM Sector, and should have negotiated with ScACC before agreeing the turn before FL80 with Hawarden.

Fortunately, all controlling parties quickly took action when the HS25's L turn and A319's descent resulted in a confliction. The Hawarden APR stopped the HS25's descent whilst the Wallasey/IOM Tactical expedited the A319's descent to FL60. The Board agreed these two actions had quickly and effectively removed any risk of collision.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Liverpool APR inappropriately agreed coordination with Hawarden APR, who turned the HS25 into conflict with the A319.

Degree of Risk: C.

AIRPROX REPORT No 2010120

Date/Time: 2 Sep 2010 0923Z

Position: 5309N 00219W (0.75nm N
Arclid M/Light site - elev 262ft)

Airspace: LFIR (Class: G)

Reporting Ac Reported Ac

Type: Pegasus Quik MD900
GT450 Flexwing Explorer

Operator: Civ Trg Civ Pte

Alt/FL: 700ft 1300ft
(QFE 1012mb) (QNH)

Weather: VMC NR VMC CLOC

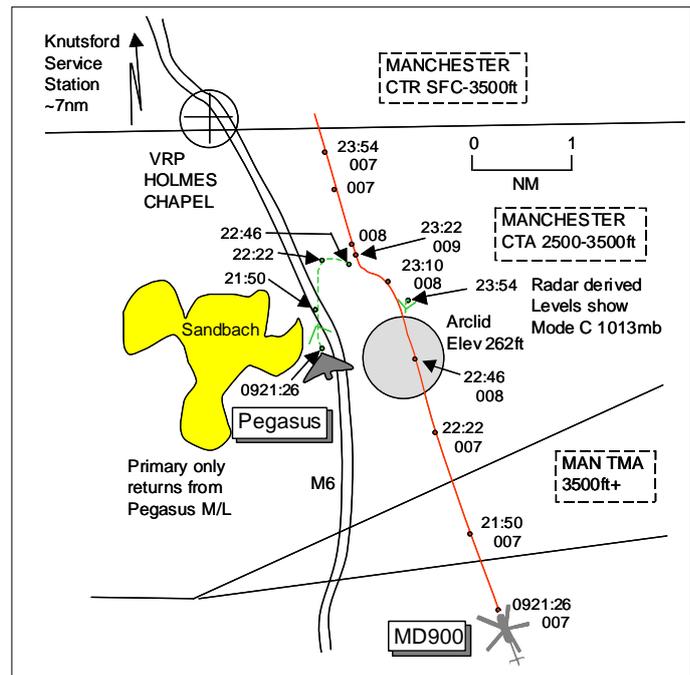
Visibility: >10km 20km

Reported Separation:

Nil V/200m H 100ft V/1000m H

Recorded Separation:

NR



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PEGASUS QUIK GT450 FLEXWING PILOT reports flying a dual training cct sortie from Arclid, VFR and monitoring the M/Light frequency 129.825MHz. The visibility was >10km in VMC and the ac's flexwing was coloured yellow/white. Whilst on R base leg RW20 at 700ft QFE heading 090° at 52kt, he was describing the next stage of flight to the student when he noticed movement in his R peripheral vision. On taking a closer look he saw a black or blue coloured medium sized helicopter, possibly a Eurocopter type, on a collision course heading 300° at the same height a few hundred metres away (0.25nm). He took control and descended to the L noting the helicopter also took avoiding action, he thought, by turning to its L; the helicopter then passed down his RHS by 200m. After landing he contacted Manchester Airport to report the Airprox. He believed there was a high risk of collision as the helicopter flew through the centre of an area of intense M/Light activity - the airfield is shown on charts - at cct height, with the ac involved being close enough such that the pilots felt the need to take avoiding action.

THE MD900 EXPLORER PILOT reports en-route to Barton, VFR and in communication with Manchester Approach, squawking an assigned code with Modes S and C. The visibility was 20km in VMC and the ac was coloured black with strobe lights on. Heading 350° at 1300ft QNH and 110kt they saw a powered delta-wing hang-glider about 1000m away as it was already passing down their LHS about 100ft above. In their opinion this was not an Airprox, there being no risk of collision and no avoiding action was taken by either ac.

UKAB Note (1): The UKAB Secretariat telephoned the Capt of the MD900 to discuss the disparate viewpoints of the incident. After informing the Capt of the geometry, he stated that the M/Light he had seen in the area had passed well clear to his L and above, not to his R and below as reported by the Pegasus pilot. Also, he had not made an avoiding action L turn near to Arclid but thought it might have been a track change to comply with the limit of the clearance issued by Manchester ATC to remain W of a VRP.

ATSI reports that the Airprox occurred at 0923, in the vicinity of Arclid airfield, situated in Class G airspace, 12.5nm to the SSW of Manchester Airport. Arclid is notified in AIP ENR 5-5-4-1 as a Microlight site (elevation 262ft). The Airprox was reported by the pilot of a Pegasus Quik GT450

M/Light, operating VFR in the cct for RW20 at Arclid airfield and not in receipt of an ATS. The Manchester METAR: EGCC 020920Z 00000KT 9999 NSC 18/11 Q1022 NOSIG=

At 0910:00 the MD900 pilot contacted Manchester Radar reporting on a VFR flight from a private site near Eastbourne en-route to Manchester Barton. The pilot reported at altitude 1400ft, QNH 1022, and requested a BS. Radar recording showed the helicopter's position as 25nm SSE of Arclid airfield tracking 350°. Manchester Radar agreed a BS and allocated a squawk 7353. At 0911.20 the MD900 pilot reported 4nm SW of Stafford and the pilot was instructed to plan on a direct route to Barton but to remain outside CAS. At 0916:50 Manchester Radar identified the MD900 and confirmed a BS outside CAS however, there was no response from the pilot.

At 0918:00 Manchester Radar advised the MD900 pilot to route W of Knutsford Services [10nm NNW Arclid on the M6] to enter the CTR then direct to Barton not above 1250ft VFR. This was acknowledged correctly by the pilot. The radar recording showed the MD900 10nm SSE of Arclid and tracking 340° towards Arclid airfield.

[UKAB Note (2): By 0921:26 the MD900 is 4.2nm SSE of Arclid indicating FL007 (970ft QNH 1022mb) with an intermittent primary only return, believed to be the Pegasus M/Light, 0.75nm W of Arclid tracking 360° in the MD900's 1130 position range 3-25nm. The Pegasus M/Light continues on steady track until 0922:22 when it is seen to commence a R turn, rolling out on an E'ly track base leg for RW20. The Pegasus M/Light fades after the sweep at 0922:46 when it is 1nm NW of Arclid at which time the MD900 is passing O/H Arclid indicating FL008 (1070ft QNH). As the MD900 reaches 0.8nm N of Arclid it turns L about 45° for a short period before resuming track. Just as the MD900 is about to enter the Manchester CTR at 0923:54, the Pegasus M/Light reappears on radar 0.4nm N of Arclid tracking 190° on final for RW20. The CPA is not captured as it occurs during the radar fade period of the Pegasus whilst on base leg.]

At 0926:14 the MD900 pilot reported abeam Knutsford, routing direct to Barton not above 1250ft VFR and 2min later at 0928:13 the flight was transferred to Manchester Barton retaining the squawk.

The Manchester Radar controller has no recollection of the MD900 pilot making any comment about the incident, whilst in receipt of a BS. MATS Pt1 Section 1, Chapter 11, Page 4, paragraph 3.1.1, states:

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

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

Members agreed that this Airprox would not have occurred had the MD900 pilot taken due regard of the airspace in which he was flying. Arclid is marked on 1:250000 and 1:500000 charts and as such M/Lights should be expected in the cct area during daylight hours. All that was required was a small course deviation early on to route clear of the O/H and/or a cruising altitude that was well above the cct. In this case the MD900 pilot flew through the Arclid O/H at cct height and came into conflict with the Pegasus M/Light, which he did not see, and this had caused the Airprox.

The MD900's L turn, reported by the Pegasus pilot as avoiding action, was in fact a navigational turn, but it helped to increase the separation between the 2 ac as they passed. The Pegasus pilot did well to spot the approaching MD900, owing to its small head-on target aspect, about 0.25nm away and had turned L to avoid it, estimating separation as 200m. This prompt manoeuvre flown by the

Pegasus pilot was enough to convince the Board that any risk of collision had been effectively removed.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The MD900 pilot flew through a promulgated and active M/Light site and into conflict with the Pegasus M/Light, which he did not see.

