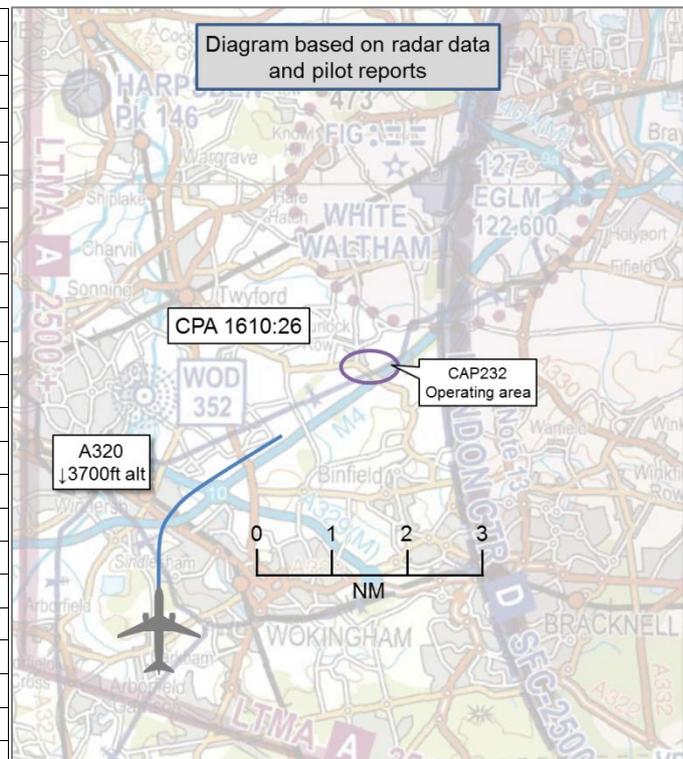


AIRPROX REPORT No 2016097

Date: 27 May 2016 Time: 1610Z Position: 5127N 00049W Location: 14nm W Heathrow

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	A320	CAP232
Operator	CAT	Civ Pte
Airspace	London TMA	London FIR
Class	A	G
Rules	IFR	VFR
Service	Radar Control	None
Provider	Swanwick TC	
Transponder	A,C,S	Not fitted
Reported		
Colours	Company	Blue/yellow
Lighting	NK	None
Conditions	VMC	VMC
Visibility	>10km	NK
Altitude/FL	3700ft	NK
Altimeter	QNH (1016hPa)	NK
Heading	060°	NK
Speed	180kt	NK
ACAS/TAS	TCAS II	Not fitted
Alert	None	N/A
Separation		
Reported	200ft V/2nm H	Not seen
Recorded	NK	



THE AIRBUS A320 PILOT reports that whilst he was heading 060° to intercept the RW09L approach at 3700ft, an aerobatic aircraft was seen in vertical climb at 12 o'clock approximately 3nm away. He reported it to ATC but it was not seen on radar. The light-aircraft was level with his aircraft at 3500ft when it stopped climbing rapidly and entered a vertical descent, disappearing below the nose of the A320. The closest range was approximately 2nm. The aircraft was a single-engine monoplane (aerobatic), mostly white. On visual contact, he reduced his ROD to 200fpm but no lateral avoidance was required as the other aircraft was flying vertically downwards. The approach was continued to a normal landing.

He assessed the risk of collision as 'Medium'.

THE CAP232 PILOT reports conducting an aerobatic training flight on the afternoon in question, in a 1km square area near the M4, south-west of White Waltham between 800 and 2400ft. Given that it was a training flight, there were two independent observers in radio contact with the pilot on the ground for the purpose of providing assistance with keeping a good look-out for other aircraft in the area, as well as to critique the aerobatic flying. The pilot remembered that the weather was good, and perceived the risk of other aircraft in the vicinity as a potential threat prior to the flight, hence the use of two observers on the ground. The pilot was preparing for an upcoming competition, which would involve being watched by judges on the ground, so it was important to be able to keep the aerobatics in a tight area both horizontally and vertically. The use of two observers (rather than the usual one) was to mitigate the risk of the extra workload. These observers did not identify any aircraft to avoid during this flight. The observers were both competition aerobatic pilots (one an ATPL holder) and were trained in aerobatic judging; this includes training for judging flight within a tight aerobatic box and in height perception.

The pilot did not see the A320 and therefore could not assess the risk of collision.

