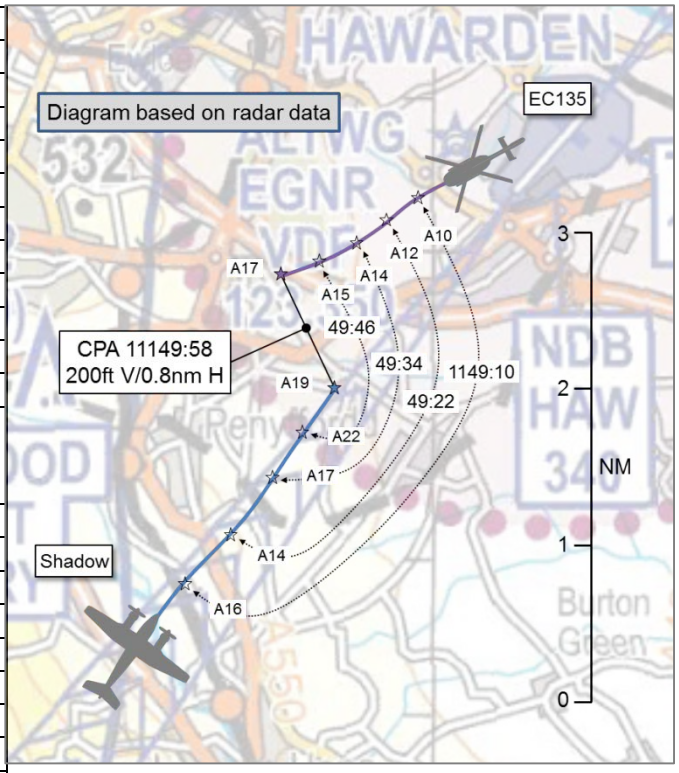
AIRPROX REPORT No 2016103

Date: 11 Apr 2016 Time: 1150Z Position: 5309N 00301W Location: SW Hawarden airport

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Shadow	EC135
Operator	HQ Air (Ops)	NPAS
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	Aerodrome	Aerodrome
Provider	Hawarden	Hawarden
Altitude/FL	FL17	FL17
Transponder	A,C,S	A,C
Reported		
Colours	Grey	Blue/yellow
Lighting	Nav, beacon, landing, taxi	White anti-colls and strobes, 2x landing
Conditions	VMC	VMC
Visibility	8km	NK
Altitude/FL	1300ft	NK
Altimeter	QNH (1007hPa)	
Heading	040°	225°
Speed	150kt	100kt
ACAS/TAS	TCAS II	TCAS I
Alert	None	None
Separation		
Reported	100ft V/0.5-1nm H	Not seen
Recorded	Nil V/0.8nm H	



THE SHADOW R1 PILOT reports that he was flying an autopilot-coupled approach and was fully established on the ILS RW04 at Hawarden. Tower contacted the crew to report rotary traffic that was remaining west of the field, heading south-west and would remain clear of the approach lane. The crew acknowledged the traffic report. The rotary traffic contacted the Tower saying they had them "on TCAS" and the Pilot Flying (PF) verbally noted from the ATC report that this traffic was flying towards them. The PF then saw a TCAS contact on his Primary Flight Display (PFD), on the nose within 5nm, indicating 600ft below and climbing. He believed this was the rotary traffic and so he continued to monitor it as the Pilot Monitoring (PM) tried to acquire the traffic visually in poor visibility. The PF decreased the range on his PFD to the lowest setting as the TCAS contact closed. The TCAS contact was still tracking towards their aircraft, now indicating 300ft below and climbing. The PF could not understand why TCAS had not issued a TA and, because neither pilot was visual with this traffic, he elected to go-around. The rotary traffic then reported to Tower that they were visual with them. The PF and PM both noted that the TCAS contact, which was now indicating directly below the aircraft, was now only 100ft below and still climbing. The PM acquired the rotary traffic visually and verbally reported this to the PF. Once established on the go-around and clear of the traffic, the PF checked the IFF to confirm that it was selected to TA/RA, which it was. The PM estimated that the traffic was 1nm away, in the 9 o'clock, co-altitude and travelling in the opposite direction (south-west). The crew continued with the missed approach procedure and positioned for a further ILS. After shutdown, the PF contacted ATC and spoke with the controller who said the rotary traffic was between 0.5 and 1.0nm away from their aircraft. Both pilots could not understand why this did not trigger at least a TA.