Degree of Risk: C.

AIRPROX REPORT No 2010121

Date/Time: 31 Aug 2010 1734Z

Position: 5749N 00401W (Tain Range)

Airspace: EGD 703 (Class: G)

Reporting Ac Reported Ac

Type: Tornado GR4 PA28

Operator: HQ AIR (Ops) Civ Pte

Alt/FL: 1000ft 150ft
(QFE 1023mb) (QNH 1023mb)

Weather: VMC CLOC VMC CLBC

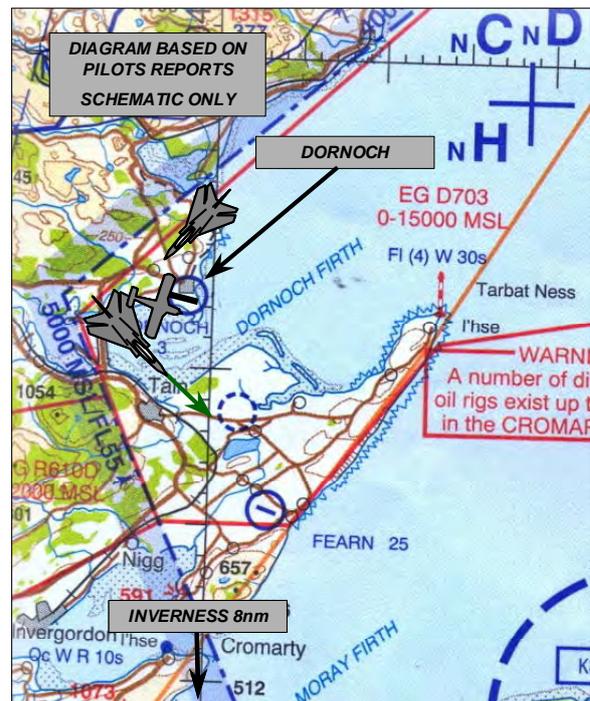
Visibility: 10km 15nm

Reported Separation:

500ft V/500ft H 300ft V/1nm H

Recorded Separation:

NR



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE TORNADO GR4 PILOT reports leading a pair of ac conducting practice weaponry in Tain Air Weaponry Range (AWR) (EGD 703 See UKAB Note (1)) squawking 7002 with Mode C. Leader was heading 130° at 500kt, 3nm W of the Range Control Tower and about to commence a high energy 'pop' manoeuvre in order to attack a target from the West, when a light ac was seen 1000ft away in the Range Danger Area, at a height of about 1000ft agl just to the left of his nose but flying away from him. He immediately passed the 'stranger's' position to his No2 who was in 30sec trail behind him and then informed the Range Safety Officer (RSO) of the light ac and requested its heading and intentions. The RSO then identified the 'stranger' and informed them that the ac was seen to be exiting the Range to the NW.

When the 'stranger' was clear of the Range Danger Area the GR4 leader commenced an attack from the East and then exited the range to the S to RTB, while his No2 remained for a further pass. As Tornado 2 recovered from his attack he saw the ac again, appearing to have re-entered the Range from the NW, and he climbed above the ac in order to avoid a conflict. The RSO then informed him that the ac had re-entered the Range and was now exiting to the W.

They recovered to RAF Lossiemouth without further incident and assessed the risk as being Medium.

THE TORNADO STATION comments that they have highlighted the issue of penetrations of 'safe areas' in a recent Staneval newsletter.

THE PA28 PILOT reports that he took off from RW05 at Inverness on a private VFR flight to Dornoch Airstrip in a blue and white ac. He was initially flying at 75kt, in receipt of a BS from Inverness, squawking as directed with Mode C, with Tain Range frequency set as the standby. Shortly into the flight he was informed by Inverness he would be transferred to Safety Com, which he then set as the standby freq in place of the Tain frequency. While at about 2500ft over the Black Isle [outside EGD 703] he called APR and then switched to Safety Com as instructed.

On arriving at Dornoch he remained 1/3nm S of RW, checked the windsock and prepared to enter right base for landing on RW10; at that point his passenger, also a pilot, said he had seen another ac. This caused him concern and as a result he became high on the approach so he executed go-around. Shortly into the climb he saw a jet ac to the left of his nose over the water about 1nm ahead

turning and possibly climbing from low level. He immediately made a 120° turn to right onto a heading of about 220° and climbed to 2500ft to depart the area without delay.

He assessed the risk as being low.

After landing at Inverness he telephoned TWR and Tain Range to discuss this incident. The flight time from the freq change to Safety Com was very short (about 10 min) and indicated to him that the Range was inactive. At no time in this flight was he advised to contact Tain range.

He pointed out that on a previous flight to Dornoch at about the same time in the evening, he was also instructed by Inverness APR to use Safety Com and he landed at Dornoch without incident. Further, the only times Inverness APR had advised him to use Safety Com were on flights in the Dornoch area when Tain Range was not active. As a consequence he considered that the transfer to Safety Com by Inverness APR indicated the range was not active; on other flights in the area when the range was active he had contacted Tain on 122.75 as he would have done on this occasion had he not been advised to go to Safety Com.

THE TAIN RSO reported that 2 Tornado GR4 ac based at RAF Lossiemouth entered EGD 703 from the West to operate in the range. They reported seeing a light ac above the town of Dornoch, which is within the boundary of EGD 703, at about 1000ft. The light ac headed W and departed EGD 703, before turning N. The Tornados then set up for a run-in from Brora; both ac came through [the target] before leader departed the range and No2 set up for a run-in from the E.

He then saw the light ac again overhead Dornoch with Tornado 2 turning towards it so he informed the crew of the position of the ac and they replied that they were visual with it.

The light ac then turned W and, after passing Dornoch Bridge, it appeared to turn S towards Inverness so he called D&D to request that they identify the ac and put a call out on VHF guard to ask the ac's intentions. D&D spoke to Inverness ATC who said they believed the ac to be a PA28 Registration x-xxxx. He then called Inverness APR who said they had spoken to the pilot when the ac left their airspace and they had instructed him to go to the Safety Com Frequency.

At 1910 the pilot telephoned and said that he had been instructed by Inverness APR to transfer to Safety Com. The RSO informed the pilot that he would be submitting a report as the pilot had not requested permission to enter EGD 703 and had come close to a fast jet ac. Later he spoke to the Tornado Leader and the No2 navigator, who said the light ac was about 500 ft and 2/3nm away.

A transcript of the RT was provided.

INVERNESS ATC were not aware of the Airprox and did not provide a report.

HQ AIR BM SM commented that a Tornado GR4 pair was operating within an AWR (EGD 703) when an Airprox occurred with a PA28 that had infringed the range. Reports from the GR4 leader, the RSO, a radar replay and a RT tape transcript, were available to conduct this analysis; the radar replay, however, was inconclusive, therefore the investigation was conducted using information gained from the reports and RT transcripts.

The GR4 crews were conducting practice weaponry in the AWR and made initial contact with the RSO at 1731:33, when they received a range joining clearance. At that time the RSO was not aware of the presence of the PA28; therefore TI was not passed on initial contact. The first indication the RSO had of other traffic was when Tornado Leader reported an ac in their vicinity at 1734:44. This prompted the RSO to look in the reported position and where he saw a PA-28 (registration later identified). As the Tornados made a further run at 1739:44 the RSO again saw the PA28 overhead Dornoch Hotel, he estimated at 1000ft. He passed TI and Tornado leader reported visual and manoeuvred the formation to pass above the ac. The remainder of the sortie passed without incident and Tornado 2 reported leaving the range at 1742:00.

RSOs at AWRs generally operate without of surveillance equipment; consequently, their awareness of ac operating on the extremities of the AWR is dependent upon pilots operating in the area making information calls to them, under the auspices of the Danger Area Activity Information Service (DAAIS). Furthermore, the UK Mil and Civ AIP at ENR 5.1 states:

“aircraft wishing to use Dornoch or Easter aerodromes during range opening hours are to contact Tain Range on 122.75 prior to entering the range.”

This incident happened in a notified AWR and as such the ac operating within it are assumed to be protected from other airspace users in order to carry out weaponry sorties with tactical freedom. In this case the RSO carried out his duties effectively and, once aware of the proximity of the PA28, continued to scan in order to help provide early warning to the Tornados.