THE VISUAL CONTROL ROOM SUPERVISOR reports that he was initially informed by the TC Group Supervisor that the A320 (currently at 4DME from touchdown RW09L) might have had an encounter with a light-aircraft when establishing on the approach. The pilot reported this to the Final (FIN) Director but the frequency had been too busy to take any details. A similar report was passed to the RW09L Arrivals controller as the A320 vacated the runway, so he asked the crew to telephone after they arrived at their gate. The following details were passed to him by the crew, which he took straight from the log: *"[A320 C/S] reports an Airprox with an aircraft at around 10nm from LL on closing heading for [approach]. Details passed to TC and they will file a report, as first reported on FIN, but too busy to take details. Relevant info passed on [telephone call] as... Aerobatic mono-plane with dark blue fuselage & white wings, level with them at 3500ft approx 2nm ahead of their 060 heading. Nothing seen on radar at TC."*

Factual Background

The weather at Heathrow was recorded as follows:

EGLL 271550 07006KT 040V110 9999 BKN049 20/19 Q1016 NOSIG=

Analysis and Investigation

CAA ATSI

ATSI had access to reports from both aircraft, area radar recording and local Heathrow radar as well as recordings of the London radar controllers' frequencies. ATSI also had access to a recording of a subsequent telephone discussion with the Heathrow Tower supervisor. Screenshots produced in the report are provided using the Heathrow radar recordings as these provided better evidence of the CAP232 manoeuvring. Levels indicated are in altitude. The A320 pilot was operating IFR on a commercial passenger flight to Heathrow and was under a Radar Control Service from London Radar. The CAP232 pilot was operating VFR on a training aerobatic sortie and was not under any ATC service. However, radio contact was being maintained with two observers on the ground.

At 1607:38 the A320 pilot contacted Heathrow Radar and following a few transmissions to other pilots the controller instructed the A320 pilot to turn right heading 325°. At 1608:41 the controller instructed the A320 pilot to turn right heading 360° and then at 1609:15 the A320 pilot was instructed to descend to 3000ft. At 1609:23 the controller instructed the A320 pilot to turn right heading 060° to establish on the approach. Figure 1 depicts the A320 just after the right turn was initiated.

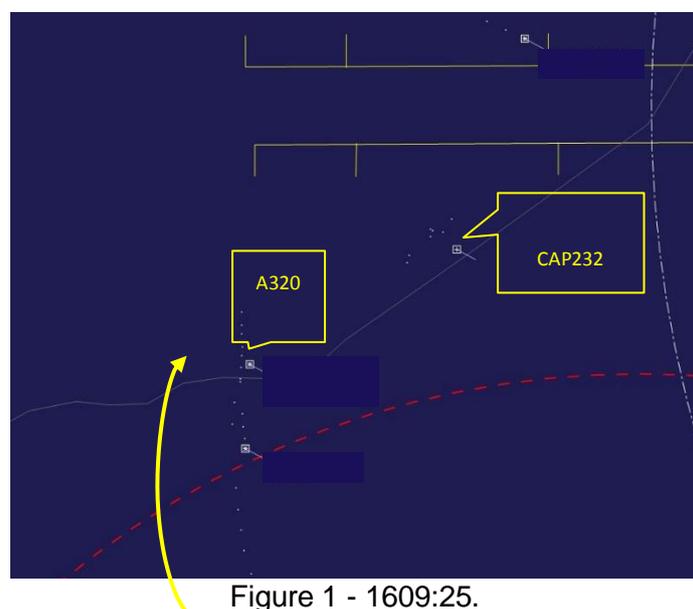


Figure 1 - 1609:25.

At 1610:02 the A320 pilot reported an aerobatic aircraft at approximately 200ft below, operating in the 12 o'clock position within 5nm. The controller stated that there was nothing seen on radar within 5nm.

At 1610:21, the pilot stated the aerobatic aircraft was level with them and, after the controller asked if avoiding action was being taken, the pilot stated that the aircraft had seen them and was now 500ft below them. The controller again confirmed that nothing was seen on radar and that as the aircraft was 500ft below them it would be outside controlled airspace.

Figure 2 depicts the radar at 1610:24 at the point when the CAP232 faded from radar coverage. Figure 3 depicts the Swanwick MRT (that the controller would have seen) at the same time, with no primary radar contacts evident.