He assessed the risk of collision as 'Medium'.

THE EUROCOPTER EC135 PILOT reports that he was only made aware of the Airprox about 8 weeks after the incident and his recollection of the event was extremely vague. He was conducting mutual instrument flying with another pilot in VMC. He was the PF and his colleague was the Safety Pilot. They lifted off the Police parking spot and air taxied to the dedicated Police departure point, arriving a couple of minutes later. Their intentions were to depart into the circuit in order to carry out 2 ILS approaches and 1 Surveillance Radar Approach at Hawarden. After being given a departure clearance, they took off paralleling RW22 and, from this point, they would have followed all ATC instructions. At some point during this period, they both recalled that there was another aircraft on the same frequency and heard its pilot inform ATC that he was 'aborting' his approach. He could only assume that it was the pilot of this aircraft who filed the Airprox report. At this point, the Safety Pilot did not have sight of the other aircraft, and their TCAS gave no 'Proximity Traffic' indications. They were not aware or concerned of any Airprox situation. The planned sortie was completed before landing at Hawarden.

Factual Background

The weather at Hawarden was recorded as follows:

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METAR EGNR 111150Z 06006KT 9000 FEW025 13/08 Q1007=
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Analysis and Investigation

CAA ATSI

ATSI tasked the Transcription Unit to obtain the R/T and local radar recordings as soon as the Airprox was notified to them. Unfortunately, the Airprox was already outside the 30-day statutory retention period and, therefore, this data was not available. ATSI commented that it looked like the Shadow pilot took avoiding action against the departing EC135 at around 1150 but it was not possible to confirm whether Traffic Information was passed.

The Hawarden ATSU provided ATSI with the following information:

- The Shadow was pre-noted inbound to Hawarden with its last routing point being PEDIG. The aircraft was estimating KEGUN at 1144 with an SSR code of 5716.

- The airways release was provided to the Hawarden Radar controller with the Shadow descending to FL70 and a release time of 1141. The aircraft was then vectored right-hand for the ILS RW04, initially descending to 4000ft downwind, then 3100ft on base leg, when the pilot was provided with a Traffic Service.

- The Shadow pilot was transferred to Hawarden Tower at 1148.

- The Shadow pilot appeared to have executed a go-around at 1150 and turned left climbing to 2900ft before subsequently being vectored for a left-hand pattern for the RW04 ILS. The pilot was transferred back to Hawarden Tower at 1200. The pilot landed at 1204.

- The EC135 departed Hawarden at 1148 from the Police Aiming Point (west of the runway) on a Basic Service routing to the south (which would involve either crossing the runway or crossing the climb out). Its SSR Code was 0055. The aircraft was subsequently picked up for a radar vectored ILS to RW04 on a Traffic Service.

UKAB Secretariat

The Shadow and EC135 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard[1]. If the incident geometry is considered as head-on or nearly so then both pilots were required to turn to the right[2]. An aircraft operated on or in the vicinity of an aerodrome shall conform with or avoid the pattern of traffic formed by other aircraft in operation[3].

Figure 1 is not a formal assessment of TCAS performance but is derived from a UKAB tool that gives an indication of TCAS performance for converging aircraft. Nominally designed for fast-jets vs airliners - hence the speed box headings - it is equally applicable to any TCAS equipped aircraft and helps to show why neither pilot received a TCAS TA/RA.