ATSI commented that the PA28 was on a VFR flight from Inverness Airport to Dornoch airfield.

Inverness was operating combined TWR and APR control positions but at the time of the incident neither ac was in receipt of a service from Inverness.

The Inverness weather was:

METAR EGPE 311720Z 05006KT CAVOK 16/08 Q1023=

At 1721 the PA28 departed from Inverness airport for Dornoch displaying the Inverness SSR conspicuity Code 6177. At 1723 the PA28 was asked to report when intending to change frequency for Safety-Com Dornoch.

At 1723 the Tornado formation called Inverness saying, *‘north to routeing doors to the Beaully then north to Tain’*; at 1725:30 they reported clearing the gap and were instructed to report ready to leave the frequency for Tain. Inverness passed the formation TI on the PA28, positioned S abeam *‘the Glory gap’*, heading for Dornoch airfield. At 1726:44 the PA28 pilot was asked if he had copied the Tornados, shortly to pass N abeam en-route Tain and he confirmed that he had copied the TI.

At 1727 the Tornado formation reported abeam the *‘Black Isle en-route Tain’*. At 1728:29 the PA28 was instructed to squawk 7000 and transferred to Safety Com frequency 135.475MHz, which the pilot acknowledged.

UKAB Note (1): EGD 703 is promulgated in the UKAIP (ENR 5-1-3-24) as a Danger Area from SFC to 15000ft, 0900-2200 Mon -Thu etc (the incident took place on a Tuesday) covered by [Statutory Instrument] SI 1940/644. That being the case, permission to enter from the DAAIS (Tain on 122.75) is required before entry. Further, as stated above, ac using Dornoch Aerodrome during the hours of operation of EGD 703 are required to contact Tain before entering the Danger Area.

UKAB Note (2): The incident occurred below the base of recorded radar cover.

HQ AIR (Ops) comments that this incident would be better classified as an infringement of an active danger area than an Airprox. The GR4s visually acquired the PA28 in good time to avoid it by an appropriate margin and did so. The reasons for the PA28 entering the range without the required permission is worthy of further investigation.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, a radar recording and reports from the appropriate ATC and operating authorities.

The Board agreed that although this had been a serious airspace infringement, as reasoned below there had not at any time been a risk that the ac would have collided.

Tain is a busy Air Weapons Range with ac performing high-energy weaponry delivery profiles that sometimes preclude normal lookout since crewmembers need to concentrate on flying the weaponry pattern accurately, performing safety checks and acquiring the target. That being the case, such ranges are classified as danger areas for good reason and published procedures for landing at civil airfields such as Dornoch should be strictly adhered to. Further, Members noted that the PA28 pilot had incorrectly assumed that the Range was not active, despite that it was during the published activity hours, and he further incorrectly assumed that he could therefore enter the range without needing to get permission. Members agreed that these were key incorrect assumptions that had led to the conflict. The GA Member counselled that pilots should treat ranges with great respect, as they can be very dangerous places.

Controller Members agreed that, although the Inverness APR controller had complied with local orders, he could have been pro-active in helping the PA28 pilot. Although there is no landline communication between Inverness ATC and Tain Range, the controller was aware that the Tornados were heading there, that the Range was open and that it was within promulgated range opening hours. That being the case, and since he knew the PA28's destination, controller Members agreed that he should have prompted the PA28 pilot to call Tain as required by the UKAIP, rather than Safety Common.

When assessing the risk, Members considered the geometry of the incident and precisely when the respective pilots had seen the opposing ac. The lead Tornado pilot saw the PA28 after turning hard left onto 130° just before pulling-up for the weapon delivery profile. At that time the PA28 had already crossed the Tornado's intended flightpath well above and was probably over or very close to Dornoch airfield; that being the case, although neither pilot had seen the opposing ac until after they had crossed, the two ac had been separated by about a mile. The separation between the PA28 and the second Tornado was similar, although the geometry differed slightly. In addition, both Tornado pilots discontinued their weaponry pass to allow the PA28 to depart the range safely.

Members thought it inexplicable however, that the PA28 had then re-entered the range without calling them, in a second attempt to reach Dornoch. By then he knew positively that the range was active and he flew into conflict with the No2 Tornado for a second time; Members speculated that perhaps the PA28 pilot had incorrectly believed that, although they had no authority to do so, Inverness APR had somehow cleared him into the range. Fortunately the No2 Tornado crew saw the PA28 in good time to avoid it.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The PA28 pilot entered an active Danger Area without permission and flew into conflict with the Tornado GR4s.

Degree of Risk: C.

AIRPROX REPORT No 2010127

Date/Time: 3 Sep 2010 1215Z

Position: 5053N 00205W (4nm
NE Blandford Forum)

Airspace: LFIR (Class: G)

Reporting Ac Reported Ac

Type: Luscombe 8E PA28

Operator: Civ Pte Civ Club

Alt/FL: 2000ft 1950ft
(QNH 1021mb) (QNH 1025mb)

Weather: VMC CLBC VMC HAZE

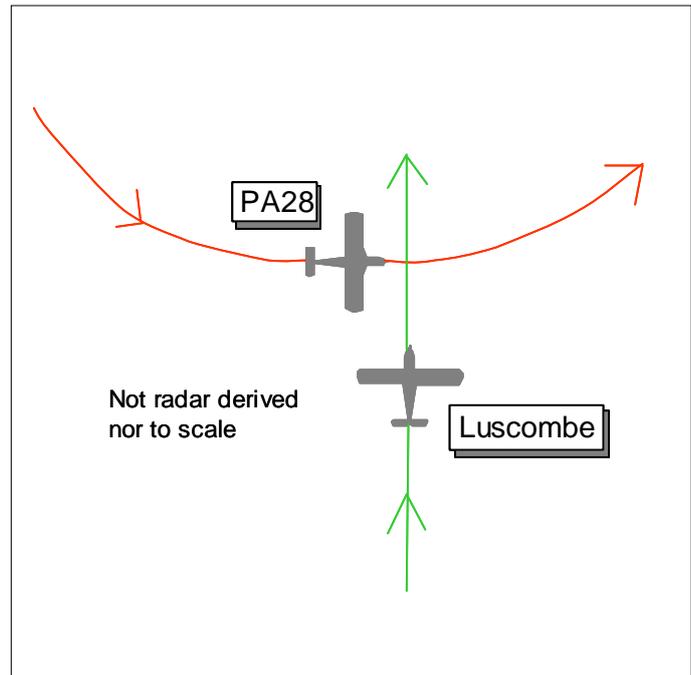
Visibility: 30km 6-8km

Reported Separation:

20ft V/<100ft H 300ft V/400ft H

Recorded Separation:

NR



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE LUSCOMBE PILOT reports flying a local sortie from a private site to the SW of Blandford Forum VFR and listening out with Bournemouth Approach on 119.475MHz, squawking 7000 with Mode C. The visibility was 30km flying 1500ft below cloud in VMC and the ac was coloured white/red with strobe and nav lights switched on. As he was approaching the 'Great Dorset Steam Fair' site, heading N at 2000ft QNH and 100kt, a yellow/ochre coloured PA28 appeared <100ft directly in front and 20ft above, its registration could be clearly seen, heading 070-080° flying straight and level. It was not seen earlier owing to the angle and point of approach, it being obscured by his ac's high wing. He assessed the risk as high. Later he spoke to the PA28 pilot who was apparently unaware an Airprox had occurred.

THE PA28 PILOT reports flying a local sortie from Compton Abbas VFR and in receipt of an A/G service from Compton Abbas on 122.7MHz, squawking 7000 with Mode C. The visibility was 8km in haze, reducing to 6km into sun, in VMC and the ac was coloured yellow/brown with anti-collision and strobe lights switched on. He was in a constant L turn at 1950ft QNH and 98kt around a large event on the ground and, as he was in a low-wing ac, he had positioned himself at the lowest permissible height above the event so he could focus his lookout above. Having turned around the event onto W he was surprised to see a white coloured high-wing ac, a Luscombe, 400ft on his L heading in the opposite direction about 300ft below and directly above the event. On sighting the ac he turned R onto a N'y heading to avoid. After landing he received a telephone call from the pilot of the Luscombe stating that whilst turning his PA28 gently L from S onto N passing E, the Luscombe had passed beneath his ac with <100ft separation. He had not seen the Luscombe at this time. He believed that at the time the Luscombe pilot reported approaching him from the S it would have been out of view under his R wing and coming out of sun, where there was poor visibility, making it very difficult for him to have spotted it. The Luscombe pilot said that after passing under his PA28 he positioned his Luscombe onto a reciprocal heading so that it would be visible to him.

