

ASSESSMENT SUMMARY SHEET FOR UKAB MEETING ON 22 FEBRUARY 2012

Total	Risk A	Risk B	Risk C	Risk D	Risk E
18	3	4	9	0	2

No	Reporting	Reported	Airspace	Cause	Risk
2011125	DHC-1 & ASK 13 Glider (CIV)	C172 (CIV)	G	Late sightings by the DHC-1 and C172 pilots.	C
2011127	PA28 (CIV)	CZAW SportCruiser (CIV)	G Shoreham ATZ	The SportCruiser's flight path caused the controller and the PA28 pilot concern.	C
2011130	Bell 206 (CIV)	PA28 (CIV)	G	A non-sighting by the PA28 pilot and effectively a non-sighting by the Bell 206 pilot.	A
2011132	EC145 (CIV)	PA34 (CIV)	G	Sighting report.	E
2011133	EMB505 (CIV)	PA34 (CIV)	G	A conflict in Class G airspace between IFR and VFR traffic.	C
2011136	Tornado GR4 pr (MIL)	Hawk T Mk1 (MIL)	G Lossiemouth CMATZ	The Hawk pilot requested, and ATC did not prevent, a join though right base, which resulted in a conflict with the GR4 pair.	C
2011137	A330 (CAT)	Ikarus C42 (CIV)	D Brize Norton CTR	The Ikarus C42 pilot entered the CTR without clearance and flew into conflict with the A330.	C

2011138	Zenair Zodiac (CIV)	Robin 2160 (CIV)	G	The Robin pilot flew close enough to cause the Zodiac pilot concern.	C
2011139	BE200 (CIV)	Untraced (NK)	G	A conflict in Class G airspace.	B
2011141	Sigma Paraglider (CIV)	KA6 Glider (CIV)	G	Effectively a non-sighting by the KA6 pilot.	A
2011142	Tutor (MIL)	PA31 (CIV)	G Lincs AIAA	A conflict in Class G airspace.	C
2011145	Cirrus SR22 (CIV)	C208 (CIV)	G	A conflict in Class G airspace.	C
2011146	PA23 (CIV)	Hawk T Mk1 (MIL)	G	A conflict in Class G airspace resolved by the PA23 pilot.	C
2011148	MD902 (CIV)	R44 (CIV)	G	A non-sighting by the R44 pilot and a late sighting by the MD902 pilot.	B
2011149	C130J (MIL)	PA31 (CIV)	G	Sighting Report.	E
2011154	Lynx HAS 3 (MIL)	PA28R (CIV)	G Merryfield MATZ	The Lynx did not follow promulgated Merryfield departure procedures and flew into conflict with the PA28R crossing the MATZ.	B

2011156	Ka13 (CIV)	Europa (CIV)	G Aston Down G/S	The Europa pilot flew overhead a promulgated and active glider site below the maximum height of the winch cable while gliding was taking place.	B
2011158	Diamond DA40 (CIV)	TB20 (CIV)	G Shoreham ATZ	<ol style="list-style-type: none"> 1. The overloaded controller did not pass TI to either pilot. 2. The TB20 pilot did not position appropriately to join RW07 LH. 3. Effectively non-sightings by both pilots. 	A

AIRPROX REPORT No 2011125

Date/Time: 24 Sep 2011 1150Z (Saturday)

Position: 5047N 00113W (1½nm SSW THLD RW05 Lee-on-Solent - elev 32ft)

Airspace: London FIR (Class: G)

Reporting Ac Reported Ac

Type: DHC-1 &

ASK13 Glider C172

Operator: Civ Club Civ Pte

Alt/FL: 1700ft↑ 2000ft
aal QNH

Weather: VMC CLOC VMC CLBC

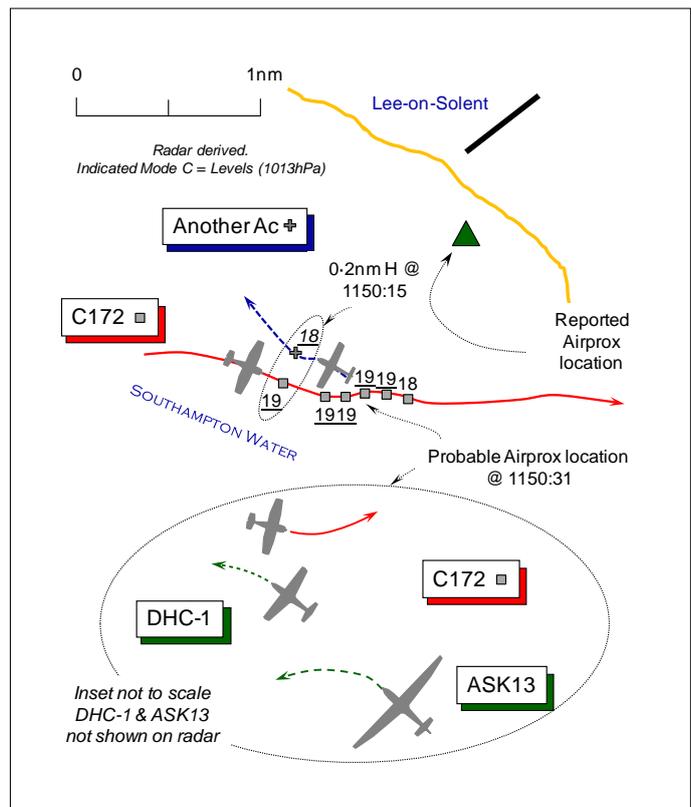
Visibility: 15-20km 8km

Reported Separation:

150ft V/500m H ~200ft below

Recorded Separation:

Not recorded



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PILOT-IN-COMMAND OF THE DHC-1 CHIPMUNK 22 TUG & ASK13 GLIDER COMBINATION

reports that the gliding club was conducting winch and aerotow glider launching from RW23 at Lee-on-Solent. The DHC-1 pilot was executing an aerotow launch of the ASK13 glider, piloted by a gliding instructor in the rear seat with a student pilot occupying the front seat; both ac were in contact with Lee RADIO on 118.925MHz. The DHC-1 is coloured blue/white; SSR is not fitted.

After take-off from RW23 the tug-glider combination climbed straight ahead to 500ft and about 200m off-shore, before making a 90° L turn to head towards Browdown, a point of land about 2nm to the SE. On this SE'ly track both the tug pilot and the gliding instructor saw a light ac (LA) above them, about 2nm to the S heading NW. After allowing the LA to pass clear behind, the combination made a 180° R turn climbing through a height of about 1000ft, to return towards Lee-on-Solent on a heading of 315° at 60kt tracking about ½nm off-shore. After about 1½-2min on this NW'ly track at about 1700ft aal the instructor in the ASK13 glider – the PNF - saw an ac at 11 o'clock, but he was unsure of its aspect, suspecting that it might be the previously sighted LA. After a second or two, the ASK13 instructor realised the LA was closing rapidly so he immediately released the glider from the DHC-1 and performed a climbing L turn; there was insufficient time to advise the tug pilot on RT. Upon release, the tug pilot lowered the nose and for the first time saw a red and white high-wing aeroplane, similar to a C172, in his 1 o'clock about 500m away some 150-200ft below him flying on a reciprocal heading so he turned L 10° to remain on a parallel track. Both the tug pilot and ASK13 instructor immediately reported an Airprox to Lee RADIO. The unknown LA was not in contact with Lee RADIO. The Risk was not assessed.

THE CESSNA F172H (C172) PILOT reports he was flying VFR from Bristol to Goodwood and was in receipt of a BS from SOLENT RADAR; a squawk of A3663 was selected with Mode C on. His aeroplane is coloured white.

He had transited beneath the Solent CTA, below 2000ft QNH along the Stoney Cross – Beaulieu Corridor, before following an E'ly heading from Beaulieu climbing to 2000ft after clearing the end of the Solent CTA. His routing took him to the S of Lee-on-Solent and the Glider Launching Site

marked on the 1:500,000 VFR chart (confirmed by GPS). SOLENT RADAR passed a warning of another ac, which was spotted and avoided by a slight deviation in course to the S for additional clearance as the opposing traffic deviated slightly to the N. Very shortly afterwards, heading 100° at 105kt in a level cruise at 2000ft (1014mb), a glider tug appeared from below his ac at about 3 o'clock (he did not specify the distance). The blue tug ac appeared to be pitching up steeply and then banked away towards the S, so to avoid the tug he banked towards the N as soon as he saw it. The glider passed by in his 2 o'clock several hundred feet below and some distance away from his aeroplane. SOLENT RADAR gave no advance warning of this traffic. He assessed the Risk as 'low'.

UKAB Note (1): The UK AIP at ENR 5-5-1-4, notifies the Glider Launch Site at Lee-on-Solent A/D as active every day from Sunrise to Sunset. Aerotow and winch launching is notified to 2000ft above the aerodrome elevation of 32ft amsl.

ATSI reports that the C172 pilot had departed Bristol International for a flight to Goodwood and was in receipt of a BS from SOLENT RADAR on 120.225MHz.

The Southampton 1150Z METAR: 21005KT 170V240 9999 FEW020 SCT048 17/12 Q1014.

The C172 pilot called Solent RADAR and at 1136:10, the flight details, position, level and intentions were passed. A BS was agreed, the pilot instructed to squawk A3663 and the QNH read-back correctly.

The C172 was instructed to remain clear of CAS and, having passed the Stoney Cross VRP, routed around the southern edge of the Southampton CTR. The C172's SSR was validated and verified by the Solent RADAR controller at 1142:20.

At 1149:40, as the C172 was mid-Solent, N abeam Cowes, the Solent RADAR controller passed TI on an unknown LA [not the tug-glider combination] ahead of the C172 by 1.5nm, tracking NW at an altitude of 1900ft. The C172 pilot called visual with this ac at 1149:50. The unknown ac was not transmitting any Mode S identification information and remains unidentified.

The C172 continued on a course towards the Spinnaker Tower, Portsmouth, indicating 1900ft Mode C (1013mb). At 1151:19 the C172 crossed the coast at Browdown Point.

The reported Airprox was not visible on the available surveillance replay and, given the lack of transponder and initial low-level manoeuvring of the DHC-1, it is possible that there was no position indication symbol displayed to the SOLENT RADAR controller. Solent primary surveillance radar is provided by a Watchman 10cm radar sited on Southampton Airport; SSR is supplied by the Pease Pottage Radar. The primary surveillance information from SOLENT RADAR was not available for this investigation.

It is likely that, as the C172, heading SE'ly, crossed with another ac on a NW'ly course, the C172 was not clearly visible to the DHC-1 pilot. Cloud in the area was FEW and SCT which, when combined with the white colour-scheme of the C172, might make visual acquisition of the ac difficult. The DHC-1 pilot executed the 180° R turn after the unknown ac on a NW'ly course cleared astern. Before doing this the DHC-1 pilot had not seen the C172 astern as they were flying towards the same land feature.

There is no requirement for SOLENT RADAR to be informed of traffic activity at Lee-on-Solent. Manual of Air Traffic Services Part 2 (Southampton) Edition 1/11, 3 May 2011 (NATS) Section 4 paragraph 3.10 notes to unit ATCOs that:

'there are numerous airspace restrictions and obstacles within the proximity of the airspace under their control and..ATCOs are to have an awareness of those relevant to the normal operation of the unit.'

Under a BS a controller with access to surveillance derived information may issue a warning to a pilot if it is considered that a definite risk of collision exists.

The Airprox occurred in Class G airspace when the DHC-1 pilot turned and climbed into proximity with a previously unseen C172.

Contributory to the incident was:

Another ac in the vicinity that may have initially masked the C172's presence.

The potential difficulty of visually acquiring the white C172 against the prevailing cloud and into sun.

UKAB Note (2): The LAC Swanwick radar recordings do not illustrate this Airprox as the DHC-1 Chipmunk 22 tug and ASK13 glider are not shown at all, either individually or as a combination. However, the C172 is shown maintaining 1900ft Mode C (1013mb) passing abeam another ac at 1150:15, that is probably the LA seen by the pilots involved on a NW'ly course before the Airprox occurred. The C172 makes a short L turn at 1150:31, 1.7nm SSW of Lee-on-Solent, before reversing back on course, which may be indicative of the pilot's avoiding action L turn upon sighting the DHC-1 and ASK13. The C172 then continues on track for the Spinnaker Tower VRP at Portsmouth Harbour. At an indicated 1930ft QNH (1014mb), the C172's Mode C suggests the ac was in the order of 200ft above the DHC-1 tug pilots reported equivalent altitude of 1732ft amsl.

HQ NAVY COMMAND comments that whilst the Gliding Club operates under the rules and assurance of the BGA, Navy Command HQ maintains an overview of the operation of the club. The report suggests that all parties involved did everything required of them and that the Airprox was the result of late sightings of ac that are difficult to spot due to their colour schemes and definition against the cloud cover and sun.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

Although not compelled to do so, the controller had helpfully provided a warning to the C172 pilot about the other ac shown to be in the vicinity. Although he was only providing a BS, SOLENT might also have warned the C172 pilot about the DHC-1 and glider combination if the controller had been aware of it so it is unfortunate that the DHC-1 is not fitted with SSR as this would make it more conspicuous to radar-equipped ATSU's such as SOLENT Radar. The BGA Member reaffirmed the BGA's recommendation to fit SSR to aerotow ac where possible for this purpose. When seen, the C172 pilot had elected to avoid the other ac by turning to the S, unfortunately bringing his aeroplane closer to the tug-glider combination that was at that stage unseen. Nevertheless, it was clear from the C172 pilot's report that he subsequently saw the DHC-1 in his 3 o'clock as it appeared from below his aeroplane, just as the instructor pilot in the glider released the tow and about the same time as the DHC-1 pilot saw the C172 and turned away. The C172 pilot had a responsibility to remain clear of the tug-glider combination under the RoA, but could only do so if he saw it in time. Here it was plainly the glider instructor and the DHC-1 pilot that had initiated avoiding action beforehand. The Members concluded that a late sighting by the C172 pilot was part of the Cause.

Earlier, the DHC-1 pilot had taken account of the other ac before he turned the combination onto its NW'ly heading, but was unaware of the conflict that would develop with the C172 when he turned about. Nevertheless, it was there to be seen in the prevailing good visibility on the inside of the R turn as the DHC-1 pilot turned about. The BGA Member highlighted the limited visibility from the DHC-1's cockpit whilst towing a glider; the high nose-up attitude whilst towing is not conducive to an efficient all-round scan and consequently it is imperative to weave the aeroplane to clear the airspace directly ahead of the nose. The Member explained that this inherent nose-up attitude might be why the glider instructor spotted the C172 before the tug pilot, who was the PIC of the combination.

The instructor PIC would, however, have been focused on what his student was doing as an aerotow demands concentration, so it was fortunate that the instructor spotted the C172 in time to release his glider from the tug and initiate a climbing turn to the L. This not only ensured he could avoid the C172, but also allowed the tug pilot greater freedom of manoeuvre if needs be. As it was, as soon as the weight came off the tow and the DHC-1 pilot lowered his aeroplane's nose, he saw the C172 in his 1 o'clock about 500m away, some 150-200ft below him he reports. Members agreed the other part of the Cause was a late sighting by the DHC-1 tug pilot.

Because of the absence of radar data on the DHC-1, the relative geometry could not be ascertained independently. Although the C172's Mode C suggests the ac was in the order of 200ft above the DHC-1 tug pilot's reported equivalent altitude of 1732ft amsl when the Airprox occurred, the DHC-1 pilot also reported the C172 to be below his aeroplane when he saw it. As the C172 pilot says the tug/glider appeared from below it might be that the DHC-1 had already climbed up through the C172's altitude when the tug pilot saw the C172 but this could not be resolved with certainty. Nevertheless, robust avoiding action was not apparently required by the DHC-1 tug pilot with only a 10° L turn necessary to remain on a parallel track and maintain horizontal separation at a minimum of 500m. This convinced the Members that no Risk of a collision had existed in these circumstances.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Late sightings by the DHC-1 and C172 pilots.

Degree of Risk: C.

AIRPROX REPORT No 2011127

Date/Time: 27 Sep 2012 1422Z

Position: 5050N 00018W (0.25nm
SW Shoreham - elev 7ft)

Airspace: Shoreham ATZ (Class: G)

Reporting Ac Reported Ac

Type: PA28 CZAW
SportCruiser

Operator: Civ Club Civ Pte

Alt/FL: 1100ft 800ft↑
QFE QFE

Weather: VMC VCFG VMC VCFG

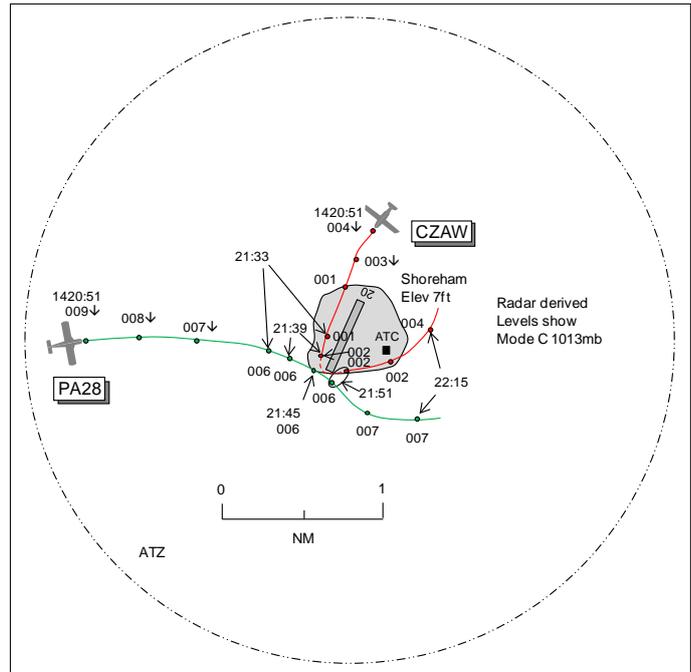
Visibility: >10km 5nm

Reported Separation:

300ft V/300m H 500ft V/0.5nm H

Recorded Separation:

400ft V/<0.1nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PA28 PILOT reports flying a dual training sortie from Shoreham VFR and in communication with Shoreham Approach on 123.15MHz, squawking 7000 with Mode C. The visibility was >10km in VMC and the ac was coloured white/burgundy; no lighting was reported. They proceeded to join crosswind for RW20 as instructed by ATC at 1100ft QFE. Once established on crosswind, heading 135° at 100kt, the student reported "crosswind" and was told to report downwind. About 5sec after passing over the upwind end of the RW he heard the pilot in another ac call 'going-around'. A few seconds later the student spotted the ac, a SportCruiser, turning towards them from the go-around approaching from their LHS from underneath. The student attempted to point the ac out to him but he was unable to see it owing to his position, seated in the RH seat. At this point he took control and made a R turn to avoid the ac, estimating it passed 300ft below and 300m clear to their L. He assessed the risk as medium. At the time there was sea fog approaching the aerodrome slowly from the SE but it was still outside the aerodrome boundary.

THE CZAW SPORTCRUISER PILOT reports inbound to Shoreham VFR and in receipt of an Information service from Shoreham on 123.15MHz, squawking with Mode C. The visibility was 5nm flying into sun but clear of cloud and about 3nm clear of fog in VMC and the ac was coloured white/silver/red; no lighting was mentioned. He was going around having overshot his approach to RW20 in calm conditions with another ac in the O/H. He climbed out heading 200° at 80kt and turned L to commence a new circuit whilst visual with the other ac, estimating it passed 500ft above and 0.5nm clear on his R. No avoiding action was needed. He heard ATC asking the other pilot if he wished to file an Airprox but the pilot said that he would chat with ATC when on the ground. ATC did not ask whether he (the CZAW pilot) wished to report an Airprox, which gave him the impression that ATC considered the event to have been his fault. As far as he was concerned there was little chance of collision as he was visual with the other ac, which was several hundred feet above him. He suspected that the angle that ATC saw of the event made the ac seem closer than they were.

THE SHOREHAM ADC reports that the SportCruiser went around at approximately 300ft whilst the PA28 was on a crosswind join. The SportCruiser climbed rapidly into conflict with the PA28 whilst making an early L turn, apparently to avoid a fog bank. The PA28 turned sharply R to avoid the SportCruiser. Both ac subsequently landed safely.

Shoreham METAR EGKA 271420Z 15006KT 9999 3500SE VCFG FEW003 18/15 Q1029=

ATSI reports that the Airprox occurred at 1421:50, 0.25nm to the SSW of the Shoreham ARP, within Class G airspace and within the Shoreham ATZ, which consists of a circle, radius 2nm, centred on RW02/20 and extending to 2000ft above the aerodrome elevation (7ft).

The PA28 was operating on a local VFR flight from Shoreham and was in the process of joining the circuit in crosswind position for RW20.

The CZAW SportCruiser was VFR inbound from Baynards Park near Dunsfold and had already joined the cct with 2 other ac ahead, one of which was making an approach to land on RW13.

The Shoreham controller was operating a combined Aerodrome and Approach control position, without the aid of surveillance equipment. Workload was assessed by CAA ATSI as light - medium. RW20 was in use with a LH traffic pattern. The UK AIP page AD 2-EGKA-1-7 (29 Jul 10), para 6, states:

- c) Circuit heights are 1100ft aal for all runways.
- d) Variable circuits at discretion of ATC.
- e) Unless otherwise instructed aircraft joining the circuit will overfly the aerodrome maintaining 2000ft aal, until instructed to descend to circuit height on the inactive (dead) side of the runway in use and join the circuit by crossing the upwind end. Pilots should note that there would frequently be helicopters operating both 'liveside' and 'deadside' in the ATZ up to 600ft.'

CAA ATSI had access to RT and area radar recordings, together with written reports from both pilots, the controller and the ATSU investigation report.

At 1414:22 the SportCruiser pilot established contact with Shoreham, reporting 3nm N on QNH 1029, with information 'Mike'. The controller instructed the SportCruiser flight to join O/H at 2000ft, RW20 LH cct. This was acknowledged correctly by the SportCruiser pilot.

Due to sea fog offshore which was approaching the airfield from the S, the controller asked another ac's pilot to relay a message to the PA28 flight suggesting that it would be a good idea to land unless he wanted to divert to Goodwood. At 1415:45, the PA28 pilot responded, *"Thank you that's copied we are inbound we're just at Littlehampton at the moment two thousand feet."*

At 1415:51, the SportCruiser pilot reported O/H and the controller replied, *"(SportCruiser c/s) roger descend deadside report downwind Runway two zero lefthand circuit there are two aircraft ahead of you in the circuit."* The SportCruiser pilot acknowledged with c/s and at the same time another ac's pilot reported on final.

At 1418:12 the SportCruiser pilot reported late downwind and the controller instructed the flight, *"(SportCruiser c/s) thank you take up a righthand orbit you're number two to a cub in the one three circuit."* The SportCruiser pilot acknowledged with c/s.

At 1418:54, the PA28 flight reported, *"(PA28 c/s) P A twenty eight overhead Worthing Pier at two thousand feet request joining crosswind."* The controller responded, *"(PA28 c/s) join crosswind Runway two zero report established crosswind."* The PA28 pilot acknowledged, *"Report crosswind (PA28 c/s)."*

At 1419:12, the SportCruiser pilot reported on L base and the controller replied, *"(SportCruiser c/s) thank you report final Runway two zero you're number two number one is a cub on a quarter mile final for Runway one three."*

At 1419:57, the SportCruiser pilot called final RW20 and was instructed to continue approach and shortly afterwards was cleared to land, *"(SportCruiser c/s) clear to land Runway 20 surface wind's"*

one four zero six.” The pilot replied, *“(SportCruiser c/s).*” The controller repeated, *“(SportCruiser c/s) clear to land Runway 20”* and the SportCruiser pilot responded, *“Clear to land two zero.”*

At 1420:51 the radar recording shows the SportCruiser on short final for RW20 and the PA28, 1.6nm W of the airfield approaching crosswind indicating FL009 (converts to an altitude of 1332ft on QNH 1029mb with 1mb equal to 27ft).

The ATSU investigation report indicated that the SportCruiser positioned poorly onto final and was too high, resulting in the go around.

At 1421:33 the radar recording shows the SportCruiser passing the mid-point of the RW. The PA28 is approaching crosswind at FL006 (converts to an altitude of 1032ft) with the SportCruiser in the PA28’s 11 o’clock at a range of 0.4nm crossing L to R and indicating 500ft below.

At 1421:42, the SportCruiser pilot reported going around, *“(SportCruiser c/s) going around sorry screwed it up.”* The controller acknowledged, *“(SportCruiser c/s) thank you report lefthand downwind Runway two zero there is an aircraft on a crosswind join above you.”* The SportCruiser pilot replied, *“(SportCruiser c/s)”*. The SportCruiser pilot’s written report indicated that he was visual with the PA28 several hundred feet above.

[UKAB Note (1): The sweep at 1421:39 shows the PA28 maintaining FL006 (1032ft QNH) with the SportCruiser in its 11 o’clock range 0.2nm indicating FL002, 400ft below. The next sweep 6sec later at 1421:45 shows the PA28 crossing the upwind end RW20 at FL006 with the SportCruiser having faded from radar. Six seconds later at 1421:51 the radar shows both ac again, the SportCruiser at FL002 (632ft QNH), having made a sharp L turn, and now turning through heading 080° 0.1nm NE of the PA28 which is seen to be turning R and diverging, still maintaining FL006 (1032ft QNH). The CPA occurs between 1421:39 and 1421:51, whilst the SportCruiser has faded, and it is estimated to be <0.1nm H and 400ft or less.]

At 1421:53, the controller called the PA28 flight, *“(PA28 c/s) er Shoreham were you visual with that Sportcruiser that just cut you up.”* The PA28 pilot replied, *“er (PA28 c/s) we are visual.”* The controller responded, *“(PA28 c/s) er thanks that looked quite close erm would you like to file an Airprox on that.”* The PA28 pilot indicated that he would call ATC when on the ground.

At 1422:15 the radar recording shows the SportCruiser turning downwind for a short cct pattern indicating FL004(832ft). The PA28 continues for a normal cct pattern indicating FL007(1132ft). The 2 ac continued in the cct and landed without further incident.

The controller was aware of sea fog approaching from the SE and advised the PA28 pilot, who elected to rejoin. The 1420Z METAR was giving visibility to the SE as 3500m.

The SportCruiser pilot had already joined the cct. The ATSU and controller’s written report indicated that the SportCruiser positioned poorly onto final and was too high on the approach, resulting in the go around. The controller passed TI to the SportCruiser pilot on the PA28 joining crosswind. The SportCruiser pilot’s written report indicated being visual with the PA28 several hundred feet above.

It was not clear why the SportCruiser turned very quickly so soon after the go around into a very tight low-level cct. The ATSU investigation report suggested that this may have been to avoid the sea fog (base about 200ft). However radar recordings show the PA28 make a normal circuit pattern at 1132ft. The precise geometry and movement of the fog, the base and top of the layer was unknown. The SportCruiser pilot’s written report does not mention turning to avoid fog.

The radar recordings show the SportCruiser was indicating 400ft below the PA28. The PA28 pilot’s written report indicates 300ft and the SportCruiser pilot’s report stated several hundred feet. It is likely that the controller and PA28 pilot were concerned, when the SportCruiser made a tight L turn below the PA28 into a short lower level cct. It was not clear why the SportCruiser pilot carried out this manoeuvre.

The incident is attributed to the SportCruiser going around and making a non-standard manoeuvre below the PA28, which caused the controller and PA28 pilot to be concerned about the safety and proximity of the 2 ac. The controller passed appropriate TI to the SportCruiser pilot, who in his written report indicated that he was visual with the other PA28 above, with little chance of collision.

The following were considered to be contributory factors:

The SportCruiser pilot was considered to have positioned poorly onto final resulting in the approach being too high, resulting in the go around.

The sea fog was likely to have been a factor in the SportCruiser pilot making the unusual early L turn into the cct.

The nature of the unusual turn and manoeuvre into a non-standard cct directly below the PA28 caused the controller and PA28 to be concerned.

CAA SRG FOI (GA) comments that it appears that the PA28 had priority as it was already establishing in the pattern formed by ac intending to land when it joined crosswind with the controller's permission. The SportCruiser's early turn exacerbated the situation; however, it is difficult to judge, from the information available, whether the pilot did so deliberately to position ahead of the joining PA28 in order to position in front of it in the cct or as a manoeuvre to avoid a conflict. Clearly the correct thing for the SportCruiser pilot to have done would have been to climb ahead to cct height or until he was well clear of the upwind end of the RW, altering to starboard if necessary to avoid the PA28, and then to have turned port onto the crosswind leg and fitted into the cct astern of it. We are aware that the performance characteristics of some of the latest Microlights and light sport ac mean that they can climb rapidly to cct height with a much steeper climb angle than earlier GA types and that this has the potential for conflict with ac joining the cct crosswind. We are publishing an article in the next edition of GASIL to address this. Although not entirely convinced that this incident merited an Airprox report, we wonder about the controller's relative attitude and behaviour towards the pilots of the 2 ac. Firstly the SportCruiser had been instructed to orbit late downwind because of an ac making an approach to another RW (13) from that which the SportCruiser was landing on. Whether this had an effect on the SportCruiser pilot's positioning on final approach to land on RW20 we can't judge but as the pilot, from his own admission, "screwed it up" to the extent that he needed to go-around, this cannot be ruled out. Having ac landing on 2 different RWs can make it difficult for pilots who are either inexperienced or unfamiliar with the aerodrome, to position correctly for their landing if they are keeping the other landing traffic in sight. We were also concerned about:-

1. The PA28 requesting and being allowed to join crosswind when the notified procedure in the AIP is to join O/H as the SportCruiser had done (although we acknowledge that the AIP entry does state 'Unless otherwise instructed').
2. The controller's question to the pilot of the PA28, "were you visual with that SportCruiser that just cut you up?" The use of the past tense suggests this message was not necessary and the allocation of blame by the controller to the SportCruiser pilot implicit in this transmission was both inappropriate and unprofessional.
3. A possible presumption that as the PA28 was a training ac operating from Shoreham and was thus a well known 'local' it should be afforded greater priority or consideration than the SportCruiser.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

Prior to the Airprox, the controller had instructed the SportCruiser pilot to orbit R when late downwind, owing to a Cub making its approach to RW13. Board Members questioned the wisdom of an orbit on

the downwind leg and particularly a right hand orbit in a left hand circuit. As it was, the SportCruiser had then positioned onto L base and then onto final approach RW20 and was issued landing clearance in good time before the pilot executed a go-around. Members were emphatic that, notwithstanding what subsequently occurred, the SportCruiser pilot was absolutely correct and should be commended for going around from an approach that he was not happy with.

At the time of the Airprox the cct traffic and controller's workload were light and Members considered whether the crosswind join by the PA28 had contributed to the incident. The PA28 pilot had requested it and the ADC judged that it was allowable as it was more expeditious, taking the adjacent fog bank into account. The notified procedure for joining O/H is usually standard practice when the cct becomes busy but joining via base leg, downwind or crosswind does afford the controller flexibility for integrating traffic into the cct expeditiously. Moreover, given the position of the encounter O/H the upwind end of the RW, the PA28 would have been in the same position over the upwind end of the runway at cct height after carrying out an O/H join albeit at a later stage allowing for its passage to the O/H and descent via the deadside. The ATSI Advisor acknowledged that the phraseology used by ADC, when the SportCruiser turned L below the PA28, was inappropriate; however, the controller was reacting to a what he saw from the VCR which he considered were 2 ac coming into close proximity. This aspect and the implied bias towards inviting the PA28 to file an Airprox have been addressed by the ATSU. Up until the Airprox the controller had performed in an entirely professional manner.