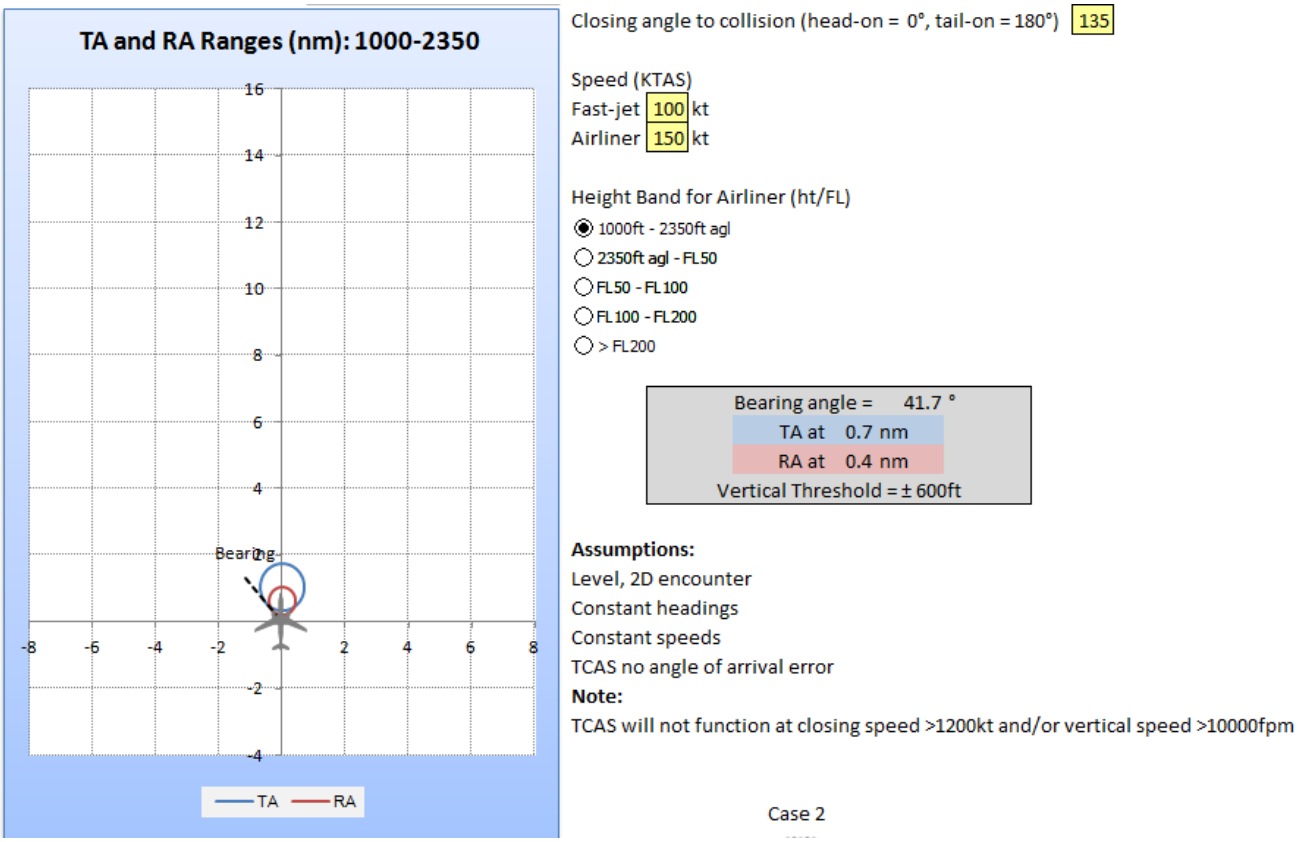

Figure 1 – TCAS representational performance for the parameters reported by the Airprox pilots.

[1] SERA.3205 Proximity.
[2] SERA.3210 Right-of-way (c)(1) Approaching head-on.
[3] SERA.3225 Operation on and in the Vicinity of an Aerodrome.