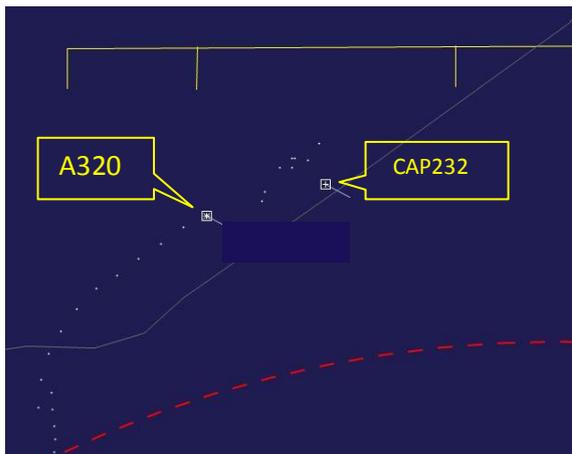


Figure 2 – 1610:24

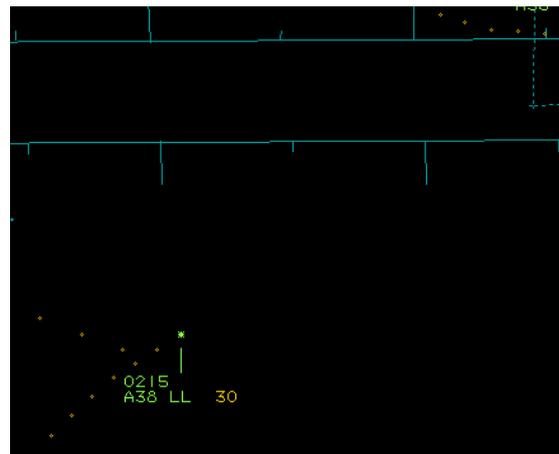


Figure 3 – Swanwick MRT at 1610:24

At 1610:50 (Figure 4) the CAP232 appeared on radar again.

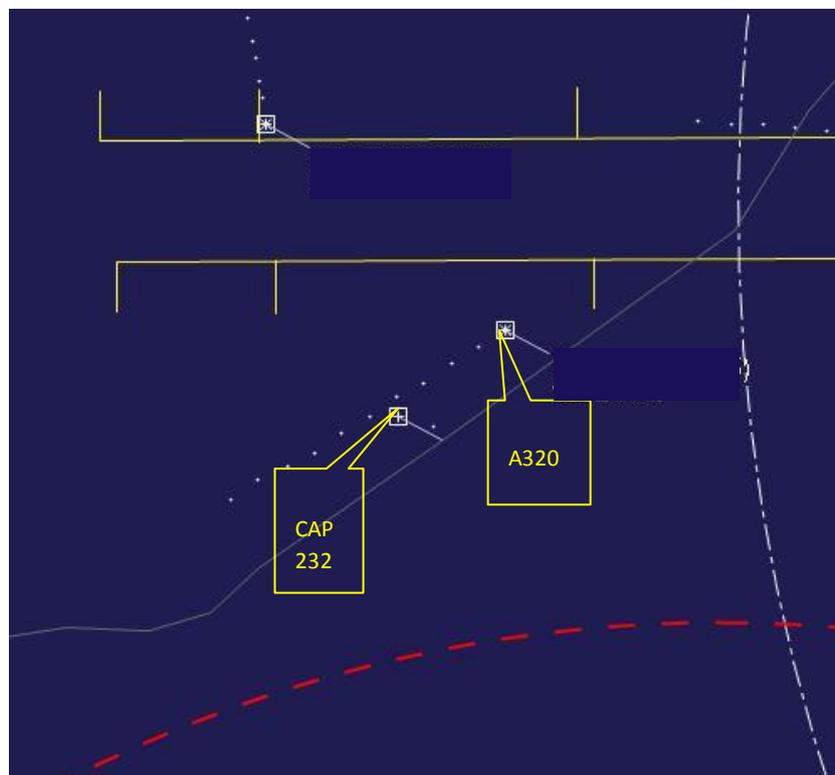


Figure 4 - 1610:50.

The controller enquired as to the direction of flight of the aerobatic aircraft and, at 1610:52, the pilot reported that the aircraft had been vertical (upwards and downwards) and had passed within 2nm of the A320

At 1626:20 the pilot of the A320 telephoned the Tower Supervisor at Heathrow and discussed the incident and the reporting action. The pilot stated again that the aircraft appeared to be at the top of a vertical manoeuvre and, when at the same level as the A320, had been at approximately 2nm range.

Because the CAP232 was not transponding, the radar returns are primary only contacts with no height information. The Swanwick MRT did show some evidence of an unknown contact in this vicinity approximately one minute prior, and subsequent to, the reported Airprox – the returns were unreliable and intermittent. This evidence was not as clear as that which he has used in his screenshots. With the information presented as in Figure 3, the controller could not have taken any other action.

The pilot making the report made several references to the distance of the CAP232 from the A320. These changed as the two aircraft grew closer in proximity and the pilot commented on losing visual contact with the aerobatic aircraft as it disappeared descending below the nose of the A320 at approximately the same time as their descent was slowed.