UKAB Note (1): The RoA Regulations Rule 5 Low Flying Prohibitions Para (3) (e) Flying over open air assemblies states:

'Except with the written permission of the CAA, an aircraft shall not fly over an organised open-air assembly of more than 1,000 persons below the higher of the following heights:

- (i) 1,000 feet; or

- (ii) such height as would permit the aircraft to land clear of the assembly in event of a power unit failure.

UKAB Note (2): Met Office provided a Bournemouth METAR and an assessment of the Wx conditions in the area. EGGH 031220Z 13009KT 9999 SCT030 21/12 Q1021=. In terms of the general situation, an area of high pressure centred just to the north of Shetland maintained a light SE'ly flow over southern England. An occluded front lay to the W of Ireland, but not affecting the Bournemouth area. The visibility in the area was generally good, in the range 20-25km. The cloud was SCT, locally BKN with a base of 2500ft to 3000ft (type shallow cumulus). No weather was reported in the Bournemouth area. The QNH in the area was 1021 hPa.

UKAB Note (3): The Airprox occurs outside of recorded radar coverage.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac.

Pilot Members agreed that there were 2 valuable lessons to be learnt from this incident. First, pilots should endeavour to be extra vigilant when planning to view a ground feature or event because of the potential to encounter other like-minded pilots. Second, with both pilots reporting that their view of the approaching ac had been obscured by known ac blind-spots, these known deficiencies should be mitigated by moving the ac (lifting/lowering a wing) and/or moving the pilot's head at regular intervals to ensure that the previously obscured airspace is clear of traffic. However, in this case the Luscombe passed unsighted to the PA28 pilot whilst Luscombe pilot only saw the PA28 as it appeared in front crossing from L to R, effectively a non-sighting.

Looking at risk, some Members thought that the ac had passed with more than a fair share of luck, and that there had been a definite risk of collision. Other members were more reticent, believing that when the Luscombe pilot saw the PA28, the ac were already passing each other, admittedly with separation margins reduced, but sufficiently distant that there was no instinctive reaction to take avoiding action. Without radar information to corroborate the actual geometry and separation distances that pertained, Members could only decide on the limited information available in the pilots' reports. In the end, the Chairman asked the Board to vote and, by a slim majority, it was decided that safety had not been assured during this encounter.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A non-sighting by the PA28 pilot and effectively a non-sighting by the Luscombe pilot.

Degree of Risk: B.

AIRPROX REPORT No 2010132

Date/Time: 5 Aug 2010 (Thursday) 1147Z

Position: 5134N 00102W (5nm
S Benson)

Airspace: Lon FIR (Class: G)

Reporting Ac Reported Ac

Type: Lynx GLIDER

Operator: HQ JHC NK

Alt/FL: 3000ft NK
(QNH 1006mb)

Weather: VMC CLBC NK

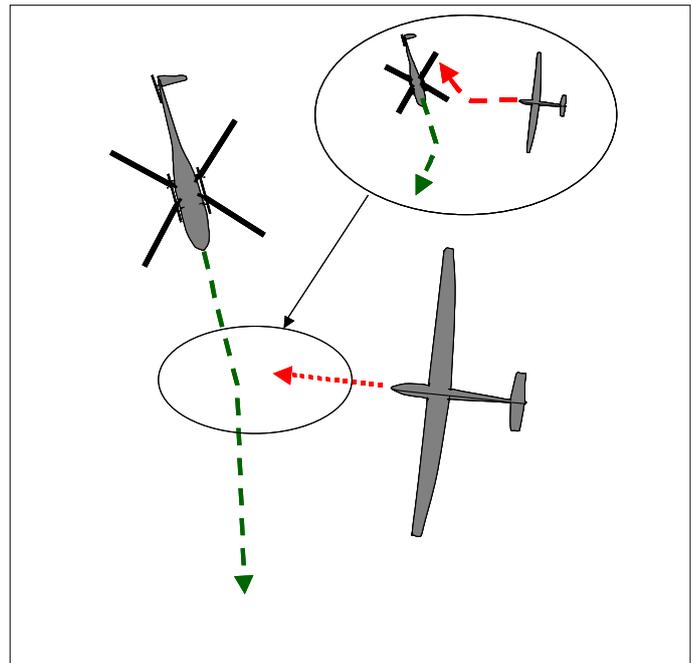
Visibility: 40km NK

Reported Separation:

0 V/ 80m H NK

Recorded Separation:

NR



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE LYNX PILOT reports that he was flying an Instrument Flying exercise between RAF Benson and Middle Wallop with a PAR to 'Low Approach' at Odiham en-route. He was ac commander and handling pilot in the left seat with his No 2 pilot as safety pilot in the right seat; they were in receipt of a TS from Benson and were squawking as directed with Modes C and S. The Airprox occurred shortly after they departed from Benson while they were level at 3000ft (Benson QNH) and heading 170°. There were many TI reports from ATC of other [he thought] ac in the area and he was aware that a gliding competition was taking place at Bicester, so both his 2nd pilot and himself were exercising extra vigilance and he was carrying out a regular lookout even though he was under a helmet mounted IF hood. While beginning one such lookout scan he caught a glimpse of an object in his 10 o'clock, looked up and identified it as a modern, white, fiberglass glider 200m away, at the same level and heading directly towards them. He immediately banked the ac hard right and the glider simultaneously initiated a roll to the right for avoidance. He estimated the glider was within 100m of his ac when he lost sight of it behind his door frame. They continued on track towards Odiham, and did not see the glider again. An initial report of the event was made to Benson APP, followed by a full Airprox Report 3-5min later.

He assessed the risk as being high.

Despite extensive tracing action, the glider pilot could not be identified.

UKAB Note (1): The recording of the Heathrow 23cm radar shows the Lynx throughout, squawking 3615, tracking 175° at FL031. At 1145:21, an intermittent primary only contact, presumed to be the glider, pops up at 3nm in the Lynx's 11 o'clock. The Lynx continues to close with the primary contact which tracks 280° until 1146:46 when it disappears from radar when under ½nm away in the Lynx's 1030 position. The CPA is not recorded but the Lynx can be seen to turn right at 1146:55.

HQ AIR BM SM reports that the transcript time code appears to lag the radar replay by around 4sec; consequently, the transcript times have been amended to bring them into line with the radar replay.

At 1145:18 APP passed accurate TI to the Lynx on the glider describing the contact as "left eleven o'clock, four miles, crossing left right, no height information." While CAP774 states that:

“controllers shall aim to pass information on relevant traffic before the conflicting aircraft is within 5 nm”

In this case, given the slow speeds of the ac, the TI was considered timely even though first passes when the ac were 4nm apart.

APP updated the TI on the glider at 1146:44 saying, “*previously called traffic twelve o’clock, half a mile crossing left right, no height information;*” however, the glider’s primary contact had disappeared from the radar recording [not necessarily APP’s display] as it was being called. While the CPA is not captured on the replay, there is no reason to believe that the loss of data occurred on the Watchman display at the unit. It is possible to extrapolate from the replay that at the point that the TI was updated, the glider was actually in the 11 o’clock position at ½ nm, rather than 12 o’clock, with the glider moving towards the 10 o’clock position given the ac’s relative speeds, in keeping with the Lynx pilot’s description. The CPA probably occurred at around 1146:51 immediately prior to the Lynx pilot’s sighting report, with the Lynx’s avoiding action turn to the right becoming apparent on radar at the next sweep at 1146:56.