Figure 2 (1150:06) shows that at CPA, the Shadow and EC135 aircraft were co-altitude, with 0.8nm lateral separation. Generation of a TCAS TA requires a converging geometry which, in this incident, was not the case as can be seen from the recorded relative tracks (brown trails on the diagram). Also, the representative TCAS TA boundaries shown in blue for various points along these tracks indicate that, even if the tracks had been converging, the EC135 did not appear to enter the Shadow's TA boundary at any time. Although this cannot be taken as definitive analysis, subject to a formal TCAS analysis, it appears that the Shadow would not have received a TCAS TA in these circumstances.

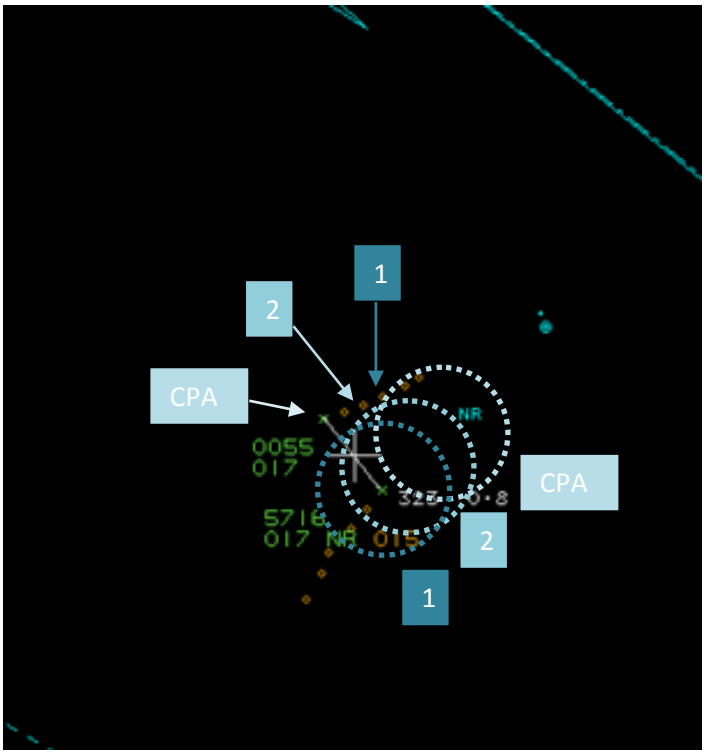

Figure 2 CPA 1150:06 EC135 (0055); Shadow (5716).

Comments

HQ Air Command

Unfortunately, the lack of ATC transcripts and the discrepancies between the Shadow's recollection of what was said on frequency and the Eurocoptor's version of events make this Airprox difficult to comprehend. It is certainly unusual that the Shadow did not receive a TA or RA when they could see the Eurocoptor on their TCAS display clearly tracking towards them [UKAB Note: see the previous paragraph, especially noting that the 2 aircraft were in fact diverging and thus, notwithstanding their reducing separation, would therefore not generate a TCAS TA]. On return to base, the TCAS equipment underwent 2 full system checks and passed both. However, the TCAS did partially 'do its job' in that it provided situational awareness of the other aircraft and, because he was not visual with the Eurocoptor, the Shadow pilot elected to conduct what he considered to be the safest course of action in that he performed a go-around.

Summary

An Airprox was reported when a Shadow and an EC135 flew into proximity at 1150 on Monday 11th April 2016. Both pilots were operating under VFR in VMC: the Shadow pilot, inbound to Hawarden, was in receipt of an Aerodrome Service; and the EC135 pilot, outbound from Hawarden, was in receipt of a Basic Service from Hawarden radar. The two aircraft passed 0.8nm apart at the same altitude.

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 was disappointed that there was not a recording of the ATC frequencies available but understood that the late notification of the Airprox had meant that they were outside the statutory retention period. Noting that the EC135 pilot was also unaware at the time that an Airprox had been filed, and his recollection of the