

ASSESSMENT SUMMARY SHEET FOR UKAB MEETING ON 19 OCTOBER 2011

Total Airprox	Risk Cat A	Risk Cat B	Risk Cat C	Risk Cat D	Risk Cat E
21	3	1	12	2	3

<u>No</u>	<u>Reporting</u>	<u>Reported</u>	<u>Airspace</u>	<u>Cause</u>	<u>Risk</u>
2011007	EMB170 (CAT)	A319 (CAT)	A	The LTC NE controller did not take the A319 into account and climbed the EMB170 into conflict with it.	C
2011025	SF340 (CAT)	Tornado GR4 (MIL)	F	A potential conflict resolved by both controllers.	E
2011026	Controller Reported C560X (CIV)	Tutor A (MIL) Tutor B (MIL)	G	Controller perceived conflict in Class G Airspace.	E
2011050	Controller Reported	Sea King Mk4 (MFTR/CIV TEST) Agusta 109 (NK)	G	Effectively a non-sighting by the Sea King crew and probably a non-sighting by the A109 pilot.	D
2011055	SK76 (CAT)	Untraced (NK)	G	A conflict with an untraced microlight in Class G airspace.	C
2011057	BE9L (CIV)	F-15E X 2 (MIL)	C	The F-15 flight climbed above its cleared level.	C
2011059	B222 (CIV)	BE200 (CIV)	G	Effectively a non-sighting by the B222 pilot and ineffective avoiding action by the BE200 pilot.	A

2011062	PA31 (CIV)	PA34 (CIV)	G	The PA34 pilot did not comply with ATC instructions.	A
2011063	Ikarus C42 (CIV)	Agusta 119 (CIV)	G	Effectively a non-sighting by the A119 crew and a late sighting by the Ikarus pilot.	C
2011064	R22 (CIV)	C152 (CIV)	G	A non-sighting by the C152 pilot and a late sighting by the R22 pilot.	C
2011065	Extra 300 LPS (CIV)	SR20 (CIV)	D208	The SR20 pilot flew through a promulgated and active Danger Area and into conflict with the Extra 300.	B
2011067	Sea King HC Mk 4 (MIL)	Untraced Light Aircraft (NK)	G	The untraced Light Aircraft pilot flew close enough to cause the Sea King crew concern.	C
2011068	Hawk T1 (MIL)	DA42 (CIV)	G	A conflict in Class G airspace	C
2011069	C550B (CIV)	Discus Glider (CIV)	G	A conflict in Class G airspace.	C
2011070	C172 (CIV)	Untraced (NK)	G	Possible encounter in Class G airspace	D
2011074	RJ100 (CAT)	ATR42-300 (CAT)	D	The RJ100 pilot was concerned at receiving avoiding action shortly after takeoff.	E
2011084	ASW27B (CIV)	PA28 (CIV)	G	A conflict in Class G airspace resolved by the ASW27B pilot.	C
2011088	Discus B (CIV)	P-51 + Spitfire (CIV)	G	The P-51 and Spitfire flew close enough to cause the Discus pilot concern.	C
2011112	TriStar (MIL)	Untraced (NK)	G	A conflict in the Oxford AIAA.	A

2011113	KC-135R (MIL)	Grob G109B (CIV)	G	A conflict in Class G airspace resolved by the Grob G109B pilot.	C
2011114	Apache AH1 (MIL)	MC130P (MIL)	G	A breakdown in the Night Low Flying System deconfliction process.	C

- end -

AIRPROX REPORT No 2011007

Date/Time: 1 Feb 2011 0919Z

Position: 5144N 00021E (9.5nm NE LAM)

Airspace: LTMA (Class: A)

Reporting Ac Reporting Ac

Type: EMB170 A319

Operator: CAT CAT

Alt/FL: FL70↑ FL80

Weather: VMC CLAC IMC CLBL

Visibility: NR NR

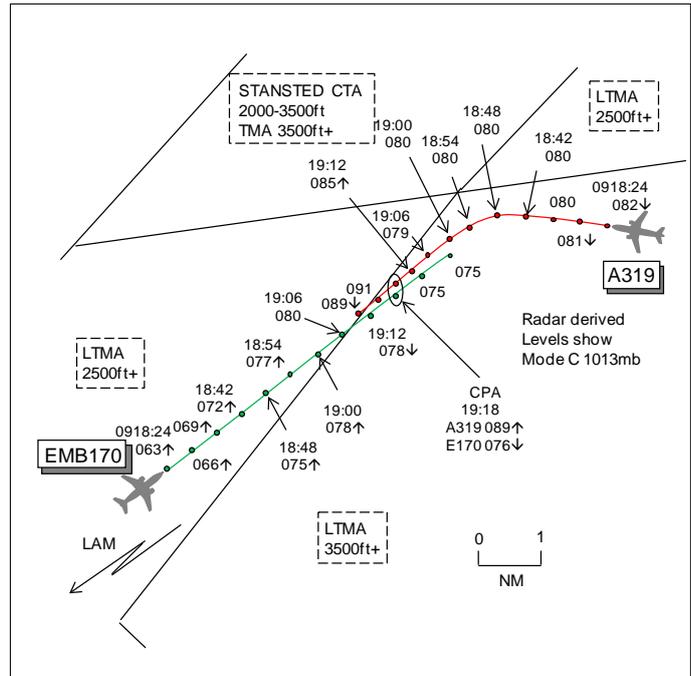
Reported Separation:

100ft V/1nm H 150ft V/2nm H

Recorded Separation:

100ft V/1.9nm H or

1300ft V/0.2nm H



BOTH PILOTS FILED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE EMB170 PILOT reports outbound from London/City, IFR and in communication with London on 118.825MHz, squawking with Modes S and C. About 10nm NE of LAM, heading 050° at 250kt climbing through FL70 for FL90, both crew noticed a descending ac on TCAS range 10nm on a reciprocal heading. The traffic quickly became 'proximate' and was visually acquired as they were 2000ft above cloud in VMC. They then received instructions from ATC with avoiding action to 'level-off' and within a few seconds received a TCAS RA to climb. The PF actioned the RA and the PNF informed ATC "EMB170 c/s TCAS RA". PNF had the ac visual at 12 o'clock same level and watched it pitch up rapidly and climb. The PNF commanded PF to descend and within a second TCAS commanded a reversal rapid RA descent. The other ac passed 100ft higher and slightly to their L, about 1nm away. He assessed the risk as high. TCAS was very useful in that they acquired the traffic visually before an RA was issued. ATC issued avoiding action at the same time as the TCAS RA so TCAS was followed. The crew was surprised by the reversal command from the TCAS.

THE A319 PILOT reports inbound to Heathrow IFR and in communication with London, squawking with Modes S and C. About 10nm NE of LAM while turning L from heading 300° towards LAM at 220kt and level at FL80, a TCAS TA was received owing to climbing traffic. The frequency was very busy so they were unable to notify ATC. Initially TCAS commanded a 'descent' RA so AP and PD were disengaged and the ac was started in a descent. ATC told the climbing flight to stop climb and, as a result, TCAS then changed to a 'climb' RA, demanding +5500fpm. At the time they were 1000ft above cloud between layers in IMC. The RA procedures were followed until they levelled at FL90 clear of the traffic, the other ac passing 150ft lower and 2nm laterally. ATC were informed and they descended back to their original level. He assessed the risk as high.

THE LTC NE RADAR CONTROLLER reports working as the NE/LAM controller in a relatively light but complex traffic situation with a Coordinator in position. The A319 was on a heading to pass N of LAM in order to provide lateral separation from a CAT B flight operating to the E of LAM at FL100. Thames Radar transferred the EMB170 flight to him on a heading against an inbound flight to them

through LAM. He climbed the EMB170 to FL90 underneath the CAT B ac without reference to the A319 and routed the A319 direct to LAM when it was clear of the CAT B. At the same time he had a Northolt to London/City positioning flight which was cruising at altitude 4000ft whilst Luton Tower telephoned the Coordinator requesting a release on a CLN departure. In order to facilitate this release he discussed with the Coordinator a plan involving the Coordinator calling Heathrow INT N to shortcut the flight to LAM through the Heathrow RMA. Concurrently an Elstree outbound flight called on frequency outside CAS and he issued a squawk and identified the ac as per SOPs. He spotted his mistake when the EMB170 was passing FL72 and when he attempted to pass avoiding action no reply was received. He again attempted to pass avoiding action and was met with a garbled response, possibly from both subject flights, indicating a TCAS RA. The flights quickly passed and reported back under his control.

ATSI reports that the Airprox in Class A CAS between an A319 and an Embraer E170 (EMB170) was reported by both pilots, NE of LAM at FL080.

The A319 was inbound London Heathrow from Prague and was in contact with LTC NE under a RCS. The EMB170 had departed London City Airport on a flight to Stockholm Arlanda and was in contact with LTC NE under a RCS.

LTC NE (LAM, LOREL and NE Deps sectors combined) was being operated by a single tactical controller supported by the LTC N Coordinator. There were no reported unserviceabilities and the controller was using Debden surveillance data on the situation display. The NE controller was on the first morning duty of a six day cycle. The controller had been detached from watch for the previous 2 cycles on operationally related projects so his last operational duty had been 2 weeks previous. The NE controller described the traffic levels as light with a high level of complexity.

ATSI had access to the following in the course of its investigation: LTC NE controller's report, A319 and EMB170 pilot reports, transcription of the LTC NE frequency (118.825MHz), recording of LTC Group Supervisor N's deskside, recorded area surveillance, ANSP unit report, TCAS Performance Assessment (NATS), Aircraft Operator's timeline of events [QAR download] and interview with the LTC NE controller.

The NE controller reported briefing as normal at the start of duty (0700 UTC). The controller's first session of the day was a busy 30min session commencing at 0730 on LTC NW, which the controller and his colleagues felt had gone well. The Controller reported that it was not unusual for the NE sectors to be band-boxed after the 'first-wave' of morning traffic. The controller took over from a trainee at 0900 and recalled being informed that a Category B flight was coming in to the sector to be worked at FL100. The controller was using the NE Deps situation display with the adjacent (LOREL) screen filtered to show LAM inbounds and the smaller Essex planning screen above. On taking over, the controller described the traffic situation as 'normal' and 'quiet'.

At 0910:57 the A319 flight called LTC NE passing FL217 in the descent to FL150, having been transferred from LTC E 50nm E of LAM. The ac was following the LAM3A arrival for Heathrow. The LTC NE controller acknowledged the call. The previous ac into the LAM hold was in the process of being vectored off the stack by Heathrow INT N and there were no other ac inbound to LAM.

The controller described the A319 flight's first call as 'a bit early' but 'nothing unusual'. At the time, the controller was climbing a Luton DVR departure above its Standing Agreement level, which would have been MSL to LTC S, to LAC S15 levels. He did not remember whether he or the Coordinator initiated the coordination sequence for this ac. Other traffic at this time were 2 Heathrow BPK departures, 2 London City N'bound departures and a London City inbound via LAM. Due to the prevailing traffic the controller's focus of attention was in and around BPK. A non-standard positioning flight to London City (via BPK) had also just become airborne from Northolt.

At 0911 Elstree aerodrome called the LTC Group Supervisor N, requesting a clearance for a BE36 departure. The Elstree representative informed the GS that the flight would be '*ready in a few*

minutes'. The GS issued squawk 3411 with instructions to remain outside CAS, on track BPK and contact 118-825MHz.

LTC MATS Part 2 (GEN-144) states that Elstree will contact FDS NE to confirm that an appropriate flight plan is held. The allocated SSR code will be passed and the flight activated using the ETD provided. The MATS Part 2 also states (NTH-34) that for Elstree departures requesting clearance to enter CAS, Elstree will contact LTC Luton Approach who will coordinate an airways joining clearance with TMA N (the traffic having free-called Luton Approach and been placed under an appropriate service, NTH-29).

At 0912:32 the NE controller instructed the A319 flight to descend FL80 to be level 5nm before LAM. This was read-back correctly. The controller noted that the decision to give a level restriction to the A319 was predicated on the expectation that the Cat B flight would remain W of LAM at FL100. The controller reported previous dialogue with LTC Heathrow INT regarding ensuring adequate separation was assured by TMA for LAM inbounds against Cat B traffic. The controller recalled looking at the strips to descend the A319 and did not recall assimilating the actual position of the Cat B flight. The controller reported that Cat B flights operating in the vicinity of, but mainly W of LAM, were not an uncommon daily experience (described as 75% of the time).

The A319 fps was moved underneath the Cat B fps in the fps bay (see table below). The high-level Luton DVR departure was to be turned and transferred, a Stansted DVR departure had become airborne and he had resolved a conflict between a London City departure and London City arrival.

LTC Heathrow INT called NE to say that the Cat B flight was 'on-task': its location now being SE of LAM. Upon assimilating this, at 0913:59, the controller instructed the A319 flight to turn R 15°. The A319 was 33nm E of LAM and the pilot read-back the instruction stating that the new heading would be 280°. The controller stated that the heading would take it N of the standard inbound route and enable the A319's descent through the level of the Cat B flight. The controller noted that if the LAM sector had been operated independently then coordination would have been required with LTC NE Deps. In the present configuration this was not necessary. (Throughout the period of events the A319 was the only ac associated with the LAM sector; all other traffic was associated with NE Deps or LOREL). Heathrow INT N was controlling the Cat B flight. The NE controller stated that this was not unusual for these flights, particularly as they generally stayed W of LAM. The controller recalled that the Cat B fps stated '10 SE LAM' as the tasking area. For Cat B flights E of LAM, NE may elect to work the flight. The controller recalled there being only one Cat B fps, which was in the LAM fps bay. He could not recall there being, and was fairly certain there was not, a strip in the BPK bay.

Thames Radar requested approval to place a London City CLN departure (the EMB170) on a heading to vector against an inbound to London City via LAM; this was approved. The NE controller stated that the normal SID track of these departures would take the ac S of LAM before turning NE'ly. The SID climbs to altitude 4000ft. The controller stated that his default way of working London City CLN departures was to 'look at LAM, climb to MSL' and stated that it was a technique he taught his trainees. The EMB170 strip was located under the BPK designator.

The controller reported nothing untoward about the strip display*:

LOREL	BPK	LAM	
	EGGW DVR dep ↑170		
	EGLC outbound	A319 ↓80	SND
	EGLC inbound	Cat B 100	
	EMB170 4A (EGLC-ESSA) 050°		



* diagram for illustrative purposes and not wholly representative of all fpss.

At 0917:05 the EMB170 flight called LTC NE passing altitude 3300ft climbing to 4000ft on a heading of 050°. The EMB170 was tracking towards LAM, approximately 1nm SW of the VOR. At this time the NE controller was dealing with Luton ATC's second attempt to request release for a CLN departure and in discussion with the N Coordinator regarding accommodation of Luton's request.

The NE controller instructed the EMB170 flight to continue on its present heading and climb FL90 (which the controller stated was against the Cat B flight at FL100). The controller reported a 'fastest finger first' situation for Northolt and Luton departures via BPK, given the route convergence and altitude constraints in the area. The controller reported that the Northolt departure to London City had been released and then Luton subsequently called for a release but were instructed, "Negative, will call you back". Once the Northolt departure was airborne the controller reported that it was not unusual to receive a follow-up call from Luton Tower, as they could see the departure from Northolt airborne on their ATM. After the second call from Luton the controller recalled entering into a discussion with the N Coordinator about how to accommodate the Luton departure 'for expediency of the traffic'.

At 0917:40 the BE36 flight departure from Elstree called LTC NE, c/s only. The BE36 was squawking 7000, rather than the pre-assigned code '3411'. 7000 codes were filtered out from the NE controller's display. The NE controller asked the BE36 flight to confirm its altitude believing that the ac may be beneath the surveillance coverage on the sector. The BE36 pilot replied, "...just climbing up to two thousand three hundred two thousand four hundred er towards BPK..." The NE controller instructed the BE36 flight to select Mode A 3411 with ident. This instruction was read-back initially by the Northolt-London City positioning flight, closely followed by the BE36 pilot's reply.

The controller believed the MATS Part 2 procedures for Elstree departures were for the aerodrome to call FPS S and, via the Coordinator, be passed a release time, squawk and any other information (such as remain clear). A tick would be placed against the squawk by the ATSA. There was no such tick on the NE controller's fps. The controller recalled that usually Elstree departures would be seen as code-c/s converted data blocks before the flight called on frequency. When the BE36 pilot called, the controller's initial thoughts were 'who?' and he started to look for a strip. The Coordinator was also looking on the situation display and pointed out a filtered-out position display symbol in the vicinity of Elstree. When the controller issued the 3411 squawk to the BE36 flight he recalled momentarily being confused as he believed he heard a foreign accent take the call (which was the Northolt – London City flight).

Immediately after hearing the BE36 pilot's reply the controller, at 0918:22, stated, "*Thank you. Break. [A319 c/s] resume own navigation direct to LAM*". The controller recalled that saying 'thank you' was an indication to himself that his doubt about the errant read back had been cleared. At this time the A319 and EMB170 were 8nm apart: the A319 on heading 280° passing FL082 for FL080 with the EMB170 8nm SW of the A319 climbing through FL063 for FL090. The EMB170 was between the A319's present position and LAM. When questioned about this point in the sequence of events the controller believed a certain amount of tunnelling had taken place i.e. only the Cat B flight and A319 figured in his visual scan – not the EMB170. The EMB170 was not in a 'normal position'.

After instructing the A319 flight to resume own navigation to LAM the controller's attention then turned back to the BE36 stating, "*(BE36 c/s) you're identified two miles er southwest of Brookmans Park it's a Basic Service only outside controlled airspace*". The BE36 pilot responded at 0918:37 by asking if the controller wished the ac to route towards LAM before CLN.

STCA between the EMB170 and A319 activated at 0918:42 as the NE controller responded to the BE36 pilot's question.

Immediately prior to recognising the conflict the controller's intention was to issue a joining clearance to the BE36 flight. The controller could only recall seeing 'the situation' e.g. the conflict, he could not recall if STCA had alerted him to the fact or not. He immediately realised his error and instructed the EMB170 flight, "*(EMB170 c/s) avoiding action stop climb immediately*" (0918:49). The controller recalled his immediate thought was to stop the EMB170. He believed he said 'stop climb' because the ac was still climbing. His next immediate thought was 'that's vertical avoidance – do something laterally'.

The NE controller then gave lateral avoiding action to the EMB170 flight at 0918:52, “(EMB170 c/s) avoiding action turn right heading one eight zero degrees”. The EMB170 pilot responded, “TCAS R A”.

The NE controller was aware of the MATS Part 1 requirements for non-intervention in TCAS encounters. He knew not to give avoiding action to the A319 and recalled accepting that the situation was now ‘hands-off’. There then followed an unidentified transmitter switch non-modulation as the STCA changed to a high-level alert.

The EMB170 received a Traffic Alert (TA) at 0918:39 and, gaining a visual sighting of the A319, slowed its ROC. The crew reported that the NE controller’s instruction to ‘stop climb’ (0918:49) had no bearing on the crew’s actions as at 0918:51 the EMB170 received an RA ‘Climb’ [‘Maintain v/s – crossing’]. Additionally, the NE controller’s lateral avoiding action at 0918:52 was not heard in the cockpit due to cockpit noise. Post incident the crew of the EMB170 described how they had initially observed their closure with the A319 and took the precaution to reduce their ac’s ROC. They recalled that the controller’s “stop climb” instruction came as the first TCAS RA was received – the latter being followed as per company SOP. The crew also clarified that the EMB170 TCAS generated ‘RA reversal’ came after the Pilot-Non-Flying had observed the A319’s change in pitch attitude.

The A319 crew recalled that, prior to the encounter, they had been aware of the EMB170’s clearance to FL90 and therefore remained vigilant. The A319 received a TA at 0918:39 as the ac commenced its L turn and this was upgraded to a RA ‘Monitor v/s’ at 0918:52 before 1sec later at 0918:53 it changed to an RA ‘Descend’ [‘Descend, crossing descend’]. The A319 crew reported that all RA commands were followed as per company SOP.

The TCAS software used on both ac, when calculating the geometry required to avoid conflict, factors in a 5sec delay in pilot response to a commanded RA and reduces the anticipated response time in an RA-reversal to 2.5sec.

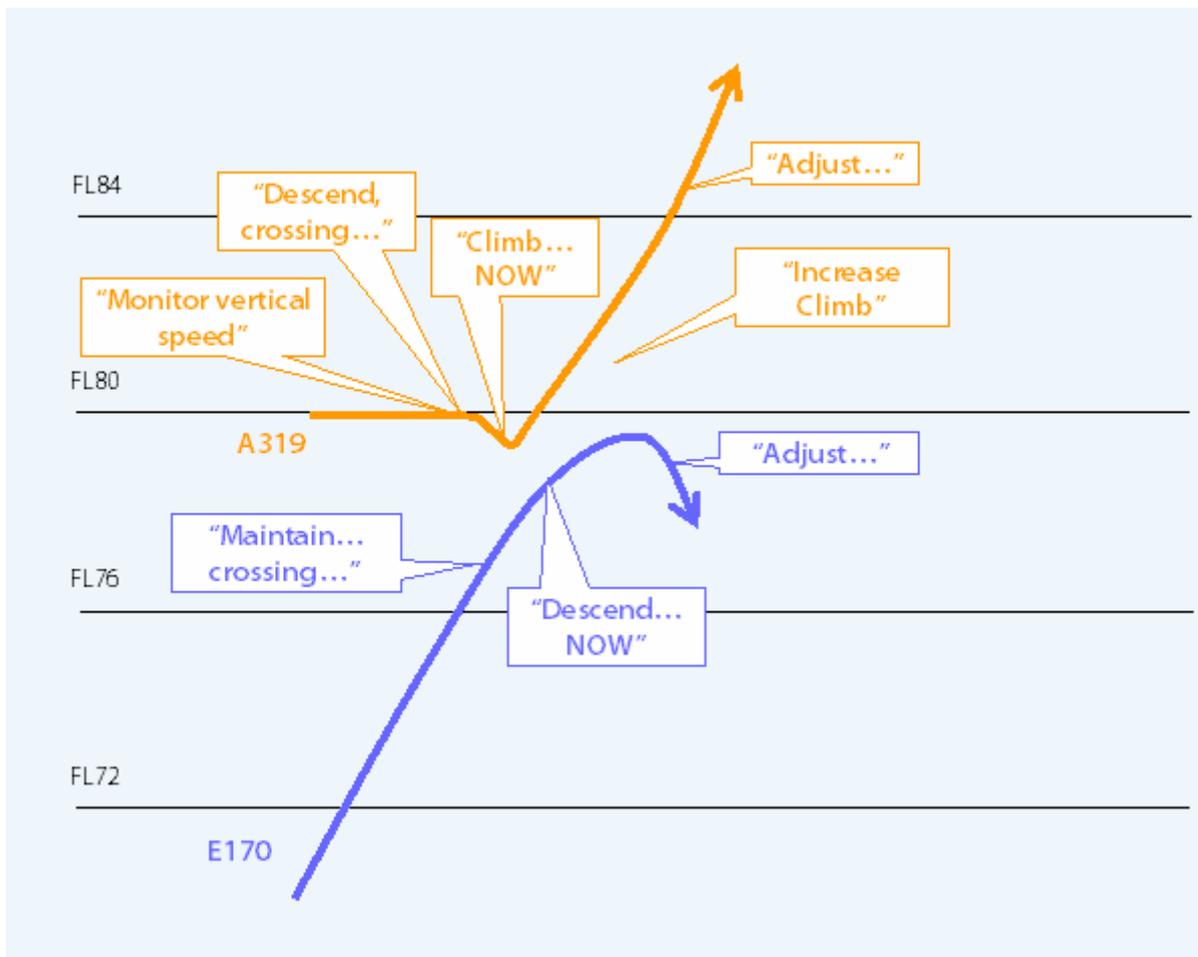
At 0918:57, the EMB170 received an RA reversal, being instructed to descend [‘Descend now’] and 1sec later at 0918:58 the A319 also received an RA reversal to climb [‘Climb, climb now’]. The A319’s TCAS also then instructed an ‘Increase climb, increase climb’ at 0919:02.

At 0918:59 the Northeast controller asked the A319 flight, “(A319 c/s) have you got TCAS?” There was another unidentified transmitter switch non-modulation, and 6sec later the NE controller transmitted, “(A319 c/s) London”, which was answered by the A319 crew, “...TCAS RA”. The NE controller requested that the A319 crew report when clear of conflict.

Surveillance analysis at 0918:39 shows the EMB170 climbing through FL069 when it received a Traffic Alert; the A319, level at FL080, receives its TA at the same time. The EMB170 continued its climb to FL075, at which point at 0918:51 the first RA (“Climb”) was received. The ac were laterally separated by 4.7nm and the A319’s L turn was not observed to be taking effect yet. Seven seconds later as the EMB170 reached FL077 [0918:58] the RAs were reversed: the distance between the ac now being 3.7nm. Separation was lost at 0919:00 with only 2.8nm and 200ft between the ac. The A319 was then recorded as descending for a short period [between 0919:00 and 0919:06 from FL080 to FL079: separation 100ft/1.9nm] before climbing 600ft in 6sec [0919:12 separation 700ft/1nm] and eventually passing FL089, when vertical separation was restored at 0919:18. At this time, the CPA, the ac passed abeam each other by 0.2nm, 1300ft apart.

At 0919:26 the EMB170 flight reported clear of conflict and at 0919:30 the A319 flight reported, “clear of conflict returning to Flight Level 80”.

At 0919:38 the EMB170 flight was instructed to resume its own navigation to CLN and at 0920:01 the A319 flight was transferred to Heathrow Director.



Graphic above courtesy of Eurocontrol from an ACAS II Bulletin.

The NE controller was relieved at 0920:31.

There were no external factors affecting the controller's performance prior to the incident. Operationally, the controller's traffic mix was complex including:

- Non-standard Northolt to London City positioning flight
- Request from Luton for a departure release
- Category B flight operating in an area not usual for the task
- Facilitation of climb for traffic exiting to LAC S15
- EMB170, London City CLN departure, off-SID route to facilitate a London City inbound
- Elstree departure: airborne without the allocated Mode A code and calling LTC Northeast direct
- All other standard TMA traffic.

The A319 was the only ac into the LAM hold and was transferred to the NE sector 50nm prior to the hold. The controller's interaction with the aircraft on its route to LAM was minimal: one descent instruction and one heading instruction.

The EMB170 was off-route and not where the controller would normally expect it to be. The controller, usually having a habit of climbing these departures to MSL only, chose to climb the EMB170 to FL090, underneath the Cat B flight at FL100.

All displays were functioning correctly and the fps outfall was normal for the sector.

The BE36 was an unpre-empted addition to the controller's traffic. As the ac was not displaying the allocated Mode A code it was not immediately apparent to the controller. ATSI were unable to determine why the BE36 was not displaying the 3411 squawk passed to the Elstree representative. ATSI could not determine if there was evidence of the BE36 flight having called LTC Luton Approach prior to its call to NE.

As the controller finished dealing with the BE36 he chose to instruct the A319 flight to resume its own navigation to LAM as it was now beneath the Cat B flight. The controller's next intended action was to join the BE36 into CAS.

In instructing the A319 flight to resume its own navigation the controller did not ensure separation with the EMB170. The controller did not detect, from the situation display, the presence of the EMB170 between the A319 and LAM. Hence the controller's description of 'tunnelling' of information, resulting in him not integrating all the information available to him i.e. the presence of the EMB170 display symbol.

The controller had forgotten the presence of the EMB170, having previously climbed it underneath the Cat B flight and through the level of the A319. This omission was likely caused by an overload in working memory at the time – his capacity and plans having been changed whilst dealing with the BE36.

As the event occurred, the controller attempted to issue avoiding action; however once the EMB170 stated that it was acting in accordance with a TCAS RA, the controller allowed the ac to act upon their TCAS instructions without further interruption.

The rapid evolution of the encounter prompted several TCAS resolution commands in each ac. All of which were followed in accordance with procedure by both crews.

The Airprox occurred on the LTC NE sector, 10nm NE of LAM at FL080 when the NE controller turned an A319 into conflict with an EMB170. The A319 flight was at FL080 and had been instructed to resume its own navigation to LAM. The EMB170 was climbing to FL090 on a heading of 050°. The minimum distance between the ac at 0919:12 was 1.0nm/700ft (approximately 6116ft ac-to-ac distance). The event was recovered by TCAS.

Analysis of the incident determined that the controller, having experienced a tunnelling of the information displayed to him, did not integrate the position of the EMB170 into his decision to turn the A319 towards LAM.

The controller, being competent in accordance with unit procedures, experienced a complex workload comprising of non-standard flights, non-standard ac routings, a request to join CAS from an unanticipated Elstree departure and operational pressures to release ac from Luton.

The issues concerning the Elstree departure have been addressed by LTC and Elstree: namely, unit personnel have been reminded of the correct procedures for departures and the AIP has been updated to advise pilots that they are to call LTC Luton Approach on departure.

Recommendations:

There are no CAA ATSI recommendations as a result of this incident.

ATSI note that a comprehensive investigation by the ANSP, in conjunction with the Aircraft Operator, has produced a set of actions and recommendations including:

Alignment of procedures for Elstree, TC North, Luton Approach and the General Aviation community.

Lesson learning and training scenario activities; including unit safety day events and dissemination throughout the unit in accordance with their Safety Management System.

Incorporation of aspects of this event into pilot/controller interface meetings.

Presentation of this event, the subsequent findings and outcomes to the EUROCAE Working Group responsible for TCAS.

The incident has also been recommended for the purposes of lesson learning and TCAS training by the ac operator.

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 commended the comprehensive ATSI report which had covered all aspects of the Airprox thoroughly. The controller had acknowledged not taking the A319 into account when he cleared the EMB170 flight to climb to FL90, beneath the Cat B flight at FL100, and this placed the 2 subject flights into conflict and had caused the Airprox. He had not detected the potential for conflict from the fpos or radar display and the situation was compounded when he released the A319 flight to resume its own navigation towards LAM. Pilot Members agreed that both crews had shown excellent SA and airmanship during the encounter, particularly when faced with a TCAS reversal. The CAT Members and the FOI Advisor agreed that it is known to be difficult to create realistic simulator training for RA reversals occurring against a single ac; the usual scenario used involved 2 separate ac. The EMB170 crew had noticed the A319 on TCAS and realised that their flightpaths were in conflict. They had received a TA, visually acquired the A319 early and reduced their ROC. A pilot Member informed the Board that the crew's actions were the natural reaction when faced with traffic converging from above but that the TCAS TA was only the first part of the ACAS algorithm, effectively a 'heads up' to get ready to react if an RA follows. In this case the ACAS system calculated that a 'crossing climb', through the A319's level was the best resolution for the EMB170 and generated an RA to that effect; the EMB170 crew had only just started to reduce their ROC at the time. The crew followed the TCAS guidance, cognisant of the controllers 'stop climb' instruction, and informed him of the RA after an avoiding action turn had been issued. The A319 had received coordinated TCAS guidance, a momentary 'monitor v/s' before a 'descend' RA was generated. However these RAs were reversed 6sec later, the EMB170 crew seeing the A319 'pitch-up' just before receipt of their 'descend' RA. The Board considered whether it had been the EMB170's reduced ROC immediately prior to the first climb RA that resulted in the subsequent reversal. While it was possible that the reduced ROC may have had an effect, the Board noted that the ROC did not reduce below 500ft/min and the A319's left turn towards LAM also contributed to the changing geometry. As it was, both crews reacted promptly to the new RAs, the A319 crew achieving a 600ft increase in level in 6sec whilst the EMB170 crew stopped their climb and achieved a 200ft descent. Shortly thereafter, the ac passed with 1300ft of vertical separation, displaced by 0.2nm. These prompt and robust actions taken by the crews were enough to allow the Board to conclude that any risk of collision had been quickly and effectively removed.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The LTC NE controller did not take the A319 into account when he climbed the EMB170 into conflict with it.

Degree of Risk: C.

AIRPROX REPORT No 2011025

Date/Time: 30 Mar 2011 1238Z

Position: 5816N 00330W
(17nm SW WIK)

Airspace: N560D (Class: F)

Reporting Ac Reported Ac

Type: SF 340 Tornado GR4

Operator: CAT HQ Air (Ops) See Diagrams below

Alt/FL: FL80 FL075

Weather: VMC CLBL VMC CLBL
(4000ft above cloud)

Visibility: NK 10km

Reported Separation:

0ft V/1nm H 500ft V/3nm H

Recorded Separation:

300ft V/2.8nm H

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE SF 340 PILOT reports flying a passenger flight inbound to Kirkwall heading 043° on N560D at 230kt and FL80; they were squawking as directed with Modes C and S, nav lights and HISLS were on, and TCAS was fitted and serviceable. When they had about 30nm to run to WIK he saw a TCAS contact 6nm W of them just as the controller asked for their meteorological conditions; he replied, "VMC between layers". They were given an immediate turn on to 090°, followed by an avoiding action turn further R onto 120°; at that point he became visual with a single Tornado ac. They were then turned onto a heading of 180° as two more contacts appeared and he was given a further turn on to 270° to avoid them. When the ac was on track he became visual with two Tornados manoeuvring below them.

He reported the Airprox to ScACC and his company assessing the risk as being low.

THE TORNADO GR4 PILOT reports flying a singleton OCU low level training sortie in a grey ac with strobes and HISLs switched on; TCAS was not fitted. They were squawking 7001 with Modes C and S, heading 140° at roughly 300kt having broken off an attempt to prosecute a low level SAP on a heading of 065°, about 20nm W of Wick. Low cloud had forced a high workload emergency abort from low level at 1235; following the abort they levelled initially at 8000ft and set a heading of 140° for recovery to Kinloss for a booked practice diversion.

Aware of the proximity of Class F airspace SW of Wick, he contacted Lossie APP in order to obtain a radar service. While establishing radio contact with Lossiemouth at the edge of ADR N560D, they set 1013mb and descended to level at FL75 in order to be at the correct quadrantal FL. Prior to formal radar identification by ATC, Lossie APP informed them of civilian traffic 5nm ahead, crossing R to L, 100ft above. Lossie APP then informed them that the traffic was taking avoiding action, and at 1236:30 updated the position of the civilian traffic as being 2 o'clock at 3nm. At this point they observed the civilian traffic in the position called by ATC (3nm away and 500ft below), but they could not determine the ac type.

They perceived no confliction based on visual separation, but followed a subsequent air traffic recommendation to turn L onto a heading of 090°. The pilot was VMC throughout this incident.

The report was filed in response to an Airprox report believed filed by the civilian ac; he assessed the risk as low/none.

ScACC MORAY Planner/Tactical Controller reports that he was providing a SF 340 with a DS on N560D [Class F] inbound to Kirkwall. The ac had left FL90 and was descending to FL70 when he saw a 7001 squawk in the ac's 10 o'clock at about 5nm with no mode C. It appeared that the mode C was then activated by the military ac and it was showing FL072 climbing but on a roughly parallel track to the SF 340 heading. He asked the SF 340 pilot for his flight conditions and he reported they were IFR [sic – see SF 340 pilot's report above] so he gave the ac a precautionary turn onto 090°. Almost immediately the military ac turned towards the SF 340 and commenced a further climb so he gave an avoiding action turn onto 120°. He did not consider a vertical solution as the military ac was climbing towards his traffic which was descending.