HQ JHC comments that with hindsight, the decision by the Lynx crew to stay ‘under the hood’ simulating IF was not sound. They appear to have been aware of the risk of flying in airspace that is likely to have been occupied by numerous gliders and were convinced that the extra vigilance they were using was appropriate in these circumstances. The crew stated that ATC was busy with traffic being called and it appears from their report and the HQ AIR BM SM report, that the glider was called appropriately. Arguably, having already made the decision to compromise the simulated IF scan with extra lookout from under the hood, it would have been better to come off instruments completely for a period of time until the airspace became less congested. If the glider had been fitted with SSR then the information passed could have been more detailed. The fact that the crew did not see the glider until the last minute suggests that the glider was difficult to see.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

Although the incident did not take place at low level, the Low Flying Ops Advisor informed the Board that on the day the incident took place there were a number of gliding competitions in the southern half of UK and they had sent representatives to several locations to ensure that timely, accurate and informative NOTAMS were issued. Members agreed that it is inadvisable to conduct simulated IF at the same altitudes as gliders operate, at times when there are notified competitions resulting in a high density of glider traffic. On such occasions, a military Member pointed out, at least one RAF Station had ceased all non-essential flying since there were too many gliders in the operating area. The Board agreed that it was unwise to programme this type of training sortie for a period when glider traffic was likely to be most intense.

Controller Members observed that Benson APP had on two occasions passed timely and accurate warnings of the primary contact (the glider involved), but the TI apparently had not been assimilated or reacted to by the Lynx crew, since the radar recording showed the ac continuing to track directly towards it. Controller Members agreed with HQ Air BM SM, that in these circumstances the TI had been passed at the appropriate time, even though later than the guidance in CAP774 (UK Flight Information Services).

Despite the factors described above, the incident took place in Class G airspace where the pilots of both ac shared a responsibility to see and avoid other ac. Since the Glider could not be traced, Members could not ascertain whether the pilot had seen (or heard) the Lynx or whether he had reacted to it. Under the Rules of the Air the Lynx should have given way to the glider and did so,

albeit at a late stage when the ac were separated by only 200m. The Board considered that the lateness of the sighting and subsequent avoiding action had caused an erosion of normally accepted safety standards. Members agreed, even accepting that gliders are hard to see and that safety pilot was looking across the cockpit, the glider should have been visible to him, particularly assisted by timely warnings from Benson APP. If this lookout responsibility could not be complied with, and given the density of glider traffic encountered, pilot Members unanimously agreed with the HQ JHC comment that the IF exercise should have been terminated, despite the pressure to continue in order to complete the syllabus.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Late sighting by the Lynx crew; the glider was untraced and it could not be determined whether or when its pilot saw the Lynx.

Degree of Risk: B.

AIRPROX REPORT No 2010160

Date/Time: 20 Oct 2010 1332Z

Position: 5308N 00235W (2nm S
Ashcroft - elev 149ft)

Airspace: LFIR (Class: G)

Reporting Ac Reported Ac

Type: Mainair Blade PA38
Flexwing M/L

Operator: Civ Pte Civ Trg

Alt/FL: 1200ft ↓1500ft
(QNH 1021mb) (QNH 1021mb)

Weather: VMC CLNC VMC CLBC

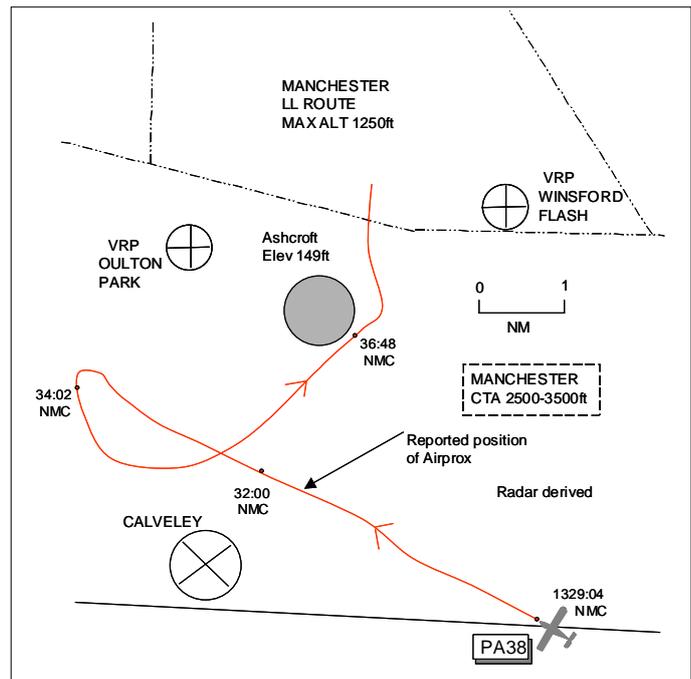
Visibility: 30km >10km

Reported Separation:

Nil V/200m H Not seen

Recorded Separation:

NR



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE MAINAIR BLADE FLEXWING M/L PILOT reports flying a 'Permit to Fly' check flight from Ashcroft, VFR and listening out on Ashcroft frequency 122.52MHz. The visibility was 30km in VMC and the flexwing was coloured white. After climbing out from RW31 he turned onto heading 180° and levelled at 1200ft, Manchester QNH, at 60kt. About 2nm S of Ashcroft flying into very bright sunlight he first saw a PA38 in his 11 o'clock range 200m heading NW at the same altitude. He immediately commenced a tight L turn to avoid a certain collision, the PA38 passing 200m clear on his R without taking avoiding action. He assessed the risk as high.

THE PA38 PILOT reports flying solo on a qualifying cross-country between Halfpenny Green and Blackpool, VFR and in receipt of a BS, he thought, from Manchester on 118.875MHz, squawking 7366 [Conspicuity code for ac operating within 5nm of Manchester CTR maintaining a listening watch on Approach frequency] with NMC. The visibility was >10km in VMC and the ac was coloured blue/white with anti-collision light switched on. On the leg between Hixon and Winsford he was R of track at the halfway point so he altered course to the L by 16° as a correction. Past Crewe heading 305° at 2000ft QNH 1021mb and 90kt tracking to Calverley he recognised Oulton Park to the N and altered course towards it, remaining outside CAS. He commenced 2 orbits to the S of Oulton Park at 2000ft to orientate himself, identifying Winsford and Ashcroft Farm, and then he descended to 1500ft on track to Winsford to enter the LL Route at 1250ft. As he passed abeam Ashcroft he saw a M/Light on his R, which was not close, and he did not consider there to be any risk of collision.

UKAB Note (1): The PA38 was traced by RAC Mil and the pilot was contacted in early November. However the completed CA1094 was not received by UKAB until the 20th December. By then the Manchester RT recording media had been returned into service so no transcript was available; therefore ATSI did not provide a report.

UKAB Note (2): The radar recording does not capture the CPA as the Mainair Blade M/Light does not show at all. The PA38 is seen clearly throughout, tracking 290° and passing 2.2nm S of Ashcroft at 1332, the approximate position of the reported Airprox. Four minutes later at 1334:02 the PA38 is seen to have commenced a L turn 2.5nm S of Oulton Park (3nm SW of Ashcroft) and after a 270° turn the PA38 rolls out on a NE'ly heading before passing 0.5nm SE of Ashcroft at 1336:48.

Thereafter the PA38 turns onto a track of 360° and passes W abeam of Winsford Flash VRP and into the Manchester LL Route.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

Although the Airprox was not captured on recorded radar, owing to the Flexwing not showing, the PA38's track is clearly seen, which broadly verifies the reported pilot's recollection of his flightpath. The PA38 student pilot had initially passed just over 2nm S of Ashcroft tracking 290°, the reported Airprox location. However, he had not seen the Mainair Flexwing at this time, only later seeing a M/Light as he passed Ashcroft after he had set course towards Winsford. Members sympathised with the student pilot, who was concentrating on his navigation by identifying ground features, which almost certainly was to the detriment of maintaining a good lookout for other traffic. Fortunately the Flexwing pilot, who was looking into sun, saw the PA38 as it approached on a NW'ly track, albeit late, and took prompt and robust avoiding action to the L, estimating separation as 200m. This action was enough to persuade the Board that any risk of collision had been quickly and effectively removed.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A non-sighting by the PA38 pilot and a late sighting by the Mainair Flexwing pilot.

Degree of Risk: C.