The controller's assurance to the pilot that, as the aerobatic aircraft was 500ft below the A320, it was outside controlled airspace, was incorrect when he made that statement. This may have been a reference to the fact that 500ft below the A320s cleared level, rather than the actual passing level at that time (c.3800ft), would have been outside controlled airspace.

Without height information evidence, it is not possible to measure the vertical distance between the two aircraft. As the radar contacts for the CAP232 also faded just as the A320 passed through the area, it is also not possible to measure a CPA.

In this particular case, the controller had no evidence to indicate that another aircraft was in the vicinity, so no traffic avoidance or information could be passed.¹

UKAB Secretariat

The A320 and CAP232 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard. The CAP232 was required to avoid Class A controlled airspace when conducting VFR aerobatic manoeuvres.

Summary

An Airprox was reported when an A320 and a CAP232 flew into proximity at 1610 on Friday 27th May 2016. The A320 pilot was inbound to Heathrow under IFR in VMC. The CAP232 pilot, operating under VFR, was not in receipt of an ATC service; however, the pilot was in contact with observers on the ground. Neither the CAP232 pilot nor the ground observers noticed any conflict with other traffic. It was not possible to determine CPA because the CAP232 was not transponder equipped and primary returns were not visible on the radar at CPA.

¹ CAP493 Section 1 Ch6 page 17 states that *'if radar derived, or other information, indicates that an aircraft is making an unauthorised penetration of the airspace, is lost, or has experienced radio failure, IFR aircraft shall be given avoidance and traffic information shall be passed'*.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from both pilots, area radar and RTF recordings and reports from the appropriate ATC and operating authorities.

The Board first discussed the actions of the CAP232 pilot. A GA member was able to confirm from personal knowledge that the pilot was a very experienced aerobatic pilot and would have been well aware of the boundaries of Controlled Airspace (CAS) in the area. Furthermore, although he could or could not be sure in this incident, in his experience aerobatic pilots conducting such competition training flights would rarely climb above 2000ft. The Board noted that two observers were monitoring the pilot's performance; one would probably have been concentrating on the aerobatic sequence, and the other on look-out for conflicting traffic. No reports were made from them about conflicting traffic or of the pilot climbing above 2500ft and thus into CAS. Some members wondered how an observer was able to judge effectively if an aerobatic pilot did not comply with its altitude restriction. The GA member explained that the observers learn from practice, and experienced observers can routinely judge heights to within 100ft. He had no doubt that they would have recognised immediately if the aerobatic pilot had climbed above the planned level and consequently into CAS. Other members questioned why the CAP232 was not equipped with a transponder; if it had been equipped with SSR Mode C, it would have shown its actual altitude and been apparent to ATC. However, it was pointed out by others that using SSR when conducting dynamic manoeuvres in close proximity to controlled airspace would almost certainly cause numerous unnecessary TCAS RAs for aircraft transiting in the vicinity. Aerobatic pilots regularly use areas below the base of the TMA at 2500ft; their extreme rate of climb could easily set off a TCAS alarm in other aircraft even though the aerobatic aircraft might be levelling below CAS.

It seemed from these discussions that, although it could not be ruled out, it was unlikely that an experienced competition aerobatic pilot would have entered controlled airspace, especially when being observed by competition observers, and so the Board then tried to reason why the A320 pilot had reported that the CAP232 had been at the same level as his aircraft at 3500ft. Members surmised that it must most likely have been a visual perception issue for the A320 pilot to think that the CAP232 was at the same level. Some members wondered whether the fact that the A320 was descending at the time had led to a misinterpretation of the other aircraft's aspect due to a nose-down attitude but a Civil Airline member commented that the A320 would have been in a fairly flat attitude at the time given that it was configuring for an approach. Alternatively, it was postulated that the possibly high rate of climb of the CAP232 at a range of only 2-3nm had given the A320 pilot a false impression of its level due to the rapidly changing vertical vector. Notwithstanding such speculation, other members commented that an experienced airline pilot would presumably be well-versed in judging height separations of circa 1000ft versus other aircraft if the CAP232 really was below the controlled airspace deck of 2500ft.

Despite their discussions on the likelihood, or not, of the CAP232 entering controlled airspace, the Board could not definitively decide one way or the other whether its pilot had done so. As a result, the consensus was that this incident was best described as a sighting report. Turning to the risk, some members considered that the balance of probability was that the CAP232 had not entered CAS, that normal procedures had pertained, and that the incident was therefore risk Category E. Other members believed that there was not enough evidence to determine the risk and therefore it should be assessed as risk Category D. A vote was taken and the Board overwhelmingly decided that the Airprox was best classified as risk Category D, insufficient information to make an assessment.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: Sighting report.

Degree of Risk: D.