The SF 340 pilot then reported that he had the military ac on TCAS so the controller took no further action. By that time, the ac were very close and the STCA was flashing red. He then realised the SF 340 pilot had only stated he had the ac on TCAS but had not stated that he had a RA so he gave a further avoiding action turn onto a heading of 180°. Lossiemouth radar then called him but they were both too busy to co-ordinate with each other.

He then saw second pair of ac squawking 7001 that was also climbing out from the same area. As a precaution he turned the SF 340 away from these ac but he eventually managed to get co-ordination with Lossiemouth radar.

The controller asked the SF 340 pilot if he wished to file an Airprox and he said yes.

THE RAF LOSSIEMOUTH APP CONTROLLER (Lossie APP) reports a Tornado ac free-called on Stud 4 and she observed a fast moving track in the vicinity of its reported position. There was a further return about 5nm ahead of it and slightly above, displaying an ORCAM squawk, following the route of N560D. She called the ac to the Tornado, using the words 'traffic believed to be you has traffic' advising that the ac was indicating slightly above but descending. She gave the Tornado a Lossiemouth squawk and called the Moray Sector Controller (MOR) who answered almost immediately; she could hear the controller giving advice to the SF 340 involved, however, despite her best efforts she was unable to speak to the controller. She then formally identified the Tornado and placed it on a TS. Throughout her attempts to contact the MOR controller she continued to pass information to the Tornado regarding the other ac until the Tornado pilot reported "visual". The (Lossie) controller heard the MOR ask his ac whether or not he was 'still visual' but she could not effect co-ordination with MOR as the Controller was talking to the SF 340 continuously.

She believes that the ac came within approximately 3nm and 100ft – the height being based on the mode C readout. The civil traffic was given a RH turn from a NE'ly heading then through S onto NW so she asked the Tornado to head E, which took it further away from the civil traffic.

She heard the civil controller ask the SF 340 if he wished to file an Airprox, at which time she asked the Lossie Supervisor (Sup) to listen in. The Sup eventually managed to effect co-ordination on her behalf but by that time the ac were diverging; the Tornado to the E of N560D heading E and the SF 340 to the W of the ADR tracking N.

She handed the ac to Director for a radar-to-visual recovery and was relieved by another qualified controller.

UKAB Note (1): Both NATS and RAF Lossiemouth conducted comprehensive internal investigations; for brevity they have not been included as they are summarised in the ATSI and HQ 1Gp BM SM2 reports below.

ATSI reports that an Airprox was reported by the pilot of a SF 340 when it came into conflict with a Tornado, 17nm SW of WIK, as the SF 340 descended through FL080. The Airprox was also reported by the Prestwick Centre MORAY controller (MOR). The SF 340 was on a flight from Glasgow to

Kirkwall and in receipt of a DS from the MOR sector on 129.225MHz. The Tornado had been on a low level sortie when cloud forced an emergency low level abort and established contact with Lossiemouth APP in order to receive a radar service.

The MOR sector was being operated as a combined tactical and planner position, his workload was assessed as light to medium and there were no reported unserviceabilities or distracting factors.

ATSI had access to the SF 340 pilot's report, the Tornado pilot's report, the ScACC watch and unit investigations, recorded area surveillance and transcript of frequency 129.255MHz.

The SF 340 established contact with the MOR sector at 1221:40, the ac was maintaining FL170 and a DS was agreed; the SF 340 continued inbound WIK on ADR N560D and at 1230:20 it was descended to FL090 and 3 min later it was given further descent to FL070.

At 1235:35 a 7001 return (the Tornado) appeared on the display 11nm N of the SF 340 but initially there was no Mode C readout. The return initially tracked parallel to the SF 340 and the Tornado's Mode C initially showed as FL078 with the SF 340 descending through FL093.

At 1236:00 the MOR controller requested the SF 340's flight conditions and the pilot replied, *"between layers, VMC at the moment"*. By 1236:04 the Tornado had commenced a right turn and was tracking perpendicular to the ADR at FL080. STCA activated at 1236:23 at which time the MOR provided TI as, *"pop-up traffic in your ten o'clock at a range of 5 miles"*, followed by the instruction, *"turn right immediately heading 090 degrees"*. The pilot read back the instruction and, at 1236:35, the controller upgraded this to, *"avoiding action turn right immediately onto a heading of 120 degrees"* and updated TI was provided.

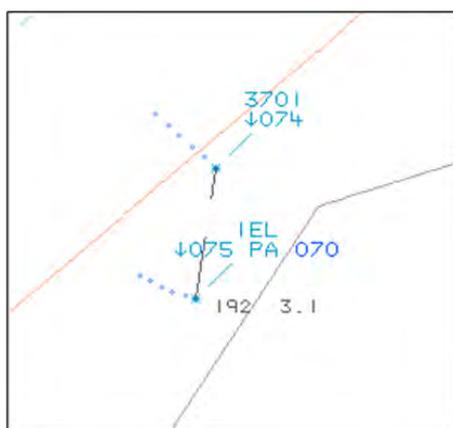
At 1236:49 a high-level STCA activated when the ac were 5nm apart on converging tracks, the SF 340 descending through FL082 and the Tornado maintaining FL082.

The SF 340 pilot then informed the controller, *"and have TCAS contact erm visual now"*.

The SF 340's right turn can be seen to take effect at 1236:58, at which time the STCA alert downgraded to low severity.

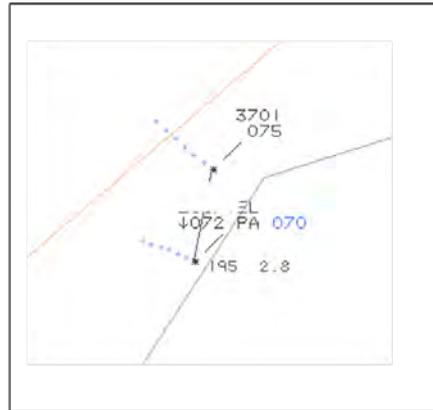
At 1237:00 the MOR controller initiated a call to Lossie APP. The line remained open as the MOR controller listened to the Lossiemouth controller who was then handling the Tornado. [See UKAB Note (2)]

At 1237:10 the Mode A code of the Tornado changed to 3701 (Lossiemouth) and by 1237:30 both ac were on parallel SE'ly tracks, 3.1nm apart, the SF 340 descending through FL075 and the Tornado descending through FL074 (see photo below).



(PC MRT 1237:30)

At 1237:20 the MOR controller asked the SF 340 pilot if they were still visual with the traffic. The pilot replied, "Negative, we're in cloud now". The controller then gave a right turn onto a heading of 180°. The minimum distance between the two ac was 2.8nm laterally, 300 feet vertically, at 1237:40.



(PC MRT 1237:40)

By 1238:00 the Tornado had taken up an E'ly track and the SF 340 was instructed to continue its right turn and resume own navigation to Kirkwall. It was only at this time that the workload of the Lossiemouth controller permitted co-ordination with the MOR controller.

The MOR controller correctly noted that although the SF 340 pilot had reported visual and having TCAS contact, an RA had not been reported. These facts had prompted him to ascertain if the SF 340 had remained visual with the Tornado; when the response was negative, he gave further avoiding action as necessary.

The CPA occurred 17nm SW of WIK in Class F advisory airspace between a SF 340 at FL072 and a Tornado at FL075. Minimum lateral distance was 2.8nm.

The Tornado had aborted a low level sortie and sought the assistance of Lossie APP during its recovery. During this time it came into conflict with the SF 340 NE bound on the ADR. The PC MOR controller observed the emergency climb out and instructed the SF 340 accordingly.

Controllers providing a DS will provide specific surveillance derived TI and issue headings and/or levels aimed at achieving planned deconfliction minima. MATS Pt 1 stipulates that against un-co-ordinated traffic the planned deconfliction minima is 5nm or 3000ft. Whilst the deconfliction minima were not achieved in this case the following actions mitigated and minimised the impact of the encounter:

- Prompt TI by the MOR controller.

- The MOR controller followed the actions of the Lossie APP on an open telephone line, thus providing complementary instructions to the SF 340.

- Recognising that an RA had not been reported by the SF 340 the controller updated the avoiding action as necessary.

BM Safety Management reports (abridged to avoid duplication) that following the Tornado's initial call, Lossie APP was able to correlate their radar return with its reported position and immediately passed TI on the SF 340 stating, "traffic south, 5 miles right to left, indicating slightly above descending, civil traffic just 100ft above descending"; at that point the SF 340 was bearing 187°, 6.8nm from it and descending through FL085. Shortly thereafter [1236.58 from Lossie APP transcript] APP rang MOR and although the call was answered immediately, the MOR controller was too busy initially to conduct any liaison.

At 1236:45 it is evident on the radar replay that the SF 340 has turned right, eventually rolling out onto a SE'ly track. Throughout the incident sequence APP continued to pass TI to the Tornado on the SF 340 and then at 1237:23 suggested a left turn onto E to increase the separation between the ac. At that point the SF 340 was 3.5nm SSW of the Tornado and both ac were indicating FL075. Moreover it is around that point that the Tornado crew became visual with the SF 340, reporting as such at 1237:31.

At 1237:44 the Tornado's turn onto E is evident on radar and coincides with the CPA, with 2.8nm lateral and 300ft vertical separation existing.

The Tornado crew correctly prioritised the low-level abort and, once established at a safe level and cognisant of the presence of the ADR, contacted APP for a radar service. APP provided a good level of service to the Tornado passing accurate TI allowing them to visually acquire the SF 340 in good time but, conscious of the MOR controller's responsibilities and the difficulty in establishing liaison with him, also suggested a turn onto E to increase separation between the 2 ac.

This was a confliction in uncontrolled airspace where the safety barriers provided on the one hand by the provision of TI in aiding aircrew to 'see and avoid' and on the other by the provision of deconfliction advice iaw CAP 774, resolved the situation before safety was compromised.

UKAB Note (2): The Tornado first show on the PC MRT at 1235:35 as a 7001 squawk with no Mode C. The Tornado called Lossiemouth at 1236:20 with the call sequence being completed 6sec later and the first TI on the SF 340 was passed a further 8sec later. Analysis of the respective transcripts shows that MOR and Lossie APP initiated calls to one another at precisely the same time (1236:58). The call however, was not answered by the MOR controller until 1238:20 (to the nearest 20 sec). The MOR RT transcript shows that RT frequency was in continuous use from 1237:20 to 1238:20; the Loss APP frequency was busy continuously from 1236:19 to 1238:04. The CPA was at 1237:40.

UKAB Note (3): The analysis of the PC MRT radar recording confirmed the analysis conducted by ATSI above (and NATS). The pair of Tornados mentioned by the SF 340 pilot cross from L to R under the SF 340 well after the Airprox (3½ min) when the SF 340 is re-established inbound WIK, 5nm W of the ADR C/L; they are never above FL040 (3000ft below the SF340)

HQ AIR (OPS) comments that the Tornado crew correctly prioritised the need to conduct a Low Level Abort before the need to avoid the Class F airspace. They then sought to obtain a radar service as soon as was practical; perhaps a call to ScACC Mil on the ICF would have allowed quicker coordination with ScACC MOR given the co-location of those 2 agencies. Nevertheless, the ScACC controller reacted promptly to the pop up traffic and gave avoiding action to prevent a further erosion of separation.

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.

A majority of Members agreed that this had been a potential conflict on a Class F ADR, recognised as such as soon as it became apparent by both controllers, who acted swiftly and correctly to resolve the situation, preventing any actual conflict or risk of collision.

Pilot Members noted that the Tornado crew had demonstrated good awareness of the ADR, acted appropriately by being predictable (to the controllers) and crossing it at right angles and level at the (lowest) appropriate quadrantal FL. Further, as soon as they had the capacity following the emergency climb out from Low Level, the Tornado crew contacted the appropriate Radar Unit (Lossie App is the local LARS unit) for assistance. Members observed that although ScACC and ScACC (Mil) are co-located at Prestwick Centre, the respective controllers are not adjacent; co-

ordination would still have required a telephone call and would not have been any quicker had the Tornado crew called ScACC (Mil) rather than Lossie App.

Controller Members also observed that both controllers had, in their opinion, acted quickly and correctly, not allowing a conflict to develop. Although the Moray Sector controller did not achieve the desired deconfliction parameters, Members agreed that in the circumstances, he could not have done any more. Members also noted that both Controllers had initiated calls to each other at about the same time but at the precise moment of the calls, both had been too busy to initiate co-ordination; the open line however had been useful in that it allowed them both at least some information on each other's actions.

Members also observed that the ScACC controller had noted quickly that the Saab was not reacting to a TCAS RA, merely that he had a TCAS contact for the Tornado; on realising this he immediately acted by attempting to gain the desired (horizontal) separation from the latter. TCAS terminology for pilots had been the subject of a previous UKAB Recommendation (2010018) resulting in the CAA issuing Safety Notice SN-2011/012 of 8 Sep 2011.

Members discussed at length the risk associated with the incident and whether it should be classified as risk Category C or E. While everyone agreed that the actions taken by the aircrew and controllers had removed the risk of a collision, the controllers were required to work hard and had difficulty in coordinating their actions; furthermore despite being given avoiding action the S340 did not maintain 5nm/3000ft separation from the Tornado and there was confusion over whether the S340 was responding to a TCAS RA. These factors were enough to satisfy some Members that the event had been an Airprox with a Risk Category C. Other Members opined that the event was a routine event for this type of airspace and normal procedures, safety standards and parameters had pertained; therefore it would be misleading to consider it to be an Airprox event. The latter view prevailed by a small majority.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A potential conflict resolved by both controllers.

Degree of Risk: E.

AIRPROX REPORT No 2011026

Date/Time: 1 Apr 2011 1130Z

Position: 5144N 00115W (15nm N CPT)

Airspace: Oxford AIAA (Class: G)

Reporter: LTC OCK/SE LOW

	<u>1st Ac</u>	<u>2nd Ac</u>	<u>3rd Ac</u>
<u>Type:</u>	C560X	Tutor(A)	Tutor(B)
<u>Operator:</u>	Civ Exec	HQ Air (Trg)	HQ Air (Trg)
<u>Alt/FL:</u>	5000ft (QNH 1017mb)	5000ft (QNH)	FL50
<u>Weather:</u>	VMC CLNC	VMC CLAC	VMC CLAC
<u>Visibility:</u>	>10km	>10km	NR

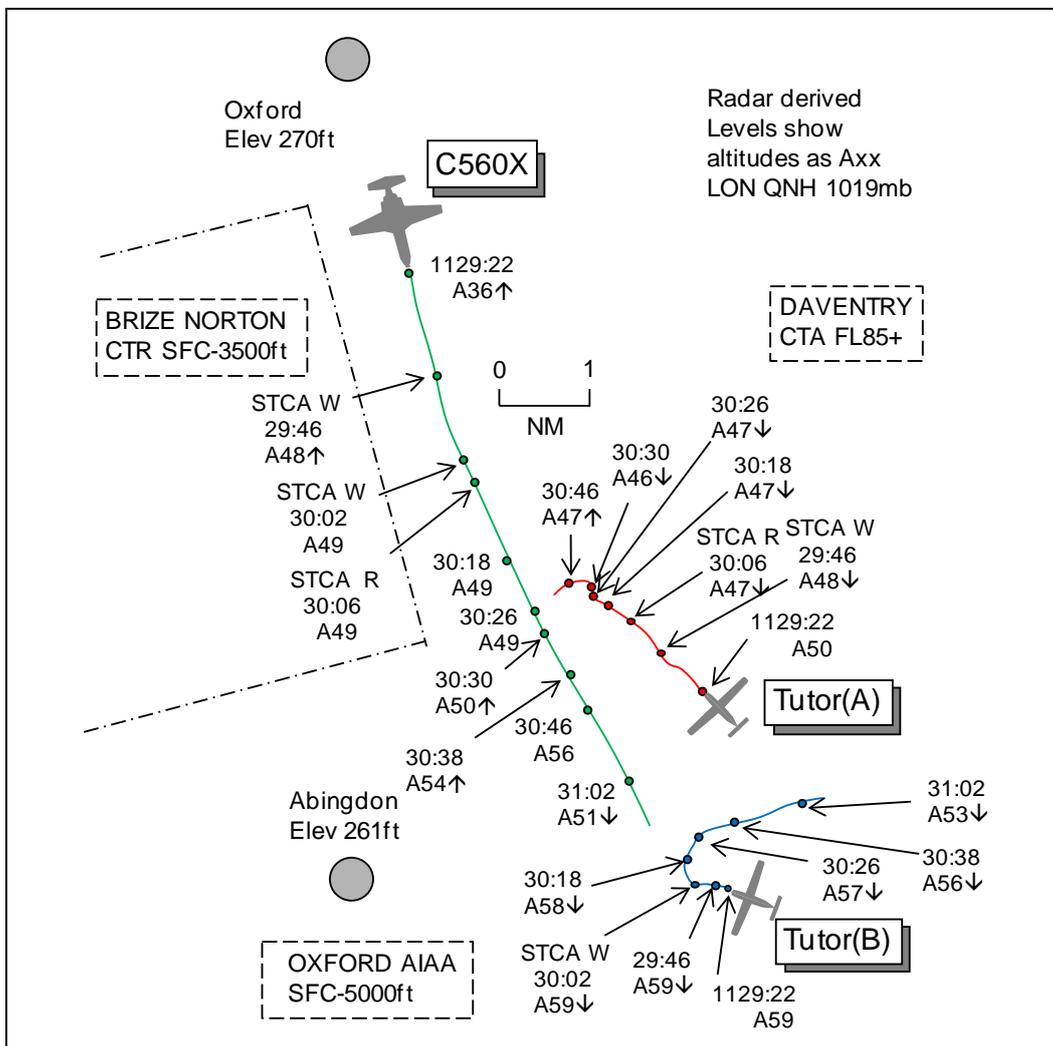
Reported Separation:

400ft V/NR H above V/2nm H Not seen

Recorded Separation:

C560X v Tutor(A) 200ft V/0.7nm H

C560X v Tutor(B) 200ft V/1.8nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE LTC OCK/SE LOW CONTROLLER reports that an Oxford departure, the C560X, had been given a clearance to remain outside CAS and to call for join. He noticed that there were 2 Benson ac operating on the route towards CPT between FL40 and FL60. As the C560X flight called on frequency climbing to FL50, STCA activated against the first Benson ac [Tutor(A)] which was at FL49. He told the C560X crew that they were under a BS only but that there was traffic 11 o'clock 5nm now descending to FL48. He re-called the traffic at 2nm at the same level before the C560X was seen to climb to FL54 and its crew reported that they had climbed owing to traffic. In taking the climb the C560X came into conflict with the second Benson ac [Tutor(B)] so he called this as traffic and gave the C560X flight a joining clearance on track CPT altitude 6000ft to enable further climb. When the C560X flight was inside CAS he asked the crew if they had seen the traffic to which they replied that they had not seen it but had responded to a TCAS RA. While this event occurred outside CAS and under a BS, a flight on frequency activating STCA with 2 other unknown ac and reporting a TCAS RA could be a distraction.

THE C560X PILOT reports outbound from Oxford, IFR and in communication with London on 135.8MHz, squawking 5251 with Modes S and C. They had received a clearance from Oxford to take-off RW19 with a L turn to CPT and to climb to 5000ft with the assigned code and to contact London after take-off. After calling London they were assured again of 5000ft to CPT under a 'Traffic Advisory' service, he thought. Heading 150° at 240kt and maintaining 5000ft they received TI on traffic in their 1230 position, he thought, range 6nm. Neither the PF in the RHS nor he could visually acquire the traffic but it was shown on TCAS to be closing quickly and almost at the same height. He switched the TCAS from 12nm to 6nm range but then received a TCAS RA 'climb, climb'. The co-pilot initiated the manoeuvre without delay and he also increased the ROC. This climb took them to 5800ft; a second ac was no immediate threat owing to their climb. He informed London as soon as the frequency wasn't occupied. Flight conditions were VMC but they never visually acquired any traffic. Shortly thereafter they were cleared to FL60 and were fully IFR controlled.

THE TUTOR(A) PILOT reports teaching an elementary flying exercise to a UAS student at 100kt and in receipt of a TS from Benson. The visibility was excellent above a uniform layer of cloud, tops 3500ft. The controller alerted him to fast moving traffic to his NW with which he was already visual in his 1030-11 o'clock approximately 3nm away and at the same height, 5000ft; he acknowledged this accordingly. The other ac was on an opposite track and it was clear that his continued heading would keep him well clear of it. The other ac appeared to maintain its heading in a gentle climb and passed abeam on his LHS at range 2nm and at high speed, sufficiently far enough away to make it difficult to identify the ac type but he thought it was a Citation. At no point was there any perceived risk and the Citation did not deviate from its track throughout. He maintained visual contact with Citation throughout until it cleared to the S.

THE TUTOR(B) PILOT reports flying a dual training sortie from Benson and in receipt of a TS from Benson squawking with Modes S and C. About 4nm S of Oxford he was flying above 8/8th cloud outside CAS on recovery to Benson in excellent visibility. He was on an E'ly heading at FL50 when he was advised of fast moving traffic 2nm to the NW, behind him, 200ft below and climbing. He did not consider this traffic to be a threat but asked ATC to keep him posted. He was later advised that the other ac was submitting an Airprox

THE BENSON APPROACH CONTROLLER reports operating bandboxed with Director. At 1115 he received a telephone call from Oxford with TI on an ac departing Oxford squawking 5251 climbing to 5000ft to join CAS at CPT. He was asked if he wanted to work the flight and due to him having no traffic to affect at the time he declined after consultation with Zone. At 1130, 15min after the TI was passed, he witnessed an ac leaving the Oxford ATZ squawking 5251 and, as now he had traffic in the area, he passed TI to Tutor(A) pilot, who called visual, and to another Tutor flight, Tutor(B), whose pilot asked to be kept updated. Both Tutors were under a TS and due to the non-threatening heading of the traffic he did not consider an update to be relevant and therefore none was passed. Shortly after this Tutor(A) flight downgraded to a BS and changed frequency to Stud 7. Shortly after

this he was relieved for lunch and on arrival back in the Tower he was informed that LTC S had filed an Airprox on both Tutors.

ATSI reports that an Airprox occurred approximately 10nm N of CPT when the C560X came into conflict with a Tutor at altitude 5000ft.

The C560X departed Oxford for a flight to Bern, Switzerland. The C560X was in contact with the LTC OCK sector on 132.125MHz and in receipt of a BS.

The Tutor had departed Benson and was on a training flight, in receipt of a TS from Benson Approach.

LTC OCK was manned by one controller and there were no reported unservicabilities or undue distractions. The OCK controller filed an Airprox report. ATSI assessed the controller's workload as 'light'.

ATSI had access to controller and pilots' reports, transcript of frequency 132.125MHz, recorded area surveillance and the ANSP unit report.

The C560X flight departed Oxford's RW19 cleared, "*left turn to Compton, climb altitude 5000 feet, squawk 5251*". The code 5251 was the airways Mode A code for the flight and was code-c/s converted on the OCK controller's situation display. The C560X was airborne at 1128 (UTC).

The LTC Manual of Air Traffic Services (MATS) Part 2 STH 5.7 Para 5.8.2 states:

'All departures from Oxford requesting an airways join at CPT are pre-noted to Brize Radar. On occasions, Brize Radar may provide a service to such departures subject to workload.'

Further provision is also made for Oxford ATC to pass details of departures towards CPT to Benson, when Brize Radar will not work such departures. ATSI were unable to ascertain if the C560X flight was offered to either Brize Norton or Benson for a service.

The C560X appeared on the OCK controller's situation display at 1129:23 as it passed through altitude 3600ft. Pease Pottage was the radar in use.

At 1129:25 the C560X pilot called the OCK sector and a BS was assigned. The ac was 18.5nm N of CPT, where the base of CAS is FL085.

[UKAB Note (1): Pilots are notified in UK AIP ENR 1-6-1-1 (12 Mar 09) that no DS or TS will be available on any London Control frequency below FL070.]

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.

At 1129:40 the OCK controller informed the C560X flight, "*(C560X c/s) although it's a Basic Service outside be advised there is traffic in your 11 o'clock range of approximately 5 miles showing flight level four nine er descending actually four eight now unverified.*" The controller's transmission ended at 1129:52, by which time STCA low-level alert had activated between the C560X and an A3610 return [Tutor(A)]. Both ac were at altitude 4800ft (London QNH was 1019mb), Tutor(A) in the C560X's 11 o'clock range 3-8nm.

The C560X pilot replied, "*Yeah, we have contact er one thousand below.*" The controller did not detect this discrepancy.

Another low-level STCA warning activated at 1130:02 on a Benson squawk A3611, Tutor(B), at altitude 5900ft in the C560X's 11 o'clock, range 5-4nm.

At 1130:05 a high-level STCA warning activated between the C560X and Tutor(A).

The controller updated the TI on Tutor(A) at 1130:16, *“and (C560X c/s) previously mentioned traffic at about two miles now er in your 11 o'clock opposite direction showing four seven unverified.”* The C560X crew acknowledged with, *“Er”*. The C560X was now at altitude 4900ft with Tutor(A) at 4700ft, range 1-8nm closing from the L, 11 o'clock.

[UKAB Note (2): The CPA occurs at 1130:26 when Tutor(A) passed down the LHS of the C560X with lateral separation 0.7nm, the C560X showing altitude 4900ft and Tutor(A) at 4700ft. The next sweep 4sec later shows the lateral separation still at 0.7nm with the C560X climbing through 5000ft and Tutor(A) descending through 4600ft.]

At 1130:49 the C560X flight reported, *“...we had to climb up due to er climb advisory of the TCAS of the mentioned traffic we're descending to five thousand again.”* The C560X had climbed to altitude 5600ft. STCA had ceased on Tutor(A) but reactivated on the 3611 return, Tutor(B).

The controller acknowledged the C560X's climb and at 1130:57 gave TI on Tutor(B) return which by now had turned E'bound away from the track of the C560X, *“...there's further traffic now in your nine o'clock showing five four unverified you are clear to enter controlled airspace in the climb to altitude six thousand feet if you want to climb.”*

No further TCAS incidents were reported.

Shortly before leaving the OCK frequency the controller asked the C560X pilot if they had seen the Tutor traffic, to which the reply was negative. The flight conditions later reported by the C560X pilot were 'VMC (visibility >10km in haze)'.

The controller later acknowledged that even though outside CAS under a BS, the activation of conflict alert between the C560X and the 2 other ac, plus the reporting of the RA, could have been an undue distraction. There were no other reported incidents on the sector at the time.

The Airprox occurred in Class G uncontrolled airspace 15nm N of CPT at altitude 5000ft when the C560X, inbound CPT, came into conflict with Tutor(A) operating in the vicinity.

Outside CAS the responsibility for collision avoidance rests solely with the pilot of each ac however, subject to the level of service agreed through ATSOCAS, controllers may provide TI (or deconfliction advice) as necessary.

At the time of the incident the C560X flight was in receipt of a BS; however the OCK controller deemed that the relative positions of each ac were such that a warning, in the form of TI, was necessary. Tutor(A) flight, being visual with the C560X, was able to avoid the C560X having been provided TI from Benson Approach.

There is no obligation for a third party agency to provide services to Oxford departures via CPT and similarities between this Airprox and an earlier Airprox (2011004) should be noted. London Oxford Airport has published its intention to procure surveillance equipment for operational readiness in 2012 at which time the procedures relative to all ANSPs in the Oxford-Compton area should be reviewed.

BM SAFETY MANAGEMENT reports that this incident was filed as an Airprox by the LTC OCK controller and involved 2 individual Tutors operating VFR in receipt of a TS from Benson APP and a Citation 560X which had departed Oxford in receipt of a PS from them and latterly a BS from TC OCK.

All altitudes quoted within the report, unless stated otherwise, are based on the SSR Mode C information from the RAC supplied radar replay.

At 1115:24, Oxford contact Benson stating, *“five-three-five-four squawk, climbing up towards CPT at 5, do you need to work him?”* The procedure between Oxford and Benson is that as Benson is not a unit with a mandated LARS task; they only accept Oxford traffic if they have IFR traffic that they need to de-conflict with the Oxford traffic. In this case, Benson had no such traffic.

[UKAB Note (3): The C560X assigned code was 5251.]

At 1129:45 the Citation is approximately 3.2nm S of Oxford climbing through 4800ft, with Tutor(A) 4.3nm SE at 4800ft in a slow descent, tracking NW.

Shortly afterwards at 1129:50 Tutor(A) turned L approximately 20° bringing it more directly into conflict with the Citation. At 1129:57 APP passed accurate TI to Tutor(A) flight stating, *“traffic north-west, three miles [radar replay shows 3.7nm], tracking south, fast moving, one hundred feet above climbing.”*

By 1130:01 Tutor(B) is 5.7nm SE of the Citation, tracking W, indicating 5900ft, with the Citation now maintaining 4900ft.

At 1130:09 Tutor(A) pilot reported visual with the Citation, with 2.1nm lateral separation existing and Tutor(A) indicating 4700ft in descent. However, the pilot of Tutor(A) stated in his report that they were already visual with the Citation at the point when TI was passed.

At 1130:15, Tutor(B) commences a long R turn onto NE.

The CPA between Tutor(A) and the Citation occurs at 1130:26 with 200ft vertical and 0.7nm lateral separation shown on radar. The pilot of Tutor(A) stated that the Citation could be seen to be *“flying the opposite track to me and it was clear that our continued heading would keep us well clear of each other.”*

At 1130:35 APP passed accurate TI to Tutor(B) flight stating, *“traffic north-west, two miles [radar replay shows 2.6nms], tracking south-east, fast moving, two hundred feet below climbing.”* At 1130:38 the Citation has climbed to 5400ft which accords with the pilot's report to the TC OCK controller that they had manoeuvred in accordance with a TCAS RA. Although Tutor(B) pilot requested to be kept *“posted”* on the position of the Citation, with the relative courses of the ac no further update was required from APP with the Citation tracking through Tutor(B)'s 6 o'clock range 2.1nm.

The CPA between Tutor(B) and the Citation occurs at 1131:02 with 200ft vertical and 1.8nm lateral separation shown on radar.

Realistically, the Airprox did not involve Tutor(B) and occurred between Tutor(A) and the Citation. However, Tutor(A) pilot was visual with the Citation at an early point in the incident sequence, enabling him to assess the situation and determine that sufficient separation existed.

Focussing specifically on the Mil ATM issues, APP provided accurate TI to the Tutors in accordance with the criteria laid down within CAP774. Moreover, by adapting their phraseology to include the term *“fast moving”* they provided a better *“picture”* for the Tutor aircrews involved. Given the number of Tutors operating within the local area and that both Tutors had previously been passed TI on each other, exclusion of the term *“fast moving”* might have suggested that the TI referred to another Tutor.

In terms of the timeliness of the TI to both Tutors, based upon the information presented to APP in terms of the relative tracks of Tutor(A) and the Citation and the speed of Tutor(A), passing TI earlier than 1129:57 would have been nugatory. Moreover, in terms of the TI to Tutor(B), 1130:35 represented their first opportunity to pass TI given that they had been involved in an RT exchange with a third Tutor, involving the passing of TI to that flight. This exchange lasted from the point where

approximately 4.2nm lateral separation had existed between Tutor(B) and the Citation, to the point where TI was passed to Tutor(B) at 2.6nm.

Finally, the Unit raised the issue of the landline liaison between themselves and Oxford at 1115:24 and their status as a non-LARS unit. Whilst a hindsight-bias argument could be created to suggest that APP could have contacted Oxford to pass TI to them on the Tutors, no clear benefit from such an activity could have been gained from Oxford's perspective, given the absence of surveillance equipment at that unit which would result in the passing of very generic TI to the Citation. Moreover, Oxford clearly transferred control of the Citation to LTC OCK relatively early, enabling LTC OCK to give more effective TI, despite only being able to offer a BS outside CAS.

This Airprox occurred in Class G airspace where the Mil aircrews and controllers involved discharged their responsibilities under CAP774 and the Rules of the Air exactly.

HQ AIR (TRG) comments that both Tutors operated under a TS and received timely TI that enabled them to deconflict from traffic, in Class G airspace, that did not see them. The activation of STCA and TCAS provided an additional benefit, firstly to the controller and secondly to the Citation, by highlighting a potential conflict in 'see and avoid' airspace.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The LTC OC/SE Low controller was undoubtedly concerned when the C560X flight was transferred to his frequency in potential conflict with 2 ac, Tutors (A) and (B). Although the C560X flight was flying under IFR, in Class G airspace there was equal responsibility on all crews to maintain their own separation from other ac through see and avoid. The controller was limited to providing a BS but issued a traffic warning to the C560X crew as the flightpaths were in apparent conflict, which was reinforced when STCA activated. The controller updated the warning when separation reduced to 2nm, the C560X crew reporting 30sec later that they had manoeuvred in response to a TCAS RA against Tutor(A). Members noted that the radar recording does not reflect the C560X crew's perception of the TCAS evolution as the ac's Mode C only indicates a climb as it passes abeam Tutor(A) with 0.7nm horizontal separation and 200ft vertical. The LTC controller also passed a traffic warning on Tutor(B) but by now that Tutor was tracking E'ly and the C560X had descended back to 5000ft, below it. Meanwhile, unbeknown to the LTC controller, both Tutor(A) and (B) flights were operating under VFR and a TS from Benson. Tutor(A) flight was issued with TI by Benson on the C560X which he had already seen and was taking visual separation against. (B) flight was given TI and was not concerned given the geometry, content the C560X would pass behind.

A controller Member, familiar with LTC operations, stated that an initial joining clearance would not be issued until the flight called on frequency owing to the uncertainty of the departure time from Oxford and its time en-route. The airspace in the CPT area is complicated by Luton outbound flights climbing to FL70, the lowest available level, or above, so invariably flights seeking to join are told to remain outside CAS until the controller is sure of traffic situation. Members noted that in this incident, although it was not relevant to the Airprox, the Oxford clearance to the C560X had not included the instruction to remain clear of CAS; rather it had cleared the ac to CPT at 5000ft. Members sympathised with the controller's predicament, being on the receiving end of a situation where STCA activated and a TCAS RA was reported. However, the Tutor crews had fully discharged their responsibilities whilst the C560X crew, although unable to visually acquire the Tutors, were cognisant of their presence from the LTC controller's warnings and TCAS, and had followed the TCAS guidance. The Board believed that LTC controller, from the information presented, had perceived a conflict between the IFR C560X and VFR Tutors but there had been no erosion of normal safety standards or parameters.

The CAA SRG Advisor informed the Board that a new routeing had been established out of Oxford towards KENET and Brize would endeavour to provide a service for those flights.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Controller perceived conflict in Class G airspace.

Degree of Risk: E.