AIRPROX REPORT No 2010161

Date/Time: 20 Oct 2010 1333Z

Position: 5406N 00157W
(near Grimwith Reservoir)

Airspace: LFA 17 (Class: G)

Reporting Ac Reported Ac

Type: Tucano x 2 Grob Tutor

Operator: HQ AIR (Trg) HQ AIR (Trg)

Alt/FL: 250 agl 500ft
(RPS 1014mb) (RPS)

Weather: VMC CAVOK VMC NK

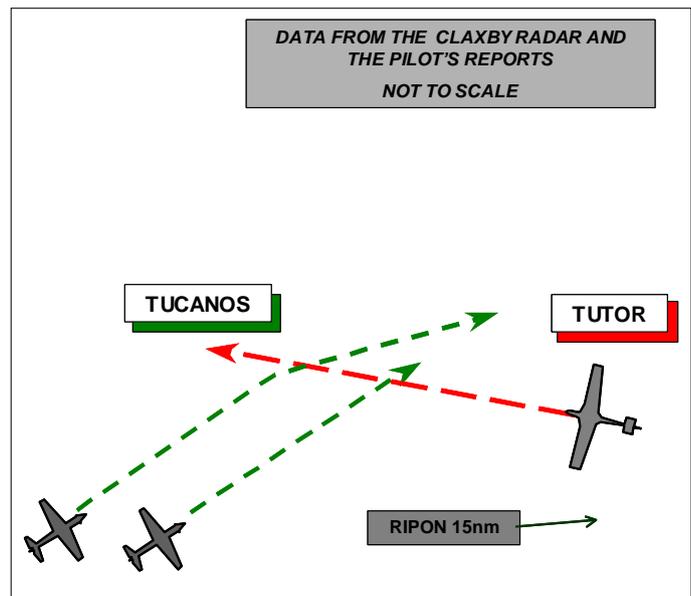
Visibility: 40km 5km

Reported Separation:

100ft V/100ft H 250ft V/200m H

Recorded Separation:

NR



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE TUCANO PILOT reports that he was leading a pair of black Tucano ac with all lights switched on, on a low level formation training flight; he was squawking 7001 with Mode C and TCAS 1 was fitted. The formation was heading 050° at 240kt, authorised to 250ft msd, and flying as a 'fighting wing pair', when both crewmembers noted a TCAS contact indicating +500ft and about 2nm away; it quickly disappeared from the screen [no TA was reported]. Both crews attempted to acquire the contact visually and the leader, assessing that the unknown ac was likely to be descending into low level at Grimwith Reservoir, manoeuvred his ac to the NE. His wingman adjusted his formation position (150m swept on the left and slightly higher) while simultaneously trying to acquire the 'stranger' visually. The leader then saw a military Grob Tutor, about 700m away in his 2 o'clock and assessed that maintaining his current flight path was the best option to avoid a collision. He did not have time to warn his wingman. The No 2 pilot then saw the Tutor in his 12 o'clock at about 400m and, assessing that there was a collision risk, turned right and descended with the Tutor passing slightly left and above him at an estimated range of 100ft.

He assessed the risk as being high and reported the incident to Linton on Ouse.

THE GROB TUTOR PILOT reports that he was instructing a UAS student on a low level training sortie from RAF Leeming flying at 500ft msd, squawking 7001 with Mode C and S. While heading 290° at 120kt he saw a pair of black Tucanos with strobes 1000m away approaching from low in his 9 o'clock position.

His sighting was fairly late as there was a slight haze and the Tucanos were coming from an out-of-sun direction. With minimal manoeuvre capability available to his ac and in association with the late pick-up, the best avoidance was to continue straight ahead, as the Tucanos appeared to be at 250ft and he judged that they would pass below. The Tucanos (flying in trail formation at the time) had obviously seen his ac and manoeuvred to pass behind, so he assessed the risk as being Medium.

UKAB Note (1): The Leeming METAR was:

METAR EGXE 201250Z 31012KT 9999 FEW030 08/M04 Q1019 BLU NOSIG

UKAB Note (2): Although the Tutor shows on the radar recordings, the Tucanos do not show until after the CPA. The recording verifies however, that the geometry of the incident however, is as shown on the diagram above.

HQ AIR (Trg) comments that this was a late sighting in class G airspace. The Tucano crew made good use of their TCAS SA to initiate their concentrated scan for the Tutor. The lack of fidelity of the TCAS in azimuth and its imperfect operation in the low-level environment means that the crew were unable to take any more effective avoiding action. The wingman's position change was a sensible move but had the unfortunate side effect of reducing the CPA with the Tutor. The different heights flown by the two parties reduced the risk of collision significantly although the resultant separation was less than the accepted safe minima. The Tutor is a difficult aircraft to see, however all parties saw each other with sufficient time to avoid a collision and the Tutor would have also had the option to climb away from the traffic; this would have been his only effective means of avoidance. He also appeared content that the Tucanos had taken avoiding action from 1000m away so no actual risk of collision existed; however, whilst a turn to the right would have increased the lateral separation it was clear to the leader that he was going to avoid the Tutor in height. The benefit of TCAS, albeit limited, is noted.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The Board discussed the apparently conflicting and incomplete reports of the geometry of the incident and agreed the it had most likely been as displayed on the diagram above with the No2 Tucano moving from the left to the right side of his leader. An HQ Air Member observed that he was aware of the difficulty of assessing incidents when reports are brief; HQ Air was taking action to encourage pilots to submit comprehensive and accurate reports thus allowing thorough investigation.

Both the Tucano formation and the Tutor had been operation legitimately in the LFS at differing heights, the former at 250 ft and the latter at 500ft. That being the case, and since it was flying relatively slowly, Members agreed that the Tutor should have been visible to the Tucanos for some time (the same time as the TCAS warning). The rolling terrain however had most likely caused the ac (and therefore the warning) to disappear for a short time; when it had ceased to be obscured all pilots involved had seen the opposing ac as early as could reasonably be expected. Having reported that he saw the Tutor 700m away in his 2 o'clock, Members could not easily explain why the lead Tucano pilot reported that he did not have time to warn this No2 in formation on his right (probably), of its presence; one explanation might be that the Tutor had been significantly closer and therefore the ac crossing had happened in a short time period. Members agreed that the Tucano the Tutor pilot reported as turning to go behind him, was the No2 as this correlated with the Tucano pilot's report; that being the case Members assessed that the leader had passed ahead of and about 250ft below the Tutor.

When assessing the cause of the incident Members agreed that the pilots had discharged their responsibility to see and avoid their respective ac and the incident had therefore been a resolved conflict in the LFS and that TCAS had played a significant part in the Tucano crews acquiring the Tutor.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict in the UKDLFS resolved by the Tucano pilots, with the assistance of TCAS.

Degree of Risk: C.

AIRPROX REPORT No 2010162

Date/Time: 25 Oct 2010 1241Z

Position: 5706N 00340W
(Cairngorm Mountains)

Airspace: LFA14/Scot FIR (Class: G)

Reporting Ac Reported Ac

Type: Tornado GR4 PA28

Operator: HQ AIR (Ops) Civ Pte

Alt/FL: 500ft agl 5500ft amsl
(RPS 1014mb) (QNH)

Weather: VMC CAVOK VMC CAVOK

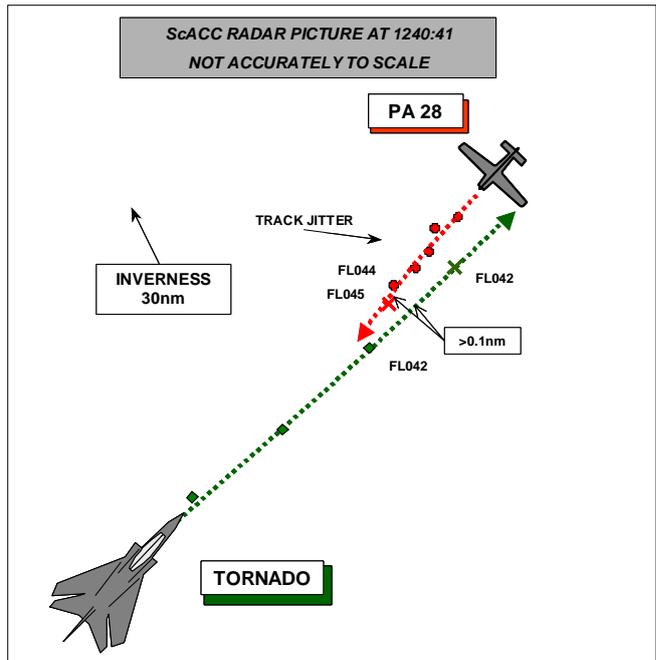
Visibility: 40km >10km

Reported Separation:

100ft V/500ft H 0ft V/600m H

Recorded Separation:

200 V/ >0.1nm H (See UKAB Note (1))



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE TORNADO PILOT reports flying a low level training flight in a grey ac with HISLs and nav lights switched on, squawking 7001 with Mode C but TCAS was not fitted. While heading 040° (out of sun) at 420kt over a flat section of the Cairngorm Mountain range and in a 10° right turn, the pilot saw a blue and white, low-winged, single-engine light aircraft, 1000yd away in their 11 o'clock, flying straight and level and coming towards them. The ac was slightly high and to the left of their flight path so he rolled wings level just before the light ac passed down the LH side and no further avoiding action was taken as he assessed that it was clear that the ac would not collide.