When the SportCruiser pilot called going-around the ADC passed TI on the PA28; there was no other requirement of the ADC. It appeared that the controller had an expectation that the SportCruiser pilot would climb straight ahead and adjust his flightpath to pass below the PA28 and then turn L behind it and Members shared this view. It was agreed that the SportCruiser pilot should have integrated better but without any positive instruction by the ADC to position No2 to the PA28, the SportCruiser pilot had positioned himself as he saw fit. Notwithstanding that the PA28 had priority, its crew still had a responsibility to look for ac to their left taking off or going-around. The PA28 instructor did not see the SportCruiser initially but, on hearing its pilot call going around, he turned his ac to the R and then saw the SportCruiser as it passed 300ft below and 300m clear on their L. The SportCruiser pilot had estimated 500ft vertical separation and the radar recording shows 400ft. It was this LH climbing turn that had caused concern to the controller from his viewpoint in the VCR and subsequently to the PA28 pilot and this led to the filing of the Airprox.

Turning to risk, the SportCruiser pilot had seen the joining PA28 and chosen the separation distance whilst manoeuvring his ac, which had quickly made the incident benign. This left the board in no doubt that any risk of collision had been quickly and effectively removed.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The SportCruiser's flightpath caused the controller and PA28 pilot concern.

Degree of Risk: C.

AIRPROX REPORT No 2011130

Date/Time: 28 Sep 2011 0912Z

Position: 5204N 00005E
(2nm SW Duxford – elev
125ft)

Airspace: FIR (Class: G)

Reporting Ac Reported Ac

Type: Bell 206 PA28

Operator: Civ Pte Civ Pte

Alt/FL: 800ft 1100ft
QFE QNH

Weather: VMC NR VMC NR

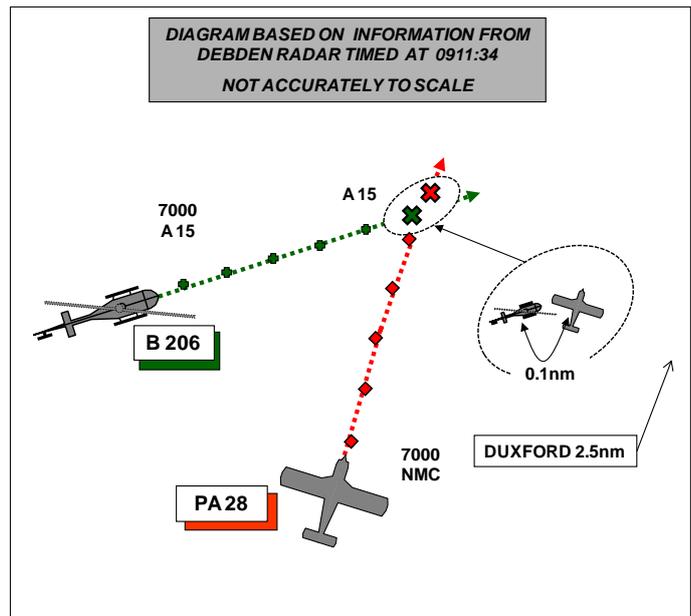
Visibility: >40nm 3000m

Reported Separation:

0ft V/50ft H 0ft V/150m H

Recorded Separation:

NR V/0.1nmH (See UKAB Note (2)).



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE BELL 206 PILOT reports flying a private flight to Duxford in a white and blue helicopter with strobes and nav lights switched on, in receipt of an A/G [BS see ATSI report] service from them. Due to an event at Duxford there was a NOTAM and an AIC outlining the Special Procedures in force for Duxford. They were heading 060° at 100kt having joined the cct downwind for RW24 at 800ft QFE when they were overtaken from the 4 o'clock by a rapidly descending PA28 which passed an estimated 50ft away. There were 3 very experienced pilots on board the helicopter at the time and they all considered they were very lucky that the PA28 had actually missed them. He provided a diagram showing the track of the PA28 and they agreed that its pilot clearly had not seen them. In their view the PA28 pilot demonstrated a lack of airmanship by joining a busy and active circuit incorrectly and dangerously.

He considered the risk as being very high and reported the incident to A/G.

THE PA28 PILOT reports that he rented the PA28 from a flying school and had flown to Panshanger to collect a passenger who occupied the P2 seat on the following short flight to Duxford to visit the Museum. The ac was blue and white with strobes switched on and they were squawking 7000 with Mode C; Mode S and TCAS were not fitted. He had received PPR from Duxford and was aware that an exhibition was taking place and had the AIC describing procedures for the event in the ac. They made contact with Duxford Info about 10nm S, were given a BS and were heading 060° at 100kt, having been instructed to join left downwind for RW24. He was aware of a helicopter that had also been advised to join downwind from the W but did not see it until he was established midway downwind when he saw it at a similar altitude in his 4 o'clock position [UKAB Note: The ac had already crossed]. Its speed appeared similar to his. His passenger saw it at the same time and kept it in sight. Given their relative positions, he suggested to the FISO that he could make a short approach to land from his present position, but he was advised that was not approved for fixed wing ac and was instructed to continue downwind for a normal approach avoiding Duxford village. He turned slightly right to avoid the village with the helicopter traffic in sight, anticipating that the B206 would then turn behind him to make a short approach; he heard it being cleared accordingly and saw it land as he was on base leg. He heard no mention of an Airprox until after landing when the

marshaller mentioned that the helicopter pilot intended to file an Airprox. The marshaller also stated that he had seen both ac downwind and felt there was no conflict. He immediately visited the tower and spoke to staff who advised that the other ac's pilot had not visited them. He visited the tower again at about 1245Z prior to departure and spoke to one of the FISOs who mentioned that a passenger from the helicopter had visited the tower. They had spoken to him, reviewed the R/T tapes and did not feel there was any need for him to leave details as they felt no report was required.

He was only advised of this Airprox report on 9 Dec by the successor company to the flying school which had ceased operations at the end of Sept.

He considered the risk to be none.

ATSI reports that Duxford has an ATZ, which comprises a circle radius 2nm, centred on the midpoint of RW 06/24 and extends to a height of 2000ft aal (elevation 125ft).

The B206 helicopter, inbound from Thrupton and the PA28, inbound from Panshanger, were both operating VFR, in receipt of a BS from Duxford Information.

Duxford Airport is promulgated as being subject to PPR and an Aerodrome Flight Information Service is provided (Duxford Info). During the period 27-29 September 2011, a special exhibition event, 'Helitech 2011' was promulgated.

CAA ATSI had access to RTF and area radar recordings and reports from both pilots.

The Stansted weather was:

METAR EGSS 280850Z 13006KT 7000 NSC 17/16 Q1028=

METAR EGSS 280920Z 13007KT 8000 NSC 17/16 Q1028=

At 0907:02, the PA28 contacted Duxford Info reporting at 2000ft; the FISO advised the PA28 pilot, RW24 LH cct was in use, QNH 1028, QFE 1024. The radar recording at that time shows the PA28, squawking 7000 with no Mode C positioned 10.2nm SW of Duxford Airport. The FISO asked the PA28 pilot to report downwind LH.

The B206 helicopter contacted Duxford at 0907:45, reporting at Bassingbourne; the FISO advised RW24 LH cct, QNH 1028, QFE 1024. The radar recording at that time shows the B206, squawking 7000 with Mode C indicating 1800ft, positioned 6.1nm W of Duxford. The FISO asked the B206 pilot to report downwind LH routeing via Royston to avoid Fowlmere. At 0908:41, the radar recording shows the B206 turn onto a SE'ly track to avoid Fowlmere and then turn ENE towards the LH traffic pattern for Duxford RW24.

At 0911:16, the B206 reported, *"B206 C/S is now downwind left-hand for Runway two four"*. The FISO replied, *"B206 C/S roger..."*. Radar recordings show the B206, indicating an alt of 1500ft, outside the ATZ and 2.4nm SW of the ARP, tracking 080°, with the PA28 converging from its right on a NE track, in the B206's 2 o'clock at a range of 0.6nm.

At 0911:28 radar recordings show the two ac in close proximity, still outside the ATZ, with the PA28 crossing the B206 from right to left.

At 0911:30 the PA28 was advised, *"PA28 C/S er you're welcome to do as you wish but you will find it easier overall if you park southside there's a very efficient minibus service across make it easier for your departure"*. The PA28 pilot replied, *"PA28 C/S and we're just entering left downwind for two four."* The FISO responded, *"PA28 C/S roger are you visual with the er Bell Jet-ranger?"* The PA28 pilot transmitted, *"Negative position"*. The FISO advised, *"Just reported downwind"*. At 0911:34, the radar recording shows the ac tracks had crossed, with the PA28 in the B206's eleven o'clock at a range of 0.1nm with the B206 indicating an altitude of 1500ft.

At 0912:01 the PA28 pilot reported, “*Yeah we’re visual now he’s in our er three o’clock we’re just outside him tight inside him*”. The PA28 pilot’s report indicated that the pilot, “was aware of a helicopter also advised to join downwind from the west but did not see it until I was established midway downwind when I saw it at a similar altitude in my 4 o’clock position”. [After the Airprox] Radar recordings show the PA28 turning downwind 0.3nm N of the B206.

At 0912:09, the FISO advised the B206 pilot, “*and er B206 C/S are you visual with the fixed wing on your inside*”. There was no immediate response from the B206 pilot but the PA28 pilot transmitted, “*Round the Village PA28 C/S or could we make a short approach from here if you prefer*”; the FISO replied, “*er no sorry that doesn’t work for non-Duxford based fixed wing so er right around the village for a two mile final please*” and the PA28 pilot acknowledged, “*Wilco PA28 C/S*”.

At 0912:47, the FISO transmitted, “*...break er Jetranger B206 C/S from your present position do you want to make an early left turn for Runway two four*”, the pilot replied, “*Affirmative Sir thanks very much for that and I think we ought to report an Airmiss...*”.

At 0913:58 the B206 reported, “*short final for two four*”, and the PA28 reported, “*two mile finals two four*”; both ac landed without further incident.

Both ac were in receipt of a BS from Duxford Information (FISO). CAP774, UK Flight Information Services, Chapter 2, Page 1, Paragraph 1, states:

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

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

‘1.1 The FISO’s area of responsibility is the aerodrome, the aerodrome traffic zone and the immediate surrounding local area.

1.2 The FISO **may** pass traffic or essential aerodrome information to anyone who calls on RTF. Any traffic information passed can relate only to known traffic operating, or intending to operate within the area of responsibility.’

Paragraph 7.4, states:

‘Landing direction and traffic information on known traffic flying within the ATZ and the immediate surrounding local area is normally passed when the ac is still some distance away from the ATZ. This enables the pilot to determine if it is safe to proceed with the flight as planned and to intelligently position the ac in relation to other ac in the circuit pattern....’

The PA28 was already on frequency when the B206 contacted Duxford and the PA28 pilot indicated being aware of a helicopter joining; however, the B206 may not have been aware of the PA28. Had the FISO passed TI, this would have aided the situational awareness of both pilots. CAP774, UK Flight Information Services, Chapter 2, Page 1, Paragraph 5, states:

‘Whether traffic information has been passed or not, a pilot is expected to discharge his collision avoidance responsibility without assistance from the controller/FISO.’

Both ac were positioning to join downwind and routed to a point 2.4nm SW of the airfield. The inbound PA28 on a N’y track crossed in close proximity to the B206 which had reported ‘downwind’. Both ac were still outside the ATZ at this point. CAP774, Chapter 1, Page1, Paragraph 2, states:

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

The PA28 pilot did not acquire the B206 helicopter visually until after they had crossed; it is not clear from his report when the B206 pilot first sighted the PA28. PA28 pilot's report indicated a flight visibility of 3000 metres in haze and the B206 pilot indicated 40nm plus. The CAA Safety Sense Leaflet 13a (June 2005), which is based on the ICAO Circular 213-AN 130, states:

'See-and-avoid' is recognised as the main method that a pilot uses to minimise the risk of collision when flying in visual meteorological conditions. 'See-and-avoid' is directly linked with a pilot's skill at looking'.

The Airprox occurred when the two ac, positioning SW of the airfield, to join downwind, came into close proximity while outside the Duxford ATZ. In Class G airspace, regardless of the service being provided, pilots are ultimately responsible for collision avoidance.

Had TI been passed it may have aided the SA of the respective pilots.

UKAB Note (1): Although the PA28's altitude cannot be determined, the radar recording showed that both ac appeared to be complying with the special procedures in force, the B206 joining from Gate W (Royston) and the PA28 from Gate S (Barkway/Nuthampstead).

UKAB Note (2): The recording of the Debden Radar shows the incident as depicted above with both ac heading almost into sun. Further it shows that the incident took place 2.5nm SW of Duxford, not in the cct as reported by the B206 pilot. The B206, squawking 7000 with Mode C, turns left at 0910.27 and approaches the CPA tracking about 080° at an alt of 1500ft. After the turn the PA28, squawking 7000 with no Mode C, is in its 2 o'clock closing on a line of constant bearing but pulling slightly ahead (of the B206). At 0911:25 the ac are 2.3nm SW of Duxford (about to enter the ATZ) with the PA28 0.3nm in the B206's (still indicating an alt of A15) 1.30. On the next sweep the separation is 0.2nm the PA28 still in the B206's 1.30. On the subsequent sweep, as the ac cross the ATZ boundary, the PA28 had crossed under 0.1nm ahead of the B206.

The radar recording shows that at the CPA the B206 is indicating an alt of A15 (1375ft agl). The PA28 reported that he was at an alt of 1100ft, but this might refer to the point when he first saw the B206, some time after the CPA. The radar also showed that the B206 did not descend to cct height (1125ft amsl) until 0912:28 (established), 53sec after the ac had crossed.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The Board noted that the radar recording showed that the incident took place on the boundary of the ATZ at 0911:34; this, however, was 18sec after the B206 had called 'downwind' at a position about 2.4nm from the ARP. At that time the PA28 was already on frequency but was still in transit from Gate S in the descent from 2000ft. Members agreed that this call would have misled the PA28 pilot into believing that the B206 was much further ahead and not a threat, when in reality it was very close to him closing from off his left wing. Members also agreed that the ac had crossed unseen to the PA28 pilot, who at the time was in a fairly lengthy, largely non-operational conversation with ATC from a point 4 sec before he passed just ahead of the B206. Members found it more difficult to ascertain when the B206 pilot first saw the PA28 on his right descending from above and closing. A helicopter pilot Member familiar with the B206 informed the Board that the view from the right hand seat that the pilot would have occupied to the right and above, is relatively uncluttered and fairly good; that being the case they could not determine why the B206 pilot had not seen the PA28 until it

passed close (reported as 50ft and radar verified as less than 0.1nm) in front of him. Bearing this in mind and that the B206 did not take any avoiding action Members agreed that the B206 pilot had not seen the PA28 (which had right of way under the RoA) until too late to take any avoidance. Members noted that at the CPA the B206 was level at an alt (radar verified) of 1500ft and the PA28 had no Mode C but the pilot reported that he was in the descent from 2000ft to cct height (1000ft); that being the case they could not determine the vertical separation but opined that it was also very close.

Since neither pilot had seen the opposing ac in time to take any evasive action and the flight vectors were very close, Members agreed unanimously that there had been a risk that the ac would have collided.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A non-sighting by the PA28 pilot and effectively a non-sighting by the Bell 206 pilot.

Degree of Risk: A.

AIRPROX REPORT No 2011132

Date/Time: 17 Sep 2011 1358Z (Saturday)

Position: 5140N 00001E (5nm W LAM)

Airspace: LFIR (Class: G)

Reporting Ac Reported Ac

Type: EC145 PA34

Operator: Civ Comm Civ Club

Alt/FL: 100ft↑ 600ft
QFE (994mb) QNH (1004mb)

Weather: VMC CLBC VMC CLBC

Visibility: >10km 10km

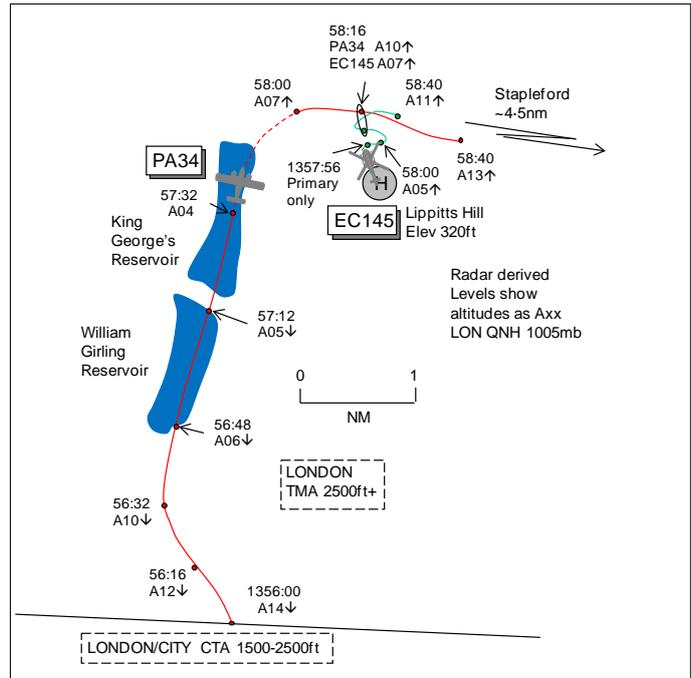
Reported Separation:

100-200ft V/ Not seen

1000m H

Recorded Separation:

300ft V/>0.1nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE EC145 PILOT reports on departure from a private site at Lippitts Hill, VFR and in communication with his base operations, squawking a discrete code with Modes S and C. The visibility was >10km flying clear below cloud in VMC and the ac was coloured white/red/orange with nav, anti-collision beacon and HISLs all switched on. He was departing via a clear area to the NW and as he cleared the trees at the far end of the RW TCAS issued an alert (circular symbol indicating +100ft about 1000m away). Heading 340° at 60kt and climbing through 100ft QFE 994mb the crew member in the rear informed him of the presence of a white coloured twin-engine ac flying extremely low up the reservoirs in an erratic fashion, ~1000m away. In response to this and the TCAS alert he elected to manoeuvre his helicopter down and R before visually searching for the ac. Once confident that he was clear, he rolled L and looked for the contact. He saw it in a climbing R turn towards him and he positioned his helicopter below the ac so that he could read its registration. He followed the ac at distance and filed an Airprox on contacting Heathrow SVFR. He was confident the ac was from Stapleford so after landing he telephoned Stapleford Operations and informed them that he was filing an Airprox against the twin engine ac. He assessed the risk as high.

THE PA34 PILOT reports flying a local sortie from Stapleford, VFR and in communication with Heathrow SVFR and then Stapleford Radio, squawking with Modes S and C. The visibility was 10km flying clear below cloud in VMC and the ac was coloured white/purple with strobe lights switched on. He was returning to Stapleford from a pleasure flight over London. Stapleford was using RW22 for arrivals and departures and the cct was very busy with training traffic. He elected to return from London on a N'y route via the Lee Valley Lakes [Reservoirs] as this allowed him to conveniently and more safely join the Stapleford cct from the deaside. Once clear of the London City CTR he descended to altitude 600ft QNH 1004mb to afford his pax a pleasurable view of the lakes and Epping Forest. Heading 360° at 120kt upon reaching W abeam LAM he entered a climbing R turn, eventually levelling at altitude 1200ft to position for a crosswind join at Stapleford. He did not see any rotary craft which he was subsequently told was on climb out from the Epping Forest area.

THE HEATHROW SVFR CONTROLLER reports mentoring a trainee when the PA34 flight, which had been conducting a pleasure flight over central London, reported leaving his frequency to return to Stapleford. About 2min later at 1401 the EC145 flight made its initial call on frequency and

reported, "...a twin-engine plane with the registration (PA34 reg) flying low over the reservoir...we nearly hit it". He took over from the trainee and asked the EC145 pilot if he wished to file an Airprox. The pilot replied in the affirmative and it was agreed the event would be logged at Swanwick and the pilot would complete the Airprox paperwork when he returned to base. A contact showing 7000 was seen close to the EC145, TI was passed and the EC145 pilot reported that this was the other ac concerned. This radar contact was identified using Mode S as PA34 c/s. The non-standard flight paperwork relating to PA34 c/s listed the PA34 registration as one of the ac used for this operation.

ATSI reports that this was an AIRPROX in Class G uncontrolled airspace between an EC145 and a PA34, reported by the EC145 pilot, in the vicinity of Lippitts Hill, NE London at a height of 100ft QFE 994mb [420ft amsl]. The EC145 departed a helipad in the vicinity of Lippitts Hill on an operational flight. The pilot reported manoeuvring at low level to initially stay clear of the PA34.

The PA34 had departed Stapleford earlier in the day and had been conducting a pleasure flight over London. LTC Heathrow Special VFR (LL SVFR) was providing a RCS to the PA34 flight on 125.625MHz whilst it operated inside the London City CTR. Outside CAS the PA34 flight was provided with a BS. The EC145 pilot called LL SVFR on the same frequency after lift-off. LL SVFR services were being provided by an ATCO on extension training under the supervision of an OJTI.

ATSI had access to the following in the course of its investigation: both pilots' reports, LL SVFR controller report, transcript of frequency 125.625MHz, recorded area surveillance. NOTE: radiotelephony is not recorded at Stapleford or at Lippitts Hill.

METAR EGLC 171350Z AUTO 25012KT 210V280 9999 SCT045/// 18/07 Q1004=

The PA34 exited the London City CTR at 1355:37 (UTC) displaying a LL SVFR SSR code and flew outside CAS to Banbury Reservoir where it turned onto a N'y track to fly low-level along the centre of William Girling and King George's Reservoirs.

At 1357:32 the PA34 disappeared from surveillance coverage displaying an altitude of 400ft.

At 1357:56 the first, primary only, surveillance position indication symbol of the EC145 appeared 0.3nm N of the Lippitts Hill Helipad (LHH).

At 1358:00 the PA34 pilot requested a frequency change to Stapleford Radio, which was approved, and LL SVFR's service was terminated.

At 1358:00 the PA34's position indication symbol reappeared 0.9nm NW of the LHH at an altitude of 700ft. The EC145 was now also displaying Mode C information and was at altitude 500ft having tracked E from its previous position.

The PA34 continued climbing on an E'y track as the EC145 also climbed whilst executing a LH turn.

At 1358:16 the ac passed abeam each other, on reciprocal tracks, laterally distant by 0.15nm: the PA34 was at altitude 1000ft and the EC145 at altitude 700ft. The ac were approximately 0.6nm N of the LHH.

At 1358:20 the EC145 pilot called LL SVFR stating that a twin-engine ac had been sighted over 'the reservoirs' and that the EC145 nearly collided with it. By 1358:40, when the EC145 flight's initial RT message ended, the EC145 had climbed to 1100ft and turned R, following the E'y track of the PA34. The PA34's SSR code had changed to 7000 and the ac was at altitude 1300ft.

There followed a dialogue between the LL SVFR controller and EC145 during which the ac sighted by the EC145 was identified as the PA34.

A map of the Lippitts Hill area is provided at Appendix A. The map has been annotated with the position indication symbols for both the PA34 (in red) and the EC145 (in yellow). The PA34's flight

along the King George Reservoir was at a level such that it disappeared from surveillance coverage for 28sec. During this time it is assumed that the ac continued on a N'y track to the end of the reservoir where it turned on to an E'y heading. It climbed from altitude 400ft to altitude 700ft in this time.

The initial lift profile of the EC145 was not visible on the surveillance recordings therefore it is not possible to verify the orientation of the ac prior to it being recorded on an E'y track at 500ft. It is likely that, prior to this, the EC145 crew had observed the PA34's flight along the reservoir. The distance between the LHH and the last observed position of the PA34 over the King George Reservoir is 1.3nm.

The minimum distance (CPA) between the 2 ac occurred at 1358:16; this was equal to 280m.

The LL SVFR controller had access to surveillance derived information; however, neither ac were displayed on the controller's situation display immediately prior to their recorded CPA. Therefore, the LL SVFR controller could have been of no assistance to either flight with regard to the Airprox that was subsequently reported.

As the Airprox occurred the PA34 flight was transferred from the LL SVFR frequency, its BS having been terminated. The EC145 pilot called LL SVFR thereafter. Given the very low-level of the Airprox it was not possible to fully verify either pilot's account using surveillance derived information.

Appendix A



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 noted that the Airprox per se occurred when the MD902 climbed through 100ft QFE (430ft QNH) on a NW'ly departure track with the PA34 passing 1000m to the W of the landing site tracking N'ly and showing 100ft above on TCAS. A crewman in the MD902 saw the PA34 flying low over the reservoirs and alerted his pilot to it. The PA34 pilot reported flying at 600ft QNH whilst recorded radar shows the PA34 fading from radar at altitude 400ft 1.3nm WSW of the helicopter site tracking N'ly. It appeared to Members that the MD902 crew were concerned that the PA34 was low-flying and closing towards their projected flightpath. Members believed that the PA34 pilot had not broken any rules flying low over the reservoirs; his only need was to comply with Rule 5 of the RoA (500ft clear of persons, vessels, vehicles or structures on the ground). The MD902 pilot had taken action quickly to increase separation by turning R away from the PA34 before he judged that it would be safe to turn L back to the W while looking for it. It was then that he saw the PA34, as it was turning R towards the E and climbing, and he elected to pass close to it to identify the ac. This resulted in the measured CPA but it was a separation distance chosen by the MD902 pilot, post the initial evolution of the encounter. Although the PA34 pilot was unaware of the helicopter's presence, the site is marked on the topographical charts and it should have been given 'due regard' during the flight planning phase. While flying low it would have been more difficult for the PA34 pilot to see the helicopter until it lifted-off and climbed above the tree line from its elevated site on a hill and this would be exacerbated by his cross-cockpit view from the LH seat.

Members were in no doubt that the MD902 crew was concerned during a critical stage of flight. However, in the circumstances, with both crews discharging their responsibilities in this Class G airspace, the Board agreed that this incident had quickly become benign, owing to the MD902 crews actions, allowing it to be classified as a sighting report where normal procedures, safety standards and parameters pertained.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Sighting report.

Degree of Risk: E.

AIRPROX REPORT No 2011133

Date/Time: 3 Oct 2011 1744Z

Position: 5203N 00129W
(14.5nm NW Oxford)

Airspace: LFIR (Class: G)

Reporting Ac Reported Ac

Type: EMB505 PA34
Phenom 300

Operator: Civ Comm Civ Trg

Alt/FL: ↓3500ft ~3000ft↑
QNH (1015mb) QNH

Weather: VMC CAVOK VMC NR

Visibility: 10km NR

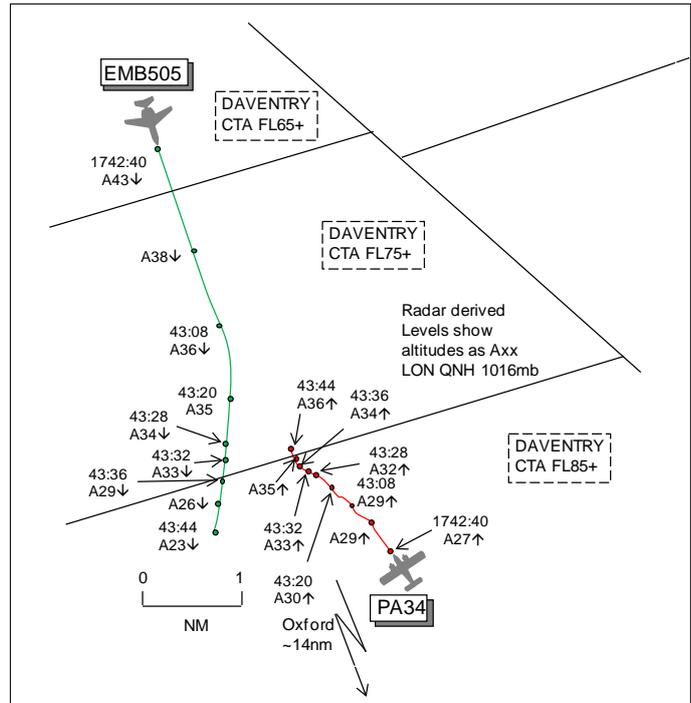
Reported Separation:

Nil V/<0.5nm H Not seen

Recorded Separation:

Nil V/0.9nm H

Or 500ft V/0.8nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE EMB505 PILOT reports inbound to Oxford, IFR and in receipt of a RCS from London and then a BS from Oxford on 125.325MHz, squawking 5015 with Modes S and C. The visibility was 10km in CAVOK VMC and the ac was coloured white/grey/black; ac lighting was not reported. A request for a HON direct arrival had been pre-noted to Oxford via RT and to London Control prior to descent. Late and insufficient descent clearance was given by London to comply fully with the procedure and they were kept on radar headings until almost out of CAS. Heading 180° at 200kt descending to 3500ft QNH just prior to changing frequency to Oxford, London warned them of "traffic 2800ft unverified" which was seen on ACAS 5-10nm ahead so they turned R to avoid. During the frequency change a TCAS RA 'descend' was generated and complied with but the high ROD resulted in a GPWS 'sink rate' and 'pull up' warning. The crew were visual with the ground but at no point did they see the other ac which passed <0.5nm away on ACAS at the same level. They repositioned onto a 10nm final for RW19. He assessed the risk as high.

THE PA34 PILOT reports flying a local dual training sortie from Oxford, VFR and in receipt of a BS from Oxford on 125.325MHz, squawking 7000 with Modes S and C. The Wx was VMC and the ac was coloured blue/white with strobe and nav lights switched on. At the time of the Airprox they were carrying out GH at about 3000ft 15nm SW of DTY heading NW at 100kt and were aware of an EMB505 inbound to Oxford but they did not see it.

ATSI reports that the Airprox occurred at 1743:34 UTC, in Class G airspace, 14.3nm to the NW of Oxford Airport.

The EMB505 (Phenom 300) was an IFR flight, inbound to Oxford from Leeds-Bradford Airport and the PA34 was operating VFR on a local training flight from Oxford Airport.

The LTC (Welin W) controller was providing a BS to the EMB505 after the ac had left CAS in the descent and was in the process of transferring the flight to Oxford Approach.

The Oxford controller was providing a combined Aerodrome and Approach control service without the aid of surveillance equipment.

CAA ATSI had access to area radar recordings, together with RT recordings from Swanwick TC (Midlands) and Oxford Approach, together with written reports from the two pilots and the Oxford Approach controller. The Eurocontrol Automatic Safety Monitoring Tool (ASMT) recorded 2 resolution advisories via the Mode-S downlink. Both messages originated from the EMB505. The PA34 was not TCAS-II equipped.

METAR: EGVN 031650Z 22006KT CAVOK 23/13 Q1015 BECMG SCT020=

METAR: EGBB 031720Z 24017G27KT 7000 BKN040 21/15 Q1014=

METAR: EGBB 031750Z 26019KT 9999 BKN025 20/14 Q1015=

METAR: EGVN 031750Z 26012KT 9999 FEW045 BKN250 20/16 Q1016 NOSIG=

[UKAB Note (1): Sunset was 1742Z.]

At 1728:10, the EMB505 pilot contacted Oxford whilst still working Scottish Control, requesting the latest Wx and RW in use. The Oxford Approach controller advised, "RW19, surface wind 230/10-15KT, CAVOK, QNH 1015, QFE 1005, 21/13". The pilot acknowledged the Wx and reported overhead Manchester estimating the the Oxford NDB OX at 1744 and looking for a straight in arrival from HON. The Oxford controller advised that this, "...shouldn't be a problem" and the EMB505 pilot returned to the Scottish Control frequency. The EMB505 was pre-noted to Oxford Approach by London FDS MIDS, with an estimate for HON of 1733 together with the request for a direct arrival via HON R151, for RW19. This was approved by Oxford Approach with an acceptance level of 3500ft on QNH 1015.

At 1735:42, the EMB505 was transferred by Scottish Control to LTC (Welin W). The LTC controller approved a direct routeing HON direct Oxford. At 1737:21 the LTC controller instructed the EMB505 flight, "...descend flight level one five zero continue present heading." This was acknowledged correctly by the EMB505 pilot. The radar recording shows the EMB505's position as 12.5nm NNW of HON.