AIRPROX REPORT No 2011050

Date/Time: 2 Jun 2011 0919Z

Position: 5107N 00032W
(Dunsfold A/D - elev
172ft)

Airspace: London FIR (Class: G)

Reporter: Dunsfold A/G

Type: 1st Ac Agusta 109 2nd Ac Sea King Mk4

Operator: NK MFTR/Civ Test

Alt/FL: NK 700ft
QNH (NKmb)

Weather: NK NK VMC CLBC

Visibility: NK >10km

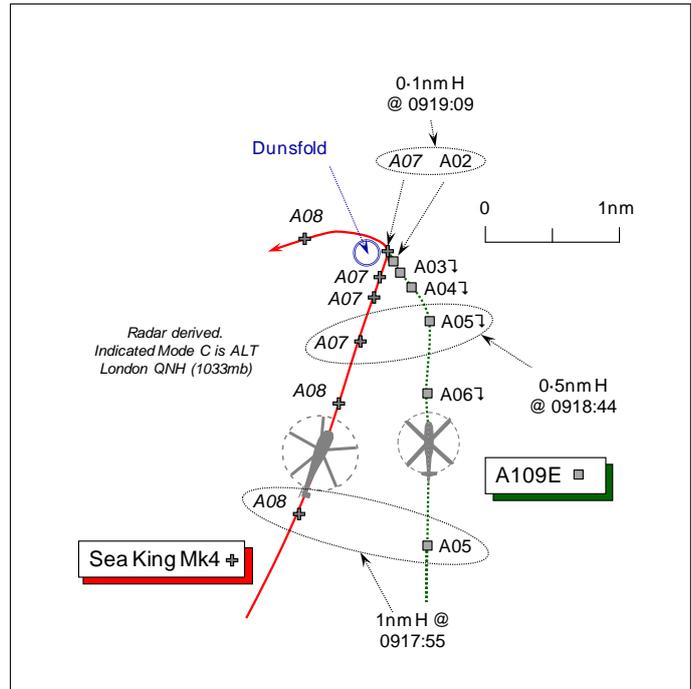
Reported Separation:

Dunsfold A/G: slightly higher
NK 700ft V/1nm H

Recorded Separation:

200ft Min V @ 0.5nm H

0.1nm Min H @ 500ft V



A/G OPERATOR [CONTROLLER] REPORTED

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE DUNSFOLD AIR/GROUND RADIO OPERATOR (A/G), who is also a licensed ATCO, reports that he was operating from the Control Tower at Dunsfold [situated S of the midpoint of RW07/25] on 119.100MHz when he became aware of a helicopter engine noise behind him. He looked around and saw a white coloured Agusta 109 (A109) helicopter approaching the southern aerodrome boundary at low level at about 400-500ft agl, which flew overhead the Tower descending steadily until it was obscured by the roof and he lost sight of it. As the A109 flew back into view again, he saw a large green Sea King helicopter that veered across ahead of the A109 from R to L, he perceived, at almost the same height, but slightly higher. The incident appeared to take place he thought at a height of about 100ft above the mid-point of the RW. Neither pilot called Dunsfold RADIO on 119.100MHz. The engine noise from the A109 flying above the VCR masked the sound from the Sea King helicopter, so he had seen it late, without any audible warning of its approach. The Sea King then made a slow turn in the Dunsfold overhead and departed to the NW at low-level.

The A109 landed next to a fuel bowser to the N of the RW and was met by an individual who began to refuel the ac once it had shut down. The bowser operator was expecting the A109 as he had received a text message from the pilot saying he was inbound, but the arrival of the A109 had not been notified to him as the A/G Operator. He called Farnborough RADAR immediately who advised that they were not talking to any traffic in the Dunsfold area. Another person who had been monitoring the A/G frequency on the ground also observed this occurrence, and at the time of the incident a high performance vehicle was using the RW for pre-arranged test runs. Subsequently, he went across the A/D to speak to the helicopter pilot and ask him if he was visual with the Sea King and to ask why he did not call on the A/G frequency – 119.100MHz. The A109 pilot's response was 'what helicopter' and stated that he had not called on the A/G frequency because he had 'forgotten it'.

Although the incident took place in Class G airspace at an unlicensed aerodrome without an ATZ, the A/G Operator perceived that both helicopters came within an unsafe distance of one another. This, combined with a non-sighting by the A109 pilot during a late stage of the approach and the omission of both pilots to call Dunsfold RADIO, especially when a high performance car was using the RW, led him to make this report.

UKAB Note (1): From a subsequent telephone conversation with the A/G Operator it seems that PPR approval had been given to the A109 pilot to operate at the A/D, but the A/G Staffs had not been informed.

THE AGUSTA 109 PILOT's company was contacted many times by the UKAB Secretariat, but to date no report has been provided.

THE SEA KING PILOT reports he had departed from Fleetlands, VFR and was conducting a post maintenance test flight in VMC whilst in receipt of a BS from Goodwood INFORMATION on 122.45MHz. The helicopter is coloured Dark Green with RN markings. The upper and lower white HISLs were on.

Flight safety critical systems (main rotor and tail rotor vibration levels plus both engine power performance indexes and max contingency levels etc) had been proven and were all within limits. At this stage of the flight they were testing the accuracy of the Doppler plot compared to the GPS plot prior to testing the ILS at Odiham and subsequently returning to Fleetlands. During the navigation plot check they routed to on-top Petworth, thence to on-top Dunsfold and to on-top the MID beacon.

Heading 260°, overflying Dunsfold at an altitude of 700ft at 90kt, his observer who was sat in the LHS, saw an A109 take off from the aerodrome below, he thought, that transitioned into their 7o'clock as they were heading W, the A109 appeared also to be heading W. There was no conflict hence they maintained a steady heading, altitude and speed whilst his observer continued to call out the A109's position by clock code, which remained in their 7o'clock. Since the A109 had just transitioned, his Sea King's speed was greater so they waited until there was sufficient lateral separation before turning SW to route towards the MID beacon. He estimated the minimum horizontal separation from the small helicopter as 1nm and the Risk 'none'.

ATSI reports that the Airprox occurred in the vicinity of Dunsfold A/D, in Class G airspace between the A109 and a Sea King Mk4 helicopter.

Dunsfold provide an A/G Service without an ATZ. Neither helicopter crew was in communication with Dunsfold RADIO. The written report from the pilot of the Sea King indicated that he was in communication with Goodwood INFORMATION. Goodwood provide a FIS, but the incident was not reported to them and no RT recording was available.

The Gatwick METAR for 0920 UTC: VRB08KT 9999 SCT034 20/11 Q1034=

Goodwood provide a FISO service and provide TI to ac flying in the vicinity of Goodwood aerodrome. It is not clear why the Sea King remained on the Goodwood frequency.

UKAB Note (1): At 0918:44, the radar recording shows two contacts separated by 0.5nm, approaching the southern boundary of Dunsfold A/D. The Sea King is the westerly of the two contacts squawking A7000 and indicating an altitude of 700ft unverified Mode C London QNH (1033mb); the easterly contact - the A109 - is at an altitude of 500ft unverified Mode C London QNH. The two helicopters converge and at 0919:09, the distance between the two ac is 0.1nm, with Sea King indicating an altitude of 700ft and crossing ahead of the A109 from the latter's L to R; meanwhile the A109 has slowed and indicates an altitude of 200ft. The Sea King then turns and departs to the W at an altitude of 800ft. The A109 is last shown at an altitude of 100ft and shortly afterwards this contact fades from radar overhead Dunsfold A/D.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included a report from the A/G Station operator, a report from the Sea King pilot, radar video recordings, together with a report from the ATC authority.

Whereas the Board normally receives reports from pilots or controllers, this was an unusual Airprox insofar as it had been originated by an A/G operator. There were, however, precedents for this and the Board recognised that the A/G Station operator involved here is also a licensed ATCO. Furthermore, the initial review of the occurrence had revealed some significant issues worthy of investigation. The Board was briefed that, despite repeated requests through the company, the A109 pilot had not provided a report. Consequently, Members were denied the A109 pilot's perspective on this Airprox and could, therefore, only base their assessment on the limited information available. Board Members expressed their disappointment at the lack of timely action by the company and the absence of a report from the A109 pilot, which prevented the Board from making a full assessment of the incident.

It was plain that neither of the pilots involved had established two-way RT communication with Dunsfold RADIO on their published frequency, thus the A/G operator was not aware of either flight before they flew into view. Whilst recognising that Dunsfold was now an unlicensed aerodrome with no ATZ and offering only limited ATS facilities, Members familiar with this area are aware that it is still used extensively by a broad range of ac operators. Moreover, other activities not compatible with aviation evidently occur on the A/D. Pilots need to be aware of what is happening, what other ac might be operating in the vicinity and where they can operate safely, which is best accomplished by operating on the frequency established for that purpose. To that end any pilot operating into the A/D, or in the immediate cct area, should be in contact with Dunsfold RADIO, to ascertain information useful for the safe and efficient conduct of the flight. Although the A109 pilot should have been able to see, cross cockpit, the larger dark green Sea King to port, the A/G operator's report suggested that the A109 pilot was unaware of the close proximity of the Sea King as he made his approach; whilst there was no reason to doubt the veracity of the A/G Operator's report, this could not be substantiated without the pilot's account. Therefore the Board agreed that the first part of the Cause was, probably a non-sighting by the A109 pilot.

From the Sea King pilot's comprehensive account, it was evident that he had not detected the presence of the smaller A109 to starboard as they approached Dunsfold from the S and it was not until their Sea King turned westbound over the A/D that the A109 was seen. Moreover, his observer had not realised that the A109 was landing; when spotted, it was most probably positioning across the main RW to the N side for refuelling before it was obscured from view as it drew aft. Since it had not been seen beforehand, it was presumed to be departing from the A/D. The Board was briefed that subsequent discussions with the Sea King pilot had revealed that on previous flights he had attempted to establish communications with Dunsfold RADIO, but two-way RT had proved somewhat erratic, the pilot suggesting that the operator might be using a hand-held VHF radio. Even though communication might be difficult, and it was accepted that the test flight was an intensive task, helicopter pilot Members opined that better airmanship was always to call on the RT when operating in the immediate vicinity of an A/D, otherwise remain clear of the cct area, as is required by the 'Rules of the Air'. The HQ JHC Member said that it was normal practice for test flights from Boscombe Down to obtain an ATS and other pilot Members agreed that the acquisition of a service, perhaps even a radar service from Farnborough, would be a useful adjunct to the crews' visual scan on high workload test flights. Controller Members recognised that Farnborough LARS would not be able to offer much of a radar service at the altitudes reported here, but in this locale they could probably provide a more useful ATS than Goodwood INFORMATION; Gatwick was suggested as another helpful ATSU who might afford a service. Regarding the actual encounter, the recorded radar data clearly shows the A109 passing to starboard and no less than 200ft below the Sea King whilst approaching Dunsfold A/D. The A109 was there to be seen forward of the beam from a range of 1nm the radar recording reveals and broadly in the Sea King pilot's field of view from that point. Therefore, the Board concluded that the other part of the Cause was, effectively, a non-sighting by the Sea King crew.

Some perceived that this was a Risk bearing Airprox because both ac were flying towards the same point on converging tracks at close quarters, both pilots being unaware of the other helicopter it would seem. Any separation that did exist was thus fortuitous. However, it was evident from the radar data that the A109 was always below the Sea King before it commenced final descent to land on the A/D, and at the point of minimum horizontal separation as the Sea King turned overhead the recorded Mode C, albeit unverified, indicated it was 500ft above the A109, not the 100ft perceived by the A/G operator. This convinced other Members that any Risk had been effectively removed. Although the Board was content to assess the Cause of this Airprox, further discussion then ensued as to whether there was sufficient evidence available to enable the Members to assess the Risk of collision. Moreover, it is not within the Board's remit to consider the safety implications of any conflict with a vehicle that might have been using the RW when the A109 landed. Following a wide ranging debate, Members concluded that without an account from the A109 pilot there was insufficient information available to reach a meaningful conclusion on the inherent Risk.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Effectively a non-sighting by the Sea King crew and probably a non-sighting by the A109 pilot.

Degree of Risk: D.

AIRPROX REPORT No 2011055

Date/Time: 10 Jun 2011 1453Z

Position: 5248N 00121E (7.5nm NNE
Norwich - elev 117ft)

Airspace: LFIR (Class: G)

Reporting Ac Reported Ac

Type: SK76 Untraced
Flexwing
M/Light

Operator: CAT NK

Alt/FL: 2000ft
(RPS 1010mb) (NK)

Weather: VMC CLBC NK

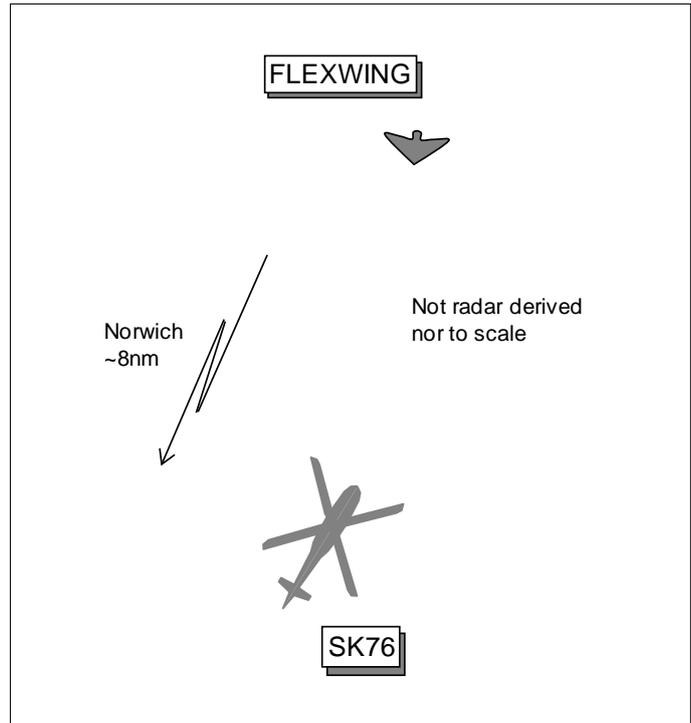
Visibility: >10km NK

Reported Separation:

100ft V/200m H

Recorded Separation:

NR



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE SK76 PILOT reports outbound from Norwich IFR to an offshore platform and in receipt of a TS from Norwich Radar on 119.35MHz, squawking 0245 with Modes S and C; TCAS was not fitted. The visibility was >10km flying 1000ft below cloud in VMC and the helicopter was coloured red, white and blue with HISL, nav and anti-collision lights all switched on. About 3nm W of Bacton heading 036° at 2000ft Yarmouth RPS 1010mb and 140kt they were alerted to a, "contact 12 o'clock 1nm no height information". The traffic was sighted about 1nm ahead at the same level on a converging track from the N. They took avoiding action by executing a hard R turn downward. The traffic, a silver/grey coloured Flexwing M/Light passed about 100ft above and 200m clear to their L before passing about 0.5nm behind without taking any avoiding action and he assessed the risk as high.

THE SK76 COMPANY FLIGHT SAFETY OFFICER comments that, whilst not relevant to this Airprox (M/Light not fitted with a transponder) the Board may wish to be aware that with the completion in May of the EASA STC for the fitment of TCAS II to their company SK92A fleet, work is starting on a similar STC for the SK76 fleet.

RAC MIL reports that despite extensive tracing action the identity of the M/Light remains unknown. Seven Flexwing M/Lights landed at Cromer Airfield between 1354 – 1427Z and no other M/Lights landed after that time.

THE NORWICH RADAR CONTROLLER reports controlling 4 ac providing DS, TS and BS. The SK76 carried out a standard RW27 departure onto an outbound track of 035° and after being transferred to his frequency the flight was identified, placed on a TS and instructed to adjust to altitude 2000ft Yarmouth RPS 1010mb. Having noticed a pop-up intermittent primary only contact close the SK76's intended track TI was passed stating it was in its 12 o'clock range 1nm crossing L to R no height information. The pilot stated that he was looking and later called visual and that the ac was heading SW. He requested the height of the unknown traffic and was told it was close to the helicopter's altitude. No discernable avoiding action by the pilot of the SK76 was noticed on radar and a short time later the pilot stated that he wished to file an Airprox. The other ac was described

as a Flexwing M/Light and it was observed for some time after the incident, appearing to disappear from radar O/H Cromer/Northrepps airfield.

ATSI reports that the Airprox occurred at 1453:20, within Class G airspace and 7.5nm to the NNE of Norwich Airport.

The Airprox was reported by the pilot of an SK76C operating IFR, en-route from Norwich Airport to the 'Loggs'- Offshore Platform, in receipt of a TS.

The other ac was reported as a Flexwing M/Light, which was observed by Norwich radar until the ac faded from radar in the vicinity of Northrepps Aerodrome, which is situated 13nm to the N of Norwich Airport.

The Norwich controller was operating as the Approach Radar Controller, with 4 ac on frequency. The workload was considered as medium and all equipment was reported as serviceable.

CAA ATSI had access to RT and NATS radar recordings, together with written reports from the Norwich Radar controller and the SK76 pilot. The Flexwing M/Light was untraced and did not show on the radar recording.

METAR EGSB 101450Z 19009KT 140V240 9999 FEW028 15/05 Q1013 NOSIG=

The SK76 helicopter departed from Norwich at 1448:00. At 1450:32, the SK76 flight contacted Norwich Radar and reported passing 1500ft on departure. The controller replied, "*(SK76 c/s) good afternoon identified Traffic Service climb to altitude two thousand feet on the Yarmouth one zero one zero.*" This was acknowledged correctly by the SK76 pilot.

At 1453:02, the radar controller advised, "*(SK76 c/s) intermittent contact at twelve o'clock one mile left right slow moving no height.*" The radar recording shows the SK76, 7.2nm NNE of Norwich Airport indicating FL021. The M/Light is not shown on the radar recording. The SK76 pilot replied, "*....looking*" and, "*(SK76 c/s) visual one microlight.*" The Radar controller then asked, "*Roger thanks is he below you.*" The pilot reported, "*er he's just about level (S76 c/s) and heading southwest.*"

At 1453:26, radar recording shows the SK76, indicating FL020 and then at 1453:46, shows the SK76 make a R turn of about 5°.

Shortly afterwards the SK76 pilot reported the incident as an Airmiss [Airprox] and described the other aircraft as a Flexwing M/Light.

At 1455:26, the SK76 flight was transferred to Anglia Radar on 125.275MHz.

The SK76 flight was in receipt of a TS. The Radar controller observed pop up traffic, close to the track of the SK76 and passed TI. The Manual of Air Traffic Services (MATS) Part 1, Section 1, Chapter 11, Page 5, paragraph 4.1.1 and 4.5.1, states:

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

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

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the SK76 pilot, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC authorities.

Members were disappointed that the Flexwing M/Light could not be traced which left them with only the reporting pilot's viewpoint on the incident. Since the Airprox occurred in Class G airspace, there was equal onus on both pilots to maintain separation from other ac through see and avoid. The SK76 crew had supplemented their lookout with a TS from Norwich ATSU and the controller had done well in quickly passing TI when the pop-up contact from the M/Light appeared on radar. This alerted the SK76 crew to the M/Light's presence and enabled them to see the conflicting traffic almost immediately. It is not known if the M/Light pilot saw the helicopter, although the SK76 crew reported that the M/Light was not seen to take any avoiding action as they passed; however, the SK76 crew took prompt and robust avoiding action which quickly resolved the conflict. On the limited information available, the Board elected to classify this incident as a conflict in Class G airspace where the SK76 crew's actions had effectively removed any risk of collision.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict with an untraced M/Light in Class G airspace.

Degree of Risk: C.

AIRPROX REPORT No 2011057

Date/Time: 4 Jun 2011 1035Z (Saturday)

Position: 5545N 00213W (10nm S of ST ABBS VOR)

Airspace: Scottish FIR (Class: C)

Reporting Ac Reported Ac

Type: BE9L F-15E x2

Operator: Civ Exec Foreign Mil

Alt/FL: FL230 FL210↑

Weather: VMC CLAC NR

Visibility: 50km NR

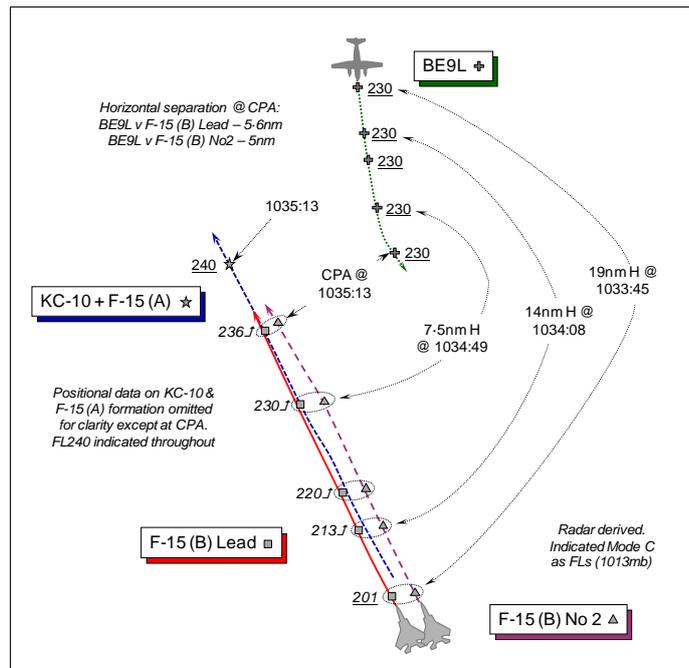
Reported Separation:

1000ft V/5nm H NR

Recorded Separation:

BE9L v F-15 (B) Lead: 600ft V/5.6nm H

BE9L v F-15 (B) No2: N/K V/5nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE BEECH BE90L (BE9L) PILOT reports he was in transit from Wick to Oxford/Kidlington IFR and in receipt of a RCS from Scottish CONTROL. The assigned squawk was selected; Mode S and TCAS are fitted. The ac is coloured silver and blue; the HISLs were on.

Approaching a position 50nm S of Wick, heading 175° on track for TILNI at 270kt, maintaining a level cruise at FL230, the controller passed TI about a tanker and escort, advising that they were 1000ft below his level and co-ordinated against his ac. About 1min later he became visual with the grey KC-10 tanker and military fast-jets 5nm away; ATC then called 'avoiding action, turn left immediately 50°', with which he complied. The controller advised that 2 military jets had climbed and were levelling at FL232. No TCAS RA was received. Subsequently, he was recleared direct to TILNI. He assessed the Risk as 'low'.

THE LEADER OF F-15E (B) FLIGHT [F-15 (B)] provided a narrative stating he was the lead pilot of a flight of 2 F-15E ac supporting the deployment of a formation of 6 F-15Es (F-15 (A) formation) to Pacific Air Command (PACOM). The KC-10 tanker launched from Mildenhall for the transatlantic flight plan and his F-15 (B) flight launched at the same time from Lakenheath with F-15 (A) formation. They all proceeded N on the notified routeing as they joined. The KC-10, F-15 (A) formation and his F-15 (B) flight were all MARSAs [Military Accepts Responsibility for Separation of Aircraft]. His two-ship F-15 (B) flight was 2nm behind the 6-ship F-15 (A) formation as the latter flew up to and joined with the tanker for refuelling operations. The KC-10 crew worked many of the radio communications for the package as they were the lead ac. At no time did F-15 (B) flight ever fly above the levels the formation had been cleared to; the KC-10 being higher than F-15 (A) formation, which was higher than his F-15 (B) flight that was trailing the formation.

Unaware of flying through any altitude/level restrictions provided by ATC, their flight path was cleared visually and with their onboard radar, deconflicting from F-15 (A) formation with whom they were visual. They contacted all ATC agencies in sequence with the KC-10 and F-15 (A) formation, abiding by all ATC instructions as they understood them. He had asked the other flight members and no one recalls hearing any instructions or deconfliction warnings provided by ATC for a level-off at FL210. The only issue that he was aware of that caused discussion with ATC was when the No5 of F-15 (A)

formation had to return to Lakenheath because of an ac malfunction. The pilot of No5 turned onto a reverse routeing as he contacted ATC for a separate clearance as a single ship. At this point, ATC issued some instructions regarding other traffic in the area.

SCOTTISH AREA CENTRE PRESTWICK TAY SECTOR CONTROLLER (TAY SC) reports that the BE9L crew had been warned about military traffic that had been co-ordinated against him that would pass by in 5 min. The pilot had reported visual contact with multiple ac before the incident. He had initiated co-ordination with ScATCC (Mil) as the BE9L was inside CAS but 'off-route' under a RCS. The initial co-ordination agreement was against military traffic at FL240, but then a further request from ScATCC (Mil) was made for co-ordination against F-15 (B) flight. As the agreement was getting complicated he agreed that the BE9L would maintain FL230 and that ScATCC (Mil) could take 1000ft separation on Mode C, above or below the BE9L with F-15 (B) flight, until the subject ac had passed.

A handover of the TAY Sector had commenced just before the incident and it was the relief controller that noticed that F-15 (B) flight had climbed into conflict with the BE9L.

Because of the close proximity of the military formation it was difficult to read the SSR data block level information. The BE9L crew was given a 'standard' avoiding action turn to the L until all the ac had passed.

THE ScATCC (MIL) CONTROLLER reports he was the ATCO-on-watch, working 7 separate units consisting of a tanker and chinks proceeding northbound on a Coronet East task, a formation of 3 F-15s in the Vale of York [F-15 (C) formation], as well several civil ac. The lead Coronet ac was a KC-10 with F-15 (A) formation followed by 2 further F-15 ac – F-15 (B) flight – as a separate element in a 10nm trail attempting to join. Passing Newcastle, the KC-10 and F-15 (A) formation were level at FL240 with the trailing F-15 (B) flight level at FL200. TAY SC was working the BE9L level at FL230 and co-ordination was agreed that he could maintain 1000ft vertical separation with his Coronet formation ac on Mode C, above or below TAY's BE9L. F-15 (B) flight leader then requested a climb to FL240 to rendezvous with the Coronet formation; he was instructed to climb to FL210 initially, to maintain the co-ordination agreement against the civil BE9L. The controller then received complicated multiple requests from several speaking units [elements of F-15 (C) formation], whereupon he observed F-15 (B) flight had climbed through their assigned level of FL210. At this point F-15 (B) flight and the BE9L were separated laterally by about 5-7nm, diverging and 500ft vertically above the BE9L. He immediately informed the duty ATCO i/c of what had occurred.

THE ScATCC (MIL) ATCO I/C reports he was informed by the ATCO-on-watch that F-15 (B) flight had climbed above their assigned level, breaking the co-ordination agreement with the SAC TAY SC. Approaching the SAC Civil Watch Manager who was aware of the incident, they immediately reviewed the radar replay to ensure that minimum separation was not lost during the occurrence. The recording shows that at no point was the minimum prescribed horizontal separation of 5nm eroded. He was aware that the controller was working particularly hard throughout the period, with multiple fast-jet ac and GAT in a quite complex air picture. Earlier, he had refused traffic as the Unit was working to maximum capacity.

UKAB Note (1): AUS issued an ALTRV (altitude reservation) for Coronet East 095/4 (11-05-0556) – a refuelling task - which was transmitted to ScATCC (Mil) on 2 Jun. The message granted Non-Deviating Status (NDS) above FL245 to the KC-10 tanker and F-15 (A) formation from specified co-ordinates within the Scottish UIR from FL240-260 inclusive. MARSAs applied within all Coronet East ac. Furthermore it was emphasised that 'ACFT MUST OBTAIN ATC CLEARANCE PRIOR TO ANY ALTITUDE CHANGES...'

BM SAFETY MANAGEMENT reports that this Airprox occurred 45nm NW of Newcastle between a pair of F15s - F-15 (B) flight - part of a Coronet East Atlantic transit in receipt of a RCS from ScATCC (Mil), with the BE9L en-route to Oxford in receipt of a RCS from ScACC TAY Sector.

The Airprox occurred at the weekend when ScATCC (Mil) operate with a reduced watch of 3 controllers, including 1 who undertakes the Distress and Diversion (D & D North) role. The ScATCC (Mil) controller's workload and task difficulty was assessed as 'high' with 4 speaking units comprising: the Coronet East mixed formation at FL240, comprising a KC-10 and F-15 (A) Formation with F-15 (B) flight in trail at FL200 closing the Coronet; a formation of 3xF15s - F-15 (C) formation - conducting general handling in Class G airspace 17nm SE of Newcastle and an un-related civil ac joining the en-route structure at NEW at FL240. The Coronet formation was NOTAM'd as being in receipt of Non-Deviating Status above FL245; however, neither the ScATCC (Mil) nor LATCC (Mil) controllers were aware of the Coronet formation until approximately 2 hours prior to the incident. The Unit's investigation established that the Unit received the Coronet ALTRV notification message, but could not establish why it had not been highlighted to the personnel on shift on the morning of the incident. At the time of the incident, the ScATCC (Mil) controller had been on console for 35 mins and was controlling all ac being worked by the Unit. Moreover, the 4 speaking units were being controlled on 3 separate frequencies, although from the transcript none appear to have been cross-coupled. Consequently, throughout the incident sequence, the transcript is confused with numerous simultaneous transmissions. The Unit's guidance on task load - the number of speaking units under an ATS - rather than workload, which is a function of task load, task complexity, time scale for task completion and the individual's psycho physiological state, is that controllers should not work more than 3 speaking units concurrently. There are occasions when controllers can work more or less traffic, dependent upon the situation. For example a fourth ac that was a relatively un-complicated transit, or working less traffic when presented with a more complex situation.

At 1033:00, the unrelated civil ac joining at NEW was transferred to ScACC as GAT. At this point the Coronet formation was 47nm NW of NEW and F-15 (C) formation was 20nm SE of NEW. At 1033:11, F-15 (B) flight lead stated to the ScATCC (Mil) controller his intention to join the Coronet, "ScATCC (Mil) [F-15 (B) flight C/S] on victor, let me just clarify...[C/S No2] is 5 miles in trail and will be joining with [KC10 C/S]. The controller replied "negative, you are coordinated with civil traffic north of you by 20 miles maintaining flight level 2 hundred (sic)". However, the BE9L was actually coordinated maintaining FL230. Immediately following this transmission about the coordinated traffic from the ScATCC (Mil) controller, F-15 (B) flight leader requested a climb to FL210: "ScATCC (Mil) [F-15 (B) flight C/S] copy, we are MARSAs [KC10 & F-15 (A) formation C/Ss] and if able we would like to climb to 2-1-0, this is for a trans Atlantic passing [sic] we need to do when refuelling". At 1033:45 the controller instructed, "[F-15 (B) flight C/S] roger, climb FL210"; this instruction was not acknowledged by F-15 (B) flight leader, although the radar replay shows that the flight entered a relatively slow climb at 1033:52. There are no other transmissions on the RT transcript that might have obscured the flight leader's acknowledgement of this instruction, or that might have precluded the ScATCC (Mil) controller challenging F-15 (B) flight leader over his lack of an acknowledgement.

At the time of the occurrence the regulation within JSP 552 relating to the conduct of formation join-ups, including MARSAs was at para 235.165. This regulation has been carried across to MAA RA 3011 and MMATM Chapter 11 Paras 43 to 49. JSP 552 235.165.5a states that when conducting formation join-ups in VMC, the formation leader is responsible for MARSAs from the point when the joining ac is cleared to climb visually and join the formation. As the lead pilot of F-15 (B) flight stated that they 'cleared their flight path visually,' the join was completed in VMC. Moreover, based upon the regulation contained within JSP 552 235.165 and the fact that the ac were in Class C airspace, MARSAs did not apply between F15 (B) flight and the Coronet as they were both separate elements.

The F-15 (B) flight leader pilot reported that:

'At no time did F-15 (B) flight ever fly above the levels the formation had been cleared to...no [flight Member] recalls hearing any instructions or deconfliction warnings provided by ATC for a level-off at FL210.'

At 1034:04, F-15 (C) formation commenced a lengthy RT exchange with the ScATCC (Mil) controller, stating their intention to split into 2 speaking units; one unit transiting S to the Wash ATA and one remaining in place 20nm SE of NEW. At this point, F-15 (C) formation was 79nm S of the Coronet formation. This prompted the controller to request that F-15 (C) formation change to an en-route

frequency due to a, *“lot of...military traffic proceeding north-west bound”*, a clear reference to the Coronet. This conversation between the ScATCC (Mil) controller and F-15 (C) formation finished at 1035:05; during this period, at 1034:08, F-15 (B) flight climbed through FL213. At the point that the ‘level-bust’ occurs, the BE9L is 14.7nm NNE of F-15 (B) flight level at FL230.

The ScATCC (Mil) ATCO i/c stated that as the ScATCC (Mil) controller became busy, he took up position next to the controller in a PLANNER role. During the incident sequence, the ATCO i/c was monitoring traffic as it approached the ScATCC (Mil) area of responsibility in an effort to manage the Unit’s traffic flow and was taking the landline calls into the unit.

At 1035:03, the avoiding action turn issued by TAY SC to the BE9L becomes apparent on the radar replay with 6nm lateral separation shown and F-15 (B) flight climbing through FL234. The CPA occurred 10sec later at 1035:13, [5.6nm lateral separation is evident against the leader with 600ft of vertical separation indicated on Mode C and 5nm lateral separation shown against the No2]. Just afterwards at 1035:24, the ScATCC (Mil) controller asked F-15 (B) flight leader to, *“confirm your altitude”* which suggests that this is the point when the controller realised that the level-bust had taken place.

It is clear that F-15 (B) flight climbed above their assigned level of FL210, thereby breaking the coordination agreement between ScATCC (Mil) and ScACC TAY SC. Although the instruction to climb to FL210 was clear, F-15 (B) flight leader did not acknowledge this instruction. Moreover, it has not been possible to determine whether the flight leader mis-heard the instruction or whether they suffered a cognitive failure, where their desire to join the Coronet formation intruded on their response execution such that they omitted to level-off at FL210.

Routinely, it would be reasonable to expect the ScATCC (Mil) controller to detect the level-bust, which occurred about 45sec prior to TAY SC issuing the avoiding action turn. The ScATCC (Mil) controller received no read back of the climb instruction from F-15 (B) flight leader, but having passed that instruction under a RCS, the controller could reasonably have assumed that the flight leader would follow that instruction. Nevertheless, controllers are required to receive read backs of level instructions and the fact that this was not challenged by the controller can be considered to be a causal factor in this occurrence. Unfortunately, the ScATCC (Mil) controller’s attention was diverted by a lengthy RT exchange with F-15 (C) formation some 79nm SE of the Coronet group.

Whilst the geographic dispersion of the traffic and the task load faced by the ScATCC (Mil) controller was within their capacity and the bounds of the Unit’s task-load guidance, the workload generated by the disparate tasks and their timing, divided the controller’s attention such that he was unable to continuously monitor F-15 (B) flight. Although ‘good practice’ might suggest that controllers should be alive to the potential for a benign situation to quickly become complex, there is a degree of hindsight bias associated with this view and, moreover, it defies the basic human instinct to attempt to continue to manage a situation. Whilst the ScATCC (Mil) control team on duty were notified of the Coronet later than might be considered ideal, this cannot be considered causal nor contributory to the occurrence, given that the overall taskload was within the team’s capacity. Furthermore, the Unit’s task load at the time of the occurrence meant that the ScATCC (Mil) ATCO i/c, having not taken an active role in terms of controlling, was unable to directly monitor events on the controller’s frequencies, thereby removing an additional ATM-related safety barrier.

It has not been possible to assess whether the understanding of USAF crews of UK formation join-up procedures and the impact of USAF tanker procedures, specifically the boom operator’s actions, affected the outcome of this occurrence.

Subsequent to the investigation of this Airprox HQ 1 Gp BM SM requested that OC ScATCC (Mil) review the Unit’s task-load orders to ensure that they provide appropriate guidance for ATM personnel. This review has been concluded and OC ScATCC (Mil) is content that the Unit’s task-load orders are fit for purpose. The Unit considers the problem lay with the application of those orders by the controlling staff on duty. Consequently, all Unit personnel have been re-briefed with respect to their responsibilities for managing the Unit’s traffic loading outside core operating hours.