He considered that a factor in his late acquisition of the light ac had been that the front cockpit windscreen was dirty. The option of cleaning the windscreen in flight has been removed due to the windscreen wash bottles no longer being replenished. Although the cockpit workload was low, both crewmembers attention had initially been focused into the turn to the RH side of the ac, but due to previous training and experience the pilot then chose to look to the outside of the ac turn.

He assessed the risk as being Medium and reported the incident to Lossiemouth APP on first contact.

THE PA28 PILOT reports that he was flying a green and white ac on a private flight with a passenger on a local sortie from Inverness in receipt of a BS from them. His strobes and nav lights were switched on, he was squawking 6177 with Mode C, but TCAS was not fitted. While flying straight and level, heading 280° at 100kt, he saw a fast moving green military aircraft 800m away in his 11 o'clock, he thought in a near vertical climb, so he broke right to avoid it. He reported the incident by telephone to Inverness ATC after landing and assessed the risk as being high.

UKAB Note (1): Although the Tornado does not show on the lead-up to the CPA, for 4 sweeps including the CPA, both ac show clearly, as shown on the diagram above. The CPA however, takes place between sweeps and the horizontal separation was derived by projecting the ac positions.

HQ AIR (Ops) comments that this was another incident in Class G airspace where the fitment of TCAS to either ac would have increased the pilots situational awareness and may have allowed a greater separation distance to be achieved. It is disappointing that, having identified that he had a dirty windscreen, the GR4 pilot considered it appropriate to continue with the low flying exercise.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

Members agreed with HQ Air that, had the Tornado windscreen become so dirty during the flight that forward vision was reduced, then the ac should have been climbed out from low level and returned to base under IFR.

The Board was informed by the Secretariat that the terrain in the area of the incident is about 4000ft amsl; therefore the altitudes reported by the respective pilots are consistent. Further, it was thought most unlikely that a Tornado would have been in a 'near vertical climb' as reported by the PA28 pilot at such a low alt.

Both ac had been operating legitimately in Class G airspace where the pilots had an equal and shared responsibility to see and avoid other ac; Members assessed how the respective pilots/crew had acquitted this responsibility.

Members noted that the PA28 had been in receipt of a BS from Inverness and therefore would not routinely have been passed information on other traffic; even had he asked for a TS or DS, the Board agreed that, due to the ac location, Inverness would have been unlikely to be able to provide a radar based service. Also, Inverness is not a LARS unit. With no outside warning of its presence, the PA28 pilot saw the Tornado 800m away, effectively head on. Members considered that, although the Tornado was below the horizon from the PA28 pilot's point of view, it had not been obscured by terrain (the highest terrain in immediate area is 4085ft and the PA28 reported that he was at 5500ft i.e. well above it); Members therefore agreed that the PA28 pilot could have seen the Tornado, and initiated avoiding action, earlier.

Flying at a lower altitude, the converse applied to the Tornado i.e. the PA28 was above the skyline and also not obscured by terrain. Therefore, Members agreed that it could have been seen and avoided before it had closed to 1000yd.

Although the sightings were somewhat late, both pilots had seen the opposing ac and both had taken effective avoiding action thus ensuring that there was no risk of collision.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Late sightings by the Tornado crew and the PA28 pilot.

Degree of Risk: C.

AIRPROX REPORT No 2010170

Date/Time: 3 Nov 2010 1202Z

Position: 5452N 00308W
(2nm N Wigton)

Airspace: LFA 17/Scot FIR (Class: G)

Reporting Ac Reported Ac

Type: Hawk Gyroplane

Operator: HQ Air (Trg) Civ Pte

Alt/FL: 1000ft 800ft
(RPS 998mb) (QFE NR)

Weather: VMC CLBC VMC HAZE

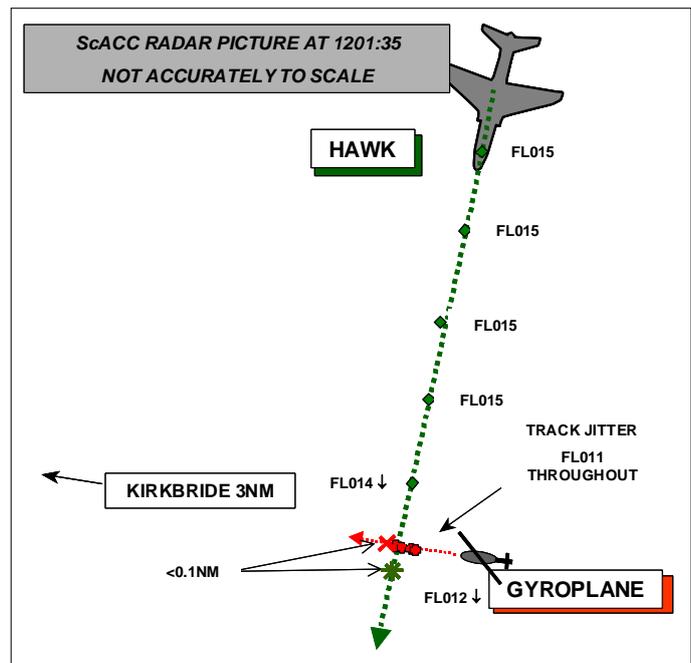
Visibility: 20km 8nm

Reported Separation:

0 V/100ft H 250ft V/ 200m H

Recorded Separation:

100ft V/ <0.1nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE HAWK (STUDENT) PILOT reports flying a solo low level navigation sortie in a black ac with nose light and strobes switched on, squawking 7001 with Mode C, but TCAS was not fitted. After coasting in at about 1000ft amsl about 5nm W of Carlisle, he turned onto 190° at 420kt and visually identified and avoided Kirkbride microlight site by about 3nm to the E. He saw one light ac passing beneath him and elected to remain high until approaching abeam the town of Wigton, 4nm S of Kirkbride. Approaching abeam Wigton, a descent was commenced and he saw a dark blue high-wing weight-shift microlight 150ft away, slightly left of the nose, moving from left to right, wings level, and on a collision course. He immediately broke upwards to the light buffet to avoid a collision but on checking the G meter, he found that the pull had exceeded 8G so he elected to climb out of low-level and recover to RAF Valley. An Airprox was declared to London Military and he assessed the risk as being High.

THE GYROPLANE PILOT reports flying a black Gyroplane with strobes and landing lights switched on, squawking 7000 with Modes C and S, on a local flight from Kirkbride unlicensed airfield and listening out on their frequency; PCAS was carried. He was on the approach to RW28 at 60kt and while lining up on final, a Hawk approached from the N and appeared not to have seen him. The Hawk altered course and by then he had commenced a descent out of its path but continued inbound. He was transponding and listening on 124.4 and was disappointed that the Hawk pilot was unaware of his presence and was flying so close to an active airfield. He assessed the risk as being low.

UKAB Note (1): The Carlisle METAR was:

METAR EGNC 031150Z 26018KT 230V290 9999 SCT023 11/06 Q1006

UKAB Note (2): The recording of the ScACC radars show the incident clearly. The Hawk, squawking 7001 with Mode C, approaches the CPA from the N, tracking 190°, in a descent, as described in the pilot's report above. Meanwhile the Gyroplane, squawking 7000 with Modes C and S, approaches the CPA very slowly from the E, tracking about 280°, level at FL011 (alt 900ft) throughout the recording. The Hawk passes just (<0.1nm) behind the Gyroplane at FL012 (100ft above it) still in the descent. The break is not evident on the recording until 6sec after the ac had passed. The CPA was 3.2nm to the E of Kirkbride airfield.