At 1738:02, the PA34 pilot operating VFR on the Oxford Approach frequency reported, "*Just between you and Moreton now just giving you an idea for that Phenom [EMB505] is he er on his way in now.*" The Oxford controller replied, "*er yeah he called me over Manchester he's gonna be coming towards the Oscar Xray coming from Honiley.*" The radar recording shows the PA34 positioned, 10.5nm NNW of Oxford Airport, indicating an altitude of 2900ft.

At 1738:41 the radar recording shows the EMB505 passing FL154 with 4.1nm to run to HON. The pilot requested further descent and the LTC controller gave the EMB505 further descent to FL100.

At 1739:11, the Oxford Approach controller updated the PA34 pilot, "*(PA34 c/s) just been ca- er just coordinated the (EMB505 company) inbound he will be doing the Honiley arrival.*" This was acknowledged by the PA34 pilot.

At 1739:41, the EMB505 pilot requested further descent and the LTC controller gave descent to FL090.

At 1741:02, the EMB505 pilot again requested further descent. The LTC controller responded, "*(EMB505 c/s) you're cleared to leaving [sic] controlled airspace by descent Oxford will accept you at altitude three thousand five hundred feet QNH one zero one five millibars.*" This was acknowledged correctly by the EMB505 pilot. The radar recording shows the EMB505 on the HON 163 radial, indicating FL090, with the PA34 indicating an altitude of 2200ft, in the EMB505's 1130 position at a range of 13nm. It was noted that the previous instruction to continue on present heading had not been changed by the LTC controller. It was not clear if the EMB505 was still on a radar heading or following the HON151 radial for the direct arrival.

At 1742:32 STCA activated low severity alert (white).

At 1742:42, the LTC controller advised, *“(EMB505 c/s) just leaving controlled airspace it’s now a Basic Service and for information about three miles ahead of your current position I’ve got an unverified aircraft showing altitude two thousand eight hundred feet.”* The EMB505 pilot responded, *“Er we’re gonna have to turn right to avoid him I think (EMB505 c/s) are we clear to do that.”* The LTC controller replied, *“(EMB505 c/s) er yeah at your own discretion.”* The radar recording shows the EMB505 indicating an altitude of 4300ft with the PA34 in the EMB505’s 11 o’clock at a range of 5.1nm, indicating an altitude of 2700ft and opposite direction.

At 1743:03 STCA changed to high severity alert (red).

At 1743:10, the LTC controller passed a further warning, *“(EMB505 c/s) just left of your eleven o’clock now two and a half miles opposite direction three thousand feet.”* The EMB505 pilot responded, *“Looking.”* The radar recording shows the 2 ac converging at a range of 2.5nm, with the EMB505 indicating an altitude of 3600ft and the PA34 indicating an altitude of 2900ft.

At 1743:19, the radar recording shows the EMB505 turning R onto a S’ly track to avoid the PA34.

At 1743:27, the EMB505 received a TCAS RA (ASMT) ‘descend, crossing descend’ and almost immediately at 1743:34 a TCAS RA ‘descend descend’ (ASMT).

The Eurocontrol ASMT reports the CPA at 1743:34, with horizontal separation of 0.86nm and vertical separation as 376ft.

[UKAB Note (2): The radar recording at 1743:28 shows the EMB505 heading 190° descending through altitude 3400ft with the PA34 1nm to its ESE at 3200ft climbing. The next sweep (1743:32) shows the lateral separation as 0.9nm with the EMB505 and the PA34 both level at 3300ft. The CPA, 0.8nm, is shown on the next radar sweep at 1743:36, the EMB505 descending through altitude 2900ft with the PA34 now in its 8 o’clock climbing through 3400ft, 500ft above.]

At 1743:42, as the separation between the ac increased, the LTC controller transferred the EMB505 flight to Oxford Approach.

The radar recording shows that the EMB505, in complying with the TCAS RA descended to an altitude of 2300ft [spot elevation in the area is shown as 784ft]. The pilot subsequently reported a GPWS “terrain warning” which was believed to have occurred at about this time. [The MSA to the NW is 2300ft].

At 1744:01, the EMB505 contacted Oxford Approach, *“Oxford Approach (EMB505 c/s) er turning left to self establish one nine climbing back to three thousand five hundred feet following an R A.”* The Oxford controller responded, *“(EMB505 c/s) your cleared for the Honiley arrival Runway one nine report localiser established and you’re number one traffic for Runway one nine.”* The pilot replied, *“Clear to self establish on the one nine approach (EMB505 c/s).”* The Oxford controller advised the pilot about the PA34, *“(EMB505 c/s) there is one Seneca [PA34] that I am aware of to the north-northwest of the airfield that traffic is VFR height and position unknown.”* This was acknowledged by the EMB505 pilot.

At 1745:02 the EMB505 pilot asked the Oxford controller what indications the Seneca (PA34) had received on TCAS. The PA34 pilot responded, *“...sorry we’re not fitted with TCAS.”* The Oxford controller added, *“(EMB505 c/s) the er Seneca’s not fitted with TCAS and wasn’t - he was aware you were approaching from the Honiley area but didn’t see you.”*

The EMB505 continued with the approach without further incident and after landing at 1752:17, reported, *“...we’re gonna have to save tapes for that one because it was a TCAS that er led to the er terrain warning as well.”* This was acknowledged by the Oxford controller.

The Airprox occurred whilst the EMB505 was in receipt of a BS from the LTC controller. As the EMB505 departed CAS, the LTC controller changed the service to a Basic Service and observed traffic ahead and passed a warning, with TI. The EMB505 pilot asked if they were clear to make a R turn to avoid. This request was most likely due to the EMB505 pilot having been instructed to “continue present heading”.

After receiving an updated warning and a TCAS TA, the EMB505 pilot commenced a R turn to avoid the unknown traffic. The EMB505 pilot then received a TCAS RA ‘Crossing Descend’ and immediately a TCAS RA ‘Descend Descend’. This resulted in the pilot descending and then receiving a GPWS - terrain warning, ‘pull up’.

The PA34 pilot was operating VFR to the N of Oxford and the pilot was aware of the inbound EMB505. The Oxford Approach controller updated the PA34 pilot on the intention of the EMB505 to carry out the “Honiley arrival”. No level information was provided by the PA34 pilot or requested by the Oxford controller. It was not clear if the PA34 pilot was aware that the EMB505 was descending to an altitude of 3500ft. The PA34 was indicating an altitude of 3400ft as the 2 ac passed abeam. The PA34 pilot did not acquire a visual sighting of the EMB505.

The LTC controller (using surveillance equipment) had retained the EMB505 until the 2 ac had passed abeam. When the EMB505 called Oxford Approach, the Oxford controller was unaware that an Airprox had occurred and was not in a position to pass timely TI on the PA34 (VFR) to the EMB505 (IFR).

The EMB505 was in receipt of a BS from the LTC controller and the PA34 was in receipt of a Basic Service from the Oxford controller. CAP 774, UK Flight Information Services, Chapter 2, Page 1. Paragraphs 1 & 5, 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.’

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

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 questioned whether the EMB505 was under the appropriate service after leaving CAS by descent. The NATS Advisor reminded Members that a DS or TS was not available on any London Control frequency below FL070 [UK AIP ENR 1-6-1-1]. The LTC WELIN controller informed the EMB505 crew that they were leaving CAS; however, best practice would have been to inform the flight in advance where and/or when this would occur to give the crew a ‘heads-up’ and the opportunity to negotiate a revised service and/or a change of frequency to be effective on leaving

CAS. There also appeared to be some confusion whether the EMB505 was still on a radar heading; although the RT transcript showed the assigned heading was not cancelled, the service was changed to a BS. The flight should have been released onto its own navigation when the assigned heading was no longer pertinent but this could have been inferred when the service was downgraded as the flight left CAS. One Member suggested that the EMB505 flight could have called Brize Norton for a radar service. Although this was possible in theory, in practice the small track distance involved after leaving CAS and establishing on the RW19 ILS from the HON procedure would have precluded a timely call to Oxford approach to establish a PS. Had the EMB505 been released earlier by LTC WELIN, Oxford APP could have provided the EMB505 with TI on the PA34 but this would have been generic. In the event, the LTC WELIN controller alerted the EMB505 crew to the PA34's presence at 2800ft when he gave a traffic warning to the flight shortly after STCA activated. Under a BS controllers are not obliged to pass TI; however, a controller with access to surveillance derived information may pass a warning to pilots if that controller considers a definite risk of collision exists and Members commended his actions in doing so. The EMB505 crew saw the PA34 on TCAS and, believing that they were still on a radar heading, asked if a R turn to avoid was approved. This request was approved and WELIN updated the warning, informing the crew that the PA34 was indicating 3000ft. At this point the radar recording shows the EMB505 turning R onto a S'ly track which resolved the conflict. Members also wondered why the EMB505 crew had continued their descent to the acceptance level of 3500ft and did not stop off their descent at a higher level. In not doing so, their descent and the PA34's climb had breached the TCAS RA 'bubble' which then commanded a descent through the PA34's level. The PA34 pilot was aware of the EMB505's impending arrival both from listening to the RT exchanges with Approach and from the TI passed. One Member thought the PA34 pilot could have been more helpful by manoeuvring his ac away from the area where he knew the EMB505 would be flying, having knowledge of its arrival at least 15min before the CPA. However, the EMB505 was off the direct arrival HON procedure, having been put on a radar heading by LTC which routed the ac about 5nm W of the HON 151° arrival track, so the PA34 pilot may have believed his ac was clear of the inbound EMB505. The EMB505 crew appeared to have taken robust action in response to the TCAS RA and their high ROD (>3000fpm) had generated a GPWS terrain warning. Members agreed that pilots should ensure that they follow the TCAS guidance closely as it was thought the RA would have 'softened' quickly, after the ac's levels had crossed, well before the GPWS parameters were breached.

In the end, the PA34 pilot flying VFR did not see the descending EMB505 crossing 1nm ahead. The EMB505 was initially approaching head-on, from above and descending. This would have presented a small target aspect to the PA34 pilot which, when combined with the nose high attitude of the climbing ac would have made visual acquisition more difficult. The EMB505 crew flying IFR only saw the PA34 on TCAS and reacted to the TI given, passing 0.8nm W of and 500ft below the PA34 whilst complying with the RA. Members discussed whether the cause of the Airprox was the failure of both pilots to see the other ac in Class G airspace. However, Members agreed that both crews had discharged their responsibilities appropriately in the circumstances and the sequence of events had led to a conflict. Although the EMB505 passed unsighted to the PA34 pilot, the EMB505 crew had reacted well to the information presented and turned their ac R which had resolved the conflicting flightpaths. The subsequent TCAS RA had increased the vertical separation at the CPA. These elements were enough to persuade the Board that any risk of collision had been effectively removed.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict in Class G airspace between IFR and VFR traffic.

Degree of Risk: C.

AIRPROX REPORT No 2011136

Date/Time: 6 Oct 2011 1628Z

Position: 5742N 00315W (Initials to RW28 at Lossiemouth – TDZE: 36ft)

Airspace: Lossiemouth CMATZ (Class: G)

Reporting Ac Reported Ac

Type: Tornado GR4 pr Hawk T Mk1

Operator: HQ Air (Ops) HQ Navy

Alt/FL: 1000ft 900ft↓
CQFE (991mb) CQFE (991mb)

Weather: VMC CLBC VMC CLBC

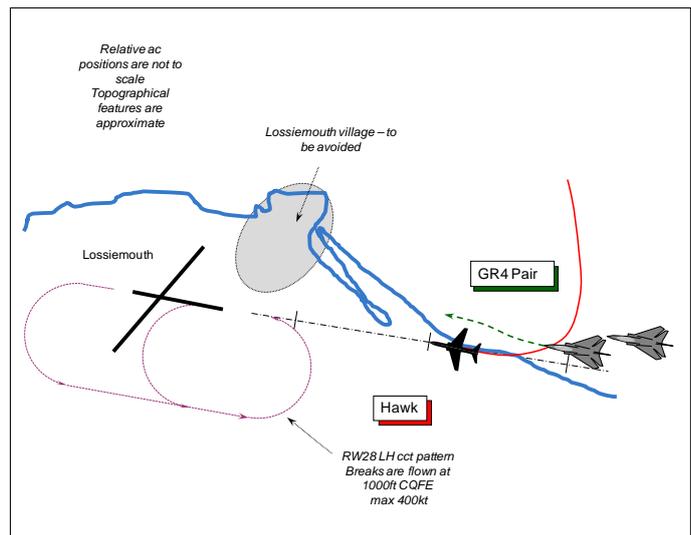
Visibility: 10km 9km

Reported Separation:

Nil V/250m H Nil V/250m H

Recorded Separation:

Not recorded



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE TORNADO GR4 PILOT reports he was leading a pair of GR4s on a visual recovery at Lossiemouth at the completion of an evasion sortie. They were informed that RW28 was in use and, realising there was a large number of ac recovering to the aerodrome, remained with APP to gain SA on the other ac. Flying an arc from NW of the aerodrome out to the E at about 16nm prior to running in to the aerodrome on a heading of 280°, APP cleared them to continue their visual approach and at about 10nm they switched to TOWER. Under a BS from TOWER they positioned themselves on the Deadside and gained visual contact with the 3 other ac in the cct. He was just about to call Initial when the pilot of a Hawk ac was heard on the frequency calling to join for a visual straight-in from 2nm Final to land. A few seconds later, inside Initial heading 280° at 1000ft Clutch QFE (CQFE) (991mb), he caught sight of a Hawk directly in front of them 0.3nm away and 200ft above crossing from R – L in a descending RH turn. The black Hawk with lights on and undercarriage down was slightly above their height initially, but it continued to descend, belly-up to his GR4 pair and passed very close in front of them. To avoid the Hawk he made a slight gentle right-hand turn (in close formation) as the Hawk passed 250m away at the closest point down the port side with a 'medium' Risk of collision. He immediately called Initial and advised TOWER that they had gained sight of the Hawk joining the cct. On the subsequent break into the cct he was sufficiently distracted by the Airprox that he lowered the gear instead of the flaps at 265kt. The Airprox was subsequently reported to the ATC Supervisor after landing by telephone.

The ac has a drab grey camouflage scheme; the white strobes were on. SSR was selected off.

THE HAWK T MK1 PILOT reports he was on a radar to visual recovery to Lossiemouth from the W. About 5nm NW of Lossiemouth at 1500ft CQFE (991mb), ATC requested that he maintain E as there was radar traffic at 10nm. He was then told that the radar traffic was at 8nm but this was then amended to ac joining visually. Given the deteriorating weather and four further ac recovering behind him, he was keen to help by landing as promptly as possible. Visual with a clear gap in the cct and radar traffic on finals, believing the traffic joining [the GR4 pair] to be at a range of 8nm from the A/D, he requested to join straight to a RH Final from his position 3nm N of the A/D. ATC said 'roger contact TOWER' which he did. Switching to TOWER, he called his position at 'RH Final' and then at 'straight-in 2nm' and was cleared to Land. Descending wings level, passing 900ft, at 150kt a

pair of Tornados were first seen at 3 o'clock - 250m away - as they passed down his starboard side at a range of 250m overtaking at the same height with a 'medium' Risk of collision.

He cited deteriorating weather visible to the SW of the A/D and 9 ac inbound via visual and radar ccts as significant factors. The ac has a Black colour-scheme; the white strobes were on. SSR was selected on.

THE LOSSIEMOUTH AERODROME CONTROLLER (ADC) reports that during a busy recovery wave of mixed ac in deteriorating weather, the Tornado GR4s were joining as a pair through Initial. Shortly afterwards a call was received from the Hawk pilot to join straight-in on Final. At this point he was not visual with the Hawk, so he queried the pilot on his position. The Hawk pilot stated 2nm, visual with the one ahead. He instructed the Hawk pilot to join at Initial, stating that there was a pair joining at Initial. The Hawk pilot again reported final visual with the one ahead, which was the first point that he was visual with the Hawk; upon receipt of a gear check the Hawk pilot was given a clearance to land, the Tornado pair then broke into the cct. An Airprox was not mentioned on frequency at any point.

THE LOSSIEMOUTH ATC SUPERVISOR (SUP) reports that at the time of the Airprox Lossiemouth was on RW28 with multiple ac recovering either visually or radar to visual. At this stage both the radar and visual cct were busy, so with the amount of traffic recovering he asked someone else to supervise the ADC as an extra pair of eyes and ears. The GR4 pair was on a visual recovery and the leader called visual with the A/D about 15-16nm to the E of the A/D. At about 10-12nm the GR4 pair switched to TOWER for their visual join. The Hawk pilot was recovering from the NW for a radar-to-visual approach and flew to the S of Tain Range, before being vectored to the E and descended. About 4nm NE of Lossiemouth the Hawk pilot called visual with the A/D; at this point he was informed of radar traffic – another pair at 3nm - and the subject GR4 pair joining visually at 8nm. The Hawk pilot called visual with the radar traffic at 3nm and the SUP instructed the APP controller to send the Hawk to TOWER thinking that the Hawk was joining through Initials and would be well ahead of the GR4 pair joining visually from 8nm. The APP controller was never informed that the Hawk pilot was doing anything other than a normal join through Initials, he thought.

BM SAFETY MANAGEMENT reports that this Airprox occurred between a Hawk T1 on a radar-to-visual and a pair of GR4s in the latter stages of a visual recovery to RW28 at Lossiemouth, during an Exercise JOINT WARRIOR recovery wave. The Hawk was operating from Lossiemouth as part of the Exercise and was considered to be Station-based having been briefed on A/D procedures.

Due to the distance of Lossiemouth from NATS' radar heads, the Airprox was not visible on radar; consequently, the radar replay was only used to confirm the position of the Hawk in the early stages of the Airprox sequence.

The incident sequence can be considered to have commenced at 1625:20. At this point, a stream of fast-jet ac was recovering for radar to visual and visual recoveries, including the subject ac. The SUP describes the ADC's and the unit's workload as 'high to medium'; the ADC has described his workload as 'high', albeit of 'low' task complexity.

The Hawk pilot and GR4 crews describe the weather conditions at the time of the incident as VMC, with good visibility in nil weather and BKN cloud between 1800 and 2000 ft – CC was BLUE.

Given the often high intensity operations at Lossiemouth, no landline liaison is conducted between the ACR and VCR to 'warn-in' ac joining visually. The APP Assistant annotates the ac's remarks column on the Electronic Tote system with an asterisk for those ac recovering visually, which is then seen by the ADC, GROUND or the Tower Assistant. The standard visual join is the 'Run-in and Break' through the IP, other forms of visual join would warrant a liaison call on landline between the ACR and VCR.

Having held off to the N and E of Lossiemouth to sequence against ac ahead, at 1625:20 the leader of the GR4 pair advised APP that they were, "15 miles to the east, are you happy for us to turn inbound for visual recovery?" APP replied, "Roger, visual recovery approved, radar traffic is at 6 miles finals" which was acknowledged by the leader. At this point, both ac can be seen on the radar replay; the GR4 pair is 16.5nm ENE of Lossiemouth tracking S'ly, whilst the Hawk is 8nm WNW, tracking E'ly.

APP was then continuously engaged with other recovering ac from 1625:35 until 16:26:16 when the controller asked the GR4 leader (the lead ac's SSR contact faded from the radar recording at 1625:41) whether they were, "visual with the aerodrome?" The GR4 leader replied, "we're now visual with the field, happy, to TOWER." APP re-stated that the, "radar traffic is about 3 miles" and the GR4 leader replied at 1626:24, "that's copied, we're visual with that traffic, [C/S GR4 pair] to TOWER...[C/S GR4 pair] stud 2 main go."

Figure 2 depicts the Hawk's approximate ground track, based upon the radar replay; the grey shaded area is Lossiemouth village which is a noise-abatement avoid. At 1626:29, at a position 3.1nm NNW of Lossiemouth, the Hawk pilot informed APP that he had the, "...field in sight." APP replied, "[Hawk C/S] maintain please and maintain eastbound, got radar traffic 2 miles and visual joiners about 10 miles" which was acknowledged by the Hawk pilot. During this transmission, at 1626:37, the Hawk pilot turned to track 105°. APP then informed the Hawk pilot that it, "won't be much of an extension" to which the Hawk pilot replied, "Okay, I can't go far...shall I remain this or go to TOWER now?" At 1626:52, APP asked the Hawk pilot to, "confirm you're visual with the ones [the GR4 pair] at 8 miles?" The Hawk replied, "...negative this time." APP then stated, "radar traffic at 8 miles, correction, visual joiners at 8 miles" that was the GR4 pair. The Hawk was 2.9nm NE of Lossiemouth tracking 105° when the pilot stated at 1627:00 that he was, "visual with the one at 3 [radar traffic] but I can fit in behind him if I join downwind and turn finals now." APP replied at 1627:06, "[Hawk C/S] roger, continue inbound, call TOWER, good-day" which was acknowledged by the Hawk pilot at 1627:08 stating, "To TOWER, squawking standby."

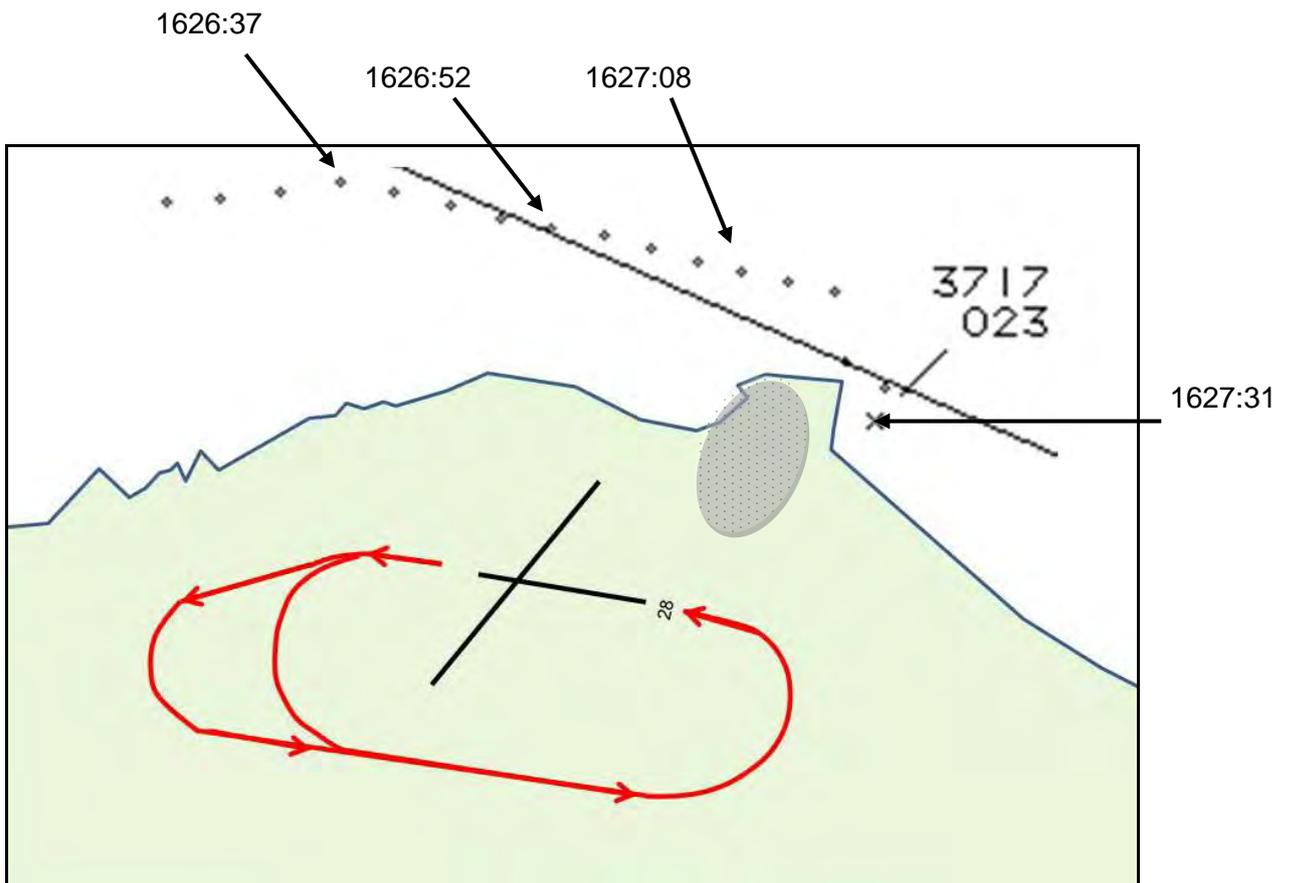


Fig 2: Approximate ground track of Hawk

[UKAB Note (1): Fig 2 Indicated Hawk Mode C of 2300ft is based on 1013mb and equates to a height of about 1640ft Clutch QFE (991mb).]

The SUP reported that having heard the Hawk's transmission at 1627:00, he instructed APP to send the ac to TOWER, thinking that the Hawk would join through Initials and would be well ahead of the GR4 pair joining visually at 8 miles. Although the Hawk pilot mentioned that "*I can fit in behind..if I join downwind and turn finals now*" it is clear that the SUP and APP believed that the Hawk would join through Initials. No landline liaison was conducted between the ACR and VCR to pass on any amendment to the Hawk's joining details.

The Hawk pilot has stated that the deteriorating weather to the SW of Lossiemouth, coupled with the high volume of traffic in the radar and visual circuits, were factors in his decision to land 'as promptly as possible'.

At 1627:00, the GR4 leader called TOWER and requested to join, which was approved; the A/D details were passed with the cct state – 3 in. The GR4 leader reported that having 'positioned on the Deadside he gained visual contact with the 3 other ac ahead in the circuit.' This accurately reflected the cct state at that moment as passed by the ADC and did not include the Hawk.

Shortly after 1627:16, at a position 057° the A/D 3.5nm, the Hawk commenced a R turn to track S'ly to the E of Lossiemouth village. At 1627:31, about 079° the A/D 3.3nm, indicating 2300ft Mode C - about 1640ft CQFE (991mb) - the Hawk pilot called TOWER "*..join for straight-in turning finals.*" TWR responded "[Hawk C/S] *Lossie TOWER join runway 2-8 clutch Q-F-E 9-9-1 4 5 in* [5in was the correct cct state including the GR4 pair] *confirm position*", as the ADC was not visual with the Hawk. The Hawk pilot replied at 1627:42, "*2 miles finals now, coming down through 1 thousand feet.*" [At this point, the Hawk was slightly N of the extended RW28 centre-line on a R base leg 3.3nm E of the A/D, maintaining about 1640ft CQFE, moments before the contact fades on recorded radar.] The GR4 leader reported that he became visual with the Hawk prior to calling Initial 'directly in front of them in a descending R turn' and stated on the frequency at 1627:54, that they were, "*visual with that traffic and Initials.*" In reply to the Hawk pilot's transmission at 1627:42, the ADC instructed the Hawk to, "*join at Initials 1 thousand feet pair joining*"- GR4 pair. However, the Hawk replied, "*finals 2 miles visual with the 1 ahead.*" Having confirmed with the Hawk pilot that the gear was down, the ADC cleared the Hawk to land at 1628:17. It is likely that the CPA occurred shortly after this as the GR4 pair passed down the starboard side of the Hawk, with both pilots assessing that nil vertical and 250m of lateral separation existed. The GR4 leader was able to take some avoiding action albeit a 'slight gentle R turn' as they were in 'close formation.'

The GR4 pair did well to maintain their situational awareness, visually acquiring both the known traffic within the visual cct and the unexpected Hawk. Given their close-formation and likely speed, it is unlikely that they could have done more to sight the Hawk earlier, or to increase separation further.

From the ADC's perspective, when the Hawk pilot called at 1627:31 he would have expected it to be executing a 'run-in and break' as no additional landline liaison had been effected. To the ADC's credit, he immediately requested the Hawk's position. Moreover, the term 'straight-in' has a specific meaning that suggests a position on the extended centre-line; in reality, the Hawk was conducting a right-base join through the deadside. With little time to assimilate the Hawk pilot's intentions to route through dead-side and cognisant of the GR4 pair approaching Initial who had reported visual with the Hawk at 1627:54, the ADC's instruction to the Hawk pilot to join through Initials was the ADC's only option to attempt to sequence the singleton Hawk with the GR4 pair. When the Hawk pilot then re-stated "*finals 2 miles, visual with the 1 ahead*", after receiving a positive gear check, the ADC correctly issued a clearance to land. BM SM contends that the ADC acted appropriately in dealing with a complex event.

In terms of the SUP's instruction to APP to authorise the Hawk's approach at 1627:06, the two controller's perception of the Hawk pilot's intentions is critical. Although the Hawk pilot clearly stated

that he would join “*downwind and turn finals*,” the SUP believed that the Hawk would continue to join normally through Initial. This could be from mis-hearing the Hawk pilot’s transmission, or only hearing the first part of the transmission where the Hawk pilot stated that they could “*fit in behind*” the radar traffic. Such a ‘failure to hear’ would have been coupled with confirmation bias of the Hawk’s intention to route through Initial, exacerbated by the high taskload. Alternatively and most likely, the SUP may have interpreted the Hawk pilot’s transmission as a statement of what the Hawk pilot would do having conducted a ‘run-in and break’. This is given weight by the SUP’s report that states that the Hawk’s ‘join through Initials would be well ahead of the [GR4] pair joining visually at 8 miles’, which would have provided a more expeditious recovery for the Hawk without delaying the GR4 pair. Unfortunately, it has not been possible to contact the SUP concerned to confirm one or other of these hypotheses. What is clear, is that at the point when the Hawk left the APP frequency the Hawk was 2.9nm NE of the A/D tracking 105°.

From the Hawk pilot’s perspective, due to the deteriorating weather to the SW of Lossiemouth and the high volume of traffic in the radar and visual circuits, his desire to recover expeditiously is understandable. However, the Hawk pilot’s decision to recover from what was effectively a right-base join suggests that his level of situational awareness was low. Routeing through the deadside would inevitably place the Hawk in conflict with other ac recovering through Initials and by entering the finals turn without being visual with the approaching GR4 pair it is clear that the Hawk pilot had not assimilated the relative speed of his ac and the GR4 pair. Finally, taken literally, the Hawk pilot’s statement at 1627:00 that he would join “*downwind and turn finals*”, might also indicate that he believed the visual cct was right-hand on RW28.

Whilst it has not been possible to confirm the ATC SUP’s understanding of the Hawk’s intentions, the main causal factor in this Airprox was the Hawk pilot’s decision to join from R base, through the dead side, without being visual with the joining GR4 pair.

HQ AIR (OPS) comments that the Hawk assumed that the GR4 pair was further from his intended recovery track than was actually the case. When joining a *visual* circuit it is the responsibility of the joining traffic to *visually* de-conflict with all circuit, and other joining, traffic. Visual deconfliction *cannot* be based upon assumption. The Hawk pilot should not have joined the visual circuit as he did, he should have joined through Initial as he was told to by the ADC.

HQ NAVY comments that during what appears to have been a particularly busy recovery period at Lossiemouth, in deteriorating weather conditions, the pilot of the Hawk made a decision, based on the information provided to him, to recover as expeditiously as possible. He was told that ac were at 8nm and he informed ATC of his intention to join and land immediately rather than route through Initial. It is for the very reasons described in this Airprox that RN Control Towers are manned with both a Radar Supervisor and a DATCO to supervise the VCR, thereby allowing the 2-way flow of information at the supervisory level.