ATSI reports that the BE9L crew called the TAY Sector at 1011:40. The flight was maintaining FL230, 15nm NW of Aberdeen, and was instructed to route direct to TILNI. At 1023 the ScATCC (Mil) controller called the TAY Sector requesting co-ordination on a formation C/S KC-10 [with F-15 (A) formation] against other GAT. The formation was climbing through FL193, 47nm S of Newcastle. All the ac within the formation were at the same level and within 1nm of each other. The Mode S SFL on one of the formation was reporting FL240.

CAP493 Manual of Air Traffic Service Part 1, Section 1 Chapter 4 paragraph 15 states:

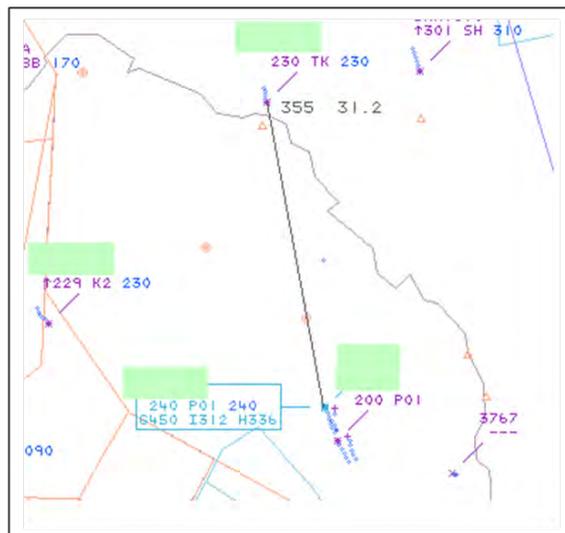
'Formations are to be considered as a single unit for separation/deconfliction purposes provided that the formation remains within the parameters shown [*below*]:

Class C Airspace: 1nm laterally and longitudinally and at the same level; ...'

Some 11nm S of this formation was another formation pair - F-15 (B) flight. Within this pair, flying parallel tracks, the westerly ac was transponding and reporting Mode C of FL174, climbing. During the co-ordination at 1023, the ScATCC (Mil) Controller did not mention F-15 (B) flight to the S.

At 1026:20 the TAY controller called Scottish Military for further co-ordination on the first formation - KC-10 and F-15 (A) formation. The TAY controller identified the BE9L to the ScATCC (Mil) controller. The BE9L was 17nm NW of NEXUS and the KC-10 and F-15 (A) formation was 90nm S of NEXUS. The KC-10 and F-15 (A) formation was activating high-level STCA on the TAY controller's situation display. A third formation, 21nm SE of the first formation, was also activating high-level STCA on the situation display. The formation pair (F-15 (B) flight) was not activating any alerts and one of the pair was not transponding. Therefore this pair displayed normally on the TAY controller's display.

The TAY SC requested, "*Co-ordination against the [BE9L C/S] then, not above 2 3 and you're not below 2 4 is that correct?*" The Scottish Military controller read back the co-ordination request and the conversation ended with the TAY SC stating, "*that's co-ordinated*". At 1028:40, TAY SC passed TI to the BE9L pilots, "*traffic information about 4 or 5 minutes you may see ... an American fighter and a D C 10 they'll be a thousand feet above you.*" The KC-10 and F-15 (A) formation was now overhead Newcastle and 75nm ahead of the BE9L. The formation was now maintaining FL240. The BE9L crew asked if the traffic would be on the aircraft's left-hand side, to which the controller replied, "*no ... they're in your 12 o'clock at the moment...its reciprocal*". Scottish (Mil) telephoned the TAY Sector at 1032:29 and requested the TAY SC identify another two F-15s, "[F-15 (B) flight C/S] *southeast of the [KC-10 and F-15 (A) formation C/S]*". F-15 (B) flight had now decreased its distance behind the KC-10 and F-15 (A) formation to 3.4nm. The BE9L was 31nm N of the KC-10 and F-15 (A) formation.



(PC MRT 1032:27)

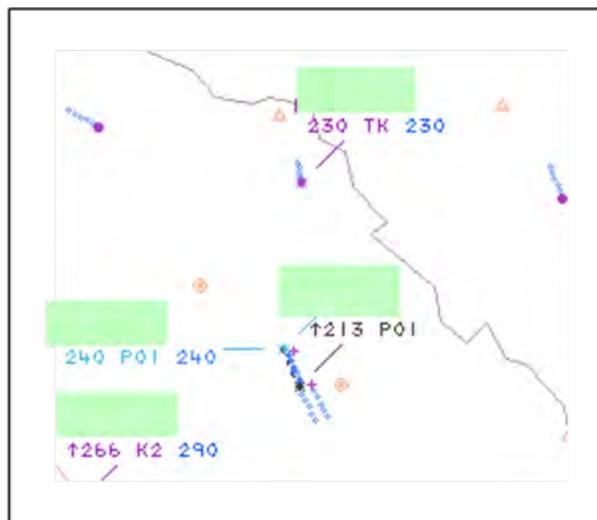
The TAY controller identified F-15 (B) flight and the ScATCC (Mil) controller stated, *“they’re not above flight level 200 against your [BE9L C/S]...”*. The TAY controller replied, *“[BE9L C/S] will stay at flight level 2-3-0 you can go 1 thousand feet below or 1 thousand feet above”*. The conversation was then terminated by the ScATCC (Mil) controller, *“Brilliant thank you very much”*.

MATS Part 1 Section 1 Chapter 10 paragraph 3 states:

‘3.1 When requesting co-ordination, a controller shall: ...

propose a course of action upon which agreement is requested and obtain a clear decision on that proposal. To ensure clarity and avoid misunderstandings, before terminating the call, parties shall explicitly state the action required of their aircraft to achieve the agreed course of action ... A response that does not reaffirm the details of the agreement, such as “Roger”, is not acceptable.’

At 1033:52 the Mode C of F-15 (B) flight leader indicated that the transponding ac had commenced a climb from FL200 and was now passing FL203; at 1034:08 it was indicating Mode C of FL213, climbing, STCA then activated between F-15 (B) flight and the KC-10 and F-15 (A) formation ahead.



(PC MRT 1034:10)

At 1034:15 the BE9L reported, *“visual with that group of traffic now”*. TAY SC replied, *“That’s correct there’s some below you and some above you they’re all co-ordinated against you and you’re just maintaining flight level 2-3-0”*. The KC-10 and F-15 (A) formation was maintaining FL240 in the BE9L’s 1 o’clock range 11nm on a track to pass down the BE9L’s right-hand side. F-15 (B) flight was 2.9nm behind the first formation and was now climbing through FL216.

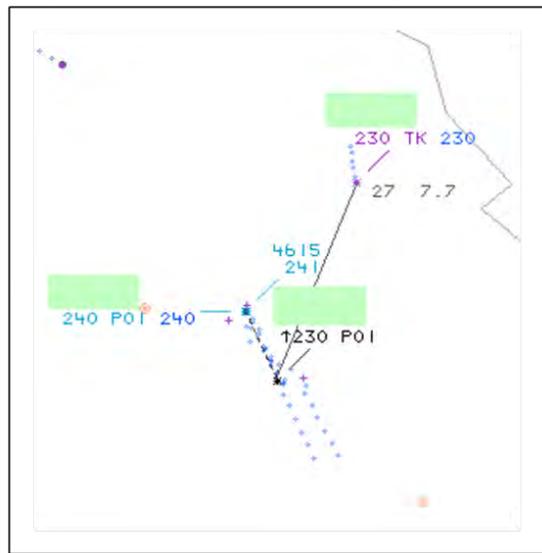
At 1034:25 the Mode C of F-15 (B) flight indicated that they were still climbing and passing through FL223. They were in the BE9L’s 1 o’clock range 11.6nm on a track to pass down the BE9L’s right-hand side.



(PC MRT 1034:25)

At 1034:35, TAY SC instructed the BE9L pilot, “[C/S] *sorry avoiding action turn left immediately 50 degrees*”; this was read back by the BE9L pilot. TAY SC informed the BE9L pilot that, “*one of those tracks he’s now just climbing through your level.*” The second formation’s Mode C was now indicating FL225.

At 1034:49, F-15 (B) flight leader’s Mode C indicated the ac were at the same level as the BE9L, still in the BE9L’s 1 o’clock, range 7.7nm. The aircraft were about 45nm N of Newcastle at FL230 in Class C controlled airspace.



(PC MRT 1034:49)

At 1034:51 the TAY controller updated the traffic information to the BE9L, to which the BE9L pilot replied, “*okay ... we got two visual ????? at the back of the pack that look a bit higher.*”

Minimum separation between F-15 (B) flight and the BE9L occurred at 1035:13 with 5nm between the nearest aircraft and 600ft indicated against the leader’s Mode C. Subsequently, F-15 (B) flight levelled at FL239 behind the leading formation. At 1035:39, TAY SC informed the BE9L pilot that his ac was now clear of the traffic and instructed the flight to resume its own navigation.

The BE9L was southbound maintaining FL230. The KC-10 and F-15 (A) formation was maintaining FL240 followed by F-15 (B) flight climbing through FL230. Separation was maintained between the BE9L and nearest aircraft of F-15 (B) flight: minimum distance was 5nm and 600ft, where 5nm or 1000ft was required.

The co-ordination undertaken between the TAY SC and ScATCC (Mil) with respect to F-15 (B) flight was not completed with an explicit statement of the action required. TAY SC offered a co-ordination

solution of “[BE9L C/S] *will stay at flight level 2-3-0 you can go 1 thousand feet below or 1 thousand feet above*”. The TAY SC had no indication therefore of the exact instruction which may have been relayed to the F-15 (B) flight pilots.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilot of the BE9L and the leader of F-15 (B) Flight, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and the appropriate ATC authorities, together with comment from the relevant Command.

There were some significant subsidiary issues within this occurrence. However, it was evident to the Board that the BE9L crew's part in this Airprox was restricted to compliance with TAY SC's avoiding action. These instructions ensured that the stipulated horizontal separation was maintained against F-15 (B) flight as they climbed up toward the KC10 and F-15 (A) 'combine'.

The HQ 3AF Advisor reaffirmed F-15 (B) flight leader's belief that his flight had not been instructed to level-off at FL210. However, he acknowledged that the BM Safety Management report had revealed that the lead pilot was mistaken. This climb was contrary to the co-ordination agreements struck between the ScATCC (Mil) controller and TAY SC which, if complied with, would have ensured a minimum of 1000ft vertical separation between the KC-10 and F-15 (A) combine above the BE9L, maintaining a level cruise at FL240 and 1000ft on Mode C against F-15 (B) flight. These agreements ensured that the ScATCC (Mil) controller had the necessary tactical flexibility to manoeuvre the ac under his control safely and had resulted in TI being passed to F-15 (B) flight about the BE9L when it was 20nm away. However, the ScATCC (Mil) controller erroneously reported that the BE9L was at FL200 – the same level as F15 (B) flight at that point. Members understood why the leader of F-15 (B) flight would have been keen to climb above traffic reported to be flying at the same level, the BE9L, which he may have perceived as an impediment to his eventual join with the KC-10 and F-15 (A) combine. His request to climb to FL210 seemed to indicate an understandable degree of urgency to climb clear above the BE9L's reported level. He would have perceived that there was then no other traffic to delay his join with the KC10 and F-15 (A) formation cruising at FL240, hence his comment “...we are MARSAs [with KC10 & F-15 (A) formation C/Ss] and if able we would like to climb to 2-1-0...”. Whilst noting that the ALTRV message only included reference to the KC10 & F-15 (A) formation, not F-15 (B) flight, the latter were in effect the 'airborne spares' for F-15 (A) formation. In Class C CAS under a RCS and co-ordinated against the BE9L, the Board recognised that MARSAs could only ever be stipulated between military ac involved in the Coronet East tanker trail. With F-15 (B) flight below the levels of the stipulated ALTRV, the mandatory instructions of the ScATCC (Mil) controller held sway, so the controller would have seen no reason at that stage not to accede to F-15 (B) leader's request to climb his flight 1000ft to FL210. The controller's immediate reply at 1033:45, “[F-15 (B) flight C/S] *roger, climb FL210*” was clear and unambiguous. However, the RT transcript revealed that there was no response from F-15 (B) flight and the controller did not challenge the absence of a read-back. This was a salutary lesson a pilot Member observed; if pursued at the time this would have forestalled the occurrence. In the event the subsequent climb revealed that the leader believed, incorrectly, that his flight had been permitted to climb to join with the KC10 and F-15 (A) combine at FL240. The Board was briefed that the controller was under significant pressure at this stage and it was evident that he was very busy indeed controlling this complex scenario, with a wide split, necessitating a diverse scan over a large displayed range on his radar. Members noted it was at this point that his attention was critically diverted by the activities of F-15 (C) formation to the SE and did not spot F-15 (B) flight's excursion above their assigned level. Controller Members opined that the use of the three frequencies simultaneously by the one controller was not good practice, albeit indicative of the Unit's limited control capacity at the time, since RT transmissions could easily be missed. This level of military activity was unusual on a Saturday morning and the issue of the controller's workload had already been addressed by the Unit as reported by BM Safety Management. As it was F-15 (B) flight had already climbed through FL210 by the time the ScATCC (Mil) controller realised what had occurred. Nonetheless, F-15 (B) flight's climb through FL213 occurred when the BE9L was 14nm away and if he had spotted it at the time it could have been

countered. The Board concluded that that this Airprox had been caused when F-15 (B) flight climbed above its cleared level.

One Member perceived that because stipulated separation had been maintained this event was so benign that it was misleading to consider it as an Airprox; it should not be classified as an Airprox event simply because avoiding action had been issued. However, this was a solitary view; other Members agreed that this was not a risk-bearing Airprox, but contended that normal procedures had not been complied with and therefore it should be categorised accordingly. Controller Members opined that whilst avoiding action is not a normal occurrence in CAS, the BE9L crew had complied promptly with TAY SC's avoiding action L turn ensuring separation of 5nm was maintained. Moreover, the BE9L crew had sighted the military jets. These factors convinced the overwhelming majority of the Members that no Risk of a collision had existed.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: F-15 (B) flight climbed above its cleared level.

Degree of Risk: C.

AIRPROX REPORT No 2011059

Date/Time: 18 Jun 2011 1807Z (Saturday)

Position: 5119N 00037W (3nm SW Fair Oaks)

Airspace: LFIR (Class: G)

Reporting Ac Reported Ac

Type: B222 BE200

Operator: Civ Comm Civ Pte

Alt/FL: ↑2400ft 1400ft
(QNH 1001mb) (QNH)

Weather: VMC CLBC VMC CLBC

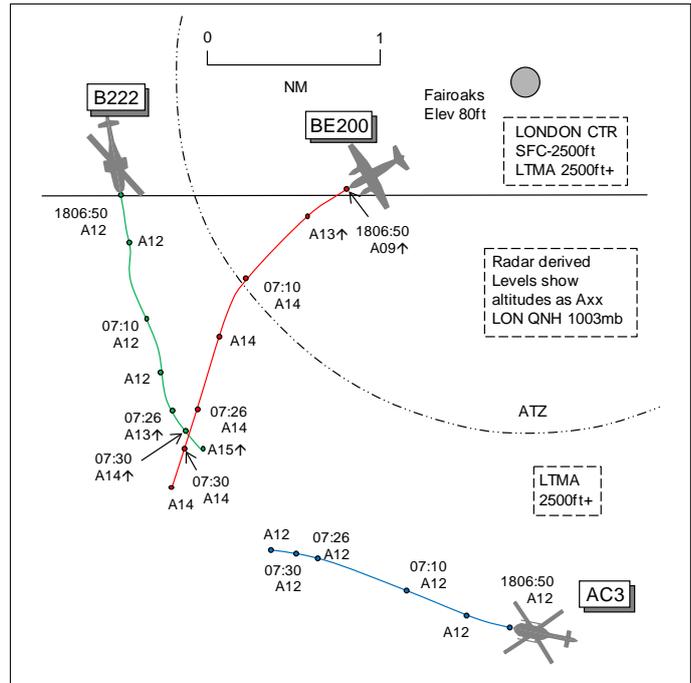
Visibility: >40km >10km

Reported Separation:

Nil V/60m H Nil V/600m H

Recorded Separation:

<100ft V/<0.1nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE B222 PILOT reports departing Ascot via the Heathrow CTR 'W End Free-lane' for a private site near Sevenoaks, VFR under a BS from Farnborough E on 123.225MHz, squawking with Mode C. The visibility was >40km flying 2000ft below cloud in VMC and the helicopter was coloured blue with nav and anti-collision lights switched on. The Free-lane exits abeam the W edge of the Fair Oaks ATZ at 1200ft amsl. Farnborough gave him TI on a helicopter at about 11 o'clock same level with which he was visual. He requested a climb to 2400ft to which Farnborough had no objection. Heading 170° at 100kt he commenced the climb and also started a L turn towards OCK. When passing through 1700ft, he thought, a faster ac, a white coloured low-wing twin-prop type, passed him at the same level about 60m away but also climbing in a 10° nose up attitude and in an approximately 20° L turn. He saw the other ac too late to take avoiding action but he rolled 'wings level'. He was flying from the RH seat and the other ac was not seen earlier owing to its relative position. He assessed the risk as high.

THE B222 CHIEF PILOT commented that this is a very busy area of airspace on Ascot days with helicopters streaming out of the Heathrow CTR through Fair Oaks climb-out and Farnborough approach. He believed it would be prudent for flights departing Fair Oaks to call before getting airborne/leaving the ATZ and that the frequency used should be common to the Ascot and Fair Oaks departures to ensure awareness by all flights of potential conflicts. Currently Ascot departures on the 'W End Free-lane' use Farnborough E 123.225MHz yet Fair Oaks departures tend to use W on 125.25MHz as does most other traffic in the area.

THE BE200 PILOT reports flying solo on departure from Fair Oaks VFR and in receipt of a BS from Farnborough on 134.35MHz, squawking 7000 with Modes S and C; TCAS was fitted. The visibility was >10km flying 2000ft below cloud in VMC and the ac was coloured white with anti-collision and strobe lights switched on. Having departed Fair Oaks iaw the 'out of hours' procedure after watching 2 helicopters pass N to S through the 'Bagshot Gap' and changing to Farnborough Radar, he was informed of 2 converging helicopters. One was to the S which was easily seen as he was turning L onto heading 170° at 160kt and 1 other to the N which he could not see. At that point a TCAS 'traffic' audio warning was heard on the N contact and he made an effort to look out to his R over the higher wing. It was then he caught sight of a blue/white Bell 222 or 430 type helicopter about 1000m away climbing through his level of 1400ft QNH. He increased his L bank to turn inside the track of the

helicopter despite its ROC taking it above his ac. His L turn was already moving his ac's vector away from the contact but it was tightened to increase separation, estimating they passed with 600m separation. He assessed the risk as low.

UKAB Note (1): The BE200 pilot was contacted by the UKAB Secretariat to clarify the reported separation distances, TCAS actions and Ascot procedures. The pilot stated that 600m minimum separation was based on a snapshot at the initial sighting as he had eased his L turn to look for the helicopter and when sighted he had lost sight of it when he tightened the turn to avoid. He did not see the B222 turn towards his ac and did not regain visual contact with it after his turn. The TCAS TA was generated after he first saw the B222 and tightened his turn and he did not recall any vertical commands on the PFD as he was heads-out flying the tight avoiding turn. He was aware of the Ascot W end Free-Lane' procedures and has watched the 2 previous helicopters exit the Heathrow CTR before departing.

THE FARNBOROUGH LARS W CONTROLLER reports the BE200 flight called him on departure from Fair Oaks and looking at the position he noticed a 7000 squawk, fairly fast moving, heading towards a 4777 squawk that was W'bound. He immediately passed TI to the BE200, which was not yet identified, as, "Traffic believed to be you has traffic similar level 1 mile SW." He continued to pass TI and issued a squawk until the BE200 pilot reported visual with the helicopter. He also tried to alert LARS N/E but N/E was intensely busy. There was little or no time to effect any type of avoiding action advice and it was unpractical due to Ascot departing traffic.

THE FARNBOROUGH LARS E CONTROLLER reports working N and E bandboxed when the B222 flight called on frequency. It was just leaving the London CTR via the 'West End Free-lane' routing from Ascot to Sevenoaks. There were about 3 helicopters leaving and 1 joining the CTR at the time, all just to the SW of Fair Oaks. Although they were all on a BS he called generic TI. Just after this LARS W pointed out another 7000 squawk, which was just appearing from the middle of these known contacts, indicating 1400ft, a similar level to the helicopters. As it had already passed, tracking SW, he did not call this traffic. Shortly afterwards, the B222 pilot asked if he had seen this traffic and he replied that he had only just seen it after LARS W had pointed it out. He apologised for the lack of TI but said that it had departed Fair Oaks on LARS W frequency.

ATSI reports that the Airprox occurred at 1807:27, within Class G airspace and 6.5nm to the NE of Farnborough Airport and 2.8nm to the SW of Fair Oaks Airport during the period of Royal Ascot week. (Saturday)

For the period of Royal Ascot week a NOTAM B0793/11 was issued promulgating the temporary Ascot ATZ, valid:14th to the 18th June 2011. Associated with this special event, a TOI was issued by Swanwick LTC, who have operational responsibility for the London CTR. The TOI contained procedures for the 'Ascot delegated airspace' within the CTR. Participating helicopter operators were provided with a comprehensive briefing on associated operational procedures.

As part of these arrangements, helicopter departures routing via the designated 'West End Free-lane,' were required to maintain an altitude of 1200ft on a squawk 4776 and contact Farnborough Radar on 123.225MHz (LARS E). The planned movement of the participating helicopters was to the SE and consequently LARS E was designated as the controlling frequency. This would also reduce the traffic loading of the LARS W controller.

The Airprox was reported by the pilot of a Bell 222 (B222) helicopter, on a VFR flight from Ascot to Sevenoaks in Kent. The B222 was squawking 5023 and in receipt of a BS from LARS E.

The second ac, was a Beech 200 (BE200), which had just departed Fair Oaks (promulgated as AFIS Mon-Sat 0700-1700, ATZ coincident with AFIS or A/G hrs), in accordance with the Fair Oaks 'out of hours' procedures. The BE200 was squawking 7000, on a VFR flight to Dunsfold and had just contacted the LARS W controller. The pilot's written report indicated that the pilot had called Farnborough Approach on frequency 134.35MHz which was combined with Farnborough LARS W

(125.25MHz). It is not clear if the BE200 pilot was aware of the Ascot 'Westend Free-lane' route and procedures. No AIC is promulgated for this event.

The Fairoaks Aerodrome Manual, Appendix E, 'out of hours', terms and conditions, note 4 states:

'For traffic information and Lower Airspace Radar Service call Farnborough Radar 125.250MHz as soon as possible, normally available 0800-2000 (local).' (LARS W)

Farnborough controllers were operating in bandboxed mode. One controller was working LARS W and Approach Radar in combined mode. The second controller was working LARS N and LARS E combined. Traffic levels were assessed as medium and there were no reported unserviceabilities.

METAR EGLF 181750Z 26017G29KT 9999 SCT039CB 16/08 Q1003=

Prior to the incident 2 helicopters had departed the Ascot designated 'West End Free-lane' ahead of the B222, working LARS E. In addition an opposite direction helicopter (Ascot inbound) [AC3], was approaching from the SE and also working LARS E.

At 1804:55, the B222 flight established contact with LARS E reporting, "*(B222 c/s) four double seven six off Ascot for Sevenoaks and request Basic.*" The LARS E controller allocated a squawk 5023, passed the QNH 1003 and agreed a BS.

At 1806:24 the radar recording, viewed at short range, shows the BE200 just airborne from Fairoaks indicating an altitude of 100ft and displaying a 7000 squawk.

At 1806:45, the BE200 flight established contact with LARS W and reported, "*Farnborough radar good evening again er (BE200 c/s) airborne from Fairoaks to Dunsfold VFR.*" The LARS W controller replied, "*(BE200 c/s) roger Basic Service Q N H one zero zero three keep a look out there's a helicopter (B222) just believed to be to the west of you by half a mile at twelve hundred feet possibly turning westbound also helicopter (Ascot inbound)[AC3] a mile south of you twelve hundred feet turning northbound.*" There was no response from the pilot of the BE200 and the LARS W controller repeated the warning about traffic in the vicinity [1807:10], "*(BE200 c/s) caution a helicopter rotary indicating one thousand two hundred feet believed to be in front of you less than quarter of a mile.*" The BE200 pilot replied, "*er looking and seen.*" The LARS W controller responded, "*(BE200 c/s) roger squawk zero four three four when you can Basic Service QNH one zero zero three.*" This was acknowledged by the BE200 pilot.

The LARS W controller's written report, indicated that he tried to warn the LARS E controller about the 7000 squawk (believed to be the BE200), but reported that the LARS E controller was 'intensely busy.'

At 1806:50, radar recording shows a number of ac in the vicinity of Fairoaks with a S'bound overflight at FL096 directly overhead the BE200 with labels overlapping and garbling. A short range expanded view of the radar recording shows the B222 passing 2.3nm SW of Fairoaks, indicating an altitude of 1200ft, with the BE200 in the B222 helicopters 10 o'clock position at a range of 1.2nm, indicating 900ft. The Ascot inbound helicopter [AC3] is shown 3.2nm to the S of Fairoaks tracking W, indicating 1200ft and displaying a LARS E squawk 5020.

At 1806:50, the LARS E controller advised the B222 pilot, "*(incomplete c/s) there's traffic (Ascot inbound) er southeast by three miles turning northbound into west end rotary same level has you in sight.*" The B222 pilot responded, "*I think that's for (B222 c/s) visual.*"

At 1807:10, the LARS E controller gave approval for the B222 helicopter to climb to 2400ft. Radar recording shows the B222 indicating an altitude of 1200ft, converging with the BE200 at a range of 0.6nm. The BE200 is indicating an altitude of 1400ft.

The written report from the LARS E controller indicated that, 'the LARS W controller pointed out the 7000 squawk (BE200) which was just appearing from the middle of the known contacts, indicating 1400ft – a similar level to the helicopters' and 'as it had already passed tracking southwest the controller did not call the traffic'.

[UKAB Note (2): The CPA occurs between 2 sweeps of the recorded radar. At 1807:26 the B222, which is turning L through 160°, is climbing through altitude 1300ft QNH 0.1nm W of the BE200 which is also turning slowly L through heading 200°, level at 1400ft QNH. The next sweep shows the BE200, still at 1400ft, 0.1nm to the S of the B222, having passed just ahead of it, which is climbing through 1400ft QNH. The CPA is estimated to be <100ft V and <0.1nm H.]

At 1808:05, the LARS W controller confirmed the BE200's altitude as 1400ft on QNH 1003 and the ac type as a Beech Kingair.

At 1810:30, the B222 pilot reported that the twin prop looked as though it had come out of Fair Oaks and had got a little bit adjacent. The pilot indicated to the LARS E controller that he would call later to discuss the incident.

NATS reported that there had been no previous incidents of this kind associated with the Royal Ascot week. They regarded this as a one-off event that should not reflect on the previous 3 years of developing the event procedures. It was thought that the pilot departing Fair Oaks was unaware of the Ascot procedures.

As a result of a recent meeting between the Ascot event stakeholders, a number of measures have been proposed for the 2012 event:

- 1) The Ascot organisers will promulgate an AIC.
- 2) Farnborough will issue a comprehensive NOTAM.
- 3) Flight safety awareness of the event will be publicised.
- 4) Fair Oaks will provide a pilot briefing, with a requirement that 'out of hours' movements will be required to telephone Farnborough, prior to departure

It is not clear if the BE200 pilot was aware of the 'West End Free-lane' and associated arrangements for Ascot departures. No AIC was issued and the NOTAM only referred to the Ascot Temporary ATZ. The designated Ascot airspace lies within the London CTR and was applicable to approved helicopter operators. However, the additional activity generated outside the CTR was likely to impact upon GA pilots flying in the adjacent airspace.

Ascot helicopters movements were working LARS E and by default Fair Oaks out of hours departures would contact LARS W. It was likely that this situation was not foreseen and had not occurred in the past.

The LARS W controller received a call from the BE200 flight, which probably prompted the controller's early detection of the conflict. However, the LARS E controller was reported as being very busy. This together with complex radar picture and the garbling of the radar labels prevented the detection of the 7000 squawk as the BE200 departed.

The incident occurred 1min after the BE200 became airborne, within Class G airspace. Both flights were in receipt of a BS, with reported good flight visibility (>40km). CAP 774, UK Flight Information Services, 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.'

'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.'

The Airprox occurred when the two flights operating VFR in Class G airspace and in receipt of a BS, came into conflict.

Under a BS there is no obligation placed upon the controller to provide TI. However, if a controller considers that a definite risk of collision exists, a warning may be issued to the pilot. The LARS W controller was able to pass a warning to the BE200 flight, but the LARS E controller did not detect the departure from Fairoaks and was unable to pass a warning.

A number of factors were considered to have contributed to the cause of the Airprox:

The workload of LARS E and the garbling of the radar labels delayed the controller becoming aware of the Fairoaks departure. The Airprox occurred within 1min of the BE200 becoming airborne and the BE200 pilot called on a different frequency to the helicopters exiting the Ascot delegated area.

There were no additional arrangements to brief pilots departing from Fairoaks in accordance with 'out of hours' procedures.

There was no AIC or NOTAM promulgating the arrangements for traffic entering and leaving the Ascot designated area, which would have increased the awareness of GA pilots operating in the adjacent area.

CAA ATSI is content that the proposals made for the 2012 event will address the safety issues highlighted by this Airprox.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The NATS Advisor informed Members that in previous years LARS W had been delegated to work traffic entering/leaving via the 'W End Free-lane'. The task was moved to LARS E to reduce the traffic loading on the LARS W frequency, which is usually the busiest LARS position at Farnborough. It appears that both the B222 and BE200 crews were going about their business with both flights establishing a BS from Farnborough. SA could have been enhanced had they been on the same frequency but the crews were responsible for maintaining their own separation from other ac through see and avoid. The BE200 pilot had seen the 2 previous 'W End Free-lane' departures but did not see the B222 following behind. LARS E had not noticed the BE200 depart Fairoaks owing to multiple

radar tracks and label garbling and was too busy to accept LARS W's warning. From the radar recording it was clear that there was an opportunity for both crews to see each other's ac for some time prior to the Airprox, the BE200 converging from the B222's L and the B222 converging from the BE200's 1 o'clock. Both crews cited cross-cockpit visibility deficiencies owing to their seating positions; while these were factors, they should be mitigated by moving the ac's heading and/or by moving one's head. The B222 had right of way under the RoA regulations but these rules rely on crews sighting a potential confliction beforehand. The B222 pilot saw the BE200 too late to take avoiding action as it passed in front, he estimated by 60m, as he was climbing and turning L; Members agreed that this had effectively been a non-sighting, and a part cause of the Airprox. LARS W had done well in seeing the confliction and issuing a warning to the BE200 flight which enabled the pilot to see the B222 close-by. However, the BE200 pilot then lost sight of the helicopter whilst tightening his avoiding action turn, unaware of or misjudging the helicopter's flightpath and close proximity; Members agreed his avoiding action had been ineffective and was the other part cause. These elements together with the recorded minimum separation were enough to persuade the Board that an actual risk of collision existed during this incident.

Whilst understanding the rationale for spreading the workload at Farnborough between LARS W and E, the Board acknowledged the intended proposals for next year, and the commitment by the NATS Advisor to ensure they are implemented, which will hopefully militate against this situation occurring again.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Effectively a non-sighting by the B222 crew and ineffective avoiding action by the BE200 pilot.

Degree of Risk: A.

AIRPROX REPORT No 2011062

Date/Time: 22 Jun 2011 1340Z

Position: 5152N 00118W (2nm FIN APP
RW19 Oxford - elev 270ft)

Airspace: Oxford AIAA/ATZ (Class: G)

Reporting Ac Reported Ac

Type: PA31 PA34

Operator: Civ Comm Civ Trg

Alt/FL: 800ft↓ ↓
QNH 1006mb QNH 1006mb

Weather: VMC CLBC VMC CLBC

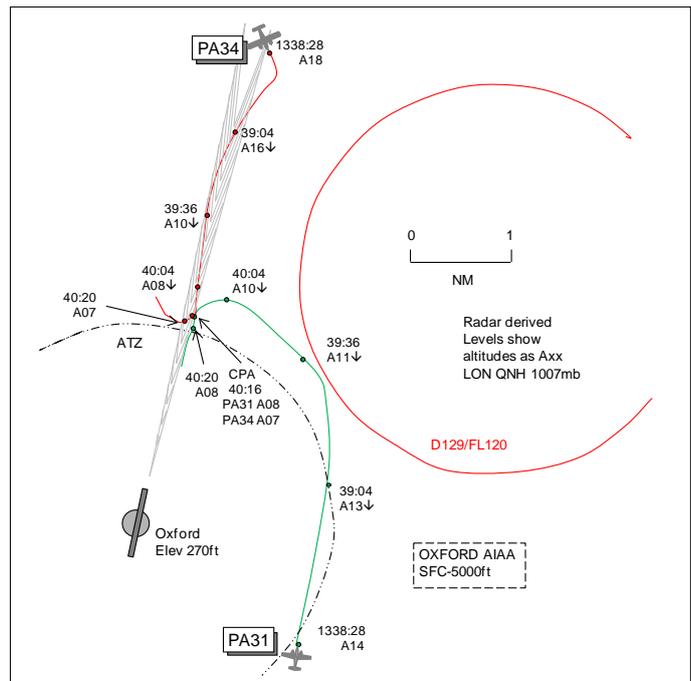
Visibility: >10km >10km

Reported Separation:

50ft V/1-200ft H 100ft V/50m H

Recorded Separation:

100ft V/0.1nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE PA31 PILOT reports inbound to Oxford IFR and in communication with Oxford Tower on 133.425MHz, squawking with Modes S and C. He had previously spoken with, and obtained a service from, Approach in the CPT area and he positioned for a LH downwind join. He was told there was no other cct traffic. He reported downwind, he thought, and was requested to report final for RW19. Once he had turned final descending through 1000ft QNH at 120kt he heard Tower request the position of another ac; at this point he was 2.9nm DME I-OXF. The other ac's pilot replied 2DME and so realising a potential conflict he immediately called, "PA31 c/s also at 2 DME" although at this point he was 2.3DME. He could see no other ac ahead or to the sides so he broke slightly to the L of the extended C/L and then he could see a PA34 below his starboard wing by approximately 50ft and 100-200ft away. He had not heard the PA34 flight call at the IFR reporting point of 4DME. He assessed the risk as high.

THE PA34 PILOT reports flying a dual local training sortie from Oxford VFR and in communication with Oxford Tower 133.425MHz squawking with Modes S and C. Heading 194° at 105kt and 2 DME RW19 Tower called his attention to a PA31 that was on final ahead. The I/F screens were obscuring his view of the ac but on leaning forward he saw the PA31 about 50m ahead and slightly to the L and 100ft above. He immediately turned R and, when clear, climbed away to reposition onto final. He assessed the risk as low.