HQ AIR (TRG) comments that this was a late sighting by the Hawk pilot. However, as he was descending, the gyrocopter would have been below the horizon making an already small target even harder to see. The pilot's lookout was also weighted towards Kirkbride, the other side of his nose to the conflict in this case. The excess G pulled was appropriate and played a major part in avoiding a collision. It should be noted that the early sighting by the Gyrocopter pilot also played a significant part.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

Members noted that the Radar recording showed that the Hawk had passed 3.2nm to the E of Kirkbride, a distance they considered adequate. Further, the Hawk pilot was aware of Kirkbride, positively identified the airfield and ensured that he had avoided it by a suitable margin; but since it is unpublished, he had no means of knowing that he would pass through the approach path.

Although similar in some respects, there were several areas where the two pilots' reports differed. Having discussed the reports and being briefed on the radar recording, Members were confident that the Gyroplane identified was the ac involved and the Hawk pilot had mistakenly thought it to be a microlight. Members commended the Gyroplane pilot for squawking because had he not done so his ac would almost certainly not have shown on the radar recording; since he had it was possible to verify the horizontal and vertical geometry of the incident. Members could not explain why the Hawk had not been displayed on the Gyroplane pilot's PCAS, as it had been 'line of sight' throughout and had also been squawking with Mode C. Nevertheless, the Gyroplane pilot had seen the Hawk in his 3 o'clock at a distance he estimated to be 2nm and opted not to take any avoiding action. Had the Hawk actually been 2nm away when first sighted and the Gyroplane had been flying at 60kt, then the Hawk would have passed $\frac{1}{4}$ nm behind the gyroplane in the 17sec it would have taken for the ac to cross. On the other hand the Hawk student pilot saw the Gyroplane just to the left of his nose much later, estimating that it was only 150ft away and therefore aggressive vertical evasion was required. Members concluded that although the respective clock codes reported had been correct, the Hawk must have been closer to the Gyroplane when it was first seen and the Gyroplane must have been sighted at a distance in excess of 150ft (1.6 sec) for the Hawk pilot's avoidance to be effective.

Notwithstanding that both ac could be hard to see due to their size and lack of relative movement on a near collision course, both pilots had a responsibility to see and avoid each other. Therefore Members agreed that the cause of the incident had been late sightings by both pilots. However, the Gyroplane pilot's early descent and the Hawk pilot's much later break upwards had been effective in removing any risk that the ac would have collided.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Late sightings by both pilots.

Degree of Risk: C.

AIRPROX REPORT No 2010171

Date/Time: 16 Nov 2010 1240Z

Position: 5240N 00328W (10nm
W Welshpool)

Airspace: LFA 7 (Class: G)

Reporting Ac Reporting Ac

Type: Hawk T Mk1 Hawk T Mk 1

Operator: HQ AIR (Trg) HQ AIR (Trg)

Alt/FL: 250ft 250ft
(RPS 1009mb) (RPS 1009mb)

Weather: VMC CAVOK VMC CAVOK

Visibility: 30km 20km

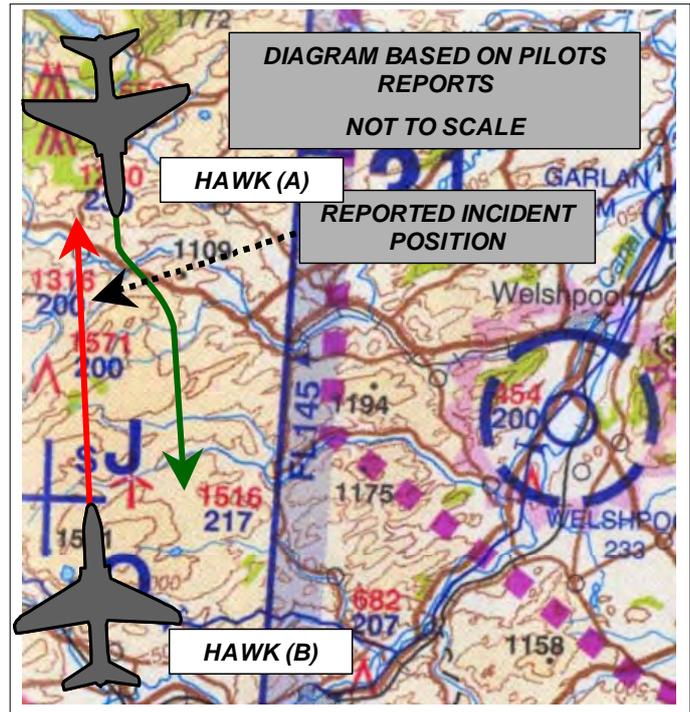
Reported Separation:

500ft H 0 V/500ft H

Recorded Separation:

NR

BOTH PILOTS FILED



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

HAWK (A) PILOT reports that he was a student pilot on an advanced flying training low level introduction sortie in a black ac with all lights switched on, squawking 7001 with Mode C but TCAS was not fitted. During the planning, low level deconfliction had been checked and a possible confliction had been identified. Because there was a possibility of a confliction, during the flight they had made numerous position reports on the RAF Valley low level deconfliction frequency but did not receive a reply to any of them.

Having completed 25min of 'free nav', on a southerly nav leg, heading 176° at 420kt into sun, the front seat student pilot saw [the nose light of] a fast jet on a reciprocal heading about 1nm away at the same height. Immediately assessing there to be a collision risk, he took avoiding action by conducting a 5G left break and during the manoeuvre he informed the captain of the confliction. As they passed abeam the other ac it was identified as another Hawk T1, which he assessed as passing 500ft away with a high risk of collision.

HAWK (B) PILOT reports flying a singleton instructional low level training flight in a black ac with all lights switched on, squawking 7001 with Mode C but TCAS was not fitted. Both ac captains had a general awareness of each other's routeing from the RAF Valley de-confliction procedures and while airborne he had heard calls on the de-confliction frequency. While heading 355° at 420kt flying at low level in Mid Wales he saw another black Hawk 1-2nm away at the same altitude and on a reciprocal heading; he noted the strobes, landing and nav lights of the other ac. The other ac passed within an estimated 500ft lateral displacement at co-altitude but, due to their late acquisition, neither pilot in their ac gained tally early enough to take action to avoid the Airprox. He reported the incident on the radio to Valley and assessed the risk as being medium.

HQ AIR (Trg) comments that the 500ft is a typical separation achievable in this scenario where only one ac had time to avoid. Separation might have been more comfortable had a vertical element been included in the avoidance manoeuvre. Whilst a level break is tactically sound and produces the best lateral separation, a late navigation turn or emergency break by the second ac might have put it back

into confliction. Without more precise detail of the geometry it is difficult to comment on the direction of the break, which appears to be contrary to the 'go right' rule of the air; however, as drawn, with slight right aspect, the left break was correct. Hawk (B)'s report is confusing in that the reported acquisition range should have allowed ample time for avoiding action to be taken. Whether this an overestimation or whether there were other factors in play is not clear. Whilst it is likely that Hawk (B) should have had the best chance of seeing the other ac, which was flying almost into sun (it is not clear if sun was actually an issue), because of the terrain, Hawk (B) was probably sky-lined to a degree, whilst Hawk (A) would have been in relatively low ground.

It highlights that there are deconfliction measures in place at Valley that were effective in ensuring that at least one crew was aware of the potential proximity of the other. Again, the nose mounted conspicuity light proved effective in alerting one crew to the other's presence. This incident is not uncommon amongst low level operators and highlights the imperative on all crews in Class G airspace to devote sufficient time to lookout and to take immediate avoiding action.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac and a report from the Hawk operating authority.

The Board noted that both ac had been operating legitimately in the UKDLFS and, due to RAF Valley local procedures, both pilots were aware that their ac would be in the area at the same time, thus prompting enhanced lookout; however, during free-nav any procedural deconfliction measures are less effective than when used for deconflicting specific routes and times.

Although the sightings by both pilots were relatively late, this was largely due to terrain masking concealing the opposing ac. That being the case, TCAS (as fitted to the Hawk T Mk2 but not the Mk1) would probably not have provided a significantly earlier warning since it is also dependent on 'line-of-sight' between the respective ac. The Board noted, however, that ac lighting had been a significant factor in the acquisition of the opposing ac.

The HQ Air (Trg) Member informed the Board that in these circumstances where only one ac took avoiding action while ensuring that there was no risk of collision, only 500ft horizontal separation is not unusual.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict in the UKDLFS resolved by Hawk (A) pilots.

Degree of Risk: C.