THE HAWK PILOT’S COMPANY comments that the Hawk pilot was fully aware of the recovery procedures at Lossiemouth. He elected to carry out a radar-to-visual recovery from the west to route to the initial point (IP) via the north of the aerodrome. The weather was deteriorating with a high rate of radar to visual and visual recoveries. As the Hawk pilot reported “*field in sight*” APP instructed the Hawk pilot to maintain an easterly heading and passed TI on radar traffic at 2nm and the GR4 formation at about 10nm. APP later passed further TI on the GR4 formation and requested if the Hawk pilot was visual, who replied “*Negative this time*”. APP immediately passed further TI on the GR4 formation as “*radar traffic at 8 miles, correction, visual joiners at 8 miles*”. The Hawk pilot replied he was “*visual with the one at 3 but I can fit in behind him if I join downwind and turn finals now*”. The Hawk pilot judged that by converting from a standard visual recovery through initial to a right base join would reduce impact on the already busy circuit and allow for an expeditious recovery as he was getting low on fuel. The Hawk pilot erroneously reported downwind when in fact he was downwind right hand. The reply the Hawk pilot received from APP was “*..roger, continue inbound, call TOWER..*”. This was taken, understandably, as approval to turn finals. The Hawk pilot initiated his turn inbound and flew into conflict with the GR4 formation. The Hawk was painting on radar until after the transfer to TOWER.

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 air traffic controllers involved and reports from the appropriate ATC and operating authorities.

It was explained that this Exercise produced an extremely busy period for ATC at Lossiemouth and the importance of following standard procedures had been emphasised to the Hawk pilot's detachment during Station briefings on local procedures. The lead pilot of the Lossiemouth-based GR4 pair was conducting a conventional run-in-and-break visual approach from the E. It was stressed that APP was not required to sequence the GR4 pair recovering visually against the singleton Hawk and no TI had been provided to the GR4 leader about it. A civil controller Member opined that in busy periods it is often simpler to take charge and sequence all traffic by issuing radar vectors. Nevertheless, other Members countered that visual formation recoveries were the speediest and most efficient method of recovering large volumes of fast-jet traffic.

The GR4 leader had switched from APP to TOWER before the Hawk pilot transmitted his proposal to APP to join visually from R base direct onto final. Therefore the GR4 leader had no prior knowledge of the Hawk before he heard its pilot call on the TOWER frequency and confirm his position in response to the ADC's query. The lead GR4 pilot was responsible for fitting in with visual traffic and it was clear the ADC had provided the correct cct state originally as he knew it; the GR4 leader had identified all the cct and radar traffic before he joined through the IP. Quite understandably, therefore, the lead GR4 pilot would have been surprised by the sudden appearance of the Hawk, belly-up gear down, joining from a R base leg as they ran in through the IP.

The Hawk pilot's company had commented that the Hawk was getting low on fuel, but the Navy Member contended that this was not a significant factor that contributed to the Airprox. Nevertheless, Members were keen to point out that pilots with concerns over their fuel-state should notify ATC at the earliest opportunity for a 'fuel-priority' recovery. It was evident here that the Hawk pilot had endeavoured to assist ATC during this busy recovery by converting his standard radar-to-visual approach through the IP for a run-in-and-break into the cct, into a non-standard visual recovery via a R base join to RW28 – which has a LH cct - to land. Whilst he had transmitted this proposal to APP, the phraseology he used “*..join downwind and turn finals now*” was evidently not clear enough and thus open to interpretation because he actually meant a R base-leg join direct to final. The lesson here was keep RT standard whenever possible, however, Members recognised that the controller's subsequent reply, “*..roger, continue inbound, call TOWER..*” had to all intents and purposes acceded to the Hawk pilot's proposal. Furthermore, the SUP's misunderstanding of the Hawk pilot's intentions was also key to this Airprox. The BM SM report postulated that the SUP believed that the Hawk pilot would execute a normal join through the IP prior to breaking into the cct, but this was evidently contrary to what the pilot had told APP. From this point APP ceased issuing vectors to the Hawk pilot for his radar-to-visual recovery; without ensuring he was visual with the GR4s and under a misunderstanding as to how the Hawk would approach the aerodrome, the SUP instructed APP to allow the Hawk pilot to continue inbound as the latter had proposed, which seemed like an abrogation of the controllers' responsibilities rather than sequencing the radar-to-visual recovery. The Board agreed this was part of the Cause, insofar as ATC did not prevent the join through right base, which resulted in the subsequent conflict with the GR4 pair as the Hawk descended through their level onto final ahead of them.

Nonetheless, even if the SUP thought the Hawk pilot would keep the speed on and fly through Initial a conflict could still have ensued and it was plain that no attempt had been made to forewarn the ADC of what was happening. A civil controller Member questioned the SUP's instructions to APP and was surprised that the SUP had the authority to intercede. The BM SM Advisor explained the SUP's executive role here in directing the watch, that he had full cognisance of the traffic situation from monitoring the RT and should, therefore, have been aware of what the Hawk pilot was telling APP. Pilot Members agreed that a breakdown in communication was fundamental to the Cause but were critical of the Hawk pilot for acting as he did. Whilst the Hawk pilot might not have realised how close the GR4 pair was as he turned onto final ahead of them, he had been told about the visual

recovery by APP and should have been looking out for them. The Board agreed that the Hawk pilot's proposal to join in a non-standard manner through R base was the other part of the Cause of the conflict. Combining all these causal factors the Board agreed that this Airprox had resulted because the Hawk pilot requested, and ATC did not prevent, a join through right base, which resulted in a conflict with the GR4 pair.

Controller Members contended that as APP had acceded to his proposed cct join, the Hawk pilot might reasonably have expected APP to have co-ordinated this with the ADC. Despite co-ordination not being stipulated by the unit for radar-to-visual and visual recoveries, controller Members perceived an absence of critical teamwork within ATC. Without co-ordination the ADC was left to sort it out himself unaware of the Hawk turning and slowing down onto finals from R base as the GR4s ran-in at speed. Controller Members were, therefore, critical of the lack of co-ordination here with the Hawk pilot having been switched to TOWER whilst in conflict with the GR4 pair. Members understood the ADC's immediate reaction to the Hawk pilot's call, instructing the pilot to join through the IP, because the controller had not spotted the ac at that stage and was unaware of the Hawk pilot's intentions to turn direct onto final. Moreover it was evident that the Hawk pilot was unaware of the relative proximity of the GR4s until he first saw the pair overtaking him. Other pilot Members recognised how much the GR4 lead pilot had been affected by the close quarters encounter when he mixed-up the gear and flap selections downwind. All this led some Members to conclude that safety had not been assured. However, the leader of the GR4 pair had spotted the Hawk in time to manoeuvre further into the deadside by making a slight RH turn, leaving the Hawk 250m away to port, the latter subsequently descending having been cleared to land. Weighing all these factors carefully, by a majority of the Members, the Board concluded that no Risk of a collision had existed in the circumstances conscientiously reported here.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Hawk pilot requested, and ATC did not prevent, a join through right base, which resulted in a conflict with the GR4 pair.

Degree of Risk: C.

AIRPROX REPORT No 2011137

Date/Time: 8 Oct 2011 1340Z (Saturday)

Position: 5145N 00119W (10nm E
Brize Norton - elev 288ft)

Airspace: CTR (Class: D)

Reporting Ac Reported Ac

Type: A330 Ikarus C42

Operator: CAT Civ Club

Alt/FL: 2800ft 2200ft
QNH (1026mb) QNH (1021mb)

Weather: VMC CLOC VMC CLBC

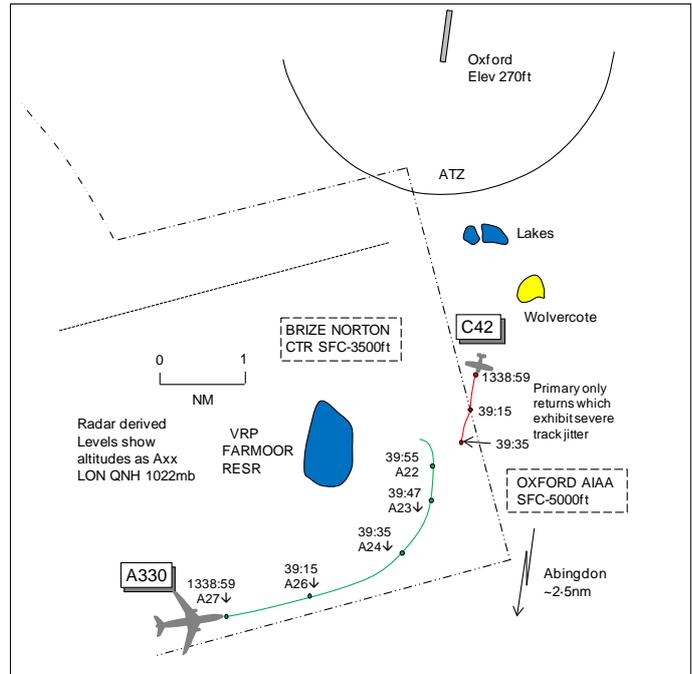
Visibility: 50km >10km

Reported Separation:

500ft V 500ft V/0.25nm H

Recorded Separation:

NR



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE A330 PILOT reports inbound to Brize, IFR and in receipt of a DS from Brize, squawking an assigned code with Modes S and C. The visibility was 50km flying clear of cloud in VMC and the ac was coloured white/blue with strobe, nav and landing lights all switched on. Turning through heading 300° to establish on the ILS level at 2800ft QNH, he thought, 1026mb at 200kt traffic was seen, after a warning from ATC, to turn R in their 2 o'clock range 5nm and 500ft below crossing from R to L. The relative bearing remained almost constant with other traffic, a white coloured light ac, appearing to pass 500ft below. He assessed the risk as high.

THE IKARUS C42 PILOT reports outbound from Oxford, VFR at 80kt and in receipt of a BS from Oxford Approach on 125.325MHz squawking 7000. Earlier, when trying to reach Turweston from Old Sarum, they had diverted into Oxford owing to worsening Wx after reaching Bicester. During their stop-off they refuelled and put some marks on the map and considered going back direct to Old Sarum by the quickest route. During their walk back to the ac across the apron they decided the Wx was unpalatable for a trip to the N, the cloud base looked 2300-2500ft, so they decided to fly back via Newbury and Andover. Once airborne from RW19 things started to go awry. In retrospect he thought they should have stayed in Oxford's airspace and climbed to transit height or headed E over Oxford staying well clear of Brize airspace. When planning his route he had decided to fly down some water meadows and a reservoir near Wolvercote [Oxford ARP 170° 2.5nm], which he could see on his 1:250,000 map, following a river to the S of Kidlington. However, as they climbed out, he must have gone further than he intended – he had a slight tailwind. Instead of making a sharp turn and heading for Oxford he continued straight ahead, perhaps steering slightly further R of 190°. He could see a reservoir very clearly in the distance but it could not have been the one S of Kidlington. In retrospect it must have been Farmoor Reservoir much further to the SW. As they drew level with the reservoir his pilot colleague asked him where they were in relation to Brize Norton; he pointed out that they were drawing level with the extended centre-line of the main RW, 3-5nm away in their 3 o'clock. At this point he realised that the main N-S RW at Abingdon was directly in their 12 o'clock and much closer than expected. He had dialled up Brize frequency on the radio before leaving Oxford and was in the process of leaving the Oxford frequency when he saw an airliner high in his 2 o'clock about 3nm away crossing his path from R to L and climbing, he thought. His co-pilot spotted it at the same time and pointed as it began to turn towards them, about 1nm away and about 300-400ft higher. He made a remark to Oxford that he was taking immediate action to turn and descend

out of the way of a large jet ac. He commenced a steep descending LH turn which took him out of the airliner's flightpath. His pilot colleague maintained visual contact with the airliner, which passed about 500ft above and >0.25nm away to their R. He thought he then switched to Brize frequency to request a BS but did not obtain a response. The call would probably have been too late anyway but he suspected that he may not have been heard because Brize was talking to other flights at the time. At no time did he think that his ac caused a hazard to other ac or the other ac cause any danger to his. Clearly he was several miles W of their intended course and could see Abingdon ahead which he wanted to avoid overflying. He tracked S towards Lambourn and successfully made contact with Brize and obtained a BS. Later he was asked by Brize if he had passed by an airliner which he confirmed. Also later he telephoned Brize Supervisor at his request to discuss the incident. He opined that several factors had occurred. This had been their first visit to Oxford and, owing to their unexpected landing, they did not have the relevant airfield plate or procedures. The unexpected diversion had led to him being more flustered and less pragmatic in his actions. Although Oxford had told him to avoid Brize airspace, he didn't appreciate how quickly he would find himself in that airspace and he did not turn sharply enough to the L when he departed. On passing 1000ft he should have turned on course immediately away from Brize airspace. He did not carry a copy of an airfield flight guide and should have sought one at Oxford or should have found the briefing room and briefed himself more thoroughly on the airspace restrictions. Failing that he should have obtained a more detailed brief from ATC. Before leaving Oxford he had spoken to Brize to find out if the Salisbury Plain Danger Area E was active but omitted to ask about any procedure for avoiding Brize airspace. He concluded that his planning had been poor. He had drawn a line from Oxford to Old Sarum which passed through the Brize CTR which was clearly an error and his co-pilot /navigator would have been confused by this when he handed the map to him. The number of reservoirs had also led to his confusion. When he saw a reservoir ahead it was probably Farmoor but he mistook it for a smaller patch of water near the junction of the A34 near Wolvercote which put him 2-3 miles off track, inside Brize airspace. It was only his good lookout and prompt action in diving away which prevented this incident from being more serious. He did not believe there was any risk of collision.

THE BRIZE RADAR CONTROLLER reports working the inbound A330 charter flight. When it was on base leg RW26 descending to 2300ft QNH a faint radar contact appeared on the radar E of Farmoor VRP tracking SW. This unknown ac was not squawking and could have been above the CTR. Presented with this confliction the A330 was given an immediate avoiding action turn inbound; however, the turn still resulted in the primary contacts merging. When clear of confliction the A330 crew was asked if they had seen the unknown ac and they replied yes and that it passed below. The unknown ac at this point had faded from radar. The A330 continued inbound making a normal ILS approach to land. Later the C42 pilot called LARS giving his position W of Abingdon at 1800ft requesting a BS en-route to Old Sarum. As the C42 had departed Oxford the pilot was asked if, during his initial departure, he had flown close to a heavy jet ac inbound to Brize. His reply indicated that the C42 was the ac that had infringed the Brize CTR without an ATC clearance. The pilot later contacted ATC and explained that he was staying clear of Abingdon, owing to the aerodrome being active with motor-gliders, which resulted in the ac infringing the CTR E of Farmoor VRP. The pilot reported being visual with the A330 and had turned L and descended to avoid. Although the A330 crew did not report an Airprox, he thought that this incident was far from satisfactory and could have resulted in a potential collision.

BM SAFETY MANAGEMENT reports that the Airprox occurred between an Airbus A330 operating IFR in the Brize Norton CTR and a C42 Ikarus operating VFR, in receipt of a BS from Oxford Approach.

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

Brize DIR, also acting as the ATCO IC, was an experienced controller and reported that his and the Unit's workloads were low, with low task complexity.

The A330 was being vectored for an ILS to RW26 at Brize, descending to 2300ft Brize QNH 1022mb and, at 1339:06, was issued a L turn onto a base-leg heading of 330°. This L turn is evident on the radar replay at 1339:15.

[UKAB Note (1): Earlier the A330 crew had requested a DS, shortly after initial contact, and this was agreed by Brize DIR at 1334:27, *(A330 c/s) deconfliction service outside controlled airspace reduced traffic information from all around due limits of surveillance cover*". After issuing descent and a radar heading, at 1336:47 DIR informed the crew, *"(A330 c/s) entering controlled airspace"* which was acknowledged.]

A primary radar contact, believed to be the Ikarus appears on the radar replay at 1338:24, 0.4nm E of the CTR, 10.4nm E of Brize and 6.4nm NE of the A330. The Ikarus then enters the CTR tracking SW at 1339:15, 3nm NE of the A330.

DIR reported that a "faint radar contact" with no associated SSR Mode 3A or C information appeared on their surveillance display "east of Farmoor VRP, tracking south-west." Immediately thereafter, at 1339:33, DIR issued the A330 flight with an "avoiding action turn inbound" stating, *"(A330 c/s) avoiding action, turn left immediately heading three-zero-zero degrees, traffic was north-east, one mile, south-west bound, no height information."* This was read back by the A330 crew. DIR has subsequently confirmed that at the point the avoiding action turn was issued, the primary contact was within the CTR.

Immediately thereafter, at 1339:47, the A330 pilot reported, *"we have the traffic in sight (A330 c/s) it's below us."* This statement was roughly co-incident with the CPA with zero lateral separation evident from the radar replay. Both pilots estimated vertical separation as 500ft, with the Ikarus pilot estimating that they passed 0.25nm behind the A330.

Subsequent to the Airprox at 1342:48 the Ikarus pilot contacted Brize LARS for a service and confirmed that it was his ac that had come into close proximity with the A330. Moreover, he reported that his transponder was operating and that a SSR 3A code of 7000 was selected throughout the incident sequence.

Although the Ikarus pilot reported that his transponder was operating, the fact that this was not detected by the BZN MSSR or NATS radars until after the Airprox at approximately 1344, suggests that the transponder was either u/s, selected to stand-by or off. The absence of this information prevented the operation of the safety barrier afforded by the A330's TCAS and, based upon the time of detection of the Ikarus on the Brize PSR, shortened DIR's available time to react.

On the basis that at 1339:33 the Ikarus had only recently "painted" on the Brize surveillance display, there was little track data available to DIR on which they could base a decision. Given the late detection of the Ikarus by the Brize PSR and that the A330 was already established in a L turn onto 330°, DIR had little option other than to issue an avoiding action turn to position the A330 further inside the CTR. However, the radius of turn of the A330 was such that separation between the 2 ac continued to decrease, resulting in the radar contacts merging.

The key causal factor in this incident was the infringement of the Brize CTR by the Ikarus which, based upon the report of the Ikarus pilot, was the result of a chain of events culminating in a number of HF-related errors.

From an ATM perspective, given the limited time between the Ikarus "painting" on PSR and the CPA, the lack of SSR information and the radius of turn of the A330, DIR had no opportunity to take action that could have prevented this incident.

This Airprox was caused by the infringement of the Brize CTR by the Ikarus, aggravated by the lack of SSR information from the Ikarus and the late detection of the Ikarus on the Brize PSR.

ATSI reports that the Airprox occurred at 1339:50 UTC, 9.5nm to the E of Brize Norton and within the Brize Norton Control Zone (CTR) Class D airspace, which lies to the S and SW of Oxford airport and extends from the surface to an altitude of 3500ft.

The A330 was operating an IFR flight from Larnaca (LCLK) to Brize Norton and was in receipt of a RCS.

The Ikarus C42 Microlight was operating on a VFR flight from Oxford to Old Sarum and was in receipt of a BS from Oxford Tower.

The Oxford controller was providing a combined Aerodrome and Approach control service without the aid of surveillance equipment.

CAA ATSI had access to area radar recordings, together with RT recordings from Oxford Tower, together with written reports from the 2 pilots.

METAR: EGVN 081250Z 27008KT 9999 BKN024 14/08 Q1022 WHT NOSIG=
METAR: EGVN 081350Z 28009KT 9999 BKN022 15/09 Q1021 WHT NOSIG=

The C42 had landed at Oxford earlier after aborting a planned flight from Old Sarum to Turweston. This was due to deteriorating weather conditions to the N of Oxford. After refuelling the pilot decided to return to Old Sarum via Newbury and Andover.

At 1325:48 the C42 pilot contacted Oxford Tower requesting the airfield information for a flight to Old Sarum. The controller passed the QNH 1021, RW19 and the C42 was cleared to taxi to the holding point for RW19.

At 1333:49 the C42 pilot reported ready for departure. The Oxford controller replied, "*(C42 c/s) Runway one nine remaining outside the Brize Control Zone you're cleared for take off two seven zero zero eight.*" The C42 pilot responded, "*(C42 c/s) er ready for take off we will avoid the Brize Zone er two seven zero zero eight.*" The controller transmitted, "*(C42 c/s) confirm you are cleared for take off Runway one nine,*" which the pilot acknowledged.

At 1336:01, the C42 pilot reported, "*(C42 c/s) er we're turning left to avoid Brize.*" The controller replied, "*(C42 c/s) roger as you clear the circuit to the -at- as you clear the circuit the southeast sorry Basic Service report changing enroute.*" The C42 pilot replied, "*(C42 c/s).*"

At 1339:15, the radar recording shows the A330, 8.2nm ESE of Brize Norton, within the Brize Norton CTR (Class D airspace), positioning downwind LH for RW26 and passing 2600ft in the descent to an altitude of 2300ft. The radar recording also shows a primary contact, 10.2nm E of Brize Norton, tracking SSW and crossing the boundary of the Brize Norton CTR. From the evidence available to ATSI, it was considered that this contact was the C42 which was at an altitude of 2200ft (see para below). The distance between the 2 converging ac was 3.3nm.

At 1339:18, the C42 pilot transmitted, "*Oxford (C42 c/s) three miles to your south currently at two thousand two hundred...*" The Oxford controller replied, "*(C42 c/s) I got that you were s-to the south at two thousand two hundred the rest was broken off.*" The C42 pilot advised, "*Visual with a very large airliner we are losing height rapidly.*" The Oxford controller responded, "*Roger that's understood that will probably be traffic inbound to Brize Norton.*"

[UKAB Note (2): At 1339:35, the radar recording shows that the distance between the 2 ac was 1.5nm, with the A330 commencing a L turn onto base leg. The next sweep 4sec later shows the C42 having faded from radar.]

The written statement from the C42 pilot indicated that at this point he initiated a steep descending L turn and saw the A330 pass well above.

At 1341:42, the C42 pilot reported changing to the Brize frequency 124.275MHz, which the Oxford controller acknowledged.

The C42 departed Oxford in receipt of a BS. CAP774, UK Flight Information Services, Chapter 2, Page 1. Paragraphs 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.'

As part of the departure instructions, the Oxford controller instructed the C42 pilot to remain outside the Brize Norton Zone. This was acknowledged by the C42 pilot and after departing from RW19, the C42 pilot reported, '*turning left to avoid Brize*'. The Oxford controller was providing a service without the aid of surveillance equipment and was unaware the C42 had mistakenly routed towards the Brize Norton CTR.

The C42 entered the Brize Norton CTR without a clearance and into conflict with the A330 in the radar pattern. The UK AIP Page, ENR 2-1-19 (20 Oct 11) states:

'1.1 Brize Norton Control Zone

1.1.1 Pilots wishing to enter the Control Zone must observe the normal procedure for joining Controlled Airspace and should make their request for entry when 15nm or 5 minutes flying time (whichever is earlier) from the Control Zone Boundary. Pilots should make their request for Control Zone entry to BRIZE ZONE.'

Rule 29 (1b) of the RoA, 'VFR flight plan and air traffic control clearance in Class B, Class C or Class D airspace', states:

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

(b) obtain an air traffic control clearance to fly within that airspace.'

The Oxford controller, operating without surveillance equipment, issued departure instructions to the C42 pilot which required the pilot to remain outside the Brize Norton CTR. The C42 pilot mistakenly infringed the Brize Norton CTR, without an ATC clearance and flew into conflict with the A330 which was operating inside CAS and in receipt of a RCS.

The Brize Norton DIR issued avoiding action to the A330 and the pilot of the C42 acquired a visual sighting of the A330 and initiated a steep descending LH turn.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

Members commended the C42 pilot for his open and honest report. The crux of the incident was the lack of planning prior to his departure from Oxford, which had led to him entering the Brize CTR without clearance and then flying into conflict with the A330. Following the appearance of the C42 as a faint radar contact crossing the CTR boundary, DIR had reacted well. As the A330 was already in a L turn onto 330°, he issued an avoiding action turn onto 300°, as well as TI on the C42, in the belief that the turn would tighten such that the A330 would turn further into the CTR and pass W of the unknown traffic. The A330 crew quickly acquired the C42 visually and watched it pass clear 500ft below. The C42 pilot had seen the A330 whilst it was positioning downwind and when it commenced

its L turn onto base leg he realised the potential for conflict and executed a descending L turn, estimating separation of 500ft as the A330 passed to his R. It was noted that whilst the ATC and 'see and avoid' safety measures worked, the TCAS safety barrier was inhibited owing to the C42's SSR not working. The ac's squawk only became apparent after the pilot called LARS, 3min post Airprox, who issued an allocated code which was then displayed on his radar. That said, the actions taken by all parties and the visual sightings by both crews were enough to allow the Board to conclude that the collision risk had been quickly and effectively removed.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Ikarus C42 pilot entered the CTR without clearance and flew into conflict with the A330.

Degree of Risk: C.

AIRPROX REPORT No 2011138

Date/Time: 2 Oct 2011 1342Z (Sunday)

Position: 5046N 00130W
(13nm E Bournemouth)

Airspace: London FIR (Class: G)

Reporting Ac Reported Ac

Type: Zenair Zodiac Robin 2160

Operator: Civ Pte Civ Pte

Alt/FL: 1700ft 1400ft
QNH (1024mb) NK

Weather: VMC CAVOK VMC CLBC

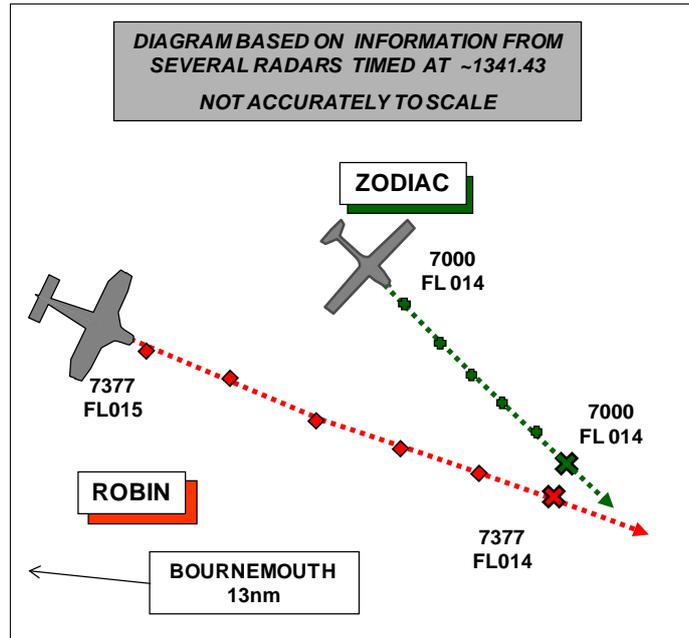
Visibility: >10km 30km

Reported Separation:

0 V/30m H 400ft V/1nm H

Recorded Separation:

0 V/0.1nm H (See UKAB Note (1))



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE ZENAIR ZODIAC PILOT reports that he was en-route from Old Sarum to Bembridge under VFR in a blue and white ac with strobes fitted, squawking 7000 with Mode C, but Mode S and ACAS were not fitted and he was listening out on Solent Radar. He was flying straight and level heading 130°, outside controlled airspace, at 75kts and at 1700ft on the QNH of 1024mb. Approaching abeam Beaulieu Disused Airfield he first noticed a previously unseen ac in his 2 o'clock position, about 50-100ft ahead, and level with him; the ac crossed from his R to L, passing immediately in front of him. He had no time to take any avoiding action as the whole incident was over in seconds and he considered the risk to be high. The ac was a red and white, low-wing, single engine, tricycle-undercarriage type similar to a PA28.

After the incident, while he continued onwards towards Bembridge, he saw the ac tracking along the N coast of the IoW towards Cowes. Neither he nor his passenger (who is a PPL holder) was at any point aware of the ac prior to the incident.

THE ROBIN 2160 PILOT reports flying a VFR private flight, in a red and white ac with a strobe fitted, from Compton Abbas to Goodwood squawking as directed (7377 with Mode C) while in receipt of a BS from Bournemouth LARS. While heading 135° at 105kt, midway between Stoney Cross and Beulieu he saw an ac 2nm away on a slowly converging course from the L at same level, but moving more slowly than his ac. He recognised that there might be a conflict and so he decided to descend from 1800ft to 1300-1400ft to pass well below and safely in front of the other ac; he did not consider that the incident was an Airprox nor was there any risk of collision.

In retrospect however, he thought that the safety of this course of action was dependent on the other ac maintaining height, course and speed and the accuracy of his judgement of its level and speed; passing behind is usually a better option but, in this case this would have involved a major course alteration.

The Bournemouth controller didn't alert him to any potential conflict.

ATSI reports that the Robin was operating VFR and, at the time of the incident, was in receipt of a BS from Bournemouth LARS. Meanwhile the Zodiac was also operating VFR but was maintaining a

listening watch on the Solent Radar frequency; the Solent Monitoring Code of 0011 was not displayed.

ATSI had access to RTF and radar recordings together with written reports from both pilots. The radar recordings displayed the Mode C indications of both ac in terms of flight level on the standard pressure setting of 1013mb. For the purposes of adjusting the Mode C indication to altitude the ratio of 1mb = 27ft has been used.

The Bournemouth METARs are provided for 1320 and 1350 UTC:

METAR EGHH 021320Z 19005KT 130V200 CAVOK 23/14 Q1023=
METAR EGHH 021350Z 18006KT 130V200 CAVOK 23/13 Q1023=

At 1328:40 the Robin pilot contacted Bournemouth Radar requesting a BS; a BS was agreed by the controller and the Robin was instructed to squawk the Bournemouth Conspicuity Code of 7377 and to report passing Stoney Cross. At 1336:20 the Robin reported passing Stoney Cross and the controller instructed him to report at Cowes.

The written report of the Zodiac pilot states that he was flying on a track of 130° at 1700ft while squawking 7000 in the vicinity of Beaulieu Disused Airfield at the time of the Airprox.

At 1339:38 radar recordings showed the Robin (identified using Mode S) 2nm to the W of an ac squawking 7000 indicating FL014 (which converts to altitude 1700ft); both ac were N of Beaulieu disused airfield. Given the reported track and level of the ac, it is assumed that the ac squawking 7000 was the Zodiac.

At 1340:52 the two ac were 1nm apart with the Robin indicating FL015 (1800ft) and the Zodiac at FL014 (1700ft). The speed of the Robin was such that it was overtaking the Zodiac.

At 1341:32 the lateral distance between the two ac had reduced to 0.2nm. At this point the Mode C indications of both ac were not visible.

The written report from the pilot of the Robin stated that he saw the Zodiac on a slowly converging course and descended to pass in front and below the other ac.

At 1341:46 the radar recording shows that the returns of the two ac merge with the Robin crossing right to left in front of the Zodiac. The two tracks then diverged.

The Zodiac pilot's report states that he saw the Robin in his two o'clock position at the same level approximately 50 to 100ft ahead shortly before the ac crossed in front of him R to L. The pilot stated that there was no time to take avoiding action.

At 1343:40 the Robin was instructed to squawk 7000 and contact Solent Radar on 120.225 MHz.

The Solent APR controller was unaware that the pilot of the Zodiac was maintaining a listening watch on 120.225 MHz so would have been unable to offer assistance in the form of traffic information.

It is unclear whether or not the Bournemouth Radar controller was aware of the presence of the Zodiac; however, under the terms of a BS there is no requirement to pass TI.

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

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

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

The Airprox occurred at 1341:32 UTC between a Zodiac, and a Robin when the ac came into conflict in Class G airspace, 1.8nm to the E of Beaulieu Disused Airfield.

The Zodiac pilot believed that the Robin passed in front of him at the same level, 50 to 100 feet ahead whereas the pilot of the Robin reported that he had given sufficient room to the other ac in order to pass it safely; the Radar recording was unable to determine the exact geometry of the encounter.