THE OXFORD ADC reports the PA31 was inbound IFR on a downwind join and when the pilot 'checked in' on frequency he was informed that there was no cct traffic and was instructed to report final No 1. The PA34 was operating VFR whilst conducting an NDB approach to RW19 and after the pilot reported base turn complete with Approach the flight was instructed to contact Tower. The pilot 'checked in' with a very brief c/s call and was instructed to report 4 DME (SOP) and was informed that they were No 2 to a PA31 downwind that was a hospital flight. The PA31 was observed halfway through the base turn and he had still not received a call from the PA34 flight so he picked up the binoculars to check its position whilst eliciting a range check. The PA34 pilot reported at 2 DME as the PA31 pilot also reported 2 DME; at this time the PA34 was seen pulling up sharply to the R and turning away from the PA31; both ac had been in extremely close proximity. Traffic levels were light with 4 speaking units and several ground units making frequent calls on a discrete frequency. Oxford is technologically challenged as they operate without an ATM and rely on 'Mk1 eyeball' and

accurate pilot's reports in order to sequence ac. It is becoming increasingly prevalent for students to not make such essential safety calls and the burden of separation is being placed upon the skill and wits of the controller on duty. The 4 DME call is an essential safety call to facilitate the safe integration of cct and approach traffic and if omitted by the student it should be made by the instructor.

ATSI reports that the Airprox occurred at 1340:11, within Class G airspace, 2.3nm to the NNE of Oxford Airport and just outside the Oxford ATZ. The Oxford ATZ extends to a height of 2000ft above aerodrome level and is bounded by a circle 2nm radius centred on the mid-point of RW19.

The PA31 was a hospital CAT B, IFR flight, inbound to Oxford from Jersey. The radar recording shows the PA31 passing Compton (CPT) at an altitude of 1900ft below CAS. It is not clear if the PA31 had cancelled IFR earlier en-route.

The PA34 was a local training flight conducting an NDB approach and operating in accordance with VFR.

Oxford were providing split positions for Aerodrome (Tower) and Approach control, without the aid of surveillance equipment. The Tower controller reported workload as light with no distractions.

CAA ATSI had access to RT and radar recordings, together with written reports from the 2 pilots and 2 controllers.

The weather for Oxford was not available, however the weather for Brize Norton was provided: METAR EGVN 221250Z 24010G20KT 9999 BKN028 SCT220 19/09 Q1006 BLU NOSIG=

The PA34 flight was under VFR at 3500ft, in receipt of a BS and holding at the OX-NDB, prior to commencing an NDB approach for RW19. At 1330:07, the PA34 flight was cleared by Oxford Approach for the NDB approach and asked to report beacon outbound.

At 1332:00, the PA31 flight established contact with Oxford Approach requesting a BS and a visual join. The Approach controller passed the QNH 1006 and the PA31 pilot reported 19nm to the SSE of Oxford requesting a join downwind LH for RW19.

At 1332:25, Approach replied, *"(PA31 c/s) that's understood join er visual downwind left hand then for runway one nine traffic is a P A thirtyfour in the Oscar Xray hold three thousand five hundred feet er he's V F R shortly to go outbound for the N D B one nine and Weston on the Green Danger Area one two nine is active to flight level one two zero report the field in sight."* This was acknowledged by the PA31 pilot.

At 1333:22, the PA34 pilot reported beacon outbound and Approach advised, *"(PA34 c/s) report leaving altitude three thousand five hundred feet traffic is a P A thirty one inbound from the south for a downwind join visual."* There was a short period of transmitter modulation, but no audible response from the PA34 pilot.

At 1334:57, the PA34 pilot reported leaving 3500ft and Approach instructed the pilot to report base turn complete. This was acknowledged by the PA34 pilot.

At 1337:18, the PA31 pilot reported 5nm to run and Approach transferred the flight to the Tower frequency 133.425MHz.

At 1337:34, the PA34 reported base turn complete and Approach transferred the flight to the Tower on frequency 133.425MHz.

Both flights were coordinated with the Tower controller, who later stated, that the PA31 strip had been placed in the active bay and the PA34 strip had been cocked out, indicating that the ac had commenced the NDB and would be transferred by APC once 'base turn complete'.

At 1337:38 the PA31 pilot contacted the Tower and the controller replied, *“(PA31 c/s) no circuit traffic report on final number one for landing runway one niner.”* The PA31 pilot acknowledged, *“Wilco runway one niner (PA31 c/s).”* The radar recording shows the PA31, 4.2nm SE of the airfield. Later the controller was asked whether he considered that the distance of the PA34, at base turn complete [chart 6.5nm] was probably equidistant with the range of the PA31. The controller indicated that he didn't have radar, the PA34 was still with Approach and the range of the base turn tended to vary considerably with training ac.

The Tower controller was asked whether he had considered asking the PA31 pilot to report either downwind or on L base. The controller indicated that the PA31 was No 1 and considered that the ac was approaching the beginning of the downwind leg. The controller added that because of the position of D129 and from previous experience, he expected that the PA31 would make a short cct pattern.

At 1338:28, the PA34 pilot contacted the Tower, the controller responded, *“(PA34 c/s) tower continue approach runway one nine report at four D M E you will be number two to hospital flight traffic that's er downwind.”* The PA34 pilot replied, *“(PA34 c/s).”* The radar recording shows the PA31 commencing the downwind leg.

At 1339:36, the radar recording shows the PA31, at the boundary of D129 and turning onto L base, at a position 2.4nm NE of the airfield. The Tower controller indicated that, as he observed the PA31 turning L base, he had a 'sixth sense feeling' and decided to request a range check.

At 1340:00, the Tower controller asked, *“(PA34 c/s) range check please,”* and the PA34 pilot replied, *“we're two D (PA34 c/s).”* The Tower controller responded, *“visual with the chieftain turning in ahead.”* At this point the PA31 pilot transmitted, *“er (PA31)c/s we're two D.”* The Tower controller responded, *“(PA34 c/s) break off and join overhead for runway one nine.”* There was no response from the PA34 pilot.

At 1340:04, radar recording shows the distance between the 2 ac as 0.3nm. The PA34 is on final approach at an altitude of 800ft and the PA31 is on L base indicating an altitude of 1000ft and turning towards final.

At 1340:16, the radar recording shows the distance between the 2 ac as less than 0.1nm with the ac labels overlapping. The PA34 is indicating an altitude of 700ft and the PA31 is indicating an altitude of 800ft.

At 1340:20, the PA34 breaks off the approach by turning R.

Both flights were in receipt of an Aerodrome Control Service. The Manual of Air Traffic Services Part1, Section 2, Chapter1, Page 1, paragraph 2.1, states:

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

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

The controller later indicated, that he had subsequently discussed the incident with the PA34 instructor, who advised that they were not aware of the hospital flight and that a student was being examined and had not reported at 4 DME.

The Approach controller had given the PA34 pilot TI regarding the PA31 and it was noted that there was only a transmitter modulation in response. The Tower controller had advised the PA34 pilot that he was *“...number two to hospital flight traffic,”* instructing the pilot to report at 4 DME. It was noted that on this occasion there was only the c/s as acknowledgement.

The controller indicated that in the busy non-radar, training environment, and busy cct at Oxford, controllers are reliant upon accurate position reports from pilots making an instrument approach, in order to effectively integrate the traffic into the cct. It is not clear why the PA34 pilot did not provide a range check at 4 DME.

On first contact with the Tower, the PA31 pilot was advised that there was no cct traffic. The PA31 pilot was passed TI about the PA34 by the Approach controller and was aware of the PA34. It is likely that the PA31 pilot's situational picture was also reliant upon the PA34 making a call at 4 DME. The PA31 pilot's written report indicated that, "I did not hear the PA34 call at the IFR reporting point at 4 DME."

The integration of traffic into the visual cct is the responsibility of the Aerodrome controller. The PA31 hospital flight, with a clear cct was cleared to final. When the PA34 flight called Tower, the PA31 was in the downwind position. The PA34 pilot was instructed to, "continue approach runway one nine report at four D M E you will be number two to hospital flight traffic that's er downwind." The controller was reliant upon the 4 DME check in order to integrate the arrival into the cct pattern. On this occasion, traffic loading was light however, the possibility of a late or missed call from a pilot, due to heavy RT loading or complex traffic situations, is something that controllers need to safeguard against.

The incident occurred when the PA34 pilot, having been advised about the hospital flight in the circuit, did not report at 4NM DME as instructed by the Tower controller, resulting in the 2 ac coming into close proximity on final approach.

CAA ATSI considered that, in a non-radar environment controllers are reliant upon accurate position reports from pilots. An initial request for the range of the inbound PA34 on first contact with the tower, would have aided the Tower controller's assessment of the situation. Additionally a request for the PA31 to make a standard call downwind or when turning L base may have prompted the controller to re-assess the plan or check the position of the arriving PA34 and would also have served to give the PA34 pilot a situational reminder of the other traffic on frequency.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

Members agreed with the ATSI summary of the incident. In the procedural environment, without radar or ATM, controllers are reliant on accurate pilot reports. The controller had formulated a plan with the CAT B PA31 being made No 1 in the traffic sequence and the PA34 No 2. The PA34 pilot was told to report at 4 DME and position No 2 to the PA31; however, the PA34 pilot did not comply with either of the ATC instructions which Members agreed had caused the Airprox. The 4 DME call was essential to allow the controller to integrate the traffic into cct and Members were surprised that the instructor had not made the call in the absence of the handling pilot, under examination, not carrying out the instruction. That said, it appeared that SA was diminished in the PA34 cockpit as the pilot had continued his approach apparently unaware of the PA31 until it was pointed out by the controller after querying the ac's range approaching 2 DME. Members acknowledged that visibility is diminished when I/F screens are erected but this deficiency should be mitigated by the instructor moving his head frequently during lookout scans. The PA31 pilot was complying with ATC instructions positioning No 1 towards final and, although aware that the PA34 was inbound, he was unaware of its range. Whilst turning through base leg onto final, the pilot's view was degraded as the PA31 was belly-up to the approaching PA34. Both crews only saw each other's ac as the PA31 was establishing on final approach and were made aware of each other's proximity when the ADC queried the PA34 flight's range. On hearing the PA34 pilot's response, the PA31 manoeuvred to the L revealing the PA34 just 50ft below and 100-200ft to the R of his ac whilst the PA34 instructor

visually acquired the PA31 just 100ft above and 50m ahead. These factors led Members to unanimously agree that luck had played a large part in the incident, with both flights having missed each other purely by chance. This left the Board in no doubt that there had been an actual risk of collision during this Airprox.

The CAA SRG Advisor informed the Board that the ATC Procedures Working Group had recently discussed the integration of traffic in the vicinity of aerodromes as an agenda item and that current procedures and guidance are under review.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The PA34 pilot did not comply with ATC instructions.

Degree of Risk: A.

AIRPROX REPORT No 2011063

Date/Time: 20 Jun 2011 1545Z

Position: 5541N 00406W
(Strathaven RW27 RH
cct - elev 847ft)

Airspace: Scot FIR (Class: G)
Reporting Ac Reported Ac

Type: Ikarus C42 Agusta 119

Operator: Civ Club Civ Pte

Alt/FL: 800ft 1968ft
QFE (NK) QNH (NK)

Weather: VMC CAVOK VMC CAVOK

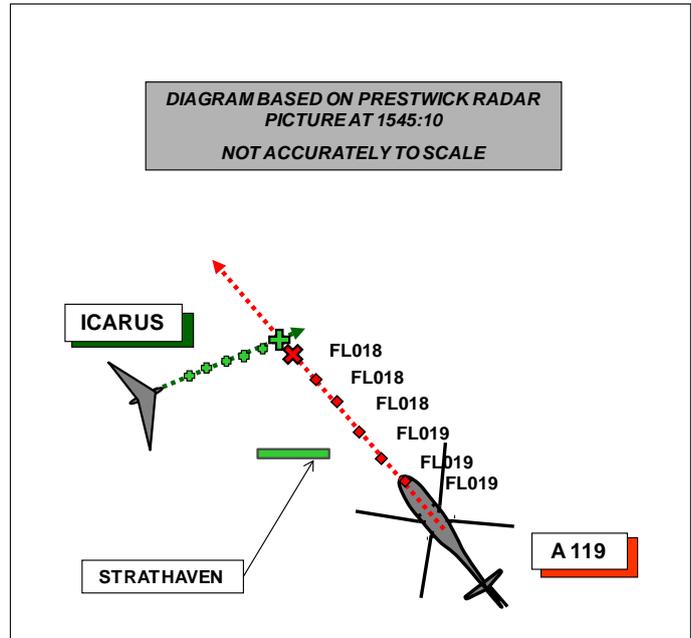
Visibility: NR >10km

Reported Separation:

200ft V/0ft H 350ft V/ 2000-
3000m H

Recorded Separation:

NR V/<0.1nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE IKARUS C42 PILOT reports that he was instructing a novice pilot on a VFR flight, returning from Bute to Strathaven VFR in an ac with no lights or SSR fitted; he made a radio call on 135.475 (Safety Common) to alert other traffic that he was 2nm to the W of the field and would be joining downwind RH for RW27. He then called downwind for RW27, heading 090° at 70kt and at 800ft QFE. When in the late downwind position, his student alerted him to a white helicopter (registration reported), 350m away in their 2 o'clock position. He assessed a collision to be imminent and took avoiding action by lowering the nose and reducing the power to idle. He saw the helicopter pass immediately overhead, about 200ft above.

He assessed the risk as being high, reporting the incident on landing.

THE AGUSTA 119 PILOT reports that they were on a VFR flight from a private site in North Norfolk to Glasgow in a black and white ac with Modes C, S and TCAS 2 fitted; he was PiC in the RH seat with a co-pilot in the LH seat and the weather was CAVOK.

About 50nm S of Strathaven they had been working Scottish Information, but when they were 30nm SE of Glasgow Airport heading 314° at 136kt, they were requested to change to Glasgow APR on 119.1. On checking in, the Glasgow controller gave them a squawk and a pressure setting but he cannot recall if they were placed on a TS or BS; however, their instructions were to descend from 3000ft for a VFR Zone entry at VRP East Kilbride, not above 2000ft alt. They commenced a descent to enter the Zone at East Kilbride below 2000ft and they were aware of the Strathaven Microlight Site; however on approaching it, neither he nor his co-pilot saw any activity, they had no published RT frequency to call them and they were still above 2000ft [amsl].

He briefly saw a microlight seeming to appear out of nowhere but with hindsight he thought that it had been either on the downwind leg or it was established on right base in a descent. He estimates that the ac was some 300-350ft below him. They received no warning from ATC of this traffic or any other activity at Strathaven.

He assessed the risk as being medium.

From a later telephone call to the club he understands that they were using RW27 with RH circuits. On further checking he determined that the aerodrome elev is 847ft and their circuit height is 1000ft. He also understands from the club that the ac had no form of transponder, so it would not have been displayed on their TCAS.

He retrieved the flight data from their moving map display and enclosed a copy.

On viewing the route recording he thought that they might just have flown over or near the NE corner of the aerodrome at an alt of 2000ft.

[UKAB Note (1); The route data recorder shows the ac passing 1.6km to the E of the centre of the Airfield (over the W edge of Strathaven town at 1968ft amsl, tracking 314°).

ATSI reports that the Airprox took place in Class G uncontrolled airspace between an Ikarus C42 Microlight (M'light) and an Augusta A119 Koala helicopter (A119).

The M'light was operating in the vicinity of the grass strips at Strathaven after a flight from Bute and was maintaining a watch/broadcasting its intentions on Safetycom, 135.475 MHz (unrecorded). The ac was not in receipt of an ATIS. The M'light was not fitted with a transponder.

The A119 had departed from a private site at Binham, Norfolk and was in contact with Glasgow APR on 119.1 MHz in receipt of a BS while inbound VFR. Glasgow ATC was unaware of the Airprox and, having been notified of the incident, filed a unit report with ATSI in retrospect.

ATSI had access to the following in the course of its investigation:

M'light and A119 pilots' reports, recording of frequency 119.1 MHz, recorded area surveillance, CAP493 and the UK AIP.

The METAR for Glasgow was:

EGPF 201550Z 28007KT 240V330 9999 FEW030 SCT040 17/09 Q1009=.

UK AIP ENR 1-1-5-9 (17 Dec 09) states:

'Those Microlight Flying Sites where flying is known to take place are listed at ENR 5.5 and are regarded as aerodromes. Sites are listed primarily as hazards to other airspace users...'

Strathaven is notified as a Microlight site (ENR 5.5) and is annotated on ICAO Aeronautical Charts 1:500,000 and 1:250,000 (AIS, VFR CHARTS). The circuit height (vertical limit, column 2) is not notified in the AIP or on the VFR charts.

A VFR Route Brief (www.ais.org.uk) from EGSN (Norwich) to EGPF (Glasgow), 20 Jun 11 1230-1800Z, VFR FL000 to FL030 does not notify Strathaven activity. NOTAMs published in accordance with ICAO standards are to cover information of a temporary nature/short term duration. This can include information concerning the presence of hazards to air navigation.

(On 12 Feb 2011 another similar Airprox occurred in the vicinity of Strathaven between a M'light and an AS355 (Airprox 2011011)).

The A119 pilot contacted Glasgow APR 1538:00, a BS was agreed and the A119 was instructed to squawk 2601. The ac was tracking in a NWly direction, at an alt of 2600ft, approximately 32nm SE of Glasgow Airport and 16nm SE of Strathaven.

Under a BS controllers may provide information useful for the safe and efficient conduct of flight. This may include general airspace activity information. The avoidance of traffic is solely the responsibility of pilots.

The Glasgow APR controller instructed the A119 to be not above alt 2000ft within the Zone.

Glasgow ATC previously reported to ATSI that the unit's surveillance does not always show local activity at Strathaven, which is 16.4nm SE of EGPF with an elevation of 847ft. Strathaven is 2.3nm outside the SE corner of the Glasgow CTR (Class D CAS, surface to alt 6000ft). The base of CAS airspace directly above Strathaven is 4500ft amsl (the Scottish TMA Class D).

The preferred radar source for Glasgow APR is their Watchman primary and Glasgow SSR (Brownfield); Kincardine and Lowther Hill are also available as required but it is not known which source the Glasgow APR controller was using at the time of the incident.

There is no requirement for Strathaven to inform Glasgow ATC when they are active and it is standard practice at Glasgow not to provide information on Strathaven activity.

The M'light, crewed by an instructor and trainee, was manoeuvring to join the aerodrome cct pattern downwind RH for RW27; the direction of circuits at Strathaven is to the N. The M'light pilot reported being late-downwind at the time of the incident and that the ac was at 800ft agl.

At 1542:09 the recorded area surveillance (Prestwick Multi Radar Tracking) showed the A119, 6.5nm SE of Strathaven, at an alt of 2100ft while an intermittent slow moving primary return can be seen WSW of Strathaven on a course towards the airfield. By 1544:00 the A119 was 2.3nm SE of Strathaven at alt 2000ft and the primary only return had manoeuvred into a crosswind position for RW27. At 1544:43, the A119 passed abeam the Strathaven RW27 final position at an (Mode C) alt of 1900ft while the primary only return was in a position downwind for RW27 and the ac were 1.5nm apart; by 1545:06 the ac were 0.3nm apart, 0.6nm N of Strathaven and the Mode C of the A119 showed 1800ft. The two radar returns then merged as the A119 continued on its NW track at 1800ft and the primary return continued on a track downwind for RW27 at Strathaven.

The A119 pilot called entering the Glasgow CTR at 1546:27 and shortly thereafter was transferred to the Glasgow TWR. There was no Airprox report given on the APR frequency.

The A119 pilot reported being aware of the Strathaven site and noted there being no published frequency. The two man crew of the A119 reported that they saw no activity in the vicinity of the site until, at the last moment, sighting the M'light as it passed approximately 300 – 350ft below them.

The primary contact observed on the Prestwick MRT was such that its characteristics indicated it to be the reporting M'light i.e. the track flown and the position of the A119 relative to the primary contact.

As the A119 approached the Glasgow Zone boundary, and in order to comply with the ATC requirement of 'not above 2000ft in the zone', the A119 descended.

The cct altitude at Strathaven is 1847ft (847ft elevation plus 1000ft height). The A119 flew less than 1nm to the NE of Strathaven at an alt of 1800ft. The M'light pilot reported being at 800ft agl. Therefore the M'light was at an altitude equivalent of 1647ft (847ft elevation plus 800ft height). By this calculation the vertical distance between the ac may have been less than that reported by both pilots.

The Airprox occurred when the A119 flew within the vicinity of Strathaven at about circuit height. The encounter was pre-disposed by several factors:

The location of Strathaven in relation to the Glasgow CTR means that traffic routing inbound from the SE beneath controlled airspace will likely pass-by the vicinity of Strathaven.

The A119 had descended in order to comply with Glasgow ATC's requirement for flight within the Glasgow CTR.

Whilst Strathaven is notified in the UK AIP as a microlight site (and depicted on standard navigational maps), there is no notification of the circuit height used at the aerodrome.

Both ac were flying in uncontrolled airspace where responsibility for collision avoidance rests with the pilots. Glasgow APR had no information to suggest there was flying activity at Strathaven and was not required to provide such information. Surveillance capabilities at Glasgow are not reliable in discerning activity in the vicinity of Strathaven.

Recommendation: In light of this and the previous Airprox of 12 Feb 2011 the following recommendation is addressed to the Civil Aviation Authority's Aeronautical Information Management Regulation department (DAP):

The CAA should determine whether or not the entry for the Strathaven Microlight Site in the UK AIP should be amended to include details of the vertical limits of activity at the site.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

Members observed that this is the second similar Airprox in the last 12 Months (2011011). Further they noted the specific circumstances and location of Strathaven relative to Glasgow and its surrounding CAS make it vulnerable to overflights both by traffic inbound to Glasgow and VFR traffic transiting through the Class G 'corridor' to the E of the CTR. Also its height of 847ft meant that such traffic is often at, or just below, cct height.

It was observed by a GA Member that the A119 crew were aware of Strathaven but its grass RWs surrounded by other areas of grass make the airfield difficult to break out; he observed that the helicopter flew along the edge of the town minimising any noise nuisance but in doing so came close to the airfield boundary and therefore close to the microlight in the cct.

While agreeing that it is good airmanship to give microlight sites a wide berth, Members understood why the A119 had routed to the W rather than to the E of Strathaven airfield and town which would have added a few track miles to his route. Members also observed that the pilot's selection of ATC agencies and types of service selected had been appropriate to the profile of his flight and no other agency was available that would have given a better level of service.

Members discussed at some length whether or not ATC had played any part in the incident. It was agreed that 2000ft amsl was a reasonable alt for VFR traffic to enter the Glasgow CTR and also that routeing the A119 via VRP East Kilbride was also sensible. Members also noted that the controller had no knowledge of the activity at Strathaven either from a warning or from radar information; that being the case Members agreed unanimously that the Glasgow controller had acted entirely appropriately and could not have prevented the incident.

Notwithstanding the issues above, the incident took place in Class G airspace where the respective pilots had an equal and shared responsibility to see and avoid other ac. The Microlight pilot, perhaps because he had been concentrating on instructing his student on his first cct and landing, had seen the helicopter late after his student pointed it out to him. The sighting however, had not been too late for him to take effective avoiding action by lowering the nose, throttling back and descending sufficiently to remove any risk of the ac colliding if the helicopter maintained its flightpath which it did.

Although the helicopter pilot 'caught a glimpse' of the microlight this was altogether too late for him to initiate any avoidance. A combination of these factors, Members agreed, had been the cause of the incident.

In discussing how such incidents could be avoided in the future, Members were unable to determine a practical measure that would work reliably and without significant disadvantages. Controllers thought it impracticable to issue warnings regarding Strathaven as, prior to VFR traffic reporting at a VRP (after passing Strathaven), they would not normally be aware of the ac's precise position, particularly since low level radar coverage is poor in that area. Further, any procedural warning of Strathaven traffic was likely to be inaccurate and out of date; therefore Members agreed that it would not provide meaningful information to the passing pilots. Members also observed that pilots should be aware the cct height at such airfields is normally 800/1000ft agl therefore a warning of the alt of activity on VFR charts was unnecessary and would 'clutter' the chart. It was also observed that different agencies use different criteria for information on VFR charts and databases; one Member familiar with VFR avionics/mapping suggested that the A119 would most likely be using a system on which microlight sites are not displayed.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Effectively a non-sighting by the A119 crew and a late sighting by the Ikarus pilot.

Degree of Risk: C.

AIRPROX REPORT No 2011064

Date/Time: 19 Jun 2011 1500Z (Sunday)

Position: 5133N 00020E (1.5nm NW Thurrock)

Airspace: LFIR (Class: G)

Reporting Ac Reported Ac

Type: R22 C152

Operator: Civ Pte Civ Trg

Alt/FL: 1200ft 2000ft
QNH (1013mb) QNH

Weather: VMC CLOC VMC CLOC

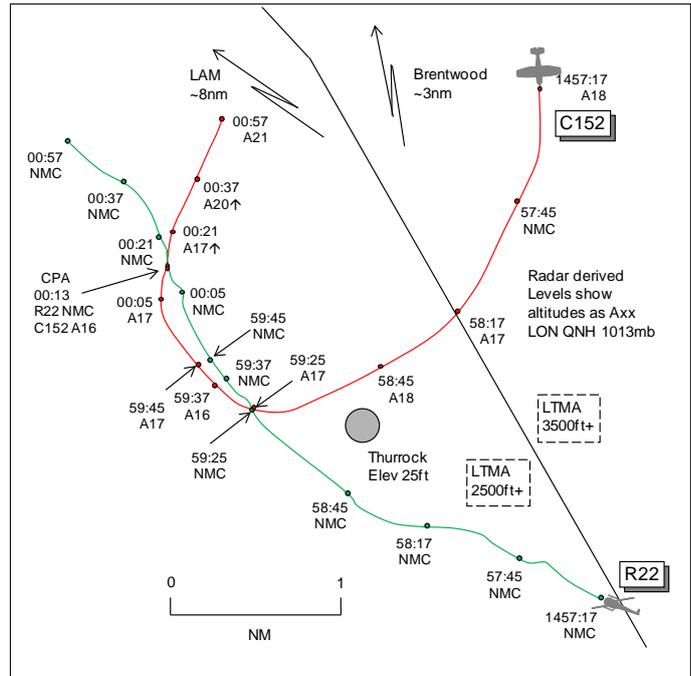
Visibility: >10km >10km

Reported Separation:

350ft Not seen

Recorded Separation:

Radar returns merge



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE R22 PILOT reports en-route to Wycombe Air Park VFR at 80kt and in receipt of a BS from Farnborough LARS N on frequency 132.8MHz, squawking with NMC. The visibility was >10km in VMC and the helicopter was coloured green with strobe lights switched on. The routing was via DVR towards LAM to remain clear of the London/City CTR. The navigator was a single-engine fixed-wing pilot and together they have made more than 1500hr of flights over 25yr including this trip in both directions a number of times. The GS was slow owing to strong W'ly winds and they were flying at approximately 1200ft on the Chatham RPS as the wind was lighter than at higher altitude. They had just transferred from London Information to Farnborough LARS N and passed Thurrock when a Cessna, travelling roughly in the opposite direction, passed close by on their RHS in level flight with an estimated slant range separation of 500ft. Neither he nor his navigator had seen the Cessna before it appeared close by at about 30° to their direction of travel. Farnborough had not warned them of an ac in the vicinity but there was a changeover of controller just then from a female to male. They did not consider there to be any likelihood of collision and so did not take avoiding action. A few minutes later, the Cessna then appeared from behind on their LHS in level flight at a closer distance of about 350ft slant range and now travelling in the same direction and overtaking them. The navigator could see the person in the Cessna's RH seat was a man, he thought, of medium build with dark hair wearing a pale yellowish /fawn jumper and was looking into the cockpit diagonally towards the instrument panel. There were 2 on board but the person seated in the LH seat of the Cessna could not be seen and he had not specifically looked at the person when the ac first passed on their RHS. When it had passed it suddenly did a 180° turn to the R towards them and passed directly O/H. He took avoiding action by making a descending turn to the R and assessed the risk as high. The Cessna pilot did not seem to be aware of their presence or to be on the Farnborough frequency. They were concerned as they didn't know whether the Cessna was going to appear again and if so from where. No one seemed to be looking out of the window of the Cessna and the Cessna pilot could hardly have failed to see the R22's yellow and white disc made by the helicopter's blades. The Cessna was coloured white with red markings and its registration was clearly seen. It was either a C150 or C152, which they recognised as they had both learned to fly on that type but it was difficult to distinguish between the 2 models. He reported the incident to Farnborough and gave them the registration; Farnborough asked if he wanted to file an Airprox to which he stated he would.

THE C152 PILOT reports that she was informed post flight that the ac she was flying at the time was involved in an Airprox. At the time she was conducting a trial lesson flight from Stapleford during which she normally demonstrated pitch/roll and yaw at 2000ft and 90kt. The visibility was >10km in VMC and the ac was coloured white /red with anti-collision light switched on. The usual routeing was to the E of Brentwood and return following the M25 whilst listening out with Stapleford Radio. She did not see the reporting ac.

THE FARNBOROUGH LARS N CONTROLLER reports the sector was busy and he was using the whole of his SSR block allocation owing to traffic intensity. The R22 pilot called when in the vicinity of the Thames at 1200ft and was readable strength 2 improving to strength 3. At about 1500Z when the helicopter was in the vicinity of Thurrock the pilot reported an ac to be flying at dangerous angles close to his helicopter and reported its registration. Later when he requested if the R22 pilot wished to file an Airprox, the pilot acknowledged with an, "affirm, after landing". The R22 was in transit at 1200ft in an area of poor RT coverage at low altitude and the flight was under a BS.

ATSI reports that the Airprox occurred at 1500:13, within Class G airspace, 1.5nm to the NW of Thurrock Airfield, which does not have an ATZ.

The reporting flight was an R22 that was on a VFR flight from Le Touquet to Wycombe, in receipt of a BS from Farnborough LARS N and squawking 5033. The second ac was a C152 on a local VFR training flight operating from Stapleford and in communication with Stapleford Radio.

The Farnborough controller was operating as LARS N and reported the sector being busy with all available SSR codes allocated due to traffic intensity. The controller reported that the R22 helicopter in transit at 1200ft was operating in an area of poor RT coverage.

The weather for London City Airport was:

METAR EGLC 191450Z 28015KT 9999 SCT040 18/07 Q1013 RERA=

The R22 flight contacted Farnborough LARS N at 1450:20. The controller reported the R22 RT as readability 2. The R22 pilot reported routeing from Le Touquet to Wycombe at 1200ft on QNH 1017 and requested a BS. The controller allocated a squawk of 5033 and passed the London QNH 1013. The radar recording shows the R22, 6.9nm SE of Thurrock Airfield with NMC altitude reporting. Shortly afterwards the controller agreed a BS.

At 1457:17 the radar recording shows the R22 positioned 2nm SE of Thurrock and the C152 tracking S, 2.3nm NNE of Thurrock squawking 7000 and indicating an altitude of 1800ft. Shortly afterwards at 1347:45 the C152 turns onto a SW'ly track. The radar recording shows both ac tracking towards Thurrock on converging headings.

The two ac continue to converge with the C152 maintaining an altitude of 1700ft. At 1459:25, the radar recordings shows both ac are in close proximity with labels overlapping at a position 0.7nm W of Thurrock. Shortly afterwards the tracks cross and the C152 turns onto a track which parallels the R22 at a range of approximately 0.1nm.

At 1500:05 the radar recording shows the C152, indicating an altitude of 1700ft, commenced a R turn and at 1500:13 the Airprox occurs when the ac's tracks cross. The radar recording shows the ac labels merge with the C152 indicating an altitude of 1600ft. The R22 pilot's written report indicated that the R22 was at 1200ft on QNH 1013. The tracks then diverge with the C152 tracking N.

At 1500:56, the R22 pilot reports, "????? Erm flying dangerously just north of Wh- yeah Thurrock airfield erm and er coming extremely close to me from several different angles we have his registration number." The controller asked for confirmation of the flight calling and the R22 pilot confirmed that the other ac had come into close proximity adding, "confirm it came from behind and on top of me." The pilot confirmed his intention to file an Airprox after landing. The controller advised that Stapleford was busy and transferred the flight to the Stapleford frequency.

The Airprox occurred in Class G airspace. The C152 flight was not in receipt of an ATS. The R22 flight was in receipt of a BS in an area of poor RT coverage at 1200ft. The Farnborough LARS N controller was operating a busy sector with high workload and was not aware of the other traffic. CAP 774, UK Flight Information Services, 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.’

‘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.’

‘Basic Service relies on the pilot avoiding other traffic, unaided by controllers/FISOs. It is essential that a pilot receiving this service remains alert to the fact that, unlike a Traffic Service and a Deconfliction Service, the provider of a Basic Service is not required to monitor the flight.’

‘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.’

The Airprox occurred when the 2 flights operating under VFR came into close proximity. The R22 flight was in receipt of a BS from Farnborough LARS N. Under a BS there is no obligation placed upon the controller to provide TI. However, if a controller considers that a definite risk of collision exists, a warning may be issued to the pilot. The LARS N controller was operating on a busy sector with a high workload. The controller was not aware of the C152 and there was no requirement for the controller to monitor the R22 flight.

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.

Since the Airprox occurred in Class G airspace, both pilots had equal responsibility to maintain separation from other ac through see and avoid. Although the R22 flight was under a BS from Farnborough, the controller was busy and did not notice the R22 and C152 converging. There was no requirement for LARS N to monitor the R22 on radar, nor to provide TI. Members agreed that there had been ample opportunity for both crews to see each other as they approached, the C152 flight initially having right of way during its first pass of the R22. However, during any encounter the RoA regulations rely on crews sighting a potential confliction beforehand. On this occasion, the R22 pilot saw the C152 late as it converged from the N and then crossed about 500ft above whilst turning through a W’ly heading; the R22 passed unsighted by the C152 pilot. Thereafter, unbeknown to the R22 pilot, the C152 pilot had unwittingly turned onto a parallel course to his L at close quarters, still unsighted. The R22 pilot then saw the C152 again, as its pilot unknowingly slowly overtook the helicopter, and became concerned as the C152 pilot was apparently unaware of their presence before the flight executed a R turn to cross just ahead and about 350ft above. The R22 pilot

executed a descending turn to the R as he didn't know what further action the C152 pilot was going to take. The radar recording shows the C152's Mode C indicating unverified altitude 1600ft as the ac returns merge. With the R22 pilot reportedly flying at 1200ft, this would corroborate the estimated separation seen by the R22 pilot. Members agreed that the R22 pilot had taken all the necessary precautions and had acted appropriately. Members believed that the R22 pilot was always in the position to take further action if needed and that any risk of collision had been quickly and effectively removed.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A non-sighting by the C152 pilot and a late sighting by the R22 pilot.

Degree of Risk: C.