UKAB Note (1): The Pease Pottage Radar shows the incident. The Zodiac, squawking 7000 with Mode C approaches the CPA tracking 130° at FL014. Meanwhile the Robin (G/S 112kt) is to the S of the Zodiac (G/S 70kt) tracking 105° and slowly closing with and overtaking it as shown above. At 1336:30 the Robin is at FL017 and continues to close with the Zodiac at FL014, while descending to FL015. At 1337:30 the Zodiac (FL014) is in the Robin's (FL016) 11 o'clock at 3.3nm. At 1339 the Zodiac is 2nm in the Robin's 11 o'clock. At 1340 the Zodiac is 1.7nm in the Robin's 1030, the levels unchanged. At 1341:12 both acs' Mode C drops out while the Robin is 0.5nm in the Zodiac's 4 o'clock. At 1341:42 the Robin is in the Zodiac's 2 o'clock at 0.1nm, overtaking it, the Robin's Mode C still not showing (on last seen sweep (1341:07) it showed FL015 and on the sweep 6 sec after the CPA also FL015). The Swanwick system and the Jersey recordings at 1341:43 show both ac at FL014, 0.1nm apart as the Robin overtook the Zodiac on its starboard side.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The Board noted that both ac had been operating legitimately in, albeit busy, Class G airspace where 'see and avoid' is the principal method of collision avoidance. The ac were closing at almost the same alt on line of constant bearing with very little relative motion to cue a visual acquisition. Although the Zodiac had the Robin on the right, the Robin was slowly overtaking so the ANO requires both to give way; however, the Robin was always behind the Zodiac and more difficult to see so the Zodiac pilot was not well placed to 'see and avoid'. The Robin pilot had a better view of the situation developing ahead of him and Members opined that he could have initiated a turn to the left to go behind the Zodiac rather than opting to give way by descending (although not discernable on the radar recording and therefore of a small magnitude manoeuvre and/or of short duration). While descending is by the letter of the law giving way, Members agreed that a lateral and vertical solution makes pilots' intentions more visible and clearly signs that one has seen, and is giving way to, another ac.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Robin flew close enough to cause the Zodiac pilot concern.

Degree of Risk: C.

AIRPROX REPORT No 2011139

Date/Time: 13 Oct 2011 1127Z

Position: 5146N 00205W
(7nm N Kemble)

Airspace: Lon FIR (Class: G)

Reporting Ac Reported Ac

Type: BE200 Untraced

Operator: Civ Com NK

Alt/FL: 3500ft NK
QFE 1018mb NK

Weather: VMC CLBC NK

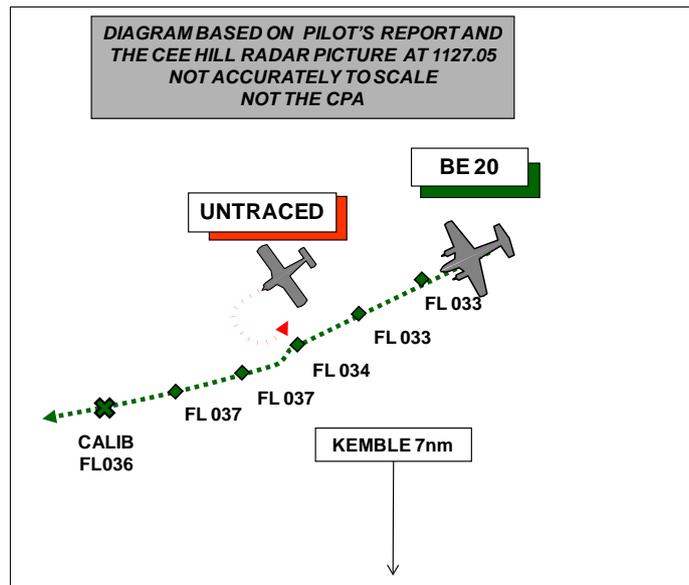
Visibility: NR NK

Reported Separation:

0ft V/100m H NK

Recorded Separation:

NR



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE BE200 PILOT reports flying a blue and white ac with all external lights switched on, on a calibration flight of the Brize Norton PAR (RW 08) under VFR; he was squawking as directed with Modes C and S, was in receipt of a TS from Brize DIR and TCAS 1 was fitted. While long downwind in the radar pattern outbound for a calibration run, heading 270° at 180kt but about to turn base, they were busy looking ahead and below for traffic that had been called by Brize, when the PNF, in the RH seat, became visual with a white, low-wing, single-engine light ac in level flight in their 0230-0300 o'clock and about 300m away. She initiated a climbing LH turn to avoiding the ac and this was continued by the PF and collision was averted. There were no TCAS indications.

He assessed the risk as being high and reported the incident to DIR.

UKAB Note (1): The other ac appeared on the Cleve Hill radar as an intermittent primary only contact on a similar track to the BE200 before turning. Despite extensive procedural tracing action the ac could not be identified. The CPA appeared to take place at about 1126:45 as the BE200 was squawking 'ident' (no request was apparent on the RT transcript). At that point the ac commenced a climb levelling 200ft above its cruising alt before descending again and then turning L on to the base leg. Although the radar recording appears to show a slight right hand turn commencing at 1126:53, the left hand turn reported by the pilot probably took place at about 1126:40 and was between radar sweeps; consequently it could not be seen on the recording.

RAF BRIZE NORTON CONTROLLER reports controlling on a busy DIR session with a C130 conducting Tactical Landing Training, a VC10 in the instrument pattern and a BE200 calibrating both the RW08 and RW26 PARs. The BE200 left the CTR to the W of Brize to self position for a 3500ft QFE run. The ac was under a TS, had been flying VFR in the Brize CTR, was warned of the high traffic density to the N of Kemble and he believes that he also warned them of possible late warnings of traffic. When trying to ascertain from the crew whether they required to fly O/H Kemble, as the controller wanted to pass TI to them, he was asked to 'Standby' and then was informed that the BE200 had an Airprox with an unknown ac. The incident occurred ivo 5145.53N 00209.48W on a radial of 330° at 7nm from Kemble. It was called at 1128Z with the BE200 at 3500ft QFE 1018mb against traffic believed to be a PA28 type tracking S at the same alt. He does not recall the BE200 pilot passing their heading, but they had taken action to avoid a collision. He asked Kemble for TI on

any traffic of that type but they were not working any ac in that area. The tapes were impounded should they be required. The aircrew reported that they would submit their report on their return to base.

BM SAFETY MANAGEMENT reports that this Airprox occurred between a BE200 operating VFR in VMC in receipt of a TS from Brize Norton Director (DIR) and an untraced light ac. DIR stated that the workload at the time of the incident was high to medium.

At 1124:51 DIR provided TI to the BE200 as, *“traffic west, four miles, two contacts, no height”* which the pilot acknowledged. The radar replay shows one primary-only contact in the position reported by DIR.

At 1125:44 LARS initiated coordination with DIR on traffic unrelated to the incident, with the landline conversation ending at 1126:05. At 1126:15, DIR updated the TI to the BE200 stating, *“previously called traffic twelve o’clock, half mile, similar heading, no height”*. The previously mentioned primary-only contact faded from the radar replay at 1126:13, one mile west of the BE200 in its right one o’clock.

DIR then asked the BE200 whether they intended to route through the Kemble overhead, mentioning that there was “high traffic density to the south”. The BE200 pilot instructed DIR to *“standby”* at 1126:32 and then at 1126:46 transmitted *“Er, standby Calibrator”*. DIR was then involved in liaison with unrelated traffic before the BE200 called them at 1127:16 stating “we’ve actually just had an airprox with a light aircraft that was er approaching from the north”.

Although no conflicting traffic can be seen on the radar replay, at 1126:45 the BE200 can be seen to have climbed 200ft and, at 1126:48 to have climbed a further 200ft. Based upon the BE200 HP’s description of the initial avoiding action taken by the NHP on sighting the unknown ac, this suggests that this was the point when the Airprox occurred.

While it cannot be proved conclusively, based upon the evidence it appears that the ac that was the subject of the TI passed to the BE200 by DIR, was the reported ac. In this instance the ATM related safety barrier operated effectively in that the BE200 was provided timely and accurate TI in accordance with CAP 774. Unfortunately, the lack of an operating transponder on the unknown ac prevented the operation of the additional safety barrier offered by the BE200’s TCAS, leaving ‘see and avoid’ as the remaining safety barrier. Whilst it has not been possible to determine whether the pilot of the unknown ac was able to ‘see and avoid’, the BE200 NHP was able to visually acquire the unknown ac in time to take avoiding action.

This Airprox adds further weight to the argument for a traffic/collision warning system that is interoperable across all types operating within Class G airspace.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the BE200 pilot, transcripts of the relevant RT frequency, radar recordings, reports from the air traffic controller involved and reports from the appropriate ATC authority.

The Board noted that this incident took place in Class G airspace where both pilots had an equal and shared responsibility to see and avoid the other ac. Due to the turn of the untraced ac towards the BE200 and the resultant bank angle, the ac could have been ‘belly up’ to the BE200 and therefore (at least in the latter part of the turn) the pilot would not have been able to see the BE200; the radar recording, however, was inconclusive regarding the untraced ac’s actual track.

The BE200 pilot was given accurate and timely TI by Brize Norton regarding the unknown contact and could have taken a lateral separation based on that information; however, there were several other ac in the area just outside the zone (particularly to the S where they had been warned that

Kemble was busy) that they could have conflicted with had they made a precautionary avoidance turn. The untraced light ac would initially (before its turn) have been tail-on to the BE200 and would have been very hard to see; that being the case in the Board's view, the BE200 crew had most likely seen the ac as early as practicable. The Board therefore concluded that the incident had been a conflict in Class G airspace.

Members observed that although late, the BE200's avoiding action was effective and, combined with the 300m separation extant, had removed any risk of collision. The relative lateness of the BE200's manoeuvre, Members agreed, had resulted in a reduction of normally accepted safety standards.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict in Class G airspace.

Degree of Risk: B

AIRPROX REPORT No 2011141

Date/Time: 15 Oct 2011 1315Z (Saturday)

Position: 5106N 00216W (1½nm SSW of The Park GLS – nr Mere, Wilts)

Airspace: London FIR (Class: G)

Reporting Ac Reported Ac

Type: Sigma Paraglider KA6 Glider

Operator: Civ Pte Civ Pte

Alt/FL: 2400ft 1535ft
amsl aal

Weather: VMC CLBC VMC CLBC

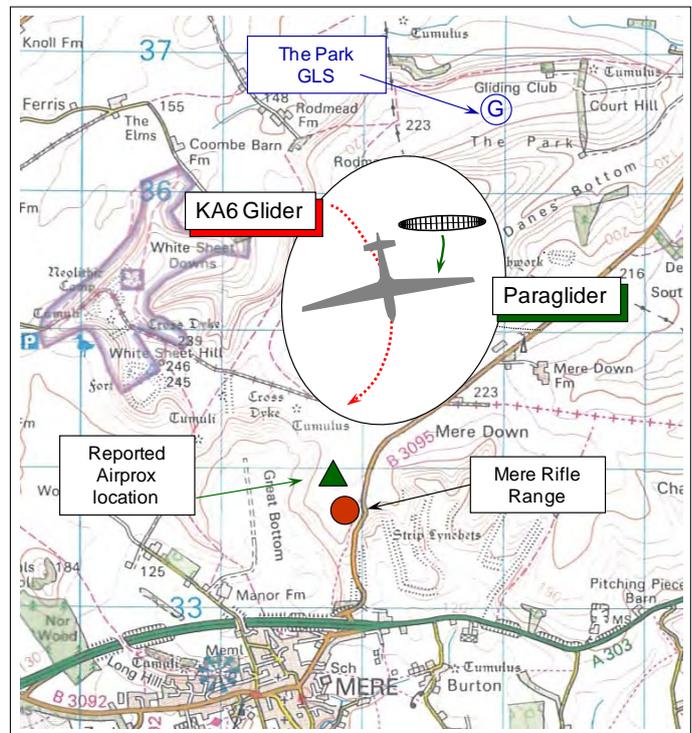
Visibility: >10km >5nm

Reported Separation:

5ft V/Nil H 100ft V/Nil H

Recorded Separation:

Not recorded



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE SIGMA 8 PARAGLIDER PILOT reports he was flying his bright orange paraglider just to the N of the town of Mere, Wiltshire. He had been flying for about 1hr in a gentle autumn thermal between 1400ft and 3400ft ALT up to the cloudbase for most of this period, and so he must have been clearly visible to all the pilots operating from the nearby Park Glider Launching Site. Other gliders had earlier flown across the location and it is common for paraglider pilots to fly there in S'yly winds. He pulled forward to join a white glider that was below him, and well ahead, over the town of Mere. The glider appeared to be in light lift, turning very gently and they were the only two ac in the vicinity. The paraglider pilot tried to head to the centre of where he gauged the thermal to be and was flying straight, maintaining altitude as he entered the gently rising air. The glider pilot continued to fly slow lazy RH turns and at this stage the glider's presence give him no cause for concern or to alter his track.

He saw the glider pass to his R, perhaps 50ft below, and several hundred metres away and waved to its pilot. The glider passed behind him before he picked it up again to his L; they were now at a similar height and in a similar slow turn to the R. Although he judged that they were on a collision course, with a speed of just 12kt he was unable to make any effective manoeuvre away. He is aware that glider pilots see paragliders as effectively stationary and was content that the glider pilot would modify his flat slow turn to the R slightly to miss his paraglider easily; however the gliders turn continued and he could see that they were very clearly on a collision course as he headed S. There was no waggle of the wings or any indication at all that control was being applied by the pilot as the glider passed directly beneath his paraglider with no more than 5ft of vertical separation at a position NW of Rifle Range Hill. Had the glider struck his paraglider it would have been about 2/3rds along the outboard wing. He saw the wing of the glider in very close detail and was screaming at this point, the slightest wiggle to tighten the turn would have led to a collision and would have killed him; the Risk was assessed as 'high'. He noted the time and looked for any ID numbers to help him identify the glider.

Amassing about 1500hr over 17 years of flying hang gliders and paragliders including extensive cross country experience, he is a Club Coach and frequently a Meet Director. He has had other incidents over the years, but this one was upsetting as it was completely unnecessary; the conditions

were totally benign and they had loads of height. This was a very close call and he has been suffering from delayed shock. Paragliders and gliders can fly well together and they can easily share the same sky.

The white glider was from the Park so he visited the launching site and spoke to the Club Chairman about the Airprox.

THE SCHLEICHER KA 6E GLIDER (KA6) PILOT reports he was airborne on a local flight from The Park Glider Launching Site (GLS); his glider is coloured white with red wing tips and rudder. He was released from the aerotow at 2000ft QFE about 2.3nm SSE of the Park and turned N, then W, before finding weak lift. At this point, about 8-10min before the Airprox, he saw a paraglider about 2nm to the W flying close to the cloud base at 2800ft ALT. He flew to the N but found no lift so turned towards Mere. Encountering lift, he made three thermal turns to the R at 48kt which produced minimal lift. Flying about 1000ft below cloud at 1535ft QFE – about 2232ft ALT - with an in-flight visibility of >5nm, he had not seen the paraglider for several minutes when he was shocked to see it fly over about 100ft above his glider with a 'high' Risk of collision. At this point he flew out of the area. The angle of approach had prevented him sighting the paraglider beforehand.

THE CFI OF THE KA6 PILOT'S GLIDING CLUB reports this was a privately owned and operated glider flown by a club member. The CFI spent several hours analysing both logger traces and has concluded that the glider and paraglider passed extremely close to each other - possibly just a few feet. He has informed all of the Club pilots of the difficulties of soaring near paragliders and the need to maintain adequate separation at all times.

UKAB Note (1): The UK AIP at ENR 5-5-1-6 notifies the Glider Launching Site at The Park, Kingston Deverill, Wiltshire, as active from Sunrise to Sunset and where winch launching takes place to 3000ft about the site elevation of 697ft amsl.

UKAB Note (2): This Airprox occurred outwith recorded radar coverage.

THE BHPA comments that data from the loggers analysed by the gliding club's CFI will have provided an accurate picture of what happened. Whilst glider and paraglider pilots are used to thermalling in what other pilots would consider very close proximity to other aircraft of the same speed range, the factor of four speed difference between the types does necessitate that more care be taken when sharing a thermal. The speed disparity leaves a paraglider pilot with very few practical collision avoidance options available to them. The proactive actions of the CFI to inform the Club's pilots of the lessons to be learnt from this unfortunate incident could well be of use throughout the BGA.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac.

It was evident to the Board that this was a close encounter between dissimilar ac types of disparate performance. Although these were the only ac flying in the vicinity, this is a very popular location for paragliding activities and the KA6 pilot as a local operator should have been well aware of that. The BGA Member suggested that the KA6 glider pilot might have been flying too fast as his reported speed of 48kt is not the ideal speed for thermalling this type of glider. Nevertheless, it was apparent that his search for what minimal lift existed in the vicinity might have been focussing his attention to the detriment of an all-round look-out scan. Having seen the paraglider beforehand, the KA6 pilot reports that he had lost sight of it during the thermalling turns. Nevertheless, Members recognised the orange paraglider was there to be seen and the glider pilot had a responsibility to afford this relatively slow and unmanoeuvrable ac appropriate separation. In the event, the KA6 pilot did not see the paraglider again until he flew underneath it and by that stage it was too late to increase the miss distance. Whilst the Board noted the paraglider pilot's comment that paragliders and conventional gliders can fly well together and easily share the same sky, the BGA Member opined

that in such circumstances it behoves glider pilots to maintain a keen lookout and afford as wider berth as practicable to the slower and less manoeuvrable paragliders. This view was reinforced by the BHPA highlighting the relative inability of the paraglider pilot to take any effective avoiding action as he cannot get out of the way at these low speeds, leaving little scope to affect the outcome at close quarters. The BGA Member recognised that this was a learning point and undertook to follow this up within the association. The Members agreed unanimously that this Airprox had resulted from effectively, a nonsighting by the KA6 pilot and that an actual Risk of a collision had existed in the circumstances conscientiously reported here.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Effectively a non-sighting by the KA6 pilot.

Degree of Risk: A.

AIRPROX REPORT No 2011142

Date/Time: 18 Oct 2011 0901Z

Position: 5301N 00049W
(4nm SSW Newark)

Airspace: Lincs AIAA (Class: G)

Reporting Ac Reported Ac

Type: Tutor PA31

Operator: HQ Air (Trg) Civ Pte

Alt/FL: 2000ft 2500ft
RPS (996mb) NK

Weather: VMC NR VMC CAVOK

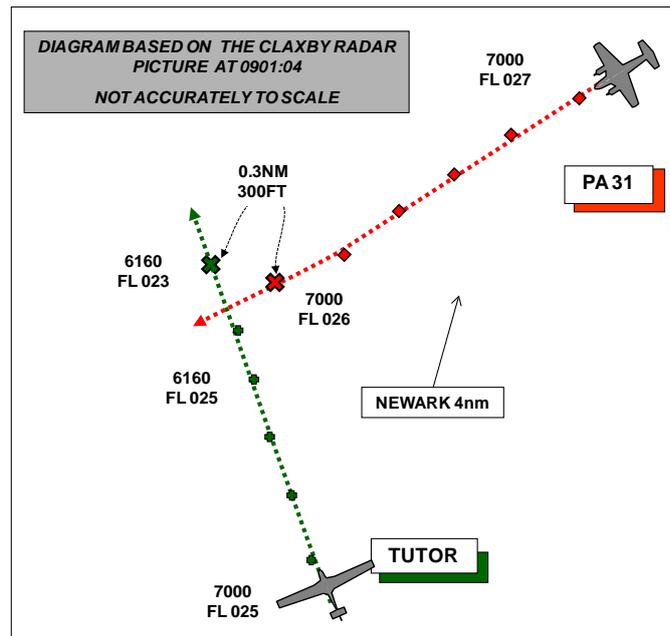
Visibility: 30km >10km

Reported Separation:

NR V/0 H >500ft V/0.5nm H

Recorded Separation:

300ft V/ 0.3nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE TUTOR PILOT reports flying an instructional sortie in a white ac with external lights switched on, squawking with Modes C and S and with TAS fitted. They were heading 314° in good VMC about 4nm SSW of Newark and the student pilot had just obtained a BS from Doncaster Radar who gave them a squawk [6160 see diagram] but the controller had not identified them when they received a TAS alert and "Traffic Traffic" sounded. The display showed a contact 100ft above and to the right in the 2 o'clock position at a distance of about 1nm. In this instance the TAS alert was timely and the contact was seen slightly above and behind the right wing. He [the instructor] took control and took evasive action by descending their ac about 300ft. The other ac was seen to be a dark coloured (possibly blue) low-wing, low-tail twin-engine ac which was flying straight and level and appeared to take no evasive action indicating, he thought, that its pilot had not seen them. It appeared to be heading towards Nottingham/East Midlands and, although of a similar size to the RAF Cranwell based King Airs, it appeared to have a low set tail plane.

If they had not taken the avoiding action the ac would have passed about 100ft directly overhead. He assessed the risk as being medium and reported the incident immediately to Doncaster Radar.

He thought that the ac had initially been obscured by the Tutor canopy arch which delayed visual acquisition.

THE PA31 PILOT reports flying a private flight under VFR from Wickenby to East Midlands in a grey and white ac with strobes switched on. He was squawking as directed with Modes C and S while in receipt of a BS from Waddington APP. While in the cruise about 10nm W of Waddington, heading 280° at 150kt and 2500ft, they informed him of an ac 6nm away tracking from L to R below him at 2000ft. The visibility was good and he saw a low-wing single-engine white ac with RAF roundels; when it was about ½nm away in his 11 o'clock and well below it performed a rapid dive.

He did not consider the incident to be an Airprox so he carried on to his destination, transferring to their frequency, also on a BS. He did not hear the other ac on either frequency at any time and considered there to be no risk.

BM SAFETY MANAGEMENT reports this Airprox occurred between a Tutor operating VFR in VMC in receipt of a BS from Doncaster APP and a PA31 operating VFR in VMC. Although the PA31 pilot stated that he was in receipt of an ATS from Waddington [ZONE] at the time of the Airprox, subsequent investigation showed that this was not the case; he had been in receipt of a BS from Waddington ZONE but left the frequency at 0859:59 with the intention of free-calling East Midlands. Prior to leaving the freq however, ZONE provided the pilot with accurate TI on the Tutor stating, *“traffic south-west of you, four miles, tracking north, indicating three hundred feet below.”*

The CPA occurred at 0901:04, with 0.3nm lateral and 300ft vertical separation indicated on the radar replay. There are no RAF ATM related issues that require further investigation in relation to this Airprox.

ATSI reports that the Tutor was operating on a local training flight from of RAF Barkston Heath and had just obtained a BS from Doncaster Radar.

ATSI had access to recordings of RTF from Doncaster and area radar recordings together with written reports from both pilots.

The radar recordings show the Mode C indications of both ac as FLs.

The Barkston Heath METARs are provided for 0850 and 0950 UTC:

METAR EGYE 180850Z 26018KT 9999 FEW025 ///// Q1005 BLU=
METAR EGYE 180950Z 26028KT 9999 FEW030 ///// Q1005 BLU=

The Tutor pilot contacted Doncaster Radar at 0900:00 requesting a BS, they agreed a BS and issued a squawk of 6160.

At 0900:01, radar recordings show the Tutor (Mode S equipped) 9.3nm to the WNW of Barkston Heath, tracking NW. At that point the PA31 (also Mode S equipped) was 3.7nm to the NNE of the Tutor on a converging course. At 0900:47, the lateral distance between the ac had reduced to 1.3nm. The Mode C of the Tutor (squawking 6160) was indicating FL025 with the Mode C of the PA31 indicating FL026. At 0901:05, the Tutor passed in front of the PA31 with 0.3nm lateral distance between the two ac.

CAP774, UK Flight Information Services, Chapter 1, Page 1, Paragraph 1, states:

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

The Doncaster radar controller had agreed a BS with the Tutor pilot but had not identified it so would have been unable to provide surveillance derived TI.

UKAB Note (1): An analysis of the Claxby radar recording confirmed the information in the BM SM and ATSI reports.

HQ AIR (TRG) comments that the benefit of TAS in this case is clear in that it alerted the pilot to a previously unsighted conflict. The PA31 ‘was not seen until well after the Traffic Alert’ but the eventual avoiding action was effective and possibly facilitated the even later sighting by the PA31 pilot. The intent of pilots should be to beat the TAS to the contact in all cases and they must be particularly diligent in moving their heads to mitigate the well publicised effect of the canopy arch.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The Board noted that both ac had been operating legitimately under VFR in Class G airspace avoiding other ac by means of the 'see and avoid' principle albeit both were, or had recently been, in receipt of a BS from their respective ATC units. The PA31 had recently left the Waddington frequency and had not yet transferred to East Midlands, but, although not required to do so, the Waddington controller had provided the pilot with accurate TI on the Tutor 4nm away before he left the frequency. The PA31 pilot did not mention in his report at what distance he saw the Tutor or if his sighting had been as a result of this information but Members assumed that it had and he had seen the Tutor shortly after the TI and in good time. Although the pilot estimated the vertical separation to be 500ft and sufficient, the radar recording shows that in the 30 sec leading up to the CPA it was substantially less than he estimated and additional avoidance was required as the Tutor disappeared below the PA31's nose and port engine cowling.

The Tutor pilot was warned of the presence of the (squawking) PA31 by the ac TAS and did not see the ac until it was estimated to be 1nm away; he then initiated avoidance by descending as he was concerned by the PA31's proximity. This descent was evident on the radar recording on the return after the CPA indicating that it had been effective in increasing the separation.

Since both pilots had seen the opposing ac in reasonable time, Members agreed that this incident had been a conflict in Class G airspace and that the Tutor instructor had ensured that there was no risk of collision by taking control and descending.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict in Class G airspace.

Degree of Risk: C.

AIRPROX REPORT No 2011145

Date/Time: 13 Oct 2011 1601Z

Position: 5216N 00043W (4nm SE of Northampton/Sywell)

Airspace: London FIR (Class: G)

Reporter: Cottesmore LARS

1st Ac 2nd Ac
Type: Cirrus SR22 C208

Operator: Civ Pte Civ Pte

Alt/FL: 3400ft 3500ft↑
RPS (1025mb) QNH

Weather: VMC CLAC VMC/IMC CLAC

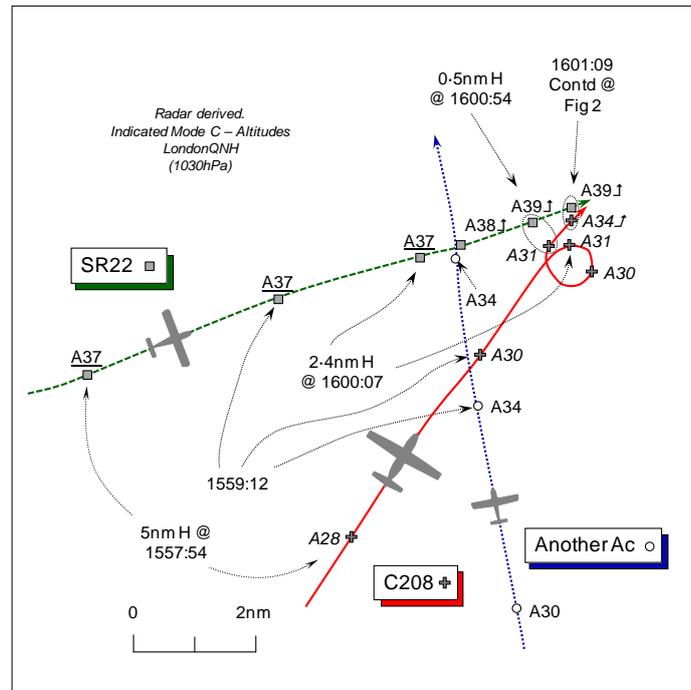
Visibility: 6-8km >10km

Reported Separation:

400ft V/200m H 500ft V/500ft H

Recorded Separation:

200ft Min V/0.1nm Min H see Fig 2



CONTROLLER REPORTED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE COTTESMORE LARS CONTROLLER (RAD) reports that the SR22 pilot had called for a TS passing DTY en-route to Norwich at 3600ft CHATHAM RPS (1025mb). Passing abeam Northampton Sywell heading about 080°, she called two conflicting tracks to the SR22 pilot. The first [the C208] was at R 1 o'clock - 5nm crossing R to L indicating 700ft below the SR22, squawking A0033 but did not look like a parachute dropping profile; the 2nd [another ac] was also crossing R to L at right 2 o'clock 4nm indicating 200ft below she thought, and the SR22 pilot was visual with it. Shortly afterwards she updated TI on the first track at 12 o'clock - 3nm crossing R to L, indicating 600ft below. The SR22 pilot was still not visual and said he would climb a couple of hundred feet. The conflicting C208 then appeared to turn and position beneath the SR22. The traffic was called again to the SR22 pilot 400ft below on a similar heading. As it was 1600UTC, which is the end of the promulgated LARS for the day, she instructed another pilot under service to squawk A7000 and change to his en-route frequency. However, she then returned her attention to the SR22 and saw that it had turned SW'ly and climbed 1000ft – see Fig 2 - so she asked the pilot's intentions. The SR22 pilot reported he had taken avoiding action as the conflicting C208 had climbed to about 200ft below his aeroplane, but he was now descending, back to 3800ft and resuming his course to Norwich. The controller asked if he was filing an Airprox, to which he replied that he wasn't sure and would think about it later on the ground. When the SR22 was clear of the conflict she suggested the pilot could call on the telephone if he wanted any further information and then advised him to switch to his en-route frequency. The Risk was assessed as 'high (A)'; minimum separation was estimated at 200ft vertically, nil horizontally.

The next day the controller was able to contact the SR22 pilot to tell him that she would be submitting an Airprox report irrespective of the pilot's intentions.

THE CIRRUS SR22 PILOT reports he had departed from Gloucestershire/Staverton on a VFR flight via DTY to Norwich in fine weather with FEW at 2000ft and SCT at 4000ft. The Airprox occurred 070° DTY 15nm - E of Northampton [4nm SE of Northampton/Sywell A/D] whilst receiving a TS from

Cottesmore LARS on 130-200MHz. His aeroplane is white with black trim; the wing HISLs were on. A squawk of A3721 was selected with Mode C; elementary Mode S and TCAS I are fitted.

Flying in VMC at about 3400ft RPS (1025mb), about 400-500ft above at least broken/near full cover cloud, on autopilot heading 070° at 155kt in reasonable daylight he called Cottesmore RADAR just NE of DTY and obtained a TS. He still felt the radar service would be useful although there was only about 10mins to go before he expected Cottesmore LARS to close. A few minutes later RADAR warned him of nearby traffic 700ft below at 2 o'clock - from memory he believes that this was the first call of traffic. Just prior to this he had picked this traffic up on his basic TCAS I and he could see that the ac was climbing, now very near and looked to be on a collision course from below his aeroplane. Immediately he switched off the autopilot and as a precaution, increased his altitude by 200ft on track and switched on the landing and NAV lights. The unknown ac – the C208 - was almost vertically below him and from the TCAS I display was getting closer. He believes that vertical separation reduced to 300ft and the traffic was still climbing towards him so he applied full or near full power and turned 90° to the R making a climbing turn that was continued for about a further 800ft. Almost at the same time he received a more urgent warning from RADAR and he advised them of the manoeuvre. He continued to look for the traffic during this climbing turn but never saw the C208 at any stage. He levelled at about 4600ft ALT, he thought, continued the turn to regain his original course and spoke briefly to ATC.

The incident seemed more threatening at first because the ac – the C208 - appeared to follow his aeroplane for a short time, which may of course have been entirely coincidental. ATC confirmed that this traffic was no longer a threat and he continued on route to Norwich.

He spoke briefly with the Cottesmore RADAR controller the next morning who advised that she would be filing an Airprox report. Assessing the Risk himself as 'low', he does not think that there was any significant Risk of collision, but if the other ac had not had Mode C switched on and if he had not obtained a short but very useful TS the incident could have been much more serious.

He has an FAA Instrument rating.