AIRPROX REPORT No 2011065

Date/Time: 30 Jun 2011 1325Z

Position: 5232N 00044E (4½nm SW of Watton)

Airspace: EGD 208 (Class: -)
Reporting Ac Reported Ac

Type: Extra 300 LPS SR20

Operator: Civ Comm Civ Pte

Alt/FL: 2500ft 2200ft
QNH (1025mb) QNH

Weather: VMC CLBC VMC In Rain

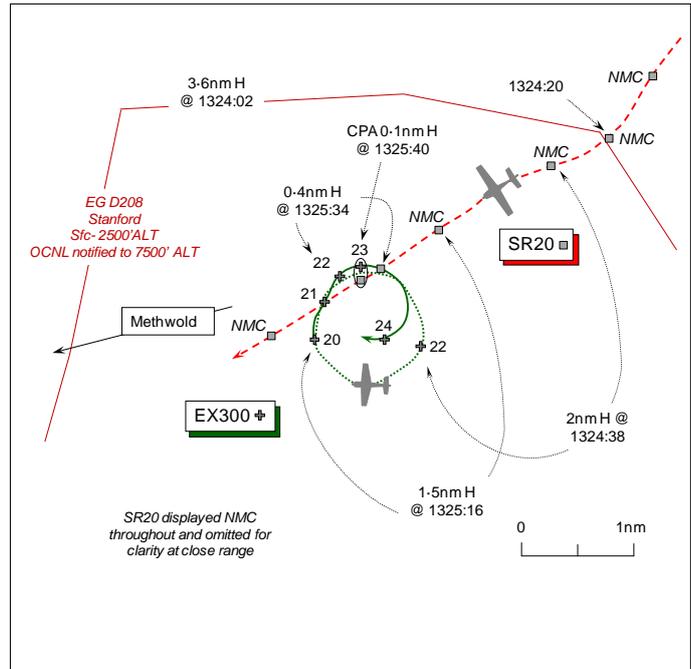
Visibility: 10km 6km

Reported Separation:

200ft V/nil H NR

Recorded Separation:

0.1nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE EXTRA 300 LPS (EX300) PILOT reports that he was participating in a Close Air Support task within EG D208 (STANTA) which was NOTAM'd from the surface to 17000ft, notifying other airspace users of rotary and fast-jet ac conducting high energy manoeuvres. Their range entry clearance had been issued by the Tactical Operations Cell (TOC), as the Exercise airspace coordination agency, on 136.950MHz. They were not in receipt of an ATS but had retained their assigned Lakenheath squawk prior to entry into D208 to facilitate deconfliction from traffic on recovery to Lakenheath. The exercise procedural deconfliction plan established safe separation between all exercise traffic with no change of altitude block permitted without prior approval from the TOC. Operating VFR in clear air 1000ft clear below cloud and a flight visibility of 10km, he was flying level at 2500ft Lakenheath QNH (1025mb) and had been allocated the block 1500-2500ft QNH to deconflict them from a Sea King operating below an altitude of 500ft and a Hawk operating above 3500ft. There were thunder cells seen 2nm to the N.

With full awareness of all other exercise airspace users he and his camera operator had sufficient confidence to dedicate their attention to the exercise ground activity, to the accepted detriment of lookout. The NOTAM and D208 boundary should have provided sanitised airspace, with TOC deconfliction allocating them ownership of the 1500-2500ft altitude block. Orbiting at 100kt, he thought to the L but actually in a R turn, in a holding pattern during their surveillance task, the other ac, a low-wing single-engine propeller driven aeroplane – the Cirrus SR20 - passed 200ft directly below his ac with a 'high' Risk of collision. No avoiding action was taken as the other ac was not seen until it was directly underneath and clearing away from his flight path. He opined that, as they had not seen the other ac approach and were manoeuvring constantly within their allocated altitude block, the 200ft vertical separation could have been eroded in fractions of a second and resulted in a collision.

The reported position of the Airprox is accurate as they were surveying a ground position at the time. He added that he was operating under a high workload, integrating with other rotary and fast-jet exercise traffic whilst supporting troops on the ground.

He immediately called Lakenheath to report the incident and asked if the other ac was on frequency and to be identified. At that point Lakenheath ATC had neither radio or radar contact with the other

ac so he switched back to the range frequency and completed the task. Upon completion of the mission he contacted Lakenheath ATC again 'on checkout' and was informed that the pilot of the other ac – the SR20 - had called Lakenheath and when questioned about the Airprox claimed he had deconflicted with his EX300 using TCAS. He (the EX300 pilot) informed Lakenheath he would be filing an Airprox and requested any radar tapes be retained.

Summarising the occurrence, the other ac – the SR20 - had entered a permanent Danger Area where there is frequently live firing, in the middle of a NOTAM'd exercise, with airspace between surface and 10000ft allocated to 3 different types of ac. All of those ac were flying unpredictable flight paths with high-energy manoeuvres involving rapid altitude changes through thousands of feet. If the pilot of the other ac thought it safe to enter such airspace (assuming they knew of its existence) then action is needed to prevent the future possibility of a very serious accident.

UKAB Note (1): The UK AIP at ENR 5-1-3-14-1 notifies EG D208 Stanford Danger Area as active for live firing/bombing/para dropping/demolition and unmanned ac operations, H24, from the sfc to ALT 2500ft and occasional use to ALT 7500ft. Statutory Instruments SI 1970/909 & SI 1975/24 apply. A Danger Area Activity Information Service (DAAIS) is available for D208 from Lakenheath ZONE on 128.90MHz.

UKAB Note (2): AUS originated a NOTAM for this close air support exercise (Pashtun Panther) (H1489/11 which replaced H1301/11) valid from 9 May to 8 Jul 2011 and effective Mon-Fri 0800-2200 UTC. It was specified that fast-jets and helicopters would conduct high-energy manoeuvres within a 5nm radius of 5230N 00044E [2nm S of the Airprox location] (EGD 208), from the surface to FL170. A landline PoC was also specified.

THE CIRRUS SR20 PILOT reports he had departed Old Buckenham VFR, bound for Waterford, Ireland. He included an original CAA VFR 1:500000 chart with his planned route marked, which was a NNW'ly track to overhead Shipdham, thence a WSW'ly track direct Northampton/Sywell, thereby circumnavigating to the N of EG D208 and passing to the S of the Marham MATZ.

A level cruise was established at an altitude of 2200ft at 135kt, whilst in receipt of a BS from London INFORMATION on 124.6MHz. Flying 1000ft clear below cloud with an in-flight visibility of 1600m in rain, he altered course onto a heading of 255° towards Methwold, to avoid Cumulonimbus cloud and heavy rain. The EX300 was not seen.

He opined that after departing Old Buckenham, a better choice might have been to call Marham RADAR on 124.15MHz rather than London INFORMATION. TCAS 1 is fitted with Mode S and a squawk was selected. His ac is white and red; the HISLS were on.

UKAB Note (3): In a subsequent telephone conversation with UKAB staff, the SR20 pilot advised he was not aware of the NOTAM'd close air support exercise or that EG D208 was active.

UKAB Note (4): The Debden Radar recording shows the SR20 crossing the lateral boundary of EG D208 at 1324:20 on a broadly SW'ly course, squawking A1177 (LAC FIS) although NMC is shown throughout. Nevertheless, the pilot reports his transit altitude as 2200ft thereby placing the ac within the regular upper limit of the Danger Area. The EX300 is shown orbiting R within the Danger Area and at 1324:38, is turning through S with the SR20 2nm to the NE. The EX300 continues in the R Turn through N on the next orbit [solid green line on the diagram] indicating 2000ft Mode C (1013mb) with the SR20 at a range of 1.5nm. Climbing slightly to 2200ft Mode C - about 2560ft ALT (1025mb), as the two ac close to a range of 0.4nm, the next sweep shows the CPA of 0.1nm H as the SR20, still indicating NMC and maintaining a steady course, passes marginally to the S of the EX300, the latter indicating 2300ft Mode C – about 2660ft ALT (1025mb).

UKAB Note (5): Subsequent to this Airprox, HQ 3AF helpfully provided a written analysis of the Lakenheath RAPCON ASR recording (it can only be played back in situ and no copies can be made), together with transcripts of the RT communications between Lakenheath RAPCON and both ac after the Airprox had occurred.

Analysis of the recorded Lakenheath RAPCON ASR data by the facility staff reveals that the SR20 was initially observed 2nm W of Old Buckenham A/D climbing through 1000ft ALT Mode C (their Mode C is related to QNH below their TA of 4000ft) on a NW'ly heading, squawking A1177. At 1320, the SR20 was heading to Shipdham, before turning to the SW, apparently to deconflict from a 'precipitation cell'. At the same time the SR20's Mode C readout ceased and was no longer shown, the last Mode C readout indicating 2000ft ALT Mode C. At 1325:40, the primary contacts of the EX300 and the SR20 merge with the former indicating 2600ft ALT and the SR20 with no Mode C. The EX300 was observed in D208 during the entire incident in a right-hand orbit between 2300ft and 2700ft ALT Mode C, squawking A0457. During the remainder of the recording the EX300 continues the orbit in D208 as the SR20 continues enroute to the W then NW.

At 1326:15, some 35 sec after the CPA, the EX300 pilot called RAPCON on 136.5MHz, "*Lakenheath [EX300 C/S] we are um still in Delta 2-0-8, we just had a G-A entalope [sic – more probably interloper] come right through the range fairly close aboard with us, just wondering if they're speaking to you.*" After RAPCON instructed the EX300 pilot to squawk IDENT the pilot advised the unknown ac was, "*...now West of our position approximately 1 mile.*" RAPCON replied, "*[EX300 C/S] roger...I'm not talking to the aircraft at all..you're radar contact and I didn't even know you were in STANTA range.*" At 1326:47, the EX300 pilot advised, "*...copied, we're maintaining your squawk 0-4-5-7 but we're a single box so we're speaking to range frequency. If that aircraft calls up would you..be kind enough to get a trace or callsign and I'll give you a call on the landline*", to which RAPCON agreed prior to the EX300 pilot switching back to the range frequency.

Some 9min after the CPA, at 1334:30, the SR20 pilot called Lakenheath on 124.9MHz. Subsequent to a radio check request from RAPCON, the SR20 pilot replied, "*not so bad thank you Sir uh trying to dodge the showers*". RAPCON advised the SR20 pilot, "*..just be advised you flew through..STANTA Delta 2-0-8, and there is numerous aircraft in there did you see...PA 31 [actually referring to the EX300] or something like that almost hit you*". The SR20 pilot replied "*Yea I had him on TCAS but eh but there was no uh no conflict.*" RAPCON added, "*Roger apparently he thought that you got closer he contacted me on my frequency to let me know and I guess he is going to call up*". Subsequently, the SR20 pilot reported, "*Yes sir well now..gonna intercept the track to..Echo Golf Bravo Kilo [Northampton/Sywell]*", whereupon RAPCON asked for the ac's altitude, to which the SR20 pilot replied at 1335:18, "*altitude is..2 thousand feet on 1-0-2-4.*"

HQ 3AF comments that it is hard to understand, given the weather conditions and his intended route, why the SR20 pilot chose to contact London INFORMATION rather than speak to either Marham APPROACH or Lakenheath RAPCON, either of which unit could have prevented him from blundering into an active danger area. TCAS may have given him a warning on this occasion but he should aware that live weapons are not equipped with transponders.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The Board was briefed on the planned route of the SR20 circumnavigating to the N of EG D208. It was evident, however, that after departing Old Buckenham the SR20 pilot had deviated from his planned route to avoid cumulonimbus cloud and heavy rain, culminating in the ac flying through this permanently active Danger Area. A pilot Member opined that this was disappointing when flying a modern ac with reputedly good navigational displays. The analysis by Lakenheath ATC reveals that the SR20 pilot had set course for Shipdham before turning to the SW, apparently to avoid a 'precipitation cell' shown on the Lakenheath RAPCON ASR recording. Having elected to route around this weather by turning westerly via Methwold, this took the SR20 straight through the exercise within D208. Controller Members suggested the SR20 pilot would have been better advised to have called Lakenheath ATC who offers the DAAIS for D208 or possibly Marham ATC. Both

ATSUs could potentially have provided radar assistance to the SR20 pilot; in addition to augmenting his visual lookout scan they would in all probability have forewarned him of the status and activity within D208. At a reported transit altitude of 2200ft, the LAC radar recording revealed that the SR20 pilot entered D208, thereby placing his ac in conflict with the EX300 participating in the close air support exercise within the Danger Area and for which a NOTAM had been issued notifying other airspace users that fast-jets and helicopters would conduct high-energy manoeuvres within a 5nm radius of the specified co-ordinates up to FL170. Members noted that the SR20 pilot reports he was unaware of the NOTAM or that D208 was active, which was indicative of inadequate pre-flight planning and awareness of the airspace surrounding his track. Members concluded unanimously that this Airprox had resulted because the SR20 pilot flew through a promulgated and active Danger Area and into conflict with the EX300.

It was reported that the EX300 pilot and his cameraman were focusing on their airborne surveillance task when the Airprox occurred and the SR20 flew about 200ft below their ac. That sighting was the first indication they had of any non-exercise ac within D208. Without Mode C from the SR20 the actual vertical separation that pertained could not be ascertained independently and the importance of ensuring that altitude reporting was always selected when the transponder is on was stressed by controller Members. The EX300's indicated Mode C was 2200-2300ft Mode C at the moment the SR20 under flew, equating to an altitude between 2560-2660ft QNH (1025mb), which suggests the EX300 was about 360ft above the SR20's reported 2200ft ALT. Given the tolerances applicable to Mode C of +/- 200ft, this was in general accord with the EX300 pilot's reported separation. The Lakenheath RAPCON RT transcript reveals that the SR20 pilot was aware of the EX300 from his TCAS I, which should also have given an indication of the EX300's relative vertical separation above his ac, but the SR20 pilot did not acquire it visually or take any action to avoid it. Furthermore, he would not know it was orbiting and the azimuth indications of TCAS I devices can be deceptive in such scenarios. The EX300 pilot was unable to take any avoiding action as the SR20 was not seen until it was directly underneath, so neither pilot took any action to avert this close quarters encounter, suggesting to some Members that an actual Risk existed. Other Members contended that with no less than 200ft of vertical separation reported by the EX300 pilot and somewhat more than that apparent from his ac's Mode C indication, the vertical separation was sufficient to avert an actual collision. Following a comprehensive debate, the Board concluded that the safety of the ac involved had been compromised.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The SR20 pilot flew through a promulgated and active Danger Area and into conflict with the EX300.

Degree of Risk: B.

AIRPROX REPORT No 2011067

Date/Time: 1 Jul 2011 0909Z

Position: 5104N 00234W (5nm
NE of Yeovilton A/D -
elev 75ft)

Airspace: MATZ/AIAA (Class: G)
Reporting Ac Reported Ac

Type: Sea King HC Mk4 Untraced LA

Operator: HQ JHC NK

Alt/FL: 1200ft NR
QFE (1026mb)

Weather: VMC NR NK NR

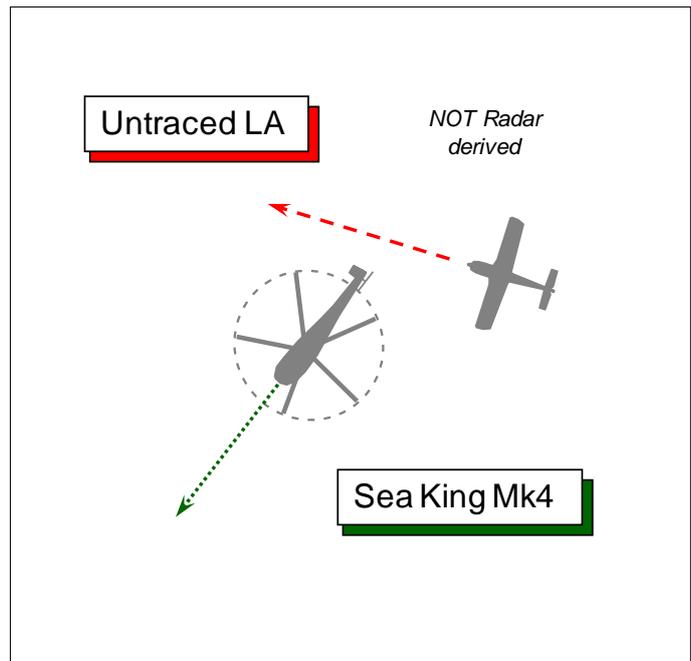
Visibility: 25km NR

Reported Separation:

Nil V/150-200m HNR

Recorded Separation:

Not recorded



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE WESTLAND SEA KING HC Mk4 HELICOPTER PILOT reports that he was executing a PAR to RW22 at Yeovilton and was in receipt of a Radar Control Service, he thought, from APPROACH (APP) on 295.075MHz. The helicopter colour-scheme is overall dark green, but the white HISLs and the nose lights were all on. Approaching 5nm Final, heading 220° at 70kt, level at 1200ft QFE (1026mb), a silver low-wing single-engine propeller-driven light ac (LA) passed about 150-200m astern of his helicopter at the same height from L - R. Although RADAR had primary radar contact on the unknown LA and was passing TI, he saw it late because the LA blended into the rising ground in the distance. The conflicting LA's flight path did not deviate throughout the encounter. He assessed the Risk as 'medium'.

An Airprox was later filed by telephone with ATC.

THE RADAR ANALYSIS CELL LATCC (MIL) (RAC) report that despite extensive tracing action, including contact with all aerodromes in the vicinity, the reported LA could not be traced.

UKAB Note (1): Subsequent to manoeuvring in the AIAA to the N of Yeovilton, the Sea King is shown intermittently on the Burrington Radar recording as an SSR contact only approaching 5nm Final for RW22 indicating 1000ft Mode C (1013mb), which equates to broadly 1390ft QFE (1026mb) before fading entirely. The unidentified LA is not evident at all on the radar recording.

UKAB Note (2): The Yeovilton AIAA is notified in the UK AIP at ENR 5-2-9, which promulgates intensive helicopter instrument flying training extending from the sfc to 6000ft ALT, with peak activity 0730-1500 UTC on Fridays in Summer. A LARS is available on 127.350MHz.

YEOVILTON ATC reports that the APP controller and RT voice recordings of the APP frequency support the sequence of events reported. The Sea King was vectored for a Short Pattern Circuit (SPC) PAR to RW22 at Yeovilton and was in receipt of a TS - not a RCS. The Sea King crew was instructed to descend to 1200ft QFE (1026mb), whereupon an intermittent radar contact was observed crossing the approach to RW27 at about 8-9nm E of the A/D before fading. The unknown contact then reappeared to the SE of the Sea King, about 4½ to 5nm away, tracking WNW'ly and

was called as being intermittent, possibly spurious, with no secondary radar information. The contact then faded from radar again, before reappearing 2nm SE of the Sea King still tracking WNW'ly; its position was passed again to the Sea King crew. As separation decreased to 1.5nm, TI was called again along with an assessment that it would pass behind the Sea King, whose crew finally became visual with the conflicting LA at a range of 0.5nm as it passed astern.

The Approach controller was also monitoring the Yeovilton VHF LARS frequency throughout, but did not receive any radio calls from any LA that could have matched the position of the conflicting ac. The Sea King crew continued with the PAR to RW22 without further incident.

The APP controller fulfilled his responsibilities regarding the provision of a TS, keeping the Sea King crew fully apprised of the relative position of the unknown conflicting LA until it had passed behind, therefore, no advisory avoiding action was offered.

SATCO YEOVILTON commented that the Unit investigation, supported by the RT recordings, indicate that this was a late sighting of an unidentified ac. The APP controller more than fulfilled the conditions of a TS, updating the Sea King crew several times that there was a possible ac tracking towards them, although there was no supporting information to confirm the validity of the primary contact. There are several small aerodromes and LA landing strips in the vicinity of Yeovilton and, whilst most GA operators do call on the LARS frequency, there are still some that do not.

HQ JHC comments that the poor airmanship displayed by the LA pilot who chose to operate on the extended centreline of a busy airfield at around the same altitude as the glide path, undoubtedly made an Airprox much more likely to happen. This Command considers that a mid-air collision with a light coloured small ac is a very significant risk. This Airprox indicates that the light aircraft community is probably not fully cognisant of the flying operations at Yeovilton.

HQ NAVY COMMAND comments that Yeovilton has for many years had close liaison with the GA community in its vicinity and it is surprising that the LA flew within the DUA and AIAA without calling Yeovilton LARS and is certainly not the norm. The actions of the APP controller were correct, with the LA called to the Sea King crew several times. Once again though it is noted that the correct procedure for initial reporting of an Airprox was not followed; UK AIP (Mil and Civil) ENR 1.14 (3.2.1) states that 'an initial report of an Airprox by a pilot should be made immediately by radio to the ATS unit with which the pilot is in communication'. Aircrew should be reminded of the need to follow this procedure so that the correct actions can be taken by ATC as soon as possible. This issue has been added to the agenda at the next Senior Pilots Meetings of both RNAS Culdrose and RNAS Yeovilton.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included a report from the Sea King pilot, radar video recordings, together with a report from the ATSU involved and the appropriate operating authority.

This Airprox occurred outwith recorded radar coverage, which hindered tracing action somewhat and despite the best endeavours of the RAC the LA pilot could not be identified. Furthermore, in the absence of any recorded radar data, the Board's assessment could only be made on the basis of the Sea King pilot's account coupled with the ATSU's report.

It was clear that the untraced LA had been spotted by the controller and TI passed on three occasions under the TS, which finally enabled the Sea King crew to sight the LA as it passed clear astern. Members understood that a LA of small cross-sectional area approaching on a constant relative bearing would be difficult to spot, despite the reported good visibility. Moreover, the Sea King pilot reports that the LA blended into the rising background terrain hindering earlier visual detection by the crew. It may be that the untraced LA pilot, who was required by the 'Rules of the Air' to 'give way' in this situation, had seen the larger helicopter in sufficient time to alter his course and pass clear astern. However, it would have been better airmanship if the LA pilot had contacted Yeovilton

on their LARS frequency whilst transiting through the AIAA adjacent to the MATZ. If he had, the LA pilot might well have benefited from a warning about the helicopter from ATC thereby giving earlier notice of the Sea King's presence that could also have mutually enhanced both pilots' SA. In the absence of his account, it was unclear if the LA pilot had definitely seen the Sea King. Therefore, based on the limited information available, the Board could only conclude that this Airprox resulted because the untraced LA pilot flew close enough to cause the Sea King crew concern.

The Board can only base its assessment on what had actually occurred and not what might have happened if circumstances had been slightly different. Nevertheless, this close quarters situation could have been prevented if the LA pilot had given the helicopter a wider berth. Despite the reported minimum separation, it seems that APP maintained a good flow of TI to the Sea King pilot and no avoiding action was taken, nor did the helicopter pilot break off his approach. In the absence of recorded radar data it was not feasible to confirm the minimum separation as the LA passed astern of the helicopter and the Board debated whether there was sufficient evidence available to enable the Members to reach a meaningful conclusion on the Risk. The majority view prevailed here and it was concluded that there was no Risk of a collision in these circumstances.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The untraced LA pilot flew close enough to cause the Sea King crew concern.

Degree of Risk: C.

AIRPROX REPORT No 2011068

Date/Time: 1 Jul 2011 1237Z

Position: 5410N 00205W
(22nm SW Leeming)

Airspace: London FIR (Class: G)

Reporting Ac Reported Ac

Type: Hawk T1 DA42

Operator: HQ Air (Ops) Civ Pte

Alt/FL: 2900ft 3000ft
(QFE 1022mb) (QNH 1026mb)

Weather: VMC NR

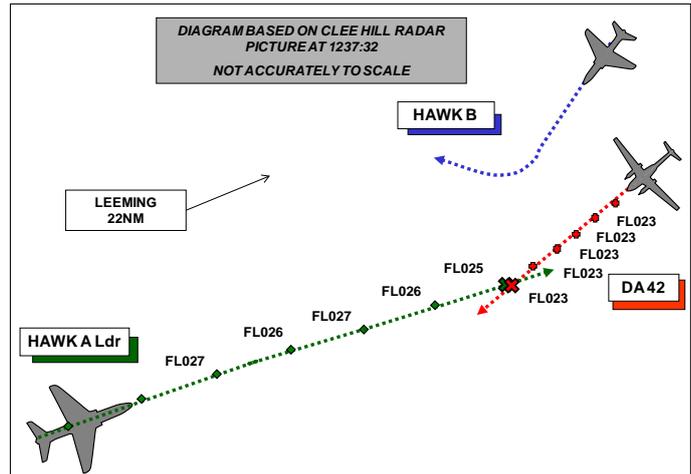
Visibility: 50km 50km

Reported Separation:

0 V/300-400ft H 200ft V/500m H

Recorded Separation:

200ft V/<0.1nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE HAWK T1 PILOT (HAWK A) reports that he was leading a formation of 2 black ac on an advanced training flight with all external lights switched on; they were heading 070° on recovery to Leeming at 380kt at 1000ft, squawking 7001 with Modes C and S but TCAS was not fitted. During the recovery he pulled up 30nm W of Leeming in order to listen to the ATIS and call APP. Once level at 2900ft on the Leeming QFE, both crew members saw another Hawk (Hawk B) in their 10 o'clock, slightly high in a right hand turn. They had yet to establish two-way communication with APP who was talking to another formation of Hawks. Whilst looking for other possible members of the formation, the handling pilot (front seat) looked forward and spotted a light-coloured twin-prop light ac ¾nm away, wings level on a reciprocal heading, about 300-400ft below them. To maintain separation and remain visual, he climbed slightly and once well clear turned 90° right to identify the other ac. The other ac appeared not to have deviated from its track and remained slightly lower than them.

He assessed the risk as being Medium.

THE DA42 PILOT reports flying a white twin-engine ac with TCAS fitted on private VFR local flight from Leeds/Bradford with a passenger, squawking with Modes C and S; at the time of the incident he was in receipt of a BS from Linton LARS [actually Leeming - see controller's report]. He was in the position of the reported incident, tracking 310° at 160kt and at 3000ft amsl when he saw a contact on TCAS. His TCAS display indicated that an ac was on reciprocal heading, above him in straight and level flight; about 2sec later he saw 2 black military ac, with nose lights, in his 12 o'clock that he believed were on a local training exercise [Hawk A Ldr and No2]. As he was taught on his initial pilot training, he maintained a steady heading and alt since he did not think it necessary to climb or descend in order to avoid them. He thought that the military ac would take the necessary avoiding action if they needed to.

He assessed the risk as low.

THE LEEMING ZONE CONTROLLER reported that at the time he was bandboxing Topcliffe RAD/Dir which included monitoring the LARS freq, Topcliffe VHF for Bagby traffic and 3 UHF frequencies (which were quiet at the time of the incident). It was a med-low intensity session within the capacity of a controller who was familiar with operating both Leeming LARS and Topcliffe, which

is not unusual. He was working 4 BS tracks; including the DA42 GH N of Leeds Bradford, an ac on a LARS transit to the W of Leeming and 2 tracks which free called inbound Bagby, resulting in a convoluted conversation with one track in particular whose C/S was difficult to ascertain. A number of ac were manoeuvring at low level to the W of Leeming and numerous primary contacts, believed to be gliders, were in the vicinity of Sutton Bank.

At about 1236 he passed TI to the GH ac to the W of Leeming (he believed to be the DA42 reported) and shortly after, updated the TI. The DA42 pilot replied that he had the other ac on TCAS and was also visual. Shortly afterwards, at about 1238, TI was passed to the DA42 pilot about another ac, also to the W of Leeming on a LARS transit. The DA42 then reported that he was visual with a Hawk [Hawk A No 2] that had gone underneath him and he would keep a good look out for further traffic.

The Hawk pilot reported the Airprox after landing.

BM Safety Management (abridged to avoid duplication) reported that this Airprox occurred between a Hawk (Hawk A Ldr) operating VFR on recovery to RAF Leeming, but not yet in communication with Leeming APP, and a DA42 conducting GH in the Vale of York under VFR and a BS from Leeming Zone.

At the time of the incident, Zone reports that they had 4 ac on freq under a BS and that their work and task-load was medium to low.

The DA42 contacted Zone at 1231:35 and was placed under a BS. At 1233:21 Zone passed TI to the DA42 on unrelated traffic, followed at 1236:17 by Zone passing further TI to the DA42 on an unrelated Hawk (Hawk B). At 1236:41 the TI on Hawk 2 was updated and the DA42 pilot reported, "*yeah visual, visual with that*". No TI was passed to the DA42 on Hawk A Ldr or No2.

At 1236:52 Zone began to transmit on Topcliffe VHF to Ac4, inbound to Bagby. The exchange of RT between Zone and Ac4 continued until 1237:24. There was then a gap of 28sec until Zone transmitted to Ac4 to recycle their SSR Mode 3A.

The pilot of Hawk A stated in his report that 'once level at 2900ft on the Leeming QFE, both crew members spotted another Hawk [Hawk B] in the left 10 o'clock, slightly high in a right hand turn'. Based upon the subsequent events and analysis of the radar replay, the ac spotted by the crew of Hawk A Ldr was Hawk B. On the radar recording, Hawk B can be seen in a right hand turn NW of the DA42 closing with it to about 0.6nm laterally and 400ft vertically.

The CPA with Hawk A Ldr was at 1237:32, with zero lateral separation discernable on the radar recording and 200ft vertical separation indicated. Hawk A Ldr freecalled APP at 1237:53, 21sec after the CPA. At 1238:14, Zone passed TI to the unrelated ac (Ac2) on both Hawk A Formation and Hawk B and continued to provide appropriate TI to all other ac in receipt of a BS.

Zone's actions in the period leading up to and following the Airprox demonstrate that he was aware of his duty of care under a BS and was discharging this by providing warnings when he perceived there to be a risk of collision. Therefore, the fact that he did not pass TI to the DA42 on Hawk A Ldr suggests that his attention was diverted elsewhere. Moreover, the fact that Zone passed TI to Ac2 on both Hawks indicates that this was the point where he re-focused his attention on that area of the display and, importantly, the first point where he saw Hawk A Ldr.

During and following the exchanges of RT at 1236:52 and 1237:24 between Leeming Zone and Ac4, it is reasonable to assume that Zone would have completed the FPS and waited for the ac to squawk the assigned SSR Mode 3A in order that he could validate and verify the SSR. It appears that these tasks may have precluded Zone from passing TI to the DA42 on Hawk A Ldr. However, the responsibilities of the crews of Hawk A Ldr and the DA42 to 'see and avoid' other traffic are clear. Moreover, as stated in the unit's internal investigation, it is reasonable to argue that Hawk A Ldr crew's relatively late sighting of the DA42 at $\frac{3}{4}$ nm was as a result of their focus on gaining visual

contact with other members of the other Hawk formation, having sighted only one ac. Fortunately however, Hawk A Ldr crew was able to sight the DA42 in time to take effective avoiding action.

Of greater concern is the DA42 pilot's statement that 'as per pilot training I maintained a steady heading and altitude. I didn't feel the need to climb or descend in order to avoid. Military ac would take the necessary avoiding action if required'. One interpretation of this statement is that the DA42 pilot believes that military ac will 'see and avoid' civil ac. This suggests either a misunderstanding by this individual pilot of the Rules of the Air and their applicability to aviators or, more worryingly, could suggest a failure of the training delivered by that pilot's flying school.

HQ AIR (Ops) comments that the delay by the Hawk A Ldr pilot in contacting Leeming APP may have contributed to the Airprox, in that there was no opportunity for the controller to give TI to him on either the other Hawk formation [Hawk B] or the DA42. Hawk A Ldr pilot may have been devoting more attention to visual acquisition of the other formation and his lookout scan in other sectors could have been reduced. However, it seems that the DA42 pilot was aware of the Hawk's presence, firstly by TCAS and then visually, and should taken at least some avoiding action to prevent such a close encounter.

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.

Controller Members agreed that the circumstances of this encounter were such that, despite that the DA42 was on only a BS, Leeming Zone should have provided the pilot with a warning of Hawk A Ldr's presence since the ac were clearly on a collision course. Leeming App, on the other hand, although co-located did not have sufficient time or information to provide such a warning to Hawk A Ldr, but his heightened lookout for a possible wingman to Hawk B revealed the white DA42 directly ahead and slightly below him.

Members agreed that this had been a head on situation and the ANO Rule 10 applied which requires both ac to alter course to the right; needless to say this requires both pilots to see the opposing ac in time to do so. The Hawk pilot saw the DA42 at a distance he estimated to be $\frac{3}{4}$ nm. At a closing speed of about 540kt this gave the Hawk pilot 5 sec to see assimilate and react to the DA42 by initiating a 'slight climb'. Members were perplexed as the Great Dun Fell radar recording [8 sec update rate] seemed to show the Hawk in a continuous slight descent [continuing even after the diagram above]. Mode C is accurate only to ± 200 ft and [in this case] only updates every 8 sec so small altitude deviations are sometimes not apparent on radar recordings. The DA42 pilot reported that despite having acquired the Hawks [A Ldr and 2] on TCAS he maintained heading and altitude as he thought that the military ac would take the necessary avoiding action if required. Members noted that the ANO is quite specific and in Class G airspace the respective pilots have an equal and shared responsibility to avoid each other; expecting other ac to initiate avoidance is imprudent since it is totally dependent on the other pilot seeing you in time to initiate avoidance and this is often not the case. Members thought it wise in a majority of encounters to assume that the opposing pilot has not seen you and react accordingly. Members could not determine whether the DA42 pilot had misinterpreted the ROA collision avoidance responsibilities and believed that military ac would avoid civil ones or had merely expressed himself poorly in his report. Another interpretation could be that he believed, in this case mistakenly, that the Hawk pilot's avoidance would be more timely and more effective than any he could initiate, or that sufficient vertical separation existed.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict in Class G airspace resolved by Hawk A Ldr.

Degree of Risk: C.

AIRPROX REPORT No 2011069

Date/Time: 2 Jul 2011 1140Z (Saturday)

Position: 5213N 00013E (2nm NE of Cambridge Airport - elev 47ft)

Airspace: London FIR (Class: G)

Reporting Ac Reported Ac

Type: C550B Discus Glider

Operator: Civ Comm Civ Club

Alt/FL: 3000ft 3600-5000ft
QNH (1020mb) QNH

Weather: VMC NR VMC Clear Sky

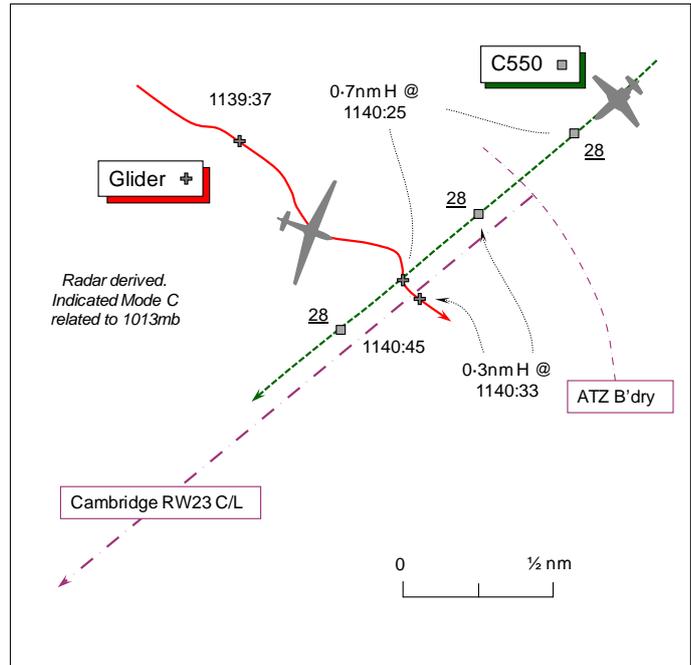
Visibility: 10nm 20km

Reported Separation:

200-300ft V/nil H 500ft +V

Recorded Separation:

Not recorded



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE CESSNA CITATION II C550B PILOT (C550) reports he was inbound to Cambridge Airport at 160kt under IFR in VMC and in receipt of a 'Radar Control' service, he thought, from Cambridge ATC. Flying the LLZ course for RW23 level at 3000ft a glider appeared very close overhead about 200-300ft above his ac in what seemed like a diving turn with a nose-down attitude. The glider was not evident on his ac's TCAS and its pilot was not in RT contact with ATC. The glider was seen too late and was already astern before avoiding action could be taken. He reported the Airprox to TWR on RT.