THE C208 PILOT reports he was en-route on a positioning flight back to Peterborough/Sibson after a parachute dropping flight at Weston-on-the-Green. He had switched en-route from Brize and a squawk of A0033 was selected with Mode C on; Mode S and TCAS I are fitted. Passing E abeam Northampton Sywell heading 050° at 140kt he was in a cruise climb from about 2000ft to 3500/4500ft, above cloud, due to turbulent conditions below the cloud layer. At about 3500ft he was leaving IMC conditions within the cloud layer when TCAS I gave a warning of traffic in the 10:30 position; looking out visual contact was made with the SR22 [the range was not specified]. The SR22 did not appear to be on a converging course so the heading was maintained, he thought, but his ac's climb rate reduced. After about 30secs the SR22 carried out a R turn in an ESE'ly direction passing 500ft above his ac with horizontal separation of 500ft. Visual contact on the SR22 was then lost as he turned eastbound in an attempt to maintain visual contact with the ac. Visual contact was not re-established and the TCAS I indicated that the SR22 was now behind and moving away in an ESE'ly direction. Subsequently, he turned back onto his original heading for Peterborough/Sibson and TCAS gave no further warnings. He assessed the Risk as 'low'.

[UKAB Note 1: In Fig 1 the LAC radar recording shows the SR22 on a steady ENE'ly track indicating 3700ft QNH (1030mb) and converging with the C208, which is ahead at 2 o'clock on a NE'ly course climbing slowly through 2800ft QNH (1025mb) to 3000ft. As the ac close to a range of 2-4nm the C208 turns R into an orbit, rolling out on its original course 0.5nm off the SR22's starboard wing, as the latter, which had already climbed slightly indicates 3900ft, some 800ft above the C208. As the C208 steadies NE'ly at 1601:09, the ac's Mode C indicates a climb through 3400ft in the SR22's 4 o'clock at a range of 0.2nm. Moving to Fig 2, the C208 starts to overhaul the SR22 and climbs to 200ft beneath it; the SR22 then turns R into an orbit climbing at a higher rate through 4400ft with the C208 300ft below indicating 4100ft. At 1601:42, the C208 was at a range of 0.1nm from the SR22 still climbing and turning R, crossing 300ft above and slightly astern of the C208 in between sweeps at the CPA. The C208 commences a L turn but contact is then lost for several sweeps as the SR22

continues the R orbit, ascending to a maximum altitude of 4900ft at 1602:22, when the C208 is shown once more at 4000ft on a NNE'ly course.]

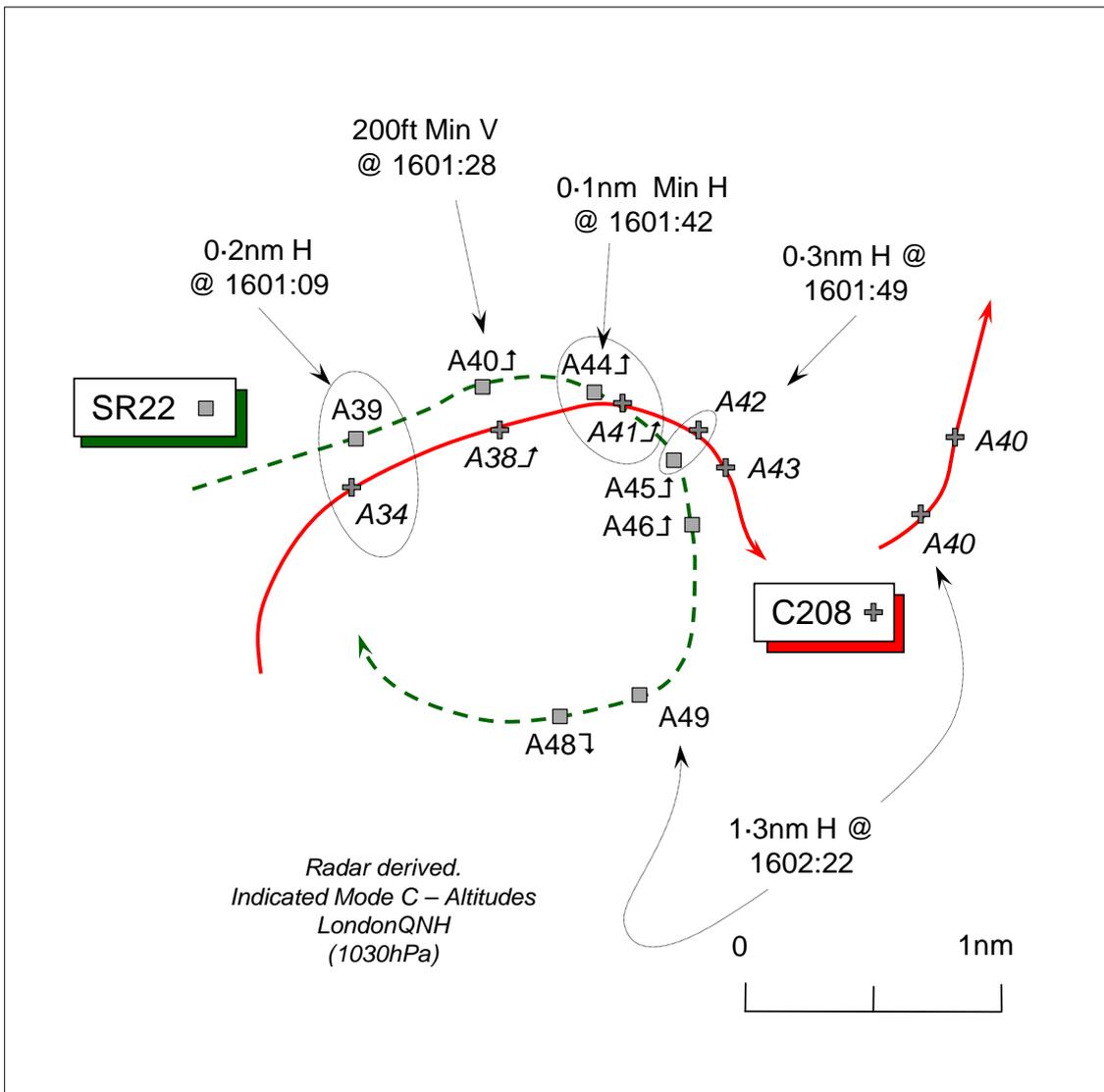


Fig 2

BM SAFETY MANAGEMENT reports that this Airprox occurred between a Cirrus SR22 operating VFR in receipt of a TS from Cottesmore RADAR (RAD) and the Cessna 208 in intermittent IMC; both ac were equipped with TCAS I.

RAD described their workload and task complexity at the time of the incident as 'low', with 2 ac on frequency.

At 1555:01, the SR22 pilot called RAD en-route from Gloucester to Norwich at 3600ft, requesting a TS. The SR22 was identified and placed under a reduced TS due to poor radar performance. At this point, the SR22 was 38nm SW of Cottesmore, tracking 075°, with the C208 7.7nm SE of the SR22, tracking 055°, indicating 2400ft. After turning SE'ly at 1556:53, the C208 turned L at 1557:09 onto a track of 045°. At 1557:59, RAD passed accurate TI to the SR22 pilot on the C208, "traffic right 1 o'clock, 5 miles, crossing right left, indicating 7 hundred feet below", which was acknowledged. At 1559:10, RAD passed TI to the SR22 pilot on un-related traffic, which the SR22 pilot stated he was visual with. RAD then updated the TI to the SR22 on the C208 at 1559:20, stating "the first one now in your 12 o'clock [radar replay shows 1 o'clock] 3 miles, crossing right left, indicating 6 hundred feet below." Having acknowledged this TI, the SR22 pilot then advised RAD that they were "going to climb a couple of hundred feet" reporting that this was a precaution against the C208.

At 1600:01, the C208 commenced a right-hand turn through a full 360° to resume a NE'ly track at about 1600:54. Based upon the C208 pilot's report, the C208 left IMC shortly afterwards at about 1601:02; 0.4nm lateral and 700ft vertical separation existed between the 2 ac. The C208 pilot reported he gained visual contact with the SR22 at this stage and did not believe that the ac were converging. Analysis of the radar replay shows that the 2 ac were converging, albeit slowly.

CAP 774 states that:

'the controller shall pass traffic information on relevant traffic, and shall update the traffic information if it continues to constitute a definite hazard, or if requested by the pilot. However, high controller workload and RTF loading may reduce the ability of the controller to pass traffic information, and the timeliness of such information.'

At 1601:17, RAD updated the TI on the C208 to the SR22 pilot stating, "*previously reported traffic is now beneath you [radar replay shows ac 0.2nm south], four hundred feet below, similar heading.*"

At 1601:28, as described in the pilot's report, the SR22 commenced a 'full or near full power' climb as separation between the 2 ac reduced to 0.2nm and 200ft vertically. About 4 sec later the C208 turned SE'ly. This accords with the point in the C208 pilot's report that he lost visual contact with the SR22, turning E to 'attempt to maintain visual contact' with the SR22.

The operation of the C208 in IMC without an ATS undermines the principles that underpin CAP 774. Specifically, that when faced with high traffic density, controllers providing a DS will prioritise the separation of known traffic over unknown traffic on the assumption that unknown traffic will be operating VFR and will be able to 'see and avoid.' However, whilst MAA RA 2307 mandates to military aircrew that flight in IMC is only permitted 'when in receipt of a radar or procedural service' except where it is not available or un-obtainable, there is no equivalent civil regulation.

Notwithstanding the restriction to 'see and avoid' induced by the weather, RAD's TI to the SR22 and the respective pilot's assimilation of the information displayed by their TCAS I equipment allowed them to develop their situational awareness and thus take action to resolve this confliction, albeit with reduced safety margins. That aside, whilst RAD provided generally accurate TI and the SR22 pilot did not request additional updates to that TI, BM SM contends that, given RAD's low workload and that the geometry of the event changed markedly between 1559:20 and 1601:17, good practice would suggest that an opportunity existed to provide a further TI update before 1601:17.

BM SM would like to commend RAD for reporting this Airprox, for their work in tracing the SR22 pilot in order to discuss the incident with them and for allaying his concerns over the reporting process.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The Board commended the controller involved for the thorough application of the TS to the SR22 pilot, which overran the regular hours of service for Cottesmore LARS. Furthermore, the Board noted the controller's conscientious approach in tracing and discussing the issues further with the SR22 pilot and for reporting this Airprox. It is important that pilots and controllers alike do not misunderstand the purpose of Airprox reporting and investigation, which is purely a safety investigation that does not apportion blame or form the basis of punitive action.

The BM SM advisor briefed the Board that no record could be found of any ATS provided to the C208 pilot by Brize Norton ATC before the Airprox occurred and that the C208 pilot was not in receipt of an ATS during the period of this encounter with the SR22. Given that the C208 pilot was climbing slowly and had encountered IMC it was surprising that he had not sought a DS, but the LARS

provider in this vicinity was just closing. Notwithstanding that the C208 pilot is entitled to select a squawk of A0033 at his discretion when engaged in para-dropping, the drop at Weston-on-the-Green had been completed and he was positioning back to Peterborough/Sibson. The AIP at ENR 1-6-2 para 2.2.2.1 is quite specific insofar as: ‘..pilots of transponder equipped aircraft should select Mode A code 0033, together with Mode C pressure altitude reporting...five minutes before the drop commences until the parachutists are estimated to be on the ground.’ Here controller Members perceived an inappropriate use of this specific conspicuity code and believed that A7000 was more suitable.

It was evident from the recorded radar data that these two ac were separated horizontally and vertically at the outset, except that the slightly faster SR22 was catching-up the C208 on a converging flight path. The BM SM report shows that this had prompted two transmissions of TI from RAD to the SR22 pilot who was also aware of the C208 from his TCAS I. However, the geometry changed when the C208 turned into a R orbit, with the range decreasing rapidly and the C208 rolling out of the turn just 400yd off the SR22’s starboard wing. The Board was aware that TCAS I does not provide consistently reliable and accurate indications in azimuth at close quarters and Members agreed that it was unfortunate that RAD had not updated the reduced range and horizontal situation before the final transmission of TI at 1601:17. From this point, the C208 would have appeared on TCAS to be almost vertically below the SR22 and it was apparent that the SR22 pilot subsequently took positive action to avoid the C208 and increased his rate of climb. This was just after the point of minimum vertical separation of 200ft at 1601:28. Board Members reasoned that it was at 1601:09, just after rolling-out of the R turn and climbing through 3400ft ALT whilst leaving IMC, that the C208 pilot received a warning from his TCAS I and saw the SR22 to port in his 10:30 position just moments before the point of minimum vertical separation. This Airprox illustrated clearly the benefit of even a basic traffic warning system that had enhanced the C208 pilot’s SA considerably in IMC and Members noted the SR22 pilot’s effective reaction to resolve the conflict. Whilst flying in VMC the SR22 pilot did not see the C208 visually, but nevertheless recognised the developing conflict from the TI provided and climbed at a higher rate than the C208 displayed on his TCAS I, thereby ensuring 300ft separation as he overflew the C208 and turned away to the S into an orbit himself. Unfortunately the C208 pilot lost sight of the SR22 at this point and resumed his easterly course as the SR22 drew astern; by then, however, the conflict was resolved. The Board concluded that this Airprox had resulted from a Conflict in Class G airspace, but in assessing the Risk a pilot Member opined that the C208, by flying in IMC beforehand without a radar service, had raised the Risk level. However, this was a solitary view; the Members agreed overwhelmingly that the SR22 pilot’s avoiding action climb based on the initial TI and good SA from his TCAS I data, coupled with the C208 pilot’s visual sighting as the SR22 passed above and his own TCAS I assisted SA was sufficient to remove any Risk of a collision.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict in Class G airspace.

Degree of Risk: C.

AIRPROX REPORT No 2011146

Date/Time: 20 Oct 2011 1533Z

Position: 5525N 00154W (24nm NW Newcastle)

Airspace: SFIR/OTA E (Class: G)
Reporting Ac Reported Ac

Type: PA23 Hawk T Mk1

Operator: Civ Pte HQ Air (Ops)

Alt/FL: FL70 <FL60-70

Weather: IMC KLWD VMC CLBC

Visibility: NR

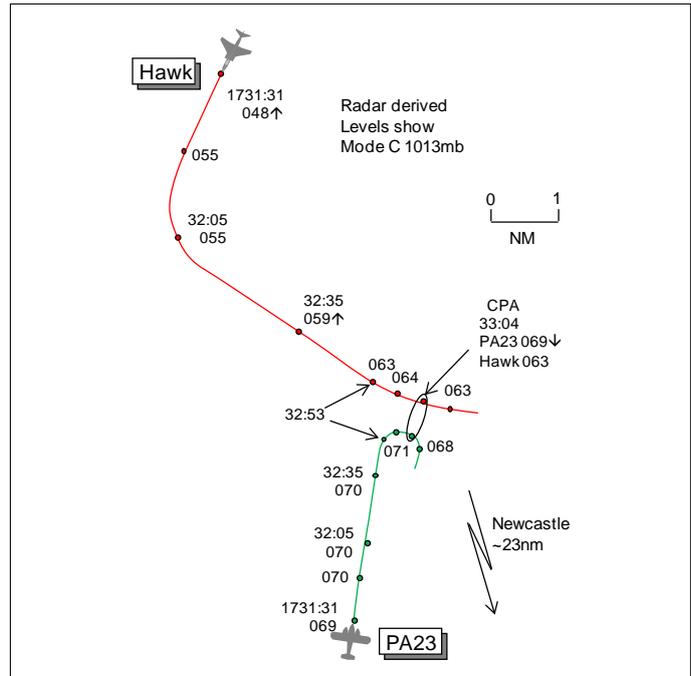
Reported Separation:

<800ft V/ Not seen

<0.25nm H

Recorded Separation:

600ft V/0.5nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PA23 PILOT reports en-route to an airfield near Peterhead, IFR and in receipt of a TS from Newcastle on 124.375MHz he thought [actually ScACC TAY Sector 124.5MHz], squawking an assigned code with Modes S and C; TCAS 1 was fitted. His route was through Class G airspace via ALASO, MADAD and DENOG and just short of the NW corner of the Newcastle CTR he had turned direct to MADAD, after informing ATC, to avoid clipping CAS and to cut the corner. There was a warm front approaching from the W and he was cruising at FL70 in cloud in IMC, which he entered just before Newcastle, and the A/P was engaged. Tracking 017° at 135kt about 24nm NW of NATEB just prior to the incident Newcastle sic [TAY] advised him of a contact in his 9 o'clock range 11nm and he replied that he was in IMC. His MFD was in mapping mode at range 15nm to ensure he avoided the Newcastle CTR and the range ring was set at 3.75nm. Shortly afterwards he noted a contact on the TAS, appearing on the MFD in his 0900-0930 position 2000ft below and climbing towards him. When it was apparent that neither its climb nor its relative position were changing he disengaged the A/P and began a steep 360° climbing turn to the R, hoping to turn inside what he thought was the projected track of the contact. Before and during the turn the TAS gave an audible warning which meant the traffic was <0.5nm away horizontally and within 800ft vertically. He recalled that the screen showed much less than 0.5nm but he could not recall the relative height difference or the subsequent positions of the other ac. Newcastle sic [TAY] stated the other ac had been working a Mil frequency and he confirmed that he wished to report the incident. He assessed the risk as high.

THE HAWK T MK1 PILOT reports being unaware of the Airprox until after being contacted by RAC Mil. At the time of the incident he was not under a radar service, operating in OTA E on a bounce sortie and was capping at FL60-70 below cloud in 10km visibility squawking 7001 with Mode C. He did not see the reporting ac.

THE SCACC TAY CONTROLLER reports acting as an OJTI to a trainee providing a TS (at the pilot's request) to a PA23 IFR en-route to Peterhead at FL70. They initially worked the flight SW of Newcastle, transferred it to Newcastle, and then worked it again when it was N of Newcastle. The Sector was busy (several Aberdeen inbound) and they were in the process of asking for a Planner.

When the PA23 was approximately 20nm NNW of NATEB fast-jet traffic squawking 7001 was spotted and called twice (at about 15nm and 10nm range) before it disappeared from radar. This traffic then popped-up again about 7nm NW of the PA23. At 1533 further TI was called at about 2nm as the traffic was indicating FL055 climbing. The PA23 pilot stated that he had TCAS and was taking his own avoidance and then appeared to carry out a very tight RH orbit. At this stage the conflicting traffic was indicating FL067, he thought. He estimated that the conflicting traffic passed <0.5nm and <500ft from the PA23; this would have been less had the PA23 not turned. The PA23 pilot stated that it was too close for comfort and that he was in IMC. TAY advised him that he would be filing an Airprox and asked the pilot for his TCAS equipment fit. Interrogating the Mode S of the conflicting traffic gave a c/s but this was later found to be incorrect. No avoiding action was given and none was requested.

ATSI reports that the Airprox occurred at 1533:09 UTC, in Class G airspace, 24nm to the NW of Newcastle Airport.

The PA23 was operating an IFR flight from Blackpool to Longside Airfield, Peterhead, Aberdeenshire and was in receipt of a TS from ScACC (TAY Sector).

The Hawk was on a training exercise in the military training area OTA-E and was operating in a CAP up to a maximum FL060-070, displaying the Military low flying conspicuity squawk 7001. The pilot reported listening out on a low flying operational frequency and not being in receipt of a radar service.

CAA ATSI had access to area radar recordings, RT recordings and written reports from the 2 pilots, the TAY controller and the NATS unit investigation report.

METAR: EGNT 1520Z 24008KT 9999 FEW032 09/04 Q1022=

The PA23 had been in receipt of a TS from Newcastle Radar on a squawk of 3755 and routed to the W of Airway P18 and the Newcastle CTR. The PA23 pilot was advised that the Otterburn Danger Area was active up to 18000ft and the PA23 pilot reported that he would be tracking a couple of miles E of the Danger Area. At 1526 the PA23 flight was instructed to change to a Scottish squawk of 3623. The Newcastle controller then terminated the radar service and transferred the PA23 to Scottish Control on frequency 124.5MHz (TAY Sector).

At 1527:43, the PA23 flight contacted ScACC (TAY Sector) requesting a TS. TAY instructed the PA23 pilot to squawk ident and a TS was agreed.

At 1528:21, TAY advised, *“(PA23 c/s) there is traffic in your eleven o'clock range about fifteen miles it's fast moving from left to right indicating flight level four seven unverified.”* The PA23 pilot replied, *“(PA23 c/s) looking out.”* The radar recording shows the PA23 positioned, 16nm NW of Newcastle Airport, with the Hawk in the PA23's 11 o'clock at a range of 18.9nm indicating FL048 and squawking 7001.

At 1529:20, TAY updated the TI, *“(PA23 c/s) that traffic is still in your eleven o'clock range about ten miles now erm no height information crossing from left to right.”* This was acknowledged, *“(PA23 c/s) copied.”* The radar recording shows the PA23 at FL069 and the Hawk with NMC. At 1529:38, the Hawk faded from radar coverage.

At 1531:31, the radar recording shows the Hawk reappear in the PA23's 11 o'clock at a range of 8.5nm. The PA23 was indicating FL069 and the Hawk was indicating FL048.

At 1532:38, just after STCA activated a low-severity (white) alert, TAY updated the TI, *“Er (PA23 c/s) in your eleven o'clock range about one mile indicating flight level six zero unverified.”* The PA23 pilot responded, *“Er yeah I've got him on my collision system and I'm just going to make a steep turn and try and get away from him.”* The radar recording shows the 2 ac were converging at a range of

2.5nm, with the PA23 maintaining FL070 and the Hawk passing FL059 in the climb. Eight seconds later (1532:45), STCA changed to high severity (red).

At 1532:53, the radar recording shows the PA23 commencing a RH turn, with the Hawk, indicating FL063 at a range of 0.9nm. The PA23 continued in a tight RH turn as the Hawk passed NE abeam. The PA23 pilot reported, *“Yeah that was a bit too close for comfort.”*

At 1533:04, the CPA, the PA23 was indicating FL069 and the Hawk, indicating FL063, was shown passing 0.5nm NE of the PA23. As the PA23 continues in the R turn the separation begins to increase and the 2 ac diverge.

The PA23 pilot advised TAY that he intended to file an Airprox report. In the following discussion the PA23 pilot indicated that he carried a TAS. The pilot reported flying in thick IMC and that he couldn't see a thing, adding that the other ac was climbing and getting closer and closer.

The Hawk pilot's written report indicated that the Hawk pilot was not in receipt of a radar service. The Hawk pilot indicated that he was operating below cloud at 6000ft with a flight visibility of 10km. The report does not give details about any other ac in the vicinity and the pilot was not aware of the Airprox at the time of the event.

The Hawk pilot was not in receipt of a radar service. The PA23 was in receipt of a TS from ScACC (TAY Sector). CAP774, UK Flight Information Services, Chapter 3, Page 1, Paragraph 1 and 5, states:

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

The controller shall pass traffic information on relevant traffic, and shall update the traffic information if it continues to constitute a definite hazard, or if requested by the pilot. However, high controller workload and RTF loading may reduce the ability of the controller to pass traffic information, and the timeliness of such information.’

TAY updated the PA23 on the position of the Hawk and the PA23 pilot received a warning on the ac's TAS. This resulted in the PA23 pilot taking avoiding action by completing a steep R turn to avoid the Hawk.

The PA23 pilot was flying in IMC and it is not clear why the PA23 pilot did not request a DS, which would have required the controller to try and achieve the deconfliction minima.

HQ AIR (OPS) comments that the Hawk pilot must have been flying VFR; the height at which he was CAPing seems to be inconsistent with the weather conditions reported by the PA23 pilot. The PA23 was IMC at FL70, in “thick cloud” whereas the radar derived flight level of the Hawk was FL64 and it has not been possible to determine the Hawk's actual separation from the cloudbase. It behoves all military pilots to abide rigidly to the limits of VFR flight and maintain 1000ft clear of cloud wherever possible, and to make best effort to obtain a radar service if they cannot maintain VMC. Nevertheless, if the PA23 pilot had obtained a DS then he would almost certainly not have got so close to the Hawk as earlier avoiding action could have been given and should have been taken.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

Members wondered why the PA23 pilot had only asked for a TS when a DS would have been more appropriate for his flight in IMC. ScACC TAY is tasked with the provision of ATSOCAS N of Newcastle and a DS is available, subject to traffic and workload. The PA23 pilot did not report being in IMC and when passed TI had replied “looking out” and “copied”. There was no compunction on TAY to offer a DS in the circumstances as the pilot had made the initial level of service request. TAY had seen the Hawk and passed accurate TI to the PA23 pilot, twice, before it faded from radar. After reappearing again, TAY again passed TI on the Hawk when separation had reduced to 2.5nm with the ac indicating FL60. The PA23 pilot saw the approaching Hawk on TAS and, about the time that TAY gave the last TI, he elected to execute a tight RH orbit to break the conflicting flightpaths. At this time he was unaware that the Hawk would be levelling-off below cloud which had resulted in vertical separation of 600ft as they passed at the CPA of 0.5nm. Members agreed with the HQ Air Ops comments that given the Wx conditions reported by the PA23 pilot, it appeared the Hawk was not remaining 1000ft below cloud in order to remain in VMC. It was also noted that the squawk selected by the Hawk pilot was not appropriate while he was flying a CAP at medium level. The 7001 squawk is for conspicuity descending into or operating in the low flying system or when a radar service is required on climbing out from low-level.

Although the PA23 had right of way under the RoA, with the ac flying in cloud and not visible to the Hawk pilot, the PA23 pilot was put in an unenviable position of having to take action on a conflicting climbing ac approaching at high speed. Given that neither ac was visible to the other pilot, the Board assessed this Airprox as a conflict in Class G airspace. Because the PA23 pilot had turned away before it became apparent that the Hawk was levelling off below him, the Board agreed that he had resolved the conflict. As the Hawk had levelled-off below cloud, and the PA23 had turned away, the Board assessed that safety had been assured during this encounter.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Conflict in Class G airspace resolved by the PA23 pilot.

Degree of Risk: C.

AIRPROX REPORT No 2011148

Date/Time: 23 Oct 2011 1001Z (Sunday)

Position: 5111N 00015E (1.5nm SW
Tonbridge)

Airspace: LFIR (Class: G)

Reporting Ac Reported Ac

Type: MD902 R44

Operator: Civ Comm Civ Pte

Alt/FL: 1000ft 800ft
QNH (1009mb) QNH

Weather: VMC CLBC VMC NR

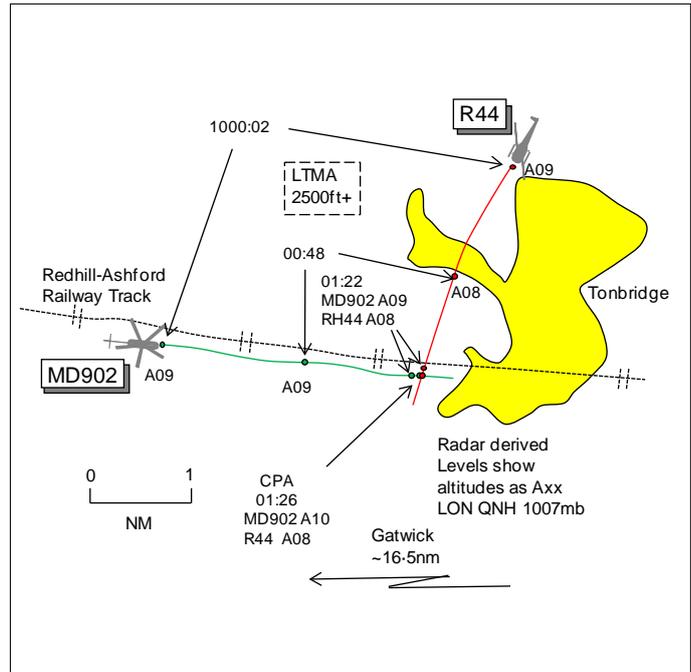
Visibility: >10km >10km

Reported Separation:

100ft V/50m H Not seen

Recorded Separation:

200ft V/returns merge



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE MD902 PILOT reports routeing from a field site near Edenbridge to a private site in near Marden, Kent, not in receipt of an ATS but squawking a discrete conspicuity code with Modes S and C. The visibility was >10km flying clear below cloud in VMC and the helicopter was coloured blue/white with nav lights, red strobes and white HISS all switched on. In level cruise at 1000ft QNH 1009mb heading 100° at 120kt returning to base after a medical call-out, his LH seat crewman alerted him to a helicopter, a dark blue or black R44, approaching from his 10-11 o'clock direction at close range (200m) on a S'y and closing heading, slightly lower. He immediately cyclic-climbed the MD902 to allow the other helicopter to pass underneath, which it did by 100ft and 50m away at the CPA. Once clear he checked behind and could see the R44 continuing on its heading and height. Previously he had been talking to Gatwick Radar and had changed to Headcorn frequency some 2min earlier. No Airprox report was made on either frequency. He assessed the risk as medium.

THE R44 PILOT reports he was unaware of the Airprox until after being contacted by RAC Mil. His flight was from a private site near Wormingford, Essex, routeing to a private site in West Sussex, VFR and he was listening-out on the Farnborough E frequency squawking 7000 with Mode C. The Wx was VMC and he tracked to the E of Gatwick, flying into sun heading 185° at 115kt and at 800ft QNH. He did not see the reporting ac.

UKAB Note (1): The Gatwick 10cm radar clearly captures the incident. The MD902 is seen at 1000:02 squawking a discrete conspicuity code 3.75nm W of Tonbridge, tracking 100° indicating altitude 900ft LON QNH 1007mb. At the same time a 7000 squawk is seen, believed to be the R44, 1.6nm NNW of Tonbridge tracking 210° also maintaining altitude 900ft. Thereafter the ac continue to converge on a line of constant bearing and by 1000:48 lateral separation has reduced to 1.7nm with the R44 having turned L 15° and descended to altitude 800ft. At 1001:22 lateral separation has reduced to 0.1nm with vertical separation still 100ft. The CPA occurs on the next sweep at 1001:26; the radar returns merge, the R44 still showing 800ft whilst the MD902 is indicating 1000ft QNH, 200ft above.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

As the incident occurred in Class G airspace there was equal responsibility on both crews to maintain their own separation from other traffic through see and avoid. With the ac approaching each other on a line of constant bearing it would have been more difficult for both crews to detect each other owing to lack of relative movement within their field of view. Although the R44 pilot reported flying into sun, the MD902 was converging from his R and there was ample opportunity for him to detect its approach. The MD902 flight had right of way under the RoA Regulations; however, these rules require pilots to see the other aircraft at the appropriate time. As it was the R44 pilot did not see the MD902 at all while the MD902 pilot only saw the R44 200m away, when it was brought to his attention by the LH seated crewmember, a late sighting.

Turning to risk, although the MD902 flight had right of way, the pilot took positive action to avoid a collision by initiating a climb before the R44 passed an estimated 100ft below and 50m ahead; the radar recording shows the ac merging at the CPA with the MD902 climbing 100ft as they cross with vertical Mode C separation showing 200ft. These factors combined with the MD902 passing unsighted to the R44 pilot led the Board to conclude that the ac had passed in close proximity with margins reduced below normal such that safety had not been assured.

DRAFT PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A non-sighting by the R44 pilot and a late sighting by the MD902 pilot.

Degree of Risk: B.

AIRPROX REPORT No 2011149

Date/Time: 21 Oct 2011 1207Z

Position: 5221N 00031W (2nm SW of the Daventry RC E'ly waypoint)

Airspace: London FIR (Class: G)

Reporting Ac Reported Ac

Type: C130J PA31

Operator: HQ Air (Ops) Civ Comm

Alt/FL: FL100 FL100

Weather: VMC CLAC VMC CLBL

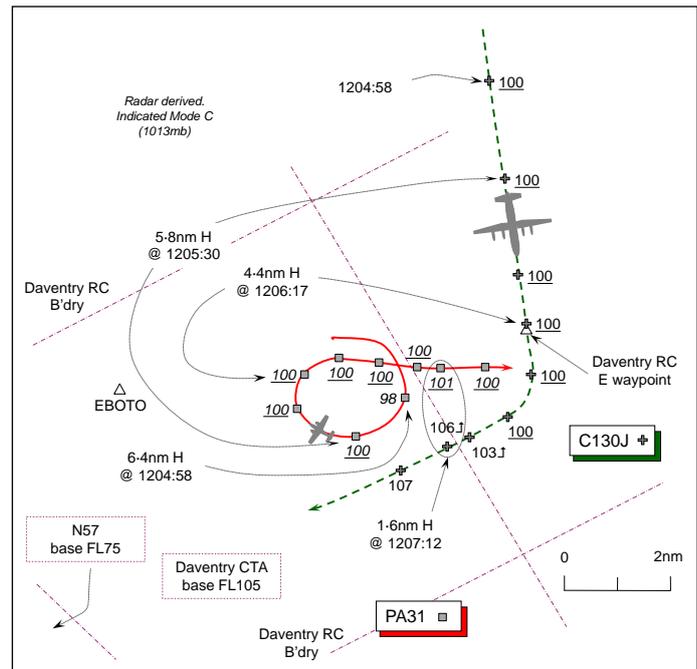
Visibility: 10km >50km

Reported Separation:

200ft V/0.5-1nm H Nil V/2nm H

Recorded Separation:

500ft V/1.6nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE LOCKHEED C130J PILOT reports that during this VFR training flight, following an approach to RW20 at Waddington, ATC handed them back to LATCC (Mil) for a transit through the Daventry Radar Corridor (DAV RC) to return to Brize Norton. The assigned squawk was selected with Modes C and S on; TCAS is fitted. They were 'cleared' to climb to FL100 with own navigation for the DAV RC under a TS. Whilst in the climb, London MILITARY passed TI about traffic 6nm away which was in the vicinity of the DAV RC. This ac was acquired visually at FL100 and appeared to be manoeuvring at the northern edge of the RC. As they approached the entry point to the RC at 210kt he positioned his C130 so that the conflicting ac [the PA31] would not cause a TCAS confliction vector. This was achieved and they transitioned the DAV RC eastern waypoint, although still under a TS before turning onto the heading of 247° to transit the DAV RC. The conflicting PA31 then turned S towards his C130 and triggered a TCAS CLIMB RA, which was complied with. The PA31 was observed to pass about ½ - 1nm behind his C130 immediately before they were placed under a RCS for the transit of Class A CAS. Both ac were in Class G airspace at the time of the Airprox which occurred at about 1207Z in a position about 52° 21'N 000° 32'W. London MILITARY was informed and passed the details of the conflicting PA31 after recovery to Brize Norton. The conflicting ac was not working London MIL's frequency.

The ac has a grey/green camouflage scheme but the 'strokes' and wingtip taxi lights were on.

THE PA31 PILOT reports he was conducting a local flight from Northampton/Sywell under VFR; he was not in receipt of any ATS. A squawk of A7000 was selected with Mode C; elementary Mode S is fitted but TCAS is not.

Whilst in the cruise at FL100 in VMC with an in-flight visibility of >50km, heading 090° at 170kt, he saw a large grey high-wing 4-engine military ac [the C130] about 3-4nm ahead of his ac. The C130 passed from L - R across his nose straight and level initially and then turned right to pass down his right hand side 2-3nm away. At the closest point, which was when the C130 passed down his starboard side, he estimates that it was at least 2nm away at the same level. There was no Risk of collision as he had seen the other ac; it was a considerable distance away at all times and was obviously going to pass well clear.

THE LJAO CENTRAL TACTICAL CONTROLLER (CEN TAC) reports that the C130 was about 2nm NE of the DAV RC under a TS proceeding SW'ly for the RC at FL100. Traffic information was passed to the crew on two conflicting ac, the first being 5nm South, tracking N, without any height information (no SSR). The second unknown ac was squawking A7000, 8nm SW, manoeuvring, indicating FL96 and climbing. The TI was acknowledged by the C130 crew and after a short delay reported visual with the conflicting ac – the PA31. The Area South Bank Supervisor then instructed him to ask the C130 crew if they could identify the type of the conflicting ac, which the crew was unable to do. The conflicting PA31 continued to manoeuvre in the same general area and as the C130 turned onto a track of about 250° degrees, he queried whether the crew was still visual as the PA31 continued to present a definite hazard. The C130 pilot advised he was no longer visual with the PA31 that was to the W at a range of 2nm at the same level, so he provided TI. Subsequently, the C130 crew reported visual and that they were taking a TCAS CLIMB, which was acknowledged.

BM SAFETY MANAGEMENT reports that this Airprox occurred 7.8nm E of the Class A CAS boundary associated with the DAV RC, between a C130 in receipt of a TS from LJAO CEN TAC and a PA31. Both ac were operating VFR in VMC. The LJAO RT transcript timings were found to be 8min 3sec removed from the radar replay and, where referred to in this report, have been corrected to reflect the radar recording timings.

The C130 was manoeuvring towards the DAV RC and at 1203:40, CEN TAC passed TI on unrelated traffic. At 1204:57 CEN TAC passed TI on the PA31 stating, *“traffic south-west, 8 miles [6.4nm on radar replay] tracking south flight level 9-7 climbing I'll keep you updated”* which was acknowledged. At 1205:31 the C130 crew reported that they were, *“visual with traffic”* which prompted CEN TAC to ask whether they were visual with the reported unrelated traffic. The C130 reported, *“..negative 1 o'clock..1 hundred foot above and..passing 6 miles”* which was the PA31. At this point, the PA31 was 5.8nm SW of the C130, in a RH turn, passing through a heading of approximately 260°, at FL100. CEN TAC then passed updated TI on the unrelated traffic. At 1206:17, as the C130 crossed the DAV RC E'ly waypoint, the PA31 was turning R passing through a heading of about 030°; CEN TAC updated the TI to the C130 on the PA31 stating, *“traffic due west of you by..6 miles now [4.4nm on radar recording], tracking north, similar altitude, what type of aircraft is it?”* The C130 replied that they were, *“unable to identify that as it's a bit far away.”* At 1206:33 the C130 commenced a R turn onto the RC track to position along the southern portion of the DAV RC, whilst the PA31 steadied on an E'ly track, which was maintained for the remainder of the incident sequence. At 1206:45 CEN TAC asked the C130 crew whether they were, *“still visual with the traffic [the PA31]?”* The C130 crew replied that they had, *“lost visual at the moment, now looking”* prompting CEN TAC to update the TI, stating *“roger, it's northwest of you by 3 miles, tracking southeast.”* The C130 crew immediately replied, *“okay, we're TCAS resolution climbing”* adding about 2sec later at 1207:08, that they were, *“visual with the traffic, it's going down our right hand side now.”*

Based upon the PA31 pilot's report, the radar recording reflects he acquired the C130 visually at about 1206:42, when the range had reduced to 3nm and remained visual throughout the incident sequence. The CPA occurred at 1207:09, as the PA31 passed 1.6nm N of the C130 and 500ft below it following the C130 crew's response to the TCAS CLIMB RA.

[UKAB Note (1): Horizontal separation reduced to 2.7nm at the same level before the C130 is shown climbing in response to the demanded RA. The C130 ascended to a maximum of FL107 before a descent is evident to the assigned DAV RC level of FL100, after the range has increased to 2.5nm at 1207:28. When informed of the TCAS RA the CEN TAC ensured LTC MIDS Sector was fully aware, who had no traffic to affect the C130's climb into the DAV CTA.]

CEN TAC provided a high level of service allowing the C130 crew to develop their situational awareness to visually acquire the PA31. By both confirming which ac the C130 had reported visual with and by confirming that the C130 crew was still visual once the incident geometry had changed at 1206:33, CEN TAC displayed a high level of situational and professional awareness and should be commended as such.

On the basis of the geometry of the event, BM SM contends that this was a TCAS sighting report.

HQ AIR (OPS) comments this was a benign event where effective lookout from both parties meant that collision was never an issue. The TCAS RA was nevertheless complied with as there was no reason not to do so (iaw C130 SOPs).

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The Board agreed that the LJAO CEN TAC controller had provided a good service to the C130 crew, through the timely flow of TI. This, coupled with TCAS information, ensured the C130 crew was continually apprised of the position of the manoeuvring PA31. The C130 crew subsequently saw the PA31 from a range of over 5nm and was content that it did not pose a threat, endeavouring to manoeuvre so as to minimise the potential for a TCAS RA. However, despite affording the PA31 what they considered to be a sufficient margin, a TCAS RA was triggered and the C130 crew was duly bound to comply with the CLIMB RA until CLEAR OF CONFLICT was enunciated.

Without the benefit of a radar service to assist his lookout, the PA31 pilot saw the C130 from a range of 2-3nm, watched it cross ahead and subsequently pass 1.6nm to starboard on a diverging heading without concern. It was unfortunate that the PA31 pilot chose to manoeuvre at the eastern end of the RC, at the corridor level, just as the C130 crew was commencing their westbound transit; however, the PA31 pilot was operating here under VFR quite legitimately in Class G airspace. Despite the resultant TCAS RA, both the C130 crew and the PA31 pilot were visual with each other's ac and both had afforded what they considered to be a reasonable margin under VFR. Whilst it was evident that the C130 had just penetrated the lower limit of the DAVENTRY CTA during the RA manoeuvre, CEN TACs swift liaison call to LTC MIDS confirmed that this had not resulted in a problem. The Board concluded that whilst this occurrence met the criteria for an Airprox report, it was nonetheless a sighting of traffic operating in Class G airspace and Members agreed unanimously that normal safety parameters had not been breached.

The Board suggested that more publicity should be afforded to the various RCs, which are regularly used by military traffic and civil ac operating as OAT to transit CAS. They are not marked on civil charts and there is little reference to them in the UK AIP, but it would be helpful to pilots that regularly operate VFR outside CAS in the vicinity of RCs to draw attention to the increased potential for meeting fast-jets and other military ac on a regular basis at the established RC levels where the corridor abuts Class G airspace.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Sighting report.

Degree of Risk: E.

His aeroplane is coloured white, red and blue; the strobes were on.

THE MERRYFIELD AERODROME CONTROLLER (ADC) reports that during a busy period at Merryfield with 6 helicopters in the cct in total, 2 helicopters were given visual departure instructions. Immediately afterwards, the subject Lynx pilot called to say he was 'exercise complete' and requested an IFR release to return to Yeovilton via a PAR. In accordance with SOPs, he obtained a release from Yeovilton APP [at 1127:20] and read back the instruction 'released standard VFR squawk 0203'. This was then passed to the Lynx crew, who duly read it back, asking additionally, 'will that be for RW09 or RW22'. Advising the crew to standby whilst he contacted YEOVIL APPROACH (APP), the LARS controller answered the line and immediately asked for a MATZ Crossing, N – S 1nm E of Merryfield A/D at 2000ft. He approved the MATZ Crossing and asked the controller to confirm which RW was being used for the Lynx's PAR. The reply from LARS was a bit woolly, with the controller unable to confirm, but he thought it would be RW22. As other transmissions were being made on his Merryfield TOWER frequency his attention was divided but RW22 made sense in view of the recovery state and prevailing wind so he passed 'expect RW22' to the Lynx crew, who acknowledged. Once he had confirmed the positions of his remaining cct traffic, he broadcast 'all stations, MATZ crosser North to South, passing 1 mile East at 2000 feet'. About 2min later, the Lynx crew called on the RT, '[Lynx C/S] is MATZ boundary to the North, channel 3, be advised, we've just had a fairly close shave with the MATZ crosser'. He asked the Lynx pilot to advise the APPROACH controller if he wished to pursue the issue, but he was not visual with the MATZ crossing ac at any point.

THE YEOVILTON LARS CONTROLLER (LARS) reports that the PA28R was operating to the N of Yeovilton on a VFR NAVEX under a BS at 2000ft Portland RPS (999mb), squawking A0242. At a position about 14nm N of Merryfield the pilot asked for a MATZ penetration of Merryfield. Initially, the PA28R pilot was told to expect approval in 10nm in order to make the MATZ crossing information more relevant and accurate for the Merryfield ADC. When the PA28 was 4nm NE of Merryfield a MATZ crossing was requested, N to S to pass 1nm E of Merryfield at 2000ft (999mb) and approved by Merryfield TOWER; this MATZ crossing approval was relayed to the PA28R pilot. With the PA28R at a range of between 1-2nm NE – maintaining about 1nm lateral clearance to the E of Merryfield an ac squawking A0203 – the Lynx – was observed about ½nm S of the PA28R's position, tracking NE. As it was known from the pre-note and APP controller's fps to be climbing to 2000ft, under a 'duty of care' he called this traffic to the PA28R pilot who reported visual with the traffic [at 1130:49 from the RT transcript]. Once the PA28R was clear of the MATZ Merryfield TOWER was informed. The PA28R pilot reported changing en-route when the aeroplane was about 5nm S of Merryfield A/D.

THE YEOVILTON APPROACH CONTROLLER (APP) reports he had no traffic under service, but was expecting an ac from TALKDOWN shortly to overshoot for a further approach, when he answered a call from the Merryfield ADC for a release on the Lynx. After checking the radar for conflicts he issued a standard VFR release from Merryfield - to depart on a heading of N climbing to 2000ft Merryfield QFE iaw Yeovilton Air Orders (YAvOs) Art 0304.5 - and to squawk A0203. There was an ac squawking A0242 [the PA28R] to the NE of Merryfield heading S at about 2300ft, but no confliction for the procedure. The Lynx pilot finally called him to the NNE of Merryfield at 2000ft heading 030°, complaining of close proximity with another ac, but the pilot did not report an Airprox to the Merryfield controller or APP at the time.

THE YEOVILTON RADAR SUPERVISOR (SUP) reports he was informed of this incident by the OIC Merryfield on the direct landline. He was advised that the Lynx pilot, on climb out for a radar pick up for GCA at Yeovilton had reported a 'close shave' with the civilian Merryfield MATZ crossing traffic that was passing 1nm E of Merryfield N – S at 2000ft. The PA28R MATZ crosser was shown on his radar display flying this profile. When the Lynx pilot initially called APP the helicopter was clear of the Merryfield MATZ. When he discussed the incident with the Lynx pilot about 15min after the incident he enquired whether the pilot was VFR on his climb out and questioned his departure on a NE track as opposed to the standard VFR release profile to the N, which the pilot replied would have

infringed the cct pattern at Merryfield. He then clarified that the Lynx pilot was declaring an Airprox as this had been mentioned whilst he was taxiing to dispersal.

UKAB Note (1): The UK AIP at ENR 2-2-2-3, promulgates the Merryfield ATZ as a circle radius 2½nm centred on RW09/27 extending to 2000ft above the A/D elevation of 146ft.

UKAB Note (2): The UK AIP at ENR 2-2-3-2, promulgates the non-standard Merryfield MATZ as a circle radius 3nm centred on RW09/27 extending to 3000ft above the A/D elevation of 146ft.

UKAB Note (3): The LAC System recording shows the Lynx departing from the vicinity of Merryfield on a NNE'ly track – NMC fitted – as the PA28R is shown approaching from the NNE level at 2500ft (1013mb) – about 2050ft Merryfield QFE (998mb). The two ac converge on a point 2¼nm NE of Merryfield at 1130:52, before passing port-to-port with 0.1nm horizontal separation evident.

YEOVILTON reports that in accordance with YAvOs 0304.5, aircraft departing Merryfield for radar pick up for PAR are to depart VFR. The flight is subject to a radar release from APP or SUP, which is then relayed to the pilot prior to him being given clearance to depart the Merryfield cct. Aircraft released 'standard VFR' are to carry out a normal VFR cct departure and, when clear of the Merryfield cct, fly heading 360°, climb to 2000ft Merryfield QFE and call APP on Channel 3. Pilots must maintain VMC until the ac has been identified and placed under an ATS by APP. Additionally, YAvOs specifically states at article 0304.4 that if a departure from Merryfield is required on a track between 030° and 150°, a clearance must be obtained from the SUP. The Lynx was released 'standard VFR', so APP was expecting the Lynx to depart Merryfield heading 360°. Radar releases to departing traffic are given to ensure the protection of IFR traffic flying outside of the Merryfield cct; this is especially prevalent when Yeovilton is operating on RW09RH. The Lynx called APP level at 2000ft heading 030°, which directly contravenes YAvOs.

UKAB Note (4): DSATCO YEOVILTON advises that following the Station's review of this Airprox the existing procedure was clarified in order to remove any potential for ambiguity. The applicable order within YAvOs relating to departures from Merryfield requiring a radar pickup for GCA was slightly reworded. However, in this case the Lynx pilot did not follow that procedure.

HQ NAVY COMMAND comments that the practice instrument departure procedure from Merryfield (a VFR only A/D) has been in YAvOs for many years and is used routinely. It is defined as being a VFR procedure and allows the helicopters to depart to the N for a radar pick-up by APP before being turned into the radar pattern for whichever runway is in use at Yeovilton. There are laid down procedures for the use of dual runways at Yeovilton when in certain configurations with practice IFR recoveries able to be conducted to RW22 when RW09 or RW27 are the duty RW. The pilot of an ac leaving Merryfield should be aware of what the duty runway is as this affects the VFR route configuration. However, the route configuration is not relevant when conducting a standard VFR departure for radar pickup, which is always to depart on a heading of 360°. The Merryfield ADC obtained the correct departure instructions and broadcast all of the relevant information, including the position and altitude of the MATZ crosser, this does not seem to have been assimilated by the Lynx pilot, who should not have departed on a heading of 030° and should have maintained VFR until identified by APP and placed under an ATS. The Lynx pilot contravened local orders for this departure profile causing him to fly his ac close enough to the MATZ crosser to cause himself concern; had he not done so the Airprox was unlikely to 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 and operating authorities.

It was evident to the Board that the PA28 pilot had requested a crossing of Merryfield MATZ in good time, which had subsequently been relayed by LARS and approved by the Merryfield ADC, who broadcast to A/D traffic, including the subject Lynx crew, that the PA28R would pass 1nm E of Merryfield at 2000ft. The Navy Command Member emphasised that the Lynx crew was in receipt of a BS as they departed Merryfield under VFR, not the PS that the reporting pilot had supposed. As this departure is a VFR procedure there was no intention to separate the two ac and it remained the Lynx pilot's responsibility, whilst departing from the vicinity of Merryfield A/D, to 'see and avoid' the PA28R. The Lynx pilot reports that he had heard the broadcast on the Merryfield TOWER frequency about the MATZ crosser and he was actively searching for it; however, he did not spot it until after he looked back out of the cockpit to clear the L turn onto N when he saw the PA28R 2-300m away just L of the nose at the same height. A pilot Member was critical of the QHI for cross-checking here when he was required to maintain the lookout; with the PF 'under the hood' and other traffic known to be passing to the E of the A/D, scanning out of the cockpit should have been his first priority. The Navy Command Member agreed with the Unit view that the Lynx crew should not have departed on a heading of 030° without approval, but should have been heading N whilst maintaining VFR until identified by APP and placed under an ATS. If they had done so the conflict would not have arisen because the Lynx would have been further to the W. The radar recording shows the PA28R maintaining a level cruise at about 2050ft QFE (998mb) on a course to pass more than 1nm E of Merryfield as it converged with the Lynx that was tracking about 030° and broadly head-on climbing to 2000ft QFE. At this virtually head-on aspect, with little crossing motion to draw attention to it, the white coloured PA28R would not have been easy to spot but the Lynx crew had been pre-warned about it and the PA28R was there to be seen by the safety pilot as the helicopter climbed up to the PA28R's notified height. However, the Lynx safety pilot did not see the PA28R until a very late stage, which resulted in him taking control from the PF that was 'under the hood' and effecting robust avoiding action at a point about 2nm NE of Merryfield. The avoiding action R turn by the Lynx is just detectable on the recording, as is an earlier slight R turn of no more than 10° by the PA28R at a range of about 0.9nm, before the two ac pass port-to-port about 0.1nm apart and broadly in accord with the separation reported by the Lynx pilot. The PA28R pilot, who also had a mutual responsibility to avoid the Lynx in this broadly head-on situation, stated in his written account that he recalled 'one Lynx low to his L' but no avoiding action was necessary. Evidently LARS had passed a warning to the PA28R pilot about the Lynx approaching from the S and the RT transcript reflects that the PA28R pilot reported visual with the helicopter, but it was not clear if it was the controller's warning that prompted the sighting or whether he had seen it beforehand at greater range and turned. Nevertheless, it was apparent that the Lynx crew did not follow promulgated Merryfield departure procedures and flew into conflict with the PA28R crossing the MATZ, which the Board agreed was the Cause of the Airprox. The Board also concluded, unanimously, that at these distances with the Lynx safety pilot unsighted until a late stage, the safety of the ac involved had been compromised.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Lynx crew did not follow promulgated Merryfield departure procedures and flew into conflict with the PA28R crossing the MATZ.

Degree of Risk: B

AIRPROX REPORT No 2011156

Date/Time: 30 Oct 2011 1306Z (Sunday)

Position: 5142N 00208W (O/H Aston Down G/S - elev 600ft)

Airspace: LFIR (Class: G)

Reporting Ac Reported Ac

Type: Ka13 Europa

Operator: Civ Club Civ Pte

Alt/FL: 1200ft↑ 2000ft
QFE QNH

Weather: VMC CLOC VMC CLOC

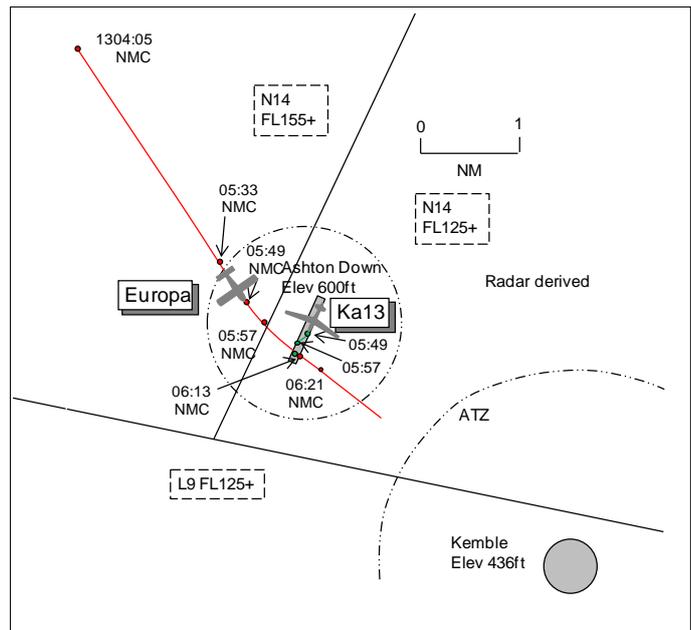
Visibility: >10km >20nm

Reported Separation:

200ft V 250ft V

Recorded Separation:

NR



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE KA13 PILOT reports flying in the rear seat of the glider on a winch launch flown by a trainee instructor at Aston Down; no radio was fitted. The visibility was >10km in VMC and the glider was coloured red/white with no lighting fitted. Heading 210° at 60kt and 1200ft agl as they reached the top of launch at the S end of RW21 pitched upwards at about 30°, he saw an ac 250-300m away approaching from their R and about 200ft below. The cable was released and as the nose of the glider was lowered he pointed out the ac to his pupil. The other ac, a Europa continued towards them and under-flew them by 200ft on a SE'yly track towards Kemble. The incident was observed from the launch point by personnel at the N end of the airfield and by the winch driver who saw that the Europa was O/H and a little N of the winch, well within the airfield perimeter. An instructor at the launch point telephoned Kemble who informed them of the ac's details. There was no risk of collision with his ac, as he was well above the Europa, but it had flown through an area where seconds earlier there had been a steel cable. If it had hit the cable the consequences would almost certainly have been catastrophic. The Gliding Club has permission to cable launch to 3600ft amsl and this is marked on the CAA chart.

THE EUROPA PILOT reports inbound to Kemble from Shobdon VFR and in receipt of a BS from Gloster Approach on 128.95Mhz squawking 7000 with Modes S and C. The visibility was >20nm in VMC and the ac was coloured white: no lighting was reported. Heading 130° at 2000ft QNH and 100kt O/H Aston Down he saw a glider 200yd ahead in a shallow turn to the R and he flew underneath it by 250ft with no need to take avoiding action as there was adequate vertical separation. He acknowledged that he should have diverted around Aston Down, but he was off-track and failed to do so and he assessed the risk as low.

ATSI reports that there was no RT media available from Kemble. The unit was contacted and there was a note of the incident in their log and the FISO had no recollection of any event. As the CA1094 from the Europa pilot was received 3 months after the incident, the Gloucestershire RT recording media had been put back into service so no ATSI investigation was possible.

UKAB Note (1): The UK AIP at ENR 5-5-1-3 promulgates Aston Down as a Glider Launching Site centred on 514228N 0020750W where aero-tows take place and winch/ground tows may be encountered up to 3000ft agl between sunrise and sunset; site elevation 600ft amsl.

UKAB Note (2): The Clee Hill radar recording does not capture the CPA. At 1304:05 a 7000 squawk is seen, believed to be the Europa, 3.7nm NW of Aston Down tracking 145° and showing NMC. The Europa continues on a steady track and by 1305:33 is 1.1nm NW of Aston Down. Sixteen seconds later at 1305:49, when the Europa is 0.6nm WNW of the glider site, a primary return pops-up, believed to be the Ka13 glider, in its 11 o'clock range 0.7nm. The next sweep 8sec later at 1305:57 shows the separation reducing 0.4nm with the Ka13 tracking 220°. The KA13 then fades from radar as the Europa is seen to pass close to the upwind end of the Aston Down RW21 turning L to track 130° towards Kemble. On the next sweep at 1306:21 a pop-up primary return re-appears in the Europa's 6 o'clock range 0.3nm as the Europa clears to the SE.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

This Airprox highlights clearly the dangers associated with flying O/H a glider site when winch launches are taking place. The airspace hazard is clearly marked on the 1:250,000 and 1:500,000 topographical charts and due regard should be taken by pilots of ac transiting through the area of active glider sites by giving them a wide berth. On this occasion, the Europa pilot was off-track and flew through the Aston Down O/H whilst a glider was on the winch wire approaching the top of the launch. Fortunately the Ka13 pilot saw the approaching Europa to his R and was able to release the cable before the Europa underflew his glider, both pilots reporting similar separation distances. However the concern to Members was the close call that the Europa pilot had of impacting the winch cable, which would have been catastrophic. Members considered whether the launch party had discharged their responsibilities by clearing the airspace into which they were launching. An experienced Member opined that at the Europa's speed it was borderline whether it could have been detected by the ground party ahead of commencing the launch. Also there are hangars to the N of Aston Down which would have delayed visual acquisition of an approaching ac until a later stage than ideal. By flying over Aston Down the Europa pilot had placed his ac into conflict with the winch wire and the Ka13 which had caused the Airprox. Fortunately the Ka13 pilot saw the Europa in enough time to release the cable before the ac crossed however the Board were clear that safety had been compromised during this encounter.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Europa pilot flew O/H a promulgated and active glider site below the maximum height of the winch cable while gliding was taking place.

Degree of Risk: B.

AIRPROX REPORT No 2011158

Date/Time: 19 Nov 2011 1330Z (Saturday)

Position: 5050N 00017W (0.4nm
E of Shoreham Airport -
elev 7ft)

Airspace: Shoreham ATZ (Class: G)

Reporting Ac Reported Ac

Type: Diamond DA40 TB20

Operator: Civ Pte Civ Pte

Alt/FL: 2000ft 1800ft↓
QFE (1015hPa) QFE (1015hPa)

Weather: VMC CAVOK VMC CAVOK

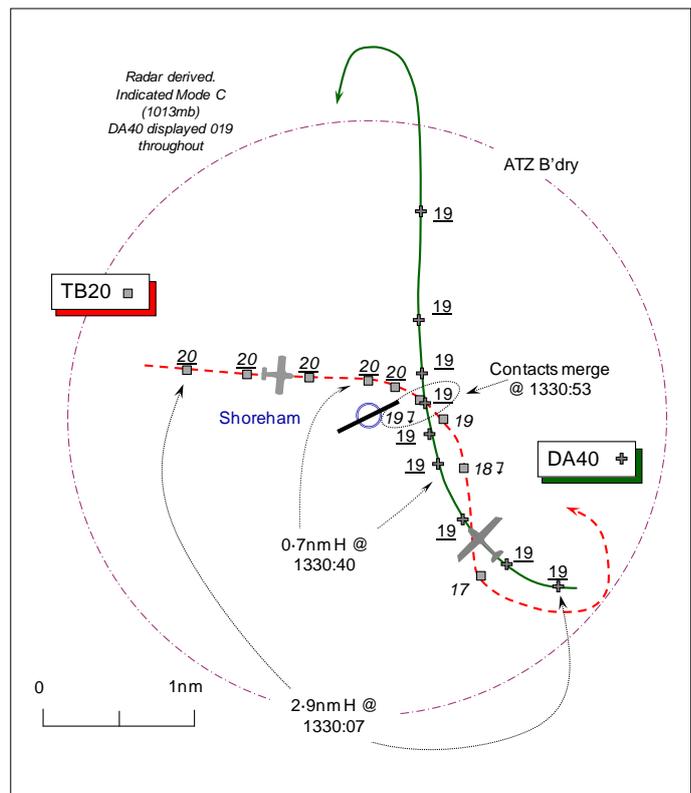
Visibility: >10km >10km

Reported Separation:

Nil V/20ft H 'Very close'

Recorded Separation:

Contacts merged



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE DIAMOND DA40 PILOT reports he was returning to Shoreham A/D under VFR following a local flight and was in receipt of an Approach Control Service from Shoreham APP/TWR on 123.150MHz. A squawk of A7000 was selected with Mode C on and elementary Mode S is fitted. The ac has a blue and white colour-scheme; the ac's lighting state was not reported.

Shoreham APP 'cleared' him for an overhead join to RW07 so he proceeded along the coast and turned onto a heading of 340° to position himself above the RW25 'numbers' at 120kt. Approaching the A/D overhead at 2000ft (1016hPa) a low-wing single engine aeroplane - the TB20 - was first sighted in the left third of his windshield; he estimated that the TB20 was about 50-70ft away at this point, at the same height, flying straight and level directly towards him. To avoid the TB20 he initiated a steep turn to the R. The TB20 pilot made no attempt to alter his heading and passed 20ft away to port at the same height with a 'high' Risk of collision.

Having then flown around and over the RW07 'numbers', the TB20 was sighted again off his left wingtip. He can only assume that TB20 was performing a right hand cct overhead join against the flow of the normal traffic [variable ccts are notified at 1100ft]. The incident was reported to ATC on the RT and he subsequently landed his aeroplane.

THE TRINIDAD TB20 PILOT reports he was inbound to Shoreham from Denham under VFR and had telephoned Shoreham before leaving Denham to obtain the weather as well as to book his arrival. After he was informed that Shoreham were using the grass RW07, he asked if it would be possible to land on the hard surface RW02 if the wind permitted, to which the answer was 'yes'.

Inbound to Shoreham, just to the E of Goodwood, he changed radio frequency to Shoreham APP/TWR on 123.150MHz and realised that they were very busy so by the time they spoke to ATC they were 7nm away. The controller, who clearly still remembered their request to land on the hard runway, suggested they should position themselves on a RH base leg for RW20. However, realising how busy it was he declined the offer and instead replied that he would join the normal flow of traffic and land on RW07 as well. He reported his position as 7nm W of the aerodrome at 2000ft QNH (1016hPa). The controller instructed them to report overhead at 2000ft. When overhead the A/D at

2000ft, they reported their position and were instructed to descend on the dead-side. He turned R from a heading of 095° onto 160° toward the dead-side and commenced a descent at 120kt. Passing about 1800ft QNH in a descending R turn he saw another aeroplane pass very close to port in what appeared to be a banked turn to the R - it all happened so quickly that neither he nor his passenger was able to identify the ac type. Within a very short time they felt the 'bump effect' of the slipstream generated by the other aeroplane as they continued descending to position themselves onto the crosswind leg. At this stage the pilot of the other aeroplane reported an Airprox with a green Cessna. They responded by confirming that it was their TB20 and also confirmed they had come very close to each other. Nothing else was said on the RT and they continued in the cct to land on the grass RW07. He did not specify the minimum separation but assessed the Risk as 'high'.