UKAB Note (1): The RW in use at Cambridge was RW05; the C550B pilot initially requested an IFR approach to RW23 that was approved by ATC. Subsequently, the C550 was broken off from the instrument approach to RW23 and instructed to make an approach to RW05. It was whilst flying through, prior to commencing the approach to RW05, that the Airprox occurred.

THE SCHEMP-HIRTH DUO DISCUS GLIDER PILOT, who may or may not be the reported glider pilot, reports he had departed from Gransden Lodge GS and was flying about 1nm N of Cambridge RW centre line at about 3600 – 5000ft QNH, turning to the R in a thermal at 50-55kt. His rear-seat passenger was in the process of passing him the radio frequency for Cambridge TOWER, but at this point he had not entered it into the radio, which in this two-seater glider can only be done by the front seat pilot.

During part of the turn he first observed a white ac about 1–1.5nm away. The ac was flying below his glider at about 3000ft, but at this point he was not aware of the ac type or its heading. Completing a 360° turn, he saw the white twin-engine private jet pass 500ft plus beneath his glider on the RW centre-line heading. He mentioned the jet to his colleague in the rear seat who had also observed the ac pass beneath them. Neither he nor his passenger heard the jet - even when it was below them. Watching the jet cross the centre-line of Cambridge airport without landing [threshold?], he did not consider this at any point to be a 'close contact' and assessed the Risk as 'light'.

FLARM is fitted to his glider, but he had not detected the twin-engine jet on this device beforehand. He has only seen vague details of the C550 pilot's account, but believes the C550 ac was at 3000ft

on the centre line when its pilot saw a glider descending above the C550. However, as he had also observed other gliders in the vicinity he now believes he is not the glider pilot involved in this Airprox - just the only glider pilot who admits to seeing the jet!

THE CAMBRIDGE APPROACH CONTROLLER (APP) reports that the C550 had been cleared to the CAM at an altitude of 3000ft Cambridge QNH (1020mb) for a procedural NDB approach to RW05. Whilst in the Cambridge overhead, the C550 pilot reported a white glider less than 100ft above, which appeared to be diving towards his ac. The Glider pilot had not contacted Cambridge APP and was unknown to ATC.

ATSI reports that the Airprox occurred in Class G airspace at 1140:41 UTC, 2.1nm to the NE of Cambridge Airport at 3000ft and above the Cambridge ATZ, which extends from the surface to a height of 2000ft above the aerodrome elevation of 47ft and is bounded by a circle 2½nm radius centred on the mid-point of RW23.

The C550 was an IFR flight inbound to Cambridge airport from St. Gallen-Altenrhein (LSZR). The glider involved in the Airprox is believed to be a Schempp-Hirth Duo Discus T glider, operating from Gransden Lodge, which is notified in the UK AIP as a Glider Launching Site, active from sunrise to sunset, where aerotows and winch launching take place to 3000ft above the site elevation of 254ft. Gliders operate daily from Gransden Lodge subject to Weather conditions.

Cambridge MATS Part 2, Section 1, Page 29, paragraph 10.4 Gliding sites, states:

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

There was no AIS NOTAM regarding any additional gliding event at Gransden Lodge.

The Cambridge APP controller was providing an Approach Procedural Service (PS) without the aid of surveillance equipment. The Airprox occurred on a Saturday and the UK AIP promulgates the hours of Cambridge Radar, in Summer, as 0700-1800 UTC and by arrangement. No withdrawal of Radar service had been promulgated by AIS NOTAM. The ATSU reported that the provision of a radar service is subject to the availability of suitably qualified staff. After two similar Airprox occurrences [this and Airprox No 2011048] Cambridge ATSU are reviewing their procedures for promulgating the hours of availability of the ASR.

The 1120UTC Cambridge METAR is: 04004KT 330V130 9999 FEW032 19/09 Q1020=

At 1133:30, the C550 pilot contacted Cambridge APP and reported descending to an altitude of 4000ft. APP acknowledged the call, passing the QNH (1020mb) and requesting from the pilot, the type of service and approach that was required. RW05 was notified as the runway in use with a light and variable wind. In response the C550 pilot requested a DS and an ILS for RW23. The controller reported that radar was not available and agreed to provide a PS. The controller cleared the C550 to the CAM (NDB) in the descent to 4000ft QNH with no delay for a procedural ILS approach to RW23. [ATSI Note: The controller had approved an approach to the opposing runway that is equipped with an ILS].

At 1134:15, the radar recording shows the C550 at a position 11nm to the SE of the airfield. The C550 pilot requested permission to carry out a non standard direct entry from the SE of the airfield. The controller approved the procedure and gave the C550 further descent to 3000ft QNH. [ATSI Note: The pilot intended to approach the CAM (NDB) from the SE turning R to intercept the outbound QDR of 063° (CAT A,B) for the ILS/DME/NDB(L) approach to RW23.]

At 1136:42 the C550 pilot reported 3nm from the beacon turning outbound. The controller instructed the C550 pilot to report LLZ established and advised that TOWER was very busy with traffic using RW05 and that the C550 might have to break off the approach to RW23.

At 1137:30, before the Airprox occurred, the controller instructed the C550 pilot to cancel the approach and climb to an altitude of 3000ft. The controller then cleared the C550 to route to the CAM (NDB) to fly outbound for the NDB approach for RW05. The C550 reported level at 3000ft QNH (1020mb) and requested confirmation of a L turn back to the CAM. This was confirmed by the controller with an instruction to maintain 3000ft and report beacon outbound or field in sight. The pilot reported that he would complete the IFR approach.

[UKAB Note (2): At 1139:37, the radar recording shows the C550, 5-6nm NE of Cambridge inbound to the CAM (NDB). Also shown are two possible glider contacts: one tracking SE to the N of the centreline and crossing the RW23 approach at a range of 2.1nm. At 1140:25, the radar recording shows the primary contact – which might or might not be the glider seen by the C550 crew - converging with the C550 just before crossing the centreline, 2.1nm NE of the airfield, with the C550 inbound to the CAM (NDB) indicating 2800ft Mode C (1013mb) – equating to about 3010ft QNH (1020mb). The distance between the two ac is 0.7nm. The contact is shown again at 1140:33, in the C550's L 11:30 at a range of 0.3nm, to the S of the centre-line. This contact then fades as the C550 passes just to the N of the last observed position.]

At 1140:25, the C550 pilot reported, “..[C550 C/S] we have a glider which is er well it's obviously inside our IFR zone and well what is he a hundred feet above us now diving.” The controller responded, “[C550 C/S] roger I..have that visual now from the control tower apologies he's not talking to us.” The C550 pilot advised that he intended to file a report.

The C550 then completed an NDB approach for RW05 and during the approach procedure the pilot reported turning in early to avoid another unrelated ac 200ft above. The radar recording showed the closest range between these ac was 1.1nm with 300ft vertical separation.

The C550 was in receipt of a Procedural Service. The Manual of Air Traffic Services, Section 1, Chapter 11, Page 10, paragraph 6.1.1, states:

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

ATSI recommended that Cambridge ATSU in consultation with the CAA ATSD Southern Regional Inspectorate, urgently review the provision and promulgation of the Unit's radar services. A number of recent Airprox events have occurred when pilots had an expectation that radar services would be available in accordance with the promulgated periods of availability. In these instances pilots were advised on initial contact, that radar was not available, often in circumstances when a number of gliders were operating in the vicinity of Cambridge Airport without controllers being aware of their presence.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilot of the C550 and a glider pilot, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controller involved and a report from the appropriate ATC authority.

Without positive radar evidence or Mode S data on the reported ac, tracing action can be problematic when endeavouring to identify a specific glider involved in an Airprox, especially when there are a number of them flying in the vicinity. In this case a degree of uncertainty persisted that could not be eradicated and which naturally affected the Board's assessment of Cause and Risk.

Here the RAC had traced the Duo Discus pilot that was operating in the vicinity at the time the Airprox occurred and whose report is included here. It is plain from his report that he saw the C550 fly along the centreline of RW23 westbound toward the CAM at 3000ft ALT. However, the Duo Discus pilot's reported operating altitude of 3600-5000ft does not closely correspond with the C550 pilot's comment on RT that it was "...a hundred feet above us" or his subsequent reported vertical separation of 200-300ft. The radar recording strongly suggests that the contact shown tracking across the centreline, moments before the C550 flew through was the Duo Discus, but without a positive identification or corresponding Mode C indication from the glider this could not be ascertained with certainty. Moreover, at the time of the Airprox the Duo Discus pilot report's he was turning R in a thermal, which is not evident on the recording. However, as the primary contact of the glider had faded from recorded radar coverage at the critical moment it was feasible that it might well have been executing a turn at the time. Members agreed that the identity of the reported glider was not confirmed, but it seemed most likely that it was the Duo Discus pilot's glider and the Board commended him for 'stepping up to the plate' and providing a frank and comprehensive account, which demonstrated a conscientious attitude to flight safety.

In the light of his remarks on the RT that "...it's obviously inside our IFR zone...", controller Members were concerned that the C550 pilot might not be fully cognisant of the nature of the surrounding airspace and his responsibilities for avoiding other VFR ac when flying IFR in the Open FIR. As Cambridge Airport is not afforded CAS outwith their ATZ, the highest level of radar service available to pilots operating in the 'see and avoid' environment of Class G airspace is a DS. To his credit, the C550 pilot had requested a DS, not the 'Radar Control' Service he had mentioned in his account. It was unfortunate, therefore, that none was available due to the absence of any radar qualified controller being available 'on watch' at the time. Members were cognisant that this topic had featured in Airprox reports earlier this year and noted that the ATSU is reviewing their procedures for promulgating the availability of their ASR. This was an important point since, short notice unavailability excepted, pilots should know with reasonable certainty beforehand whether they can expect a radar service to be available at their destination or not. Irrespective of the prevailing good weather, if Cambridge had provided a DS then the IFR C550 pilot could reasonably have expected appropriate deconfliction minima to be afforded against observed conflicting traffic. The Board was briefed that the ATSU is actively seeking to recruit radar-qualified controllers, which mollified Members somewhat.

As a general point the BGA glider pilot Member thought it unwise to be thermalling on the RW centerline to a regional airport and earlier contact with ATC to advise of the glider's presence would have been helpful. Nevertheless, the Board understood the Duo Discus pilot was soaring quite legitimately in Class G airspace when the C550 underflew his glider. Some Members perceived that this Airprox was the result of the glider pilot flying close enough to cause the C550 pilot concern, but as he reports flying no lower than 3600ft this would have been some 600ft above the C550's Mode C indicated level. However, the Duo Discus glider has a span of 20m, somewhat larger than the C550; at such a size, although perceived to be very close overhead, it might well have appeared to be closer than it actually was. The Board could not resolve this anomaly and the Member's concluded unanimously that this Airprox had been the result of a conflict in Class G airspace with no 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 2011070

Date/Time: 26 Jun 2011 1403Z (Sunday)

Position: 5056N 00018W
(8nm N Shoreham)

Airspace: Lon FIR (Class: G)

Reporting Ac Reported Ac

Type: C172 Untraced Ac

Operator: Civ Pte NK

Alt/FL: 2200ft NK
(NK)

Weather: VMC NR NK

Visibility: 30nm NK

Reported Separation:

20ft V/0ft H NK

Recorded Separation:

NK



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE C172 PILOT reports flying a red and white ac with all lights switched on, on a VFR private flight from Guernsey to Rochester. He was squawking with Modes C and S, but TCAS was not fitted. He was initially in contact with Shoreham APP then Farnborough Radar (it was his intention to go back to the Farnborough frequency earlier but Shoreham requested that he stay with them until he was abeam the RW – which he did). He is always cautious in the Shoreham area since it is always busy, so he advised them of his presence and, on being advised of oncoming traffic, decided to give the field more clearance; he advised Shoreham and moved further to the N. It was during this time while he was cruising below 2200ft, heading 085° at 100kt, that he spotted an ac 100yd ahead and 20ft above, coming straight towards him. He instinctively pushed the stick forward and went underneath the ac with only feet to spare. He believed the ac, which apparently did not see him, was also a Cessna. He was shaken for a time and then went back to Farnborough Radar.

UKAB Note (1): On the telephone he described the contact as a shadow.

He acknowledged that his description of the Airprox is brief.

It is now his policy to track even closer to the Gatwick CTA as the area is very congested; this is exacerbated by the direction of the Shoreham RW and the 'tunnelling' of the Gatwick CTA. He has long thought this to be a dangerous area and in his view all ac flying there should have Mode S and be in receipt of a LARS service from Farnborough. He also believes the Mayfield VOR is badly sited for same reason.

He reported the incident initially to the UKAB by telephone several days after the incident assessing the risk as being high.

UKAB Note (2): The reported time of the incident was 1230 UTC. Enquiries revealed that the reporting ac did not depart Guernsey until 1241, and was eventually identified from its elementary Mode S, to the N of Shoreham Airport at 1403.

UKAB Note (3): The recording of the Heathrow 10 and 23cm, the Pease Pottage and the Gatwick 10 cm radars were all viewed; the Gatwick 10 cm provided the best coverage. A further telephone call

to the reporting pilot revealed that although he was confused regarding the time of the event, he was certain that the event took place to the N of Shoreham Airport and that something flew directly above him. During the telephone conversation he stated the following: "something definitely cast a shadow over me, and I suppose it could have been a cloud or a bird". The radar recording only showed one track getting very close to him, but this track passed 1200ft directly below his ac at 1403:33 in a position 7nm NW of Shoreham (the C172 was at 2200ft and the ac below was squawking 7000 at 1000ft). At 1404:36 the C172 passed about 1nm N of the last seen position of a disappearing primary only contact about 5nm NW of Shoreham. At 1408:33 the C172 passed about 2nm S of the last seen position of another disappearing primary only contact about 6nm NNE of Shoreham. The C172 then tracks 085°, passing 4.6nm N of Shoreham at 1406:51 and at an alt of 2200ft; it continues roughly on that track until 1411 when the recording ends with the ac positioned 11nm NE of Shoreham at alt of 2400ft. No other primary or secondary contacts can be seen within 5nm of the reporting ac. (See also ATSI report below).

ATSI reports that the Airprox was reported by the pilot of a C172 operating VFR, on a flight from Guernsey to Rochester. The pilot's written report indicated that the Airprox occurred 8nm to the N of Shoreham at 1230 UTC. The second aircraft is unknown.

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

CAA ATSI had access to the RTF and radar recording, together with the C172 pilot's written report. Shoreham ATC was not aware of the reported Airprox.

METAR EGKA 261250 15005KT 9999 3000S VCFG FEW002 18/16 Q1021=
METAR EGKA 261320 15005KT 9999 3000S VCFG FEW002 19/16 Q1021=
METAR EGKA 261350 15005KT 9999 VCFG FEW002 19/16 Q1021=
METAR EGKA 261420 13006KT CAVOK 20/17 Q1020=

The C172 called Shoreham APP at 1353:55. [Note: this is at variance with the time indicated in the pilot's written report]. Radar recordings show the C172, squawking 5022 (Farnborough LARS) at a position 20.4NM SW of Shoreham. The C172 pilot reported at 3000ft descending to 2400ft from Guernsey to Rochester via the Shoreham overhead. The Shoreham controller agreed a BS, passing the QNH of 1021 and TI on VFR traffic passing S of Shoreham Westbound at 2400ft; the pilot acknowledged the TI and reported 'turning inland a bit'.

At 1357:08, the C172 pilot reported an intention to pass 10nm N of Shoreham at 2500ft and advised going back to Farnborough on 123.15MHz but the Shoreham controller reported that this Farnborough frequency was incorrect and requested that the C172 pilot report N of Shoreham, which the pilot agreed.

During the period that the C172 was in receipt of a BS from Shoreham, radar recording shows the C172 passing abeam 3 other aircraft, at 1358, 1403 and 1404 (see below). However none of these was considered to have been the Airprox as described in the C172 pilot's written report.

At 1358:21 radar recording shows the C172 tracking NE, at a position 14nm W of Shoreham, indicating FL023 and passing 1nm NW abeam traffic Westbound indicating FL025. The ac maintain their respective levels.

At 1403:33, radar recording shows the C172, positioned 7.1nm NW of Shoreham and indicating an altitude of 2200ft. Also shown is an ac on a reciprocal track squawking 7000 and indicating an alt of 1000ft; both ac maintain their respective levels.

At 1404:36, radar recording shows the C172, 5.5nm NW of Shoreham, tracking NE, indicating an altitude of 2200ft and passing 1.3nm NW of a primary contact, tracking SW.

At 1406:15, the C172 pilot reported N abeam and the Shoreham controller transferred the ac to Farnborough LARS. Radar recording shows the C172 position as 5nm NNW of Shoreham indicating an alt of 2100ft on an E'ly track.

From the information and data available to CAA ATSI, it was not possible to determine the position or time of the reported Airprox and the second aircraft remains untraced.

The Shoreham controller was not aware that an Airprox had occurred.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the C172 pilot, transcripts of the relevant RT frequencies, radar recordings, reports from the air traffic controller involved and reports from the appropriate ATC authorities.

Members noted the incident took place in an area of very good radar coverage and that there were no contacts, either primary only or SSR, in the vicinity of the C172 at the (corrected) time reported. From track following and Mode S data, the Secretariat was satisfied the track they identified was that of the C172 concerned and that the C172 was in the area at the (corrected) time. Members therefore agreed that the object reported was most likely not a light ac or helicopter. Although they could not be certain, they believed that it had not been a glider due to the confines of the airspace in the area but it was possible that it could have been a microlight, paramotor or some other non-painting ac.

Members were surprised that the C172 pilot did not remain with Farnborough LARS or call Gatwick APR as either would have been able to provide radar derived information if they had the capacity.

Although the Board supported the C172 pilot's decision to report the incident, in this case they had scant information to support their decision making process.

Due to the lack of reliable supporting information, Members were unable to assess the degree of risk or offer a cause more definitive than a possible conflict; they accepted that it might have been an actual conflict but were unable to identify or trace the other ac.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A possible encounter in Class G airspace.

Degree of Risk: D.

AIRPROX REPORT No 2011074

Date/Time: 5 Jul 2011 0750Z

Position: 5130N 00004E (London City Airport - elev 19ft)

Airspace: ATZ/CTR (Class: D)

Reporting Ac Reported Ac

Type: RJ100 ATR42-300

Operator: CAT CAT

Alt/FL: 400ft↑ 600ft↓
agl QNH (1013mb)

Weather: VMC CLOC VMC CLOC

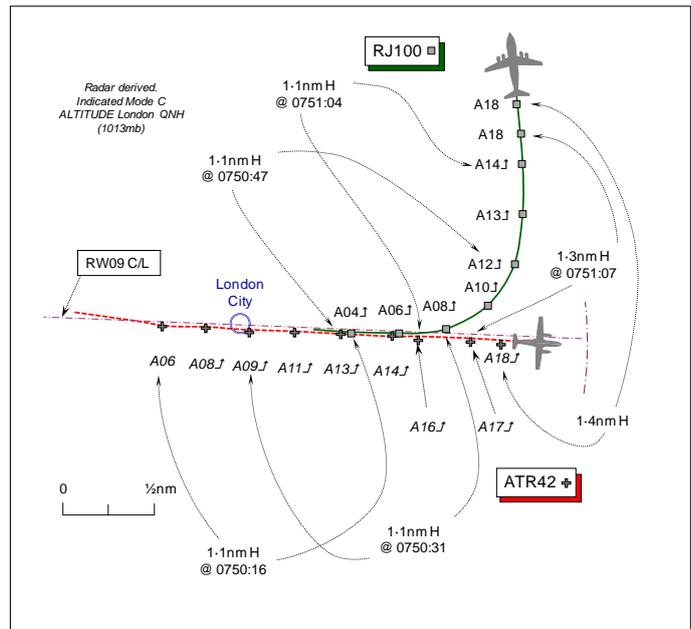
Visibility: 10km 10km

Reported Separation:

Nil V/1.5nm H Not seen

Recorded Separation:

100ft V@1.1nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE RJ100 PILOT reports he was departing from London City airport bound for Zurich under IFR in VMC and in communication with TOWER on 118.075MHz. The 1st Officer in the RH seat was the PF.

After a backtracking ac had vacated the RW, they were cleared for an immediate take-off from RW09. About 1/2nm on climb-out on RW track heading 096° at 126kt passing 400ft agl, TWR issued an urgent L turn onto a heading of 360°. At this point he noticed a solid blue TCAS target at their height 1.5nm astern; neither a TA nor RA was enunciated by TCAS. Thereafter they were handed over to Thames RADAR on 132.70MHz who, at their request, stated the reason for the avoiding action manoeuvre. The other ac was not seen, he assessed the Risk as 'low' but his workload as 'high' during the initial climb-out.

THE ATR42-300 PILOT reports he was inbound IFR to London City from Isle of Man Airport in VMC, in receipt of a radar (sic) service from London City TOWER (TWR). As PIC he was the PF. Established on the LLZ to RW09 at around 5nm, TWR advised the crew to expect a late landing clearance, with an RJ100 lined up for RW09 but still awaiting take-off clearance. Heading 094° at 100kt, whilst he was descending through 700ft QNH, the RJ100 had been cleared to take-off and was accelerating on RW09. Passing 650ft, no landing clearance had been received from TWR, who was engaged in a conversation on RT with an ac on the ground. Passing 580ft, the RJ100 was just rotating, but still no landing clearance had been issued with ATC still in conversation with another ac. At 500ft, at about 1nm Final with no landing clearance received, he commanded a go-around and executed a missed approach, which was notified to TWR passing around 850ft in the climb. Assessing the Risk as 'medium', he stated his workload was very high whilst performing a go-around in busy airspace. The pilot noted that the RJ100 was 'not seen' after the go-around was initiated and was relying on ATC vectors for avoiding action. The ac has a green and white livery; the HISLs were on. TCAS is fitted with enhanced Mode S; neither an RA nor TA was enunciated.

THE LONDON CITY AIRPORT TOWER CONTROLLER (TWR) reports that the RJ100 was lined up on RW09, with the previous landing ac backtracking to vacate at 'D'. The ATR42 was the next inbound and the gap was tight, but not particularly so. The weather was CAVOK, so there were no visibility issues. The RJ100 crew was instructed to 'Hold Position and be ready immediate when instructed'; the ATR42 crew was instructed to continue the approach and expect late landing

clearance. Both pilots confirmed their instructions. As the backtracking ac was vacating the RW he checked the inbound ATR42's progress. The gap was still fine, so he cleared the RJ100 crew for an immediate take-off. After barely a moment's hesitation the RJ100 rolled and the ac approached rotation he started transmitting to the ATR42. As the RJ100 rotated he cleared the ATR42 to land whilst turning his head to check that ac's position. The ATR42 was in a nose-up attitude and obviously climbing. As he finished the transmission, the ATR42 pilot stated he was already going around. Assessing the situation, as the RJ100 was climbing through about 200ft he decided to allow the ATR42 to continue on a standard missed approach. Therefore, he instructed the ATR42 pilot to 'continue straight ahead to altitude 2000ft', which the pilot read back. He then passed an avoiding action L turn to the RJ100 crew onto a heading of 360°, which the RJ100 pilot read back. As he watched the turn generate separation he called Thames RADAR on the landline. The Thames controller was happy to take both ac on their current headings and cleared altitudes. Both flights were therefore transferred correctly. After the ATR42 completed a successful second approach, he queried the pilot on the reason for his missed approach. The ATR42 pilot advised that as he had reached 500ft in the descent, had not been cleared to land and could see the departing RJ100 had not yet rotated; he elected to execute a missed approach.

ATSI reports that the Airprox occurred at 0750:15, within the Aerodrome Traffic Zone (ATZ) of London City Airport, Class D airspace. The London City ATZ consists of a circle, radius 2nm, centred on Runway 09/27 and extending to 2000ft above the aerodrome elevation of 19ft.

The RJ100 was departing from London City RW09; the ATR42 was inbound and established on the ILS for RW09. The controller was operating AIR and Ground Movements Control (GMC) combined (TWR).

The London City 0750UTC METAR: 09004KT 060V130 CAVOK 18/13 Q1013=

Prior to the Airprox the RJ100 crew was waiting for departure at RW09 holding point 'Alpha'. An Embraer E190 was established on final, followed by the ATR42 with 7nm spacing. At 0746:44, the E190 was cleared to land. At 0747:17, after the landing E190, the controller instructed the RJ100 crew to line up and wait RW09 assessing the gap between arrivals was adequate to allow the departure. The E190 landed long and at 0747:51, the controller instructed the ac to backtrack the runway and vacate at 'Delta' for the main apron. Shortly afterwards at 0748:06, the E190 crew was instructed to expedite the backtrack.

At 0748:21, the ATR42 crew contacted TOWER and the controller replied, "[ATR42 C/S] *City TOWER good morning to you continue approach 0 9 you are number 1 there will be a departure ahead expect a late landing clearance.*" The pilot replied, "*Continue approach ?????* [ATR42 C/S]".

The controller then passed a departure clearance to an outbound aircraft on the apron.

At 0749:14, once the E190 had vacated the runway, the RJ100 crew was cleared for an immediate take off, "[RJ100 C/S] *the surface wind is 0-8-0 degrees at 4 knots Runway 0-9 is cleared for immediate take off*" and the pilot replied, "*Clear for take off niner* [RJ100 C/S]". Although the pilot did not repeat the clearance for 'immediate', the controller indicated that the ac started to roll within 2 to 4 seconds and was satisfied that the ATR42 would be given the late landing clearance as planned.

At 0749:30, as the inbound ATR42 was passing an altitude of 1200ft. The controller passed a start clearance to an ac on stand.

From 0749:41 to 0749:52 the controller advised the E190, which was approaching the apron, that there may be a short delay going on to stand. Radar recordings shows the ATR42 passing an altitude of 600ft.

The written report from the ATR42 pilot indicated that as the aircraft reached 650ft, the controller was engaged in an RT conversation with an aircraft on stand. At 580ft the RJ100 was rotating and the controller was still in conversation. At 0749:56, radar recordings show the ATR42 indicating an

altitude of 500ft on short final and at this point with no landing clearance, the pilot initiated the go around.

At 0749:58, the controller gave the ATR42 crew a landing clearance, “[ATR42 C/S] *clear to land surface wind is 0-8-0 degrees 4 knots.*” The pilot responded, “[ATR42 C/S] *going around.*” The controller instructed the ATR42 to continue straight ahead to altitude 2000ft and this was acknowledged correctly. The ATSU report indicated that the controller had both ac in sight and provided ‘reduced separation in the vicinity of the aerodrome’.

At 1750:12 the controller transmitted, “[RJ100 C/S] *avoiding action when able turn left immediately heading 3-6-0 degrees acknowledge.*” The pilot replied, “*Left heading 3-6-0 turning left now* “[RJ100 C/S]”. (It was noted that the phraseology used to give avoiding action gave no information regarding the conflicting traffic and the RJ100 crew was probably not aware of the reason for the avoiding action.)

At 0750:21, radar recording shows the ATR42 had crossed the runway threshold indicating an altitude of 800ft, the RJ100 indicating an altitude of 600ft climbing on the runway centreline. The minimum spacing between the two aircraft was 1.1nm, which was maintained as the RJ100 crew turned L onto the northerly heading. From 0751:07, separation increased as the tracks diverged. After the RJ100 was transferred to Thames RADAR, the pilot requested the reason for the urgent avoiding action and subsequently made an Airprox report.

The controller was content with the 7nm spacing of arrivals and considered the gap sufficient to allow the safe departure of the RJ100 with the ATR42 on final, advising the ATR42 pilot to expect a late landing clearance. As the RJ100 rolled and the ATR42 was approaching short final, the controller was transmitting a start clearance, followed by information to the E190 about a delay on stand. This was a crucial point from the ATR42 pilot’s perspective. The controller could have kept RT to a minimum prior to the issue of the late landing clearance. However, the controller remained satisfied with the situation, anticipating that a late landing clearance would be provided. As the ATR42 pilot approached 500ft without a landing clearance, the pilot elected to initiate the go around. With both ac in sight, the controller utilised ‘reduced separation in the vicinity of the aerodrome’, before he decided to issue avoiding action.

The ATSU indicated that as a result of similar reported incidents at other airports when separation had been compromised, the subject of avoiding action had been included as a ‘Hot Topic’, in controller emergency training – TRaining in Unusual Circumstances and Emergencies (TRUCE) - using advanced Aerodrome Traffic Monitor (ATM radar) procedures. Controllers have been encouraged to act quickly in order to establish the separation minima. The Manual of Air Traffic Services Part 1, Section 1, Chapter 5, Page 1, Paragraph 1.1.3, states:

‘Surveillance systems may also be used to provide the following, whether or not the aircraft has been identified:

- a) Information on the position of aircraft likely to constitute a hazard;
- b) Avoiding action’

Although the controller was using ‘reduced separation in the vicinity of the aerodrome’, the controller immediately issued avoiding action in order to resolve the confliction and increase the separation. However the controller omitted to pass the RJ100 crew TI regarding the conflicting traffic. The incident occurred as a result of the controller passing avoiding action to provide increased separation between the two ac, without passing appropriate TI. This resulted in the RJ100 pilot becoming concerned about the close proximity of the other aircraft.

The ATSU reported that the controller realised that avoiding action was not strictly necessary, even if the RJ100 crew had not made an immediate left turn.

ATSI Recommendation:

CAA ATSI recommends that the ATSU review their TRUCE training requirements for the provision of avoiding action, in order to ensure that controllers use correct phraseology appropriate to the circumstances.

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 controller involved and a report from the appropriate ATC authority.

It seemed that the RJ100 crew had departed as expeditiously as feasible when their 'immediate' take-off clearance was issued by TWR. Therefore, apart from prompt compliance with TWR's instructions, the RJ100 crew had little impact on what occurred, although the PIC, as the pilot initiating the Airprox, was concerned at the lack of TI or amplification following TWR's robust avoiding action L turn instruction. The catalyst of this Airprox was the late landing clearance to the ATR42 crew following the RJ100's take-off and the ATR42 Captain's decision to execute a go-around into a missed approach. A controller Member opined that a missed approach might be initiated at any point and controllers should be prepared for them. Nevertheless having pre-warned the ATR42 crew that their landing clearance would be issued at a late stage, it was unfortunate that TWR should choose such a moment to enter into a lengthy transmission with the E190 on the ground; a military controller Member perceived that TWR had not suitably prioritised his actions. However, TWR had been content with the landing interval, albeit close, had forewarned the ATR42 crew and had issued the landing clearance as soon as he had finished transmitting to the E190: the late landing clearance transmission commencing at 0749:58, a mere 2 sec after the radar recording revealed that the ATR42 was passing 1nm final indicating 500ft. Some controller Members thought that combining TOWER and GROUND Movements Control (GMC) onto one operating position might be an issue, but the Board was briefed by the NATS Ltd Advisor that there was no alternative at this point due to the unserviceability of the GMC RT frequency. Consequently, the Board recognised that the interval between the PIC of the ATR42 deciding to initiate a go-around and the controller starting to transmit the late landing clearance was indeed minimal. A pilot Member suggested that the ATR42 pilot's go-around was perhaps actioned a modicum too early. However, another CAT pilot Member emphasised that the 5½° glide-path flown at London City is a steep approach and can be quite challenging; when no landing clearance had been received at 1nm/500ft he understood why the ATR42 Captain felt compelled to command a go-around. The Board agreed that this was the PIC's decision alone and any criticism of his decision was unjustified. Such events are not unusual, civilian controller Members opined, and it was evident that horizontal separation of 1.1nm had been maintained between the two ac as the RJ100 departed and turned L onto N in compliance with TWR's instruction, thereby safely vacating the 'climb-out' for the ATR42 proceeding straight ahead. All this was closely observed by TWR and in accord with his remit to effect 'reduced separation in the vicinity of the aerodrome'. The Board was briefed that the controller's recent TRUCE training had figured large in his prompt decision to issue avoiding action to the RJ100 crew, but the absence of any explanation for the instruction had caused the RJ100 crew concern; they would probably have been reassured by receiving TI about the ATR42. The Board concluded that this Airprox had resulted because the RJ100 pilot was concerned at receiving avoiding action shortly after takeoff. Whilst submission of the Airprox by the RJ100 pilot was entirely reasonable, it had been shown that standard procedures had been applied, separation had been maintained and the Board concluded that normal safety parameters had not been breached.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The RJ100 pilot was concerned at receiving avoiding action shortly after takeoff.

Degree of Risk: E.

showing FL021 (~2500ft QNH). The primary return reappears at 1011:22 in the PA28's 1130 position, range 0.1nm tracking N'ly. The next sweep shows the primary return 0.1nm NE of the PA28, the ac having crossed. The ASW27B pilot reported flying at 3000ft QFE (Gransden Lodge elevation 254ft) which would equate to over 700ft separation but this does not accord with the subject pilots' reported separation of between 100-200ft V and 300-400m H.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

Members were not surprised that the PA28 encountered a glider owing to the proximity of Gransden Lodge gliding site to the PA28's track to the S of Bourn. As this Airprox occurred in Class G airspace both pilots had equal responsibility to maintain separation from other ac through see and avoid. On this occasion, the ASW27B pilot saw the approaching PA28 and, although having right of way, she perceived the potential for conflict and turned L away from the PA28, which passed 300m to her R and 200ft below. The PA28 pilot saw the ASW27B 300-400m ahead and slightly below which one Member thought had been a late sighting. This view was not shared by the majority of Members who, cognisant of the known difficulty in visually acquiring thermalling white gliders against a backdrop of cloud, thought the PA28 pilot had seen the glider as soon as reasonably practicable in the conditions that pertained at the time. The PA28 pilot watched the ASW27B cross ahead of his track from slightly below before moving away to his R and above by 100ft. Members agreed that the ASW27B pilot had shown good airmanship; her actions were judged to have been timely, appropriate and effective in resolving this conflict and quickly removing the risk of collision.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict in Class G airspace resolved by the ASW27B pilot.

Degree of Risk: C.