His aeroplane has a green over white colour-scheme and the 'strokes' were on. A squawk of A7000 was selected with Mode C on and elementary Mode S is fitted; the ac's identity was not apparent on the radar recording.

THE SHOREHAM COMBINED AERODROME & APPROACH CONTROLLER (ADC) reports that the TB20 pilot had 'booked-in' by phone and requested to use the hard surface RW02. When the TB20 pilot called he was instructed to route to Steyning [3nm NNW of the A/D] for a R base RW20; after reporting at Steyning the TB20 pilot was instructed to hold. Following a delay, the TB20 pilot advised that he could accept RW07, therefore, he was instructed to report overhead at 2000ft. When he did so, the TB20 was instructed to descend deadside. The DA40 then reported overhead and an Airmiss (sic) with a green Cessna at 1331 UTC. No Cessna was known to be routing through the A/D overhead and initially, he believed it to be a 'rogue' ac. The DA40 pilot said the other ac missed him by 50ft laterally, whereupon, the TB20 pilot called advising that his ac was the reported ac and, '...turning R descending deadside'. All turns are supposed to be LH.

ATSI reports that the Airprox occurred at 1330:53 UTC, 0.3nm ENE of the Shoreham Aerodrome Reference Point (ARP), within Class G airspace and inside the Shoreham ATZ, which consists of a circle, radius 2nm, centred on RW02/20, extending to 2000ft above the aerodrome elevation of 7ft.

The Trinidad TB20 (TB20) was on a VFR flight inbound to Shoreham from Denham. The TB20 pilot had previously telephoned Shoreham ATC to request the use of a hard runway into wind.

The Shoreham controller was operating a combined Aerodrome and Approach control position, without the aid of surveillance equipment. The ATIS frequency was promulgated out of service.

The controller considered workload levels as medium. The Shoreham controller had been operational for 1hr 31mins prior to the incident and had been on duty since 0900 UTC. The ATC watch pattern for this Saturday provided one early shift controller, starting at 0900 UTC and one late shift controller commencing duty at 1100 UTC, with an air traffic assistant in support. The two controllers shared the operational shifts rotating to provide relief breaks for each other and for the air traffic control assistant.

RW07 was in use with a LH traffic pattern. ATSI considered the workload and RT levels just prior to the Airprox as 'high'.

The UK AIP page AD 2-EGKA-1-7 (29 Jul 10), paragraph 6, states:

- c) Circuit heights are 1100ft aal for all runways.
- d) Variable circuits at discretion of ATC.
- e) Unless otherwise instructed aircraft joining the circuit will overfly the aerodrome maintaining 2000ft aal, until instructed to descend to circuit height on the inactive (dead) side of the runway in use and join the circuit by crossing the upwind end. Pilots should note that there would frequently be helicopters operating both 'liveside' and 'deadside' in the ATZ up to 600ft.

ATSI had access to radar recordings, provided by NATS Swanwick, together with written reports from the pilots, controller and controller interview. In order to reflect the high workload, the narrative includes a description of each ac position and RT calls.

The Shoreham 1320Z METAR: 120012KT 9000 NSC 13/11 Q1016=

At 1319:50, ATSI assessed traffic levels as medium, with a Chipmunk in the cct followed by a PA28 (1) downwind and PA28 (2). A PA28 (3) was inbound from the E to join overhead. A Stampe pilot called inbound abeam Worthing pier and the controller instructed the Stampe pilot to join overhead at 2000ft, QFE (1015hPa), RW07. The Stampe pilot was given traffic information on PA28 (3) inbound from the E joining overhead.

Traffic levels began to increase. A departure was cleared for take off and a second departure was lined up on RW07. The pilot of a previous outbound ac reported changing frequency to Goodwood.

The pilot of PA28 (3) reported overhead at 2000ft and the controller instructed the him to descend to 1600ft and report downwind, with TI on the departure climbing towards the coast at not above cct height (1100ft). The second departure was given take off clearance and was also passed TI on PA28 (3) descending on the deadside to 1600ft.

A C172 pilot contacted Shoreham Approach reporting at Bognor Regis, requesting a downwind join for RW07. The controller instructed the C172 to report at Worthing pier for a straight-in approach to RW07, not below 1600ft QFE (1015mb).

The Chipmunk and PA28 (1) were on base leg and PA28 (2), now turning downwind, was instructed to report final No 3. PA28 (2) reported contact with the two ahead.

At 1322:52, the pilot of PA28 (4), positioned 3nm NE of the A/D, called for joining instructions. The PA28 (4) pilot was instructed to report overhead for RW07 and was passed TI regarding a Stampe biplane routeing to the overhead. An outbound called changing to Farnborough.

At 1323:32, the Chipmunk was cleared for a touch and go. The pilots of two ac on the apron called for information and taxi, one of which was a PA28 (5), with a student pilot. Student pilot PA28 (5) was cleared to taxi to the holding point 'Alpha 1' via the 'Alpha Taxiway' for RW07 with QNH (1016hPa). The Stampe pilot called overhead and was cleared to descend on the deadside. The pilot of PA28 (1) was cleared to continue approach and shortly afterwards was given landing clearance. The pilot of PA28 (2) on final was instructed to continue and shortly afterwards cleared to land. A previous departure along the coast was advised no further restriction and cleared to climb with traffic information on the C172 inbound and then transferred to Goodwood.

At 1325:10, the DA40 pilot called Shoreham Approach, "[DA40 C/S] *approaching Brighton Marina 2 thousand 3 hundred feet..request rejoining instructions please.*" The controller replied, "[DA40 C/S] *report point of departure person on board.*" The pilot responded, "*..departed Shoreham 3 P O B.*" The controller transmitted, "[DA40 C/S] *roger overhead join 2 thousand feet 0-7 Q-F-E 1-0-1-5 Cherokee [PA28 (4)] to the northeast of Shoreham inbound to the overhead.*" The DA40 pilot acknowledged, "*Overhead join Q-F-E 1-0-1-5 ..looking for traffic [DA40 C/S]*".

At 1325:56, the student pilot of PA28 (5) was instructed, "[PA28 (5) C/S] *taxi ahead cross [RW] 0-2 to the holding point 0-7.*" The student pilot's readback was not complete; "[PA28 (5) C/S] *..cross..Runway to 0-7 [PA28 (5) C/S]*". The incomplete readback omitted the words "*holding point*", which was not corrected by the controller.

At 1326:10, another DA40 pilot – DA40 (B) - called inbound from Brighton at 2200ft and was instructed to join downwind lefthand for RW07. No TI was provided. The pilot of PA28 (2), was instructed to vacate the runway after landing and the Chipmunk pilot, now downwind, was cleared to final No 2 following PA28 (3) on base-leg. An ac on the Apron was cleared to taxi.

At 1327:23, the TB20 pilot established two-way contact with Shoreham Approach and reported, “..6 miles to the west at 2 thousand feet..joining instructions please.” The controller responded, “[TB20 C/S]..route towards Steyning which is to the north of the airfield and expect a right base join..right base join Runway 2-0 Q F E 1-0-1-5 but report at Steyning.” The TB20 pilot replied, “..yeah we can take 0-7 actually to fit in with the rest.” The controller cleared the pilot of PA28 (3) to land and then responded to the TB20 pilot, “[TB20 C/S]..roger in that case..report overhead 2 thousand feet 0-7 Q-F-E 1-0-1-5”. This was acknowledged by the TB20 pilot, “..on the Q-F-E 1-0-1-5 report overhead at 2 thousand feet [TB20 C/S]”. No TI was passed regarding cct activity or the DA40 joining overhead from the E, neither was the TB20 updated regarding the second DA40 – DA40 (B) - inbound from the E. An ac on the Apron was then cleared to taxi.

The controller was unable to explain why he had not passed TI to the DA40 or TB20 pilots about each others ac. The controller considered his workload at that point to be medium and remembered passing TI to the DA40 pilot regarding PA28 (4), which was approaching the overhead from the N. The controller indicated that the TB20 pilot had telephoned ATC earlier in the day, requesting a hard runway on arrival. When the TB20 pilot called, the controller initially routed the ac to hold at Steyning and considered at that point, that there was no pertinent TI to pass. However the TB20 pilot confirmed that he would accept RW07 to, “*fit in with the rest*”. The controller indicated that he had then given the pilot of PA28 (3) a landing clearance before instructing the TB20 pilot to join overhead. The controller forgot to pass pertinent TI to both the TB20 and DA40 pilots regarding each other, which he recognised was a lapse.

The UK AIP at AD-2-EGKA-1-7 states, ‘Variable circuits at discretion of ATC’. The controller was asked if the TB20 pilot should have been advised, on first contact, that the cct pattern was LH, or whether he had expected that pilots should expect a LH cct unless instructed otherwise. The controller indicated that pilots are often advised of the cct direction but thought that the TB20 had been advised that RW07 LH cct was in use during the earlier telephone conversation.

At 1328:26, a transmission from an ac at the holding point drew the controller’s attention to PA28 (5), which had lined up on RW07 and the controller instructed PA28 (3), on final approach, to go around and then asked the student pilot of PA28 (5), “..why are you on the Runway?” The student pilot of PA28 (5) responded, “..I heard..your instructions to line up..or I mistake.” It was noted that the controller used non-standard phraseology, advising the student pilot of the mistake. The controller initially instructed the pilot to vacate but then amended the instruction and gave clearance to take off. [The controller reported this as a Runway Incursion (MOR201114434), which has been investigated by the CAA.]

The pilot of PA28 (4) reported overhead and was cleared to descend on the deadside. The pilot of DA40 (B) reported at the tunnels [2nm NE of the A/D] and was instructed to report downwind. The Chipmunk pilot reported L base visual with the Stampe which was turning final and cleared to land. An ac was instructed to cross RW02 to holding point ALPHA 1 for RW07. A C152 pilot then called inbound from the NE requesting RW13. The C152 pilot was instructed to route to Steyning and to expect L base RW13. The C172 pilot reported at Worthing Pier and was instructed to maintain 1600ft for a straight-in approach.

At 1330:32, the TB20 pilot reported, “overhead now sir.” The controller instructed the pilot, “[TB20 C/S] descend deadside and report downwind 07 lefthand at circuit height 11 hundred feet.” The pilot acknowledged, “er ..descend deadside and say..circuit height again please” and the controller replied, “1 thousand 1 hundred feet,” which the pilot acknowledged.

[At 1330:40, radar recordings show the TB20, just N of the A/D tracking E and indicating 2000ft (1013hPa), with the DA40 approaching from the SE, tracking NW, indicating 1900ft (1013hPa), in the TB20’s 2 o’clock position at a range of 0.7nm.]

At 1330:48 the DA40 pilot reported, “..overhead w-er 2 thousand feet.” The Stampe had landed and its pilot was instructed to vacate R. The controller then replied to the DA40 pilot, “[DA40 C/S] hold overhead I’ll call you for descent in about another 2 minutes.”

[At 1330:53, radar recordings show the two ac 0.3nm NE of the A/D with both ac indicating 1900ft (1013hPa) - about 1990ft Shoreham QNH (1016hPa). The contacts of the two ac merge in azimuth. The DA40 was steadying on a N'y heading as the TB20 was crossing from L - R in a R turn through SE.]

At 1331:02, the DA40 pilot reported, "[DA40 C/S] *near miss.*"

There were two broken transmissions and then the Chipmunk was cleared to land. The pilot of PA28 (3) which had gone around because of the runway incursion reported downwind and was cleared to final No 3 following PA28 (4) and the C172 making a straight-in approach. The C172 pilot was instructed to continue No 2.

There were then two other crossed transmissions, "*.....hundred feet.*" and "*.....near miss in the overhead.*"

At 1331:35, the DA40 pilot reported "*????? ???? ???? near miss in the overhead.*"

The controller responded to the broken transmission, "[DA40 (B)] *if that's you d- er passing the tunnels report downwind at 16 hundred feet.*" The pilot of DA40 (B) reported downwind and was instructed to be No 4 following PA28 (3) ahead.

The pilot of PA28 (3) then called downwind and became No 4 following DA40 (B). The C172 reported at 1 mile and was instructed to continue. The pilot of another ac called and the controller then gave the C172 pilot landing clearance.

At 1332:34, there was an exchange of RT communication between the DA40 pilot and the controller:

DA40 ???? ???? ???? ???? descend deadside.

ATC [DA40 C/S] now descend deadside and report downwind.

DA40 Report downwind er we'd like to report a near miss in the overhead a green cessna.

ATC With a green cessna.

DA40 Yeah crossing I I was crossing overhead and he was coming directly towards me.

ATC I don't know of any green Cessna on my frequency or a Cessna going through the overhead that's unknown to me T- what level was he.

DA40 Er he was two thousand feet er on the sa-er on the opposing heading to me erm probably missed by about 50 feet if that.

ATC Is that vertically or laterally.

DA40 Lateral.

ATC Roger.

DA40 I have the green Cessna on my lefthand side now erm.

At 1333:31, the TB20 pilot responded, "*..that was [TB20 C/S]..yeah we..we're turning right to descend on the deadside and..we got very close.*"

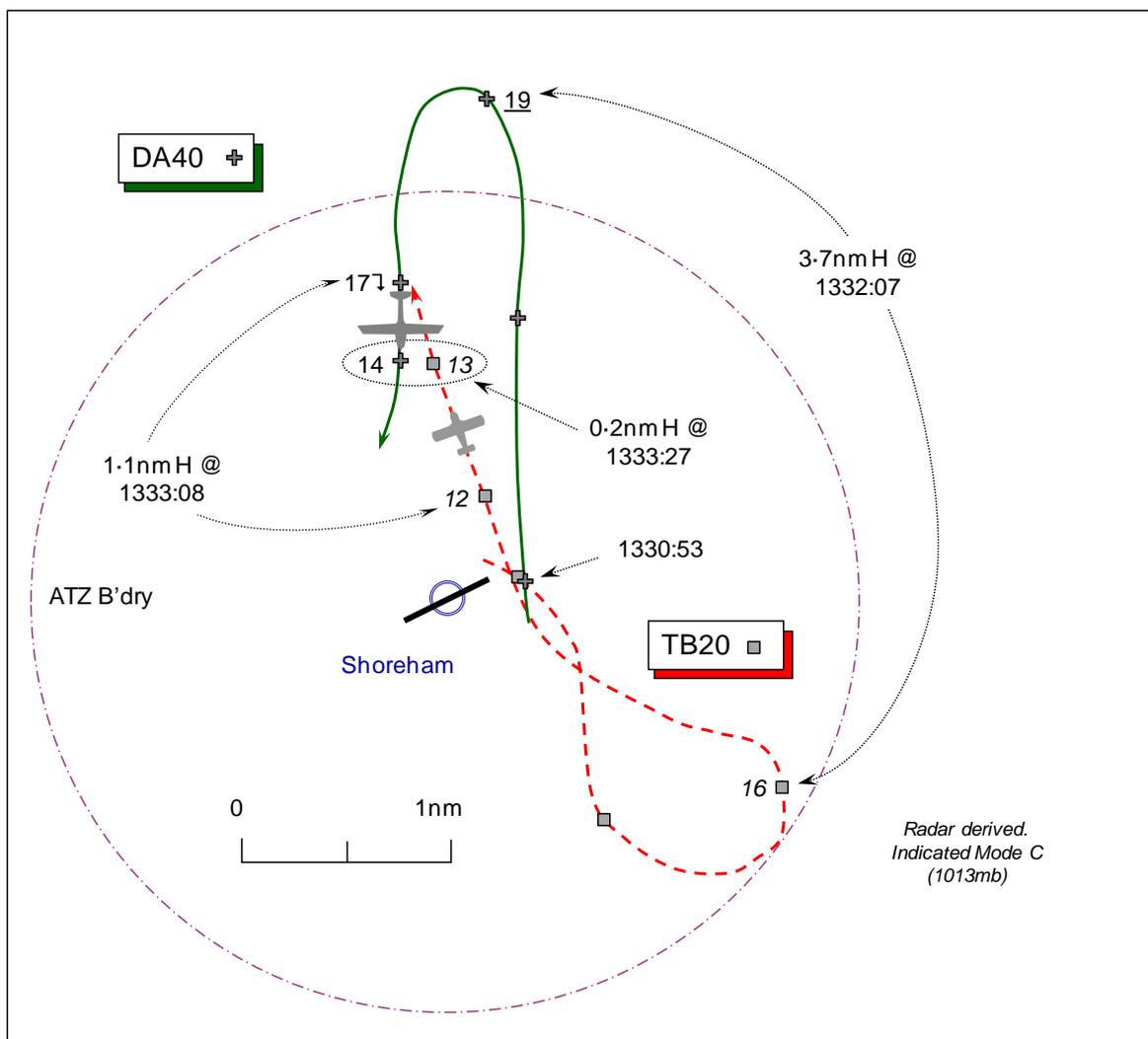


Fig 2

[UKAB Note (2): After the Airprox had occurred at 1330:53, both ac opened from the A/D overhead as illustrated at Fig 2. The two ac then turn toward the A/D and converge on broadly reciprocal headings to a range of 1.1nm at 1333:08; the TB20 indicating level at 1200ft Mode C as the DA40 descends through 1700ft Mode C. The two ac pass for the second time - port-to-port - about 1.1nm N of the A/D, the TB20 indicating 1300ft, 100ft below the DA40 that is shown descending through 1400ft Mode C.]

The controller then transmitted to an outbound ac on the Apron. The pilot of PA28 (3) called final and was instructed to continue. Another station was asked to say again. The C152 pilot reported at Steyning and was instructed to hold for a while.

At 1334:25, there was a broken transmission followed by the TB20 reporting downwind. The controller instructed the TB20 pilot, "number 4 following a Cherokee out on base leg report final". The pilot replied, "er number 2 and report final [TB20 C/S]". The controller responded, "Number 4." PA28(3) then called final and was given a land after following the C172.

The controller indicated that it was not possible to obtain a relief immediately after the incident and he continued working operationally until the normal changeover.

Shoreham MATS Pt 2, Section 10, Chapter 1, Page 1, states:

'3. Combined (Bandboxed) Operations

3.1 Although it is desirable to operate two sectors (ADC and APP) it is not always possible due to availability of staff. It is possible to operate combined during the first and last two hours of the operational day when traffic levels are usually lowest.

3.2 The combined operation uses the callsign 'Shoreham Approach' or, if the ATCO is not APP rated, 'Shoreham Tower' on frequency 123.15 MHz unless otherwise NOTAMed.

3.3 The frequencies 123.15 and 125.4 are only usually cross-coupled when the operation is being changed from two sector to combined until all aircraft are using 123.15.'

After a previous Airprox on 24 September 2011 [Airprox 2011126], the ATSU considered that workload was a factor and issued a MATS Pt2, Supplementary Instruction 01/2011, which stated:

'This SI is to be read in conjunction with Shoreham MATS 2 and serves to remind all ATS staff of the need to regulate traffic as necessary in order to avoid a traffic overload situation. This may mean for example:

Saying no to circuits or landing circuit traffic.

No to IFR training traffic.

Holding traffic outside the ATZ, asking them to call in 10 minutes, etc.

Limiting the use of runways to ONE only and advising aircraft requesting other runways of the delay or unavailability of the runway at that time as per MATS 1.

Limiting helicopter training if this impacts in a negative way

Reducing the traffic as you need to subject to your experience levels, the weather, events etc.

The traffic situation at Shoreham is highly dynamic and the complexity depends on numerous factors such as weather, the number of students involved, the mix of slow and fast traffic, etc. As such it is not appropriate to lay down a fixed number of aircraft to be worked at any one time. ATCOs and ATSAs should use their judgement, taking into consideration both present and future situations as far as practicable.'

The controller indicated that traffic levels started as light, increasing to medium but did not consider that it was necessary to introduce traffic management measures. However, the controller admitted that RT recordings showed that traffic levels prior to the Airprox gradually increased and resulted in a 'high' workload. The controller was operating a combined Aerodrome and Approach position and was unable to split the position because no staff were available.

The controller was unable to explain why he had not passed TI to either ac. When questioned about the content and method of passing TI, the controller indicated that he always passed pertinent traffic and local pilots had often complained when given too much TI. The controller was asked if he had considered the heavy RT loading to be a factor for the absence of TI. The controller indicated that it may have been, but thought at the time that the TB20 had routed towards Steyning and was approaching from the N. The controller recognised that whichever direction the TB20 was approaching from, TI should have been passed. The controller was asked about the use of non-standard RT phraseology and confirmed that standard RT phraseology should always be used.

The controller had cleared both the TB20 and DA40 to join overhead, but did not pass TI to either pilot about each other, or regarding the cct pattern. The Manual of Air Traffic Services (MATS) Part 1, Section 2, Chapter 1, paragraph 2.1, states:

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

a) aircraft flying in, and in the vicinity of, the ATZ;

b) aircraft taking-off and landing.'

MATS Pt 1 Section 3, Section 1, paragraphs 8.1 and 8.3, require that:

'Approach control shall retain all arriving VFR flights under its jurisdiction until appropriate traffic information on IFR flights and other VFR flights has been issued and co-ordination effected with Aerodrome control.'

Approach control must ensure that VFR flights are transferred in sufficient time for Aerodrome control to pass additional information in respect of local traffic.'

Additionally MATS Part 1, Section 2, Chapter 1, paragraph 2.1, states:

'Clearance to enter a traffic circuit is issued when an aircraft is still some distance from the aerodrome to enable the pilot to conform with the traffic circuit, pending clearance to land. Information concerning landing direction or runway in use and any other necessary instructions are given at the same time so that the pilot may intelligently position himself in the traffic pattern.'

The DA40 pilot's written report indicated that the DA40 was heading 340° to position above the RW25 numbers to join overhead for the LH traffic pattern. The TB20 approached the airfield from the W and passed N of the airfield, then turned R towards the deadside against the flow of traffic. It is not clear why the TB20 did not arrange to cross to the SW of the A/D into a LH circular flow. The controller believed that the TB20 pilot had been briefed on the telephone earlier that RW07 with a LH cct was in use at Shoreham.

The controller was an experienced Shoreham controller and believed he was accustomed to handling such levels of traffic. The controller believed that traffic levels were medium. The high workload was a significant factor as indicated by: the number of movements; the high level of RT; crossed or broken transmissions; the controller's use of 'break' in continuous transmissions; and the minimal level of TI. The controller was operating a combined position and the ATIS was out of service. An excessive workload can result in a situation when an overworked controller may: have difficulty in maintaining situational awareness; overlook a developing unsafe situation; make errors of judgement; become confused or be unable to cope with a sudden increase in workload. Although the controller considered traffic levels were medium, ATSI considered that the workload had reached an excessive level to the point where the safety of ac under his control was, or could have been, compromised. The traffic levels at Shoreham are affected by weather, seasonal factors, weekends, training and instrument training requirements, runway in use and helicopter operations. Forward planning is essential in identifying busy periods and determining the optimum traffic management measures, rather than reacting to circumstances, when it may be too late.

Notwithstanding the fact that the controller did not pass TI, both pilots were aware that the cct was busy. It is not clear why the pilots involved did not see each other's ac. CAA Safety Sense Leaflet 13a (June 2005), which is based on the ICAO Circular 213-AN 130, states:

'See-and-avoid' is recognised as the main method that a pilot uses to minimise the risk of collision when flying in visual meteorological conditions. 'See-and-avoid' is directly linked with a pilot's skill at looking.'

The Rules of the Air Regulations (2007), Section 4, General Flight Rules, states:

'Avoiding aerial collisions

Rule 8 (1) Notwithstanding that a flight is being made with air traffic control clearance it shall remain the duty of the commander of an aircraft to take all possible measures to ensure that his aircraft does not collide with any other aircraft.

Converging

Rule 9 (3).....when two aircraft are converging in the air at approximately the same altitude, the aircraft which has the other on its right shall give way.'

The controller was responsible for issuing information and instructions to ac under his control to achieve a safe, orderly and expeditious flow of air traffic and to assist pilots in preventing collisions between ac flying in, and in the vicinity of, the ATZ. The DA40 and TB20 pilots were instructed to join overhead the airfield at 2000ft, but the controller did not provide TI that would have aided the situational awareness of each pilot, thereby assisting them in acquiring an earlier visual sighting of each other's ac.

The following were considered to be contributory factors:

The controller was not aware and did not recognise that traffic levels were increasing to the point when traffic management measures were appropriate.

The passing of minimal TI was not sufficient in general terms, to aid the situational awareness of pilots in, or joining the cct.

The two ac approached the overhead with the DA40 positioning to join a LH traffic pattern, but the TB20 turned R against the flow of traffic.

Notwithstanding the absence of TI, the two pilots did not obtain a visual sighting of each other's ac until they were in close proximity.

ATSI Recommendations

It is recommended that the ATSU in consultation with SRG, review the levels of staffing and service provision, to ensure that Aerodrome and Approach control services can be provided from split positions when warranted.

It is recommended that the ATSU in consultation with SRG, ensure that the controller is suitably apprised of the issues raised by this Airprox.

It is recommended that the ATSU review the guidance for operational staff in predicting, managing and limiting traffic levels, with an emphasis on the human factors aspects of overloads, highlighting the need for early planning and preventative measures.

It is recommended that the ATSU remind controllers of the requirement to pass TI to arriving flights on initial contact regarding the general traffic situation, runway in use, cct direction and joining instructions, together with the number of ac in the cct. This should then be updated as ac approach the airfield in order to provide additional TI in respect of local traffic.

It is recommended that the ATSU remind controllers regarding the importance of ensuring that incomplete readbacks are corrected and that they use correct and precise standard phraseology in accordance with MATS Pt1, Appendix E, Page 2, Paragraph 1.1, which states:

'Radiotelephony provides the means by which pilots and ground personnel communicate with each other. Used properly, the information and instructions transmitted are of vital importance in assisting in the safe and expeditious operation of aircraft. However, the use of non-standard procedures and phraseology can cause misunderstanding. Incidents and accidents have occurred in which a contributing factor has been the misunderstanding caused by the use of non-standard phraseology. The importance of using correct and precise standard phraseology cannot be over-emphasised.'

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The ATSI report had reveals the extreme amount of traffic that the combined Shoreham ADC/APP controller was dealing with during the period leading up to this Airprox. It was apparent that his workload had increased markedly to an excessive level over the period immediately before the Airprox occurred and the Board agreed that the controller was indeed overloaded, although he had not recognised this himself at the time. The Board discussed the SI issued by the Unit following Airprox 2011126, which laid out various traffic management measures that could have been implemented to reduce the traffic flow to more manageable proportions, and it was unfortunate that the controller had not recognised beforehand that such action was indeed warranted. Controller Members understood that once traffic had reached an excessive level it was a very difficult situation to resolve alone and it was clear there was no additional controller available to assist him at this stage. It seemed to some Members that there were not enough controllers on watch at Shoreham to meet the requirements of the two operating positions of ADC and APP when it got very busy. In the Board's view, this excessively busy and complex traffic scenario had a direct impact on the controller's ability to perform his primary duties as the ADC. Here, the controller was responsible for issuing information and instructions to achieve a safe, orderly and expeditious flow of A/D traffic. After first instructing the DA40 pilot approaching from the E to join overhead the airfield at 2000ft and just over one minute later instructing the TB20 pilot from the W to also join overhead, the controller did not provide TI to either pilot about the other ac. This he was required to do, and it would have warned the pilots to look out for each other as they flew into the A/D overhead from opposite directions to join the pattern for RW07. Thus neither the TB20 pilot nor the DA40 had been provided with any TI to forewarn them to look out for the other ac, or indeed about other cct traffic. The Board agreed that the lack of TI to either pilot from the overloaded controller was the first part of the Cause.

Whilst operating on the same frequency, only the DA40 pilot could potentially have gleaned any indication from the RT alone that another ac was joining overhead at the same height when the TB20 pilot called joining about 2min afterwards. Conversely, the DA40 pilot had made no further transmissions until after the TB20 pilot reported overhead and was instructed by the controller to *"..descend deadside and report downwind 07 lefthand..."*, which the pilot acknowledged. About 16sec later the DA40 pilot gave the same report *"..overhead w-er 2 thousand feet"* and was instructed by the ADC to *"..hold overhead I'll call you for descent in about another 2 minutes."* These transmissions would have been the first indication to the TB20 pilot of any other ac in the immediate vicinity at his height but, possibly as a result of the rapidity and quantity of RT, it appeared that the other pilot's call had not registered with him. However, for the same reason it would have also made it difficult for the DA40 pilot to anticipate the appearance of the TB20 until he suddenly saw it flying directly towards him just left of the nose about 50-70ft away at the same height having turned R in the overhead. Members agreed that the TB20 did not arrange his join in the overhead well for the specified LH cct to RW07. By overflying the upwind end of the runway in a SE direction he was flying against the flow of ac positioning for an overhead join to RW07 LH. Members considered that he should either have arrived overhead the RW07 threshold ready to commence a LH descending turn on the deadside or offset the join further S allowing a L turn over the A/D. The Board agreed that the second part of the Cause was that the TB20 pilot did not position appropriately to join RW07 LH.

With this level of traffic, the ADC had not spotted the TB20 overhead turning R and was unable to intervene before the conflict with the DA40 occurred. However, in the prevailing good weather in this 'see and avoid' environment both pilots should have been looking out for other ac. Without the benefit of prior warning, when the DA40 pilot first saw the TB20 he initiated a steep avoiding turn to the R as the TB20 passed 20ft away to port at the same height. Even so, it was difficult to determine if this had any appreciable affect on the eventual separation. Due to the limitations of the radar data update rate and the very close quarters geometry, the recording does not replicate the DA40 pilot's avoiding action turn, but it does reflect that both ac contacts merged at the same indicated level, confirming both pilots' reports that vertical and horizontal separation was minimal. Also unaware that

another ac was approaching the overhead, by the time the TB20 pilot saw the DA40 pass 'very close' to port, it was too late to take any avoiding action. In the Board's view, neither pilot had seen the other's ac in time to take to action that might affect the outcome and Members agreed the final part of the Cause was effectively, non-sightings by both pilots. Moreover, this was a very close quarters encounter indeed and with little further debate Members agreed unanimously that an actual Risk of collision had existed in these circumstances.

Following their assessment of this incident, the Board discussed the series of Airprox that had occurred at Shoreham recently. The ATSI Advisor briefed Members on the recommendations made to address the staffing levels at Shoreham and that ATC manning is being closely monitored by CAA SRG, especially the Unit's capacity to split the combined ADC/APP positions when appropriate. Also central to the Members' concerns was the intensity and the complexity of the traffic scenarios revealed by the investigation of these Airprox; specifically the size of the A/D pattern with variable ccts L and R, coupled with the diversity of joins flown by pilots at Shoreham and all set against a background of flying training with a great diversity of experience amongst the GA pilots who operate at this busy A/D. Whilst Members were keen to translate their concern into action, to ensure that the Board was informed of action already in hand the SRG Standards and Policy Advisor undertook to brief the Chairman on the current status of work undertaken by ATSD Southern Region relating to Shoreham. Pilot Members were also concerned, in general terms, at the manner in which visual ccts were being flown at other GA A/Ds as revealed by recent Airprox. With a view to engendering better flying practice, the GA pilot Member also undertook to publish some advice about cct flying in popular GA magazines.

PART C: ASSESSMENT OF CAUSE AND RISK

- Cause:
1. The overloaded controller did not pass TI to either pilot.
 2. The TB20 pilot did not position appropriately to join RW07 LH.
 3. Effectively, non-sightings by both pilots.

Degree of Risk: A.