AIRPROX REPORT No 2011088

Date/Time: 24 Jul 2011 1143Z (Sunday)

Position: 5207N 00047W (2nm N
Newport Pagnell)

Airspace: LFIR (Class: G)

Reporting Ac Reported Ac

Type: Discus B P51 Mustang
+ Spitfire

Operator: Civ Pte Civ Pte

Alt/FL: 2500ft 3000ft
agl QNH

Weather: VMC CLBC VMC CLBC

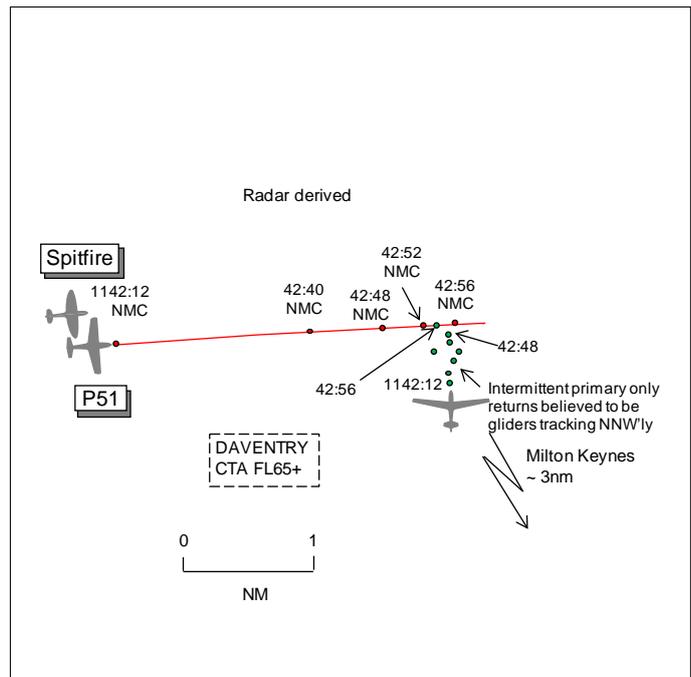
Visibility: 40km 20km

Reported Separation:

50ft V/Nil H 200ft V/Nil H

Recorded Separation:

<0.1nmH



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE DISCUS B PILOT reports thermalling with 2 other gliders 4nm W of Cranfield at 2500ft agl and not in communication with any ATSU. The visibility was >40km flying clear below cloud in VMC and the ac was coloured white; no lighting was fitted. The ASK21 glider in front turned N and a glider behind his ac turned W. He followed the ASK21 approximately 600ft behind, 200ft to its R and 400ft below. About 3nm N of Newport Pagnell whilst OH the M1 heading 330° at 60kt he noticed a movement to his L 9 o'clock and slightly low. He looked just in time to see a P51 Mustang, coloured dark gloss green on the upper surfaces, about 100ft away and 50ft or less below which was in formation with a Spitfire, coloured glossy 2-tone grey, positioned to the Mustang's L and slightly behind. He only had a brief second or less to violently pull-up, his glider's nose was just beginning to lift as the pair passed underneath diverging in his 3 o'clock. He assessed the risk as high.

THE P51 MUSTANG PILOT reports en-route to Duxford VFR leading a Spitfire in echelon port and not in communication with any ATSU but in contact with the Spitfire on a discrete frequency, squawking 7000 with Mode C switched off. The visibility was 20km flying below cloud in VMC and the ac was coloured green/silver with no lighting fitted. About 3nm NW Milton Keynes heading 090° at 3000ft QNH and 190kt 2 gliders, flying in-trail, flew over the formation heading approximately NW'ly. The formation had gently descended as the risk of collision was deemed negligible, passing 200ft below them.

THE SPITFIRE PILOT reports in loose formation with the P51 Mustang, 60m ahead in his 2 o'clock returning to Duxford. They were level at 3000ft using a discrete frequency and were aware of several large gliding competitions in the area and had seen numerous gliders during the flight. He spotted 2 gliders in their 12 o'clock at 0.75nm range and at a similar level flying straight and level, 1 behind another about 400m apart. The rear glider was about 100ft higher than the front glider and they were moving from R to L and their formation was going to pass just behind the front glider but close to the second one. He called "gliders ahead" to the lead pilot and glanced over to see that the lead pilot was already looking at them and he acknowledged his call on the radio. He initiated a gentle descent to increase separation on the second glider and the lead ac was seen doing the same. He passed about 100m in front of, and about 200ft below, the second glider. As he passed the glider commenced a L turn. He believed there was no risk of collision.

UKAB Note (1): The Heathrow radar recording 1142:12 shows a 7000 squawk with NMC, believed to be the P51 and Spitfire formation, 5nm NW of Milton Keynes tracking 085°. Ahead by 2.5nm are intermittent primary only returns, believed to be gliders including the Discus B, tracking predominantly NNW'ly. The P51/Spitfire formation continues on a steady track and at 1142:48 a primary only return is seen in the formation's 1230 position range 0.3nm. On the next sweep the primary return fades but then reappears at 1142:56 in the formations 6 o'clock with 0.1nm separation.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

Members noted that the P-51 pilot had elected to switch-off Mode C on his ac's transponder, contrary to the guidance promulgated in the UK AIP. This recommends that the transponder is operated with pressure altitude enabled in order to facilitate detection of their ac by collision avoidance systems (ACAS) and ATC radar. As this Airprox occurred in Class G airspace both pilots had equal responsibility to maintain separation from other ac through see and avoid. Undoubtedly the Discus pilot was surprised when he caught a glimpse of the P-51 and Spitfire formation as they were about to pass under his glider from L to R, he thought by 50ft. He had had good SA on the 2 adjacent gliders and he had elected to follow the ASK21 ahead when the formation underflew. His natural reaction to pull-up was ineffective as the formation was already crossing before the glider responded to his control inputs. Meanwhile, both pilots in the formation had seen the ASK21 and Discus following behind, converging on a crossing track from R to L, about 0.75nm ahead and had commenced a gentle descent to increase separation, estimating they passed 200ft below and just in front of the Discus. However, in doing so Members agreed that the P-51 and Spitfire flew close enough to cause concern to the Discus pilot which had caused the Airprox.

Looking at risk, although the passage of the formation appeared close to the Discus pilot, Members agreed that the P-51 and Spitfire pilots were always in a position to adjust their flightpaths further if necessary and that their actions had been effective in removing any risk of collision.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The P-51 and Spitfire flew close enough to cause the Discus pilot concern.

Degree of Risk: C.

AIRPROX REPORT No 2011112

Date/Time: 29 Aug 2011 1040Z

Position: 5145N 00146W
(8nm W Brize Norton)

Airspace: Oxford AIAA (Class: G)

Reporting Ac Reported Ac

Type: TriStar Untraced Paramotor

Operator: HQ Air (Ops) NK

Alt/FL: FL045↑ NK
SPS NK

Weather: VMC CLBL NK

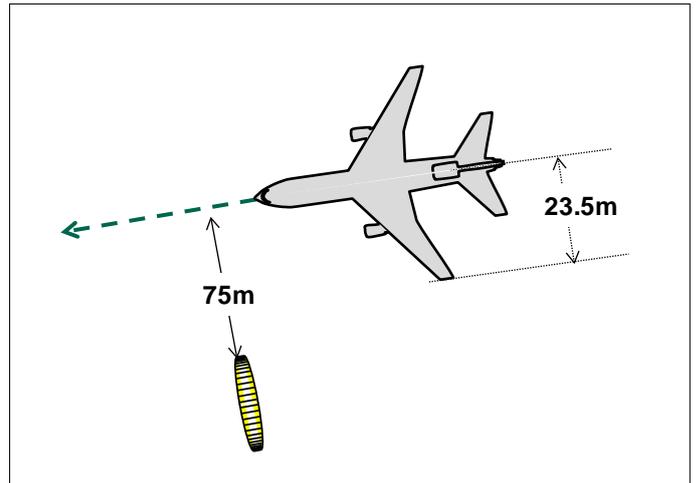
Visibility: 9km NK

Reported Separation:

0ft V/75m H NK

Recorded Separation:

NR



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE TRISTAR PILOT reports they departed Brize Norton on the RW26 MALBY SID at 1035Z, in receipt of a TS from Brize Departure, squawking with Modes C and S. On turning onto the 285° radial at 8-9nm the pilot noted large numbers of TCAS contacts with no height information and alerted the flight deck crew to be extra vigilant. This was immediately backed up by ATC who informed them of a large number of contacts in the Kemble O/H. The Crew had initially elected to receive a TS but this was almost immediately upgraded to a DS.

At approx 8-9nm, just as the DS was being requested, the pilot noticed a yellow parachute-sized object in his L, 11 o'clock, approx level with the ac at a distance of ½nm. [On a subsequent telephone conversation it was understood that it was a paramotor]. The 'ac' passed rapidly down their LHS at a distance of about 75m. ATC was informed and the ac turned onto a S'ly heading.

A check of all ac systems was completed as they suspected a collision might have occurred. ATC were passed details of the Airprox but confirmed that they had no contacts on radar.

Of note - even under a DS and with the benefit of TCAS, lookout was the only defence against this potentially catastrophic incident. However, at 250kts indicated airspeed and an all up weight of 234 tons, the pilot believed they would have been unable to manoeuvre the ac in time for avoiding action to have taken effect if the ac had been closer.

He assessed the risk as being very high.

ATC have submitted a similar Airprox report detailing this incident from an ATC perspective.

METAR EGVN 1050Z: 290/09 9999 FEW035 SCT050 BKN250 +16/+7 1018h.

THE PARAMOTOR PILOT could not be traced.

THE BRIZE DEPARTURE CONTROLLER (APP) reported that he was controlling Zone and Approach, when the TriStar was released for a standard MALBY join. The ac called airborne and was identified but he was concerned by a large number of primary contacts in the vicinity of Kemble and

negotiated with Sector 23 for a heading towards SIREN to join CAS. The Tristar pilot advised that he would like a TS but he advised him of the large number of primary contacts and explained that he could give him a vector towards SIREN for his join. As the pilot considered this option, he then requested a DS so he immediately gave him an avoiding action turn to a heading of 170°.

At that point, the other pilot, who he thought was the ac commander, advised him that they had just had an Airprox with a coloured paraglider. He told him that there were no radar contacts in his immediate area and noted the time and position. The Controller then updated the pilot on the position of the primary contacts and when he was happy that he would maintain separation, released the ac to London with further climb to FL120, as advised by Sector 23.

The Supervisor was in the TWR and did not witness the incident.

BM Safety Management reports that the paramotor does not appear on the radar replay; consequently the investigation was based upon the R/T transcript and the occurrence reports.

The Tristar exited the BZN CTR at 0937:46 en-route to MALBY and was placed under a TS. At 0938:03 APP contacted the LACC S23 Planner and stated that the TriStar was, *“on a MALBY. I’ve got a lot of primary traffic to...surrounding Kemble...he’s a fairly slow climber, are you happy if I put him on a heading towards let’s say SIREN initially?”* The LACC S23 Planner agreed this course of action with the landline call completed at 0938:24. SIREN is approximately 10nm E of MALBY.

At 0938:28 APP informed the TriStar of *“multiple primary contacts in the Kemble area, um, all height unknown, all manoeuvring, are you happy to continue or would you like a vector, happy with a vector towards SIREN if that helps?”*; in reply, the Tristar requested a DS.

At 0938:44 APP acknowledged the TriStar’s request, stating, *“avoiding action, turn left immediately heading one seven zero degrees, Deconfliction Service.”* No TI was provided with this avoiding action; consequently, it has not been possible to determine what the turn was planned to avoid.

At 0938:49, the TriStar read back the avoiding action turn and stated that they had, *“just had a er an Airprox with an unknown er it looked like a er a kite or paraglider”*. APP replied that they saw, *“absolutely nothing on radar”* thus suggesting that the avoiding action turn issued at 0938:44 was against un-related traffic.

As identified by the TriStar’s crew, given that the paramotor was not displayed on the BZN surveillance display, the ATM related safety barriers were unable to operate and the only defence against this occurrence was lookout.

UKAB Note (1): Although the TriStar can be seen on radar the Paramotor does not show at any time.

HQ AIR (OPS) comments that there is no doubt that a definite hazard existed. The TriStar crew were coordinating effectively with Brize ATC to obtain separation on known contacts. However, this incident highlights the risk of encountering small non-transponding ac in Class G airspace, the defence against which is limited to effective lookout. The operators of such ac must understand the elevated risk they expose themselves to when flying in the arrival and departure lanes of busy airfields such as Brize Norton without ATC coordination.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the TriStar pilot, transcripts of the relevant RT frequency, radar recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

Members were surprised that the Paramotor pilot did not submit a report, as they agreed unanimously that his ac would have encountered significant wake turbulence just after the TriStar passed it.

Members agreed with the TriStar pilot and HQ Air Ops that the 'See and Avoid principle' was not designed for these circumstances and does not work as envisaged in them. That being the case, Members considered that flying (any ac) in the departure lane of a busy airfield operating large transport ac and just above its associated airspace (even though it is Class G airspace) is at best ill-advised.

Without a report from the Paramotor pilot, it could not be determined at what stage he saw the approaching TriStar. The Board noted the Controllers were pro-active and did what was required of them but, since the Paramotor did not show on their radar displays and was unknown to them, they were unable to provide the TriStar crew with any warning. Therefore the Board considered that the TriStar crew had seen the Paramotor as early as might reasonably be expected and that the Cause of the Airprox was a Conflict in the Oxford AIAA.

When assessing the degree of risk, Members considered the proximity of the Paramotor to the TriStar, that the former did not paint on the radar so no warning could be issued by ATC and the lack of manoeuvrability of the TriStar (or paramotor) at the very high all-up weight. Bearing these in mind, Members agreed that even if the TriStar crew had seen the Paramotor a short time earlier (say as soon as visually practicable) it is unlikely that they would have been able to change their flightpath substantially and provide 'safe' separation; that being the case this incident had been close to a collision which the TriStar crew could not have prevented.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict in the Oxford AIAA.

Degree of Risk: A.

AIRPROX REPORT No 2011113

Date/Time: 31 Aug 2011 1334Z

Position: 5230N 00013E (14nm
NW of Mildenhall)

Airspace: London FIR (Class: G)

Reporting Ac Reported Ac

Type: KC-135R Grob G109B

Operator: Foreign Mil Civ Pte

Alt/FL: 3000ft↓ 2300ft
QNH (1016mb) QNH (1015mb)

Weather: IMC In cloud VMC CLBC

Visibility: 9km 10km

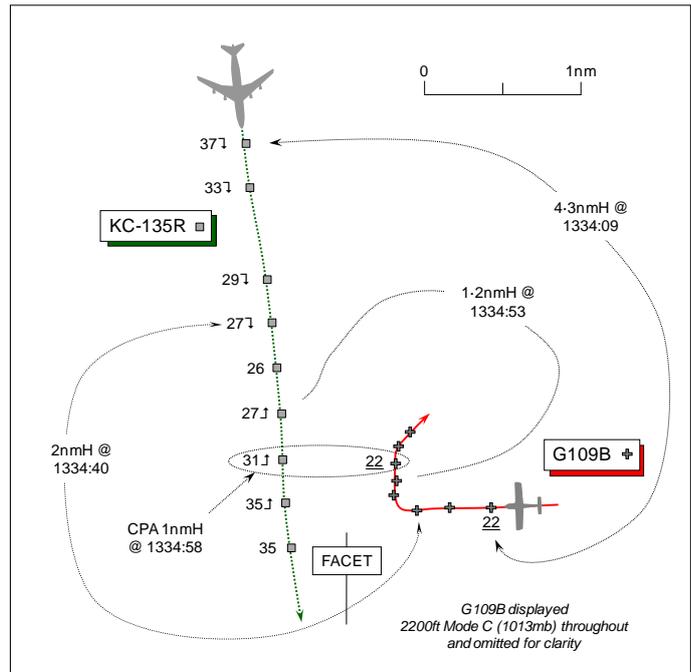
Reported Separation:

NK 1500ft V/1nm H

Recorded Separation:

1nm Min H

400ft Min V @ 1.5nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE BOEING KC-135R PILOT (KC-135) reports he was inbound to Mildenhall and in receipt of a TS from Lakenheath APPROACH (APP) on 309.2MHz. The assigned squawk was selected with Mode C; TCAS and Mode S are fitted. Landing lights and HISLs were on.

Descending IMC in cloud from FL60-3000ft, APP cleared them to descend from FL40 to 2600ft QNH (1016mb) and fly direct FACET [the IAF for an RNAV GPS approach to RW11 – 308R Mildenhall 12.5nm]. Breaking out below the cloud base at 3000ft descending at 1000ft/min, heading 195° at 240kt, the crew queried the local altimeter setting. When APP replied with confirmation of the QNH, TCAS enunciated a TA and so the crew attempted to acquire the conflicting traffic visually. TCAS then enunciated a CLIMB RA so they immediately discontinued their descent, applied maximum power, and began a rapid climb as demanded by TCAS of 4000ft/min+ on the Vertical Velocity Indicator (VVI), whilst maintaining their previously cleared flight path. After a few moments, the RA demanded they adjust their vertical speed indicating a level-off. Just as they began to level-off, the RA terminated with a CLEAR OF CONFLICT enunciation. By this time their KC-135 was O/H FACET and they continued the approach. They informed Lakenheath APP they had manoeuvred in response to a TCAS RA. Shortly after initiating the climb in response to the RA, he identified the conflicting traffic – a white low-wing aeroplane - in their 7-8 o'clock position in a R banked turn away from and behind their flight path. The conflicting ac's previous heading prior to conflict is estimated to have been about 290°. He assessed the Risk as 'medium'.

THE GROB 109B PILOT (G109B) reports he was in transit VFR from Old Buckenham to Peterborough/Conington at 85kt. He was not in contact with any ATSU and a squawk of A7000 was selected with Modes C and S; TCAS is not fitted.

About 13nm NW of Mildenhall heading 263°, flying straight and level at 2300ft QNH (1015mb) in VMC, some 1500ft clear below cloud with an in-flight visibility of 10km, a grey 4-engine ac – the KC-135 - was seen about 4-5nm away in his 2 o'clock in level flight well above, but possibly descending. He could see the ac would pass safely above him but in order to avoid its wake turbulence he decided to take up a holding position, orbiting to the R until the KC135 had safely passed. No rapid avoiding action was required, just a cautionary delay along his intended flight path. The minimum

separation was estimated to be 1500ft above his aeroplane as the KC-135 passed 1nm away. The Risk was assessed as 'none'. His aeroplane is coloured white with red/blue stripes; the HISLs and landing light were on.

LAKENHEATH ATC FACILITY reports with RT transcript that Lakenheath APP was controlling the KC-135 inbound to Mildenhall from the N under a TS. The flight was instructed to descend to FL40 and then cleared to cross FACET at or above 2600ft for the RNAV GPS approach to Mildenhall's RW11. This clearance put the KC-135 in direct conflict with a civilian VFR flight. The KC-135 pilot filed an FAA Hazardous Air Traffic Report (HATR) and Airprox after landing.

The civilian VFR ac - the G109B - was about 12nm W of Lakenheath squawking A7000 indicating an altitude of 2300ft QNH, westbound on a converging course with the KC-135. Traffic information was issued to the KC-135 crew when the ac were 4nm apart; however, no control instructions were issued to separate the ac and no safety alert was issued. The controller responsible did almost nothing to prevent this situation from occurring.

Subsequent to this Airprox, action considered appropriate by the Unit was taken.

UKAB Note (1): A review of the Lakenheath APP RT transcript reveals that at 1333:33, APP instructed the KC-135 crew to, "...cross FACET at or above 2 thousand 6 hundred feet cleared G-P-S runway 1-1....", which was read-back. At 1333:54, APP notified the KC-135 crew of, "...traffic [the G109B] 11 o'clock 4 miles northwest bound type unknown indicating 2 thousand 3 hundred". Moments later at 1334:00, the KC-135 crew reported, "..we are uh breaking outta the weather traffic below us". The LAC radar recording at 1334:09, shows the KC-135 descending through 3700ft (1013mb), with the G109B 4.3nm SE some 1500ft below maintaining 2200ft (1013mb) – about 2290ft QNH (1016mb). APP transmitted updated TI on the G109B at 1334:27, "11 o'clock in 3 miles now 2 thousand 3 hundred". The separation reduced below 2nm and 500ft after 1334:40, whereupon the G109B turns R onto a northerly reciprocal course to the KC-135. Confirmation of the local altimeter setting – 30.00 inches Hg – (1016mb) was requested by the KC-135 crew whereupon at 1334:48, APP updated the TI on the G109B for the third time, "Traffic is 11 o'clock for 1 mile 2 thousand 3 hundred appears turning northbound to avoid", which was acknowledged by the KC-135 crew. Meanwhile, the KC-135 levelled at 2600ft (1013mb) – about 2690ft QNH (1016mb) – before commencing a climb in response to the reported RA at 1334:53. Five seconds later, at 1334:58, when the ac are shown on the radar recording at the CPA, passing 1nm port-to-port abeam one another and the G109B is 900ft below the KC-135, the latter's crew reported, "[KC-135 C/S] has traffic in sight we got a R-A and uh climbing to 3 thousand 5 hundred to avoid traffic", which was acknowledged by APP with, "[KC-135 C/S] roger". There are no further transmissions relating to this incident on the RT transcript. The G109B then turns further R into the reported orbit maintaining 2200ft Mode C as the KC-135 continues on course for FACET.

HQ 3AF comments that superficially this is a straightforward Airprox where the controller fulfilled the requirements of a TS, albeit within 4nm, and the KC-135R pilot reacted to a TCAS RA. However, Lakenheath RAPCON, who provide radar services to Mildenhall traffic, carried out their own investigation immediately after the Airprox and reached a slightly different conclusion. USAF ATSU's based outside of the USA apply host nation procedures together with their own FAA procedures and where differences occur, the most stringent regulation predominates. In this case, it was found that the controller should have applied the FAA prescribed separation in the traffic pattern which, in turn, should have pre-empted the TCAS RA.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of both ac, a transcript of the relevant Lakenheath RT frequency, radar video recordings, a report from the ATC Facility involved and comment from the appropriate Command.

It was clear to the Board that the G109B pilot, in transit VFR at 2300ft ALT, but without the benefit of an ATS, had spotted the KC-135 about 4-5nm away and although content the other ac would pass safely had elected to take up an orbit thereby remaining clear of any wake turbulence generated by the larger ac. The radar recording shows that the G109B pilot turned R into the delaying orbit as the separation reduced below 2nm, just as the KC-135 was levelling at its assigned altitude of 2600ft, some 400ft clear above the indicated level of the G109B. For his part the G109B pilot was unconcerned about the occurrence. Whilst his action certainly forestalled a closer encounter, the G109B's proximity prompted a TCAS CLIMB RA in the KC-135 and shortly afterwards the effect can be seen on the recording, the steady climb achieving 900ft of vertical separation as the ac passed 1nm apart at the closest point.

The KC-135 crew had accepted the TS provided, even though they were flying under IFR in IMC and the MAA Advisor questioned whether they were able to effectively discharge their responsibilities, to see and avoid other traffic in Class G airspace, before they broke out beneath the cloud base. It seemed that a DS would have been more appropriate here. Good practice dictates that when flying IMC in cloud the principle of asking for the best service available holds sway and a DS should be sought, taking stock again if the proffered avoiding action advice proves incompatible with the flying task. If applied here, it could have prevented this Airprox and would have been in-line with the ATS the KC-135 crew perhaps expected from a USAFE RAPCON facility.

Under the TS provided by APP, three transmissions of TI were given, advising and updating the KC-135 crew of the relative position and altitude of the G109B, whilst they complied with the Lakenheath controller's instruction to route direct FACET and descend to 2600ft ALT. Following normal UK ATSOAS procedures, under a TS TI will be passed that will be updated if the traffic continues to constitute a hazard; however, the controller is not required to achieve deconfliction minima, no avoiding action will be given and the avoidance of other traffic is ultimately the pilot's responsibility. Some Members were surprised that the KC-135 pilots continued to descend towards the G109B displayed on their TCAS; a reduction in the ac's ROD might have afforded more vertical separation and forestalled the RA whilst also allowing compliance with APP's instructions. However, the KC-135 did not have far to run to the IAF and the crew would have been keen to descend below cloud, nonetheless, controller Members questioned whether the KC-135 crew should have been placed in this situation. APP had instructed the KC-135 crew to fly to FACET and towards the G109B's projected track, which coupled with the descent was effectively a vector in close proximity to the G109B. Controller Members opined this was contrary to the UK rules for a TS mandated under CAP774. Whereas there was no compunction on APP to achieve defined deconfliction minima, Members were aware that when vectoring traffic in an instrument pattern controllers should take into account traffic in the immediate vicinity, so that a risk of collision is not knowingly introduced when following their instructions. Consequently, it was suggested that the Cause was that APP had vectored the KC-135 into conflict with the G109B. However, a civil controller Member contended that as the KC-135 had been stopped off above the observed G109B, APP would have been aware that an element of vertical separation would have been maintained, thereby averting a close conflict. Nevertheless, it was plain from the Command's comments that FAA doctrine held sway. The HQ3AF Advisor stated that the RAPCON's normal practice was to provide control instructions to ensure that separation was maintained against unknown traffic in such circumstances, which had not been accomplished by the controller here as expected. Whilst this factor could not be ignored, the Board had to base their assessment on expected norms in the application of standard UK ATSOs in line with what was actually provided. Moreover, the G109B pilot's delaying action was also instrumental here and had effectively forestalled the conflict with the KC-135 before the climb in response to the TCAS RA is evident the recorded radar data revealed. Following a wide ranging debate, the Board concluded that this Airprox had been the result of a conflict in Class G airspace resolved by the Grob G109B pilot.

Turning to the inherent Risk, the radar recording revealed that the G109B pilot had turned onto a parallel course thereby preserving horizontal separation of 1nm at the closest point, whilst retaining visual contact until the ac had passed. As this occurred the KC-135 crew followed their CLIMB RA, which ensured that effective avoiding action was taken in the vertical plane, whilst also identifying the

conflicting G109B visually. The Board agreed unanimously that these factors, when taken together, had effectively removed any Risk of a collision in the circumstances conscientiously reported here.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A conflict in Class G airspace resolved by the Grob G109B pilot.

Degree of Risk: C.

AIRPROX REPORT No 2011114

Date/Time: 31 Aug 2011 2032Z

Position: 5220N 00111E
(15nm NNE Wattisham)

Airspace: UKNLFS NRR4B (*Class: G*)

Reporting Ac Reported Ac

Type: Apache AH1 MC130P

Operator: HQ JHC USAFE

Alt/FL: 800-1000ft 800-1000ft
(QNH 1015mb) (QNH 1015mb)

Weather: VMC CAVOK VMC CAVOK

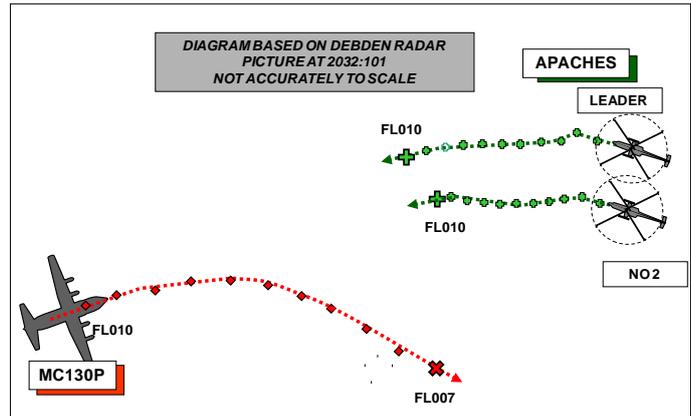
Visibility: 30km Untd

Reported Separation:

200ft V/600m H 200ft V/3nm H

Recorded Separation:

300ft V/ 1.5nm H (abeam)



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE APACHE AH1 PILOT reports conducting ACT (evasion and nav) as a pair of ac in an area NOTAM'd as a 'no lights area' for the purpose of this training. They were in receipt of a BS from Wattisham APP, squawking 4527 (Wattisham) with Modes C and S; TCAS was not fitted. While operating between 800 and 1000ft agl and tracking W at 100kt, ATC reported a fast moving MC130 at 6nm in their 12 o'clock at 600ft [Mode C - London QNH 1015mb]. The leader picked up the ac on radar before they were visual with it, by which time it had closed to about 2nm. His wingman was to their 7 o'clock and would have been blind to the MC130. He assessed that there was a real risk of collision as the MC130 came in between their patrol and he called the wingman to increase altitude to avoid collision, which they then did.

At no time did it appear that the MC130 had seen the Apaches or made any change to their route to avoid them.

UKAB Note (1): The radar recording shows the Apaches are squawking 4527 and 4530; it is assumed that leader is squawking 4527.

THE MC130P PILOT reports that they were conducting night low-level training on NVGs in East Anglia en route to overwater flight, tracking 090° at 210kt in receipt of a BS from London Info in a grey ac with nav and strobe lights switched on and were squawking with Modes C and S; TCAS 2 was fitted. Once they cleared Lakenheath ATC control, they were notified by London Info that a pair of AH-64 Apaches were E of their position and they immediately picked up traffic on TCAS at the alt specified at 20nm. They continued Eastbound maintaining SA on the location of the traffic on TCAS. When the traffic was 5nm away they made a slight right turn to the South to maintain appropriate lateral separation from them. They then became visual with one Apache, 3nm to the North of their flight path.

The crew assumed the formation was in a standard separation of 1nm, so they maintained 3nm away and the helo passed 3nm N visually estimated and verified by TCAS but they did not see the 2nd helo. They continued to the E without any knowledge of an Airprox. If the 2nd helo was greater than 1nm away from the lead, and not squawking, they would not have picked him up on TCAS. [See Diagram above].

The unit conducted an internal investigation of the incident and determined the root cause as failure to identify the specific NOTAM for the airspace. As a result, administrative actions were taken to ensure this situation does not occur again.

UKLAB Note (2): The recording of the Debden Radar shows the Apache pair manoeuvring aggressively at about 1000ft agl to the NE of Wattisham in NRR4B as the MC130P gets airborne and tracks E from Mildenhall, climbing to 2000ft then commencing a descent into the NLFS at 2026:09 (just after the ac passes 00040E - see UKAB Note (3) below) and changing squawk to London Info at 2027:24; thereafter the ac remains broadly at 1000ft agl. At that time the formation is manoeuvring at 18nm in their 11 o'clock. At 2028:30 the formation steadies on 060° and at 2029:00 they turn R initially onto 180° (in 1nm line abreast leader on the left – to the E) before commencing a crossover turn to the R onto a W track (at 2030:15) directly towards the MC130P rolling out with the leader 1nm to the N of No2 and the MC130P in the leader's 11 o'clock at 6.4nm. Thirty sec after they roll out on W, the C130 turned 30° to the right and descended slightly to avoid them to the S, passing 1.5nm abeam them to the S of the No 2 Apache and 300ft below it; it was 1.9 nm S of Leader who was then in the No2's 1.30.

UKAB Note (3): The UK Low Flying Hand Book (Sect 3) [Night] references are as follows:

1. NRR 4B. The co-ordinates of the NRR 4B area at para 59. Management of this area is undertaken by LFBC with co-ordination of approved Field Landing Site being conducted by 352 SOG. Mildenhall C130 activity is permitted in the area above 1000ft east of 00040E, subject to pre notification to the LFBC Supervisor on the working day prior to flight. RW users will be warned of any C130 activity when making a low flying booking.
2. No Visible Lighting. Prior approval is to be obtained from OC LF Ops Sqn for flights with no visible lights, except when hovering at a field HLS in LFA1 where lights may cause distraction, in established danger areas or as detailed by sub para c. Avoidance NOTAMS will be promulgated for such activity. Subject to agreement by a deconfliction fax other users may operate within the notified area.

UKAB Note (4): Both ac were correctly booked into the UKNLFS. As far as can be determined, the Apache formation was approved to conduct lights out activity but no deconfliction Fax was issued. There is no record of the Apache unit being warned of C130 activity.

UKAB Note (5): The following NOTAM was issued in respect of the Apache Flight:

(Y3343/11 NOTAMR Y2852/11

Q) EGTT/QXXXX/IV/NO/EW/000/020/

A) EGTT

B) 1108221930

C) 1109100300

D) 1930Z TO 0300Z ON 22ND TO 26TH AND 30TH TO 31ST AUG,

1830Z TO 0300Z ON 1ST AND 2ND AND 5TH TO 9TH SEP

E) NIGHT ROTARY REGION 4B, NIGHT ROTARY REGION 5, NIGHT ROTARY REGION 10

MANDATORY TEMPORARY AVOIDANCE. LIGHTS OUT ACTIVITY.

CREWS ARE TO AVOID HELOS WITHOUT LIGHTING OPERATING WITHIN AN AREA BOUNDED BY THE FOLLOWING POSITIONS:

N5204.48 E00047.76 TO

N5200.10 E00024.41 TO

N5207.75 E00015.54 TO

N5214.57 E00050.37 TO

N5230.12 E00055.08 TO

N5229.80 E00108.33 TO
N5225.06 E00108.23 TO
N5224.05 E00138.27 TO
N5215.97 E00138.82 TO
N5216.03 E00133.70 TO
N5206.88 E00133.70 TO
N5207.01 E00107.03 TO
ORIGIN.

AVOIDANCE STATUS DOES NOT INCLUDE THOSE PARTS WHICH FALL WITHIN AN ACTIVE MATZ.

POC: 01449 72 8964

F) GL
G) 2000FT AGL)

MoD MIL LF Ops commented that although it was not a factor in this incident, it became apparent that the wording of the [standard] NOTAM was open to differing interpretations and has subsequently been changed to:

‘Crews are to avoid the area bounded by the following positions...’

ATSI had nothing to add.

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 Mil LF Ops and reports from the appropriate ATC and operating authorities.

The Board noted that the MC130P crew was not aware of NOTAM Y2852/11 and that remedial action has already been implemented; it follows therefore, that the ambiguous wording of the NOTAM was not a factor in the incident, at least as far as the MC130P was concerned. The crew otherwise followed the procedures correctly. It was clear to Members that the intent, but not the wording, of the NOTAM was to provide a protected area for the Apaches to conduct their lights-out manoeuvres and that the dispensation for the MC130P to operate in the NRR4B above 1000ft should not apply in the NOTAMed area (virtually the whole of the Eastern part of the area). The Board therefore agreed that, despite the procedural error by the MC130P crew, the LFBC should have been aware that the ac was planning to operate in the NOTAMed LFA avoidance (up to 2000ft) and should not have accepted their LFA booking (or cancelled it if it was made before the NOTAM was issued). It is possible however, that the LFBC thought that the MC130P crew would be aware of the NOTAM and would operate only outside the NOTAMed area.

The Night Low Flying booking system is designed to provide procedural deconfliction between ac operating in the UKNLFS. Further, any night lights-out activity should be conducted only in NOTAMed avoidance areas. In this case, this procedure broke down and also the MC130P crew was not aware of the, albeit ambiguous, NOTAM. Notwithstanding these factors however, the MC130P crew was made aware of the Apaches by ATC, they saw them initially on TCAS and subsequently with NVDs and initiated visual separation both laterally and vertically. Although the lateral separation was less than the crew reported, probably due to the difficulty of estimating ranges at night, it was sufficient to ensure that there was no conflict and no collision risk.

The Board agreed that the Apache crews had expected to be operating in a ‘sanitised’ area and had been surprised to see the MC130P when Wattisham App warned them of it. They also (the Board agreed again probably due to night factors) had not assimilated the geometry or miss-distance

correctly as shown on the radar recording; Members agreed however, that the miss-distance was sufficient. Bearing these factors in mind, the Board agreed that there had been no risk of collision.

Post Meeting Notes:

- (1) Any military rotary-wing user may book NRR4B (MC130P ac may book as at UKAB Note 3, 1 above). Both the Apaches and the MC130P were booked into the area. It is understood that NOTAMs regarding lights-out activity should be available to the LFBC Supervisor but the Board was unable to determine if the Supervisor had not seen the NOTAM or if he had not regarded it as a prohibition.
- (2) The UKAB Secretariat was not able to contact the Apache crews for additional information.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A breakdown in the Night Low Flying deconfliction process.

Degree of Risk: C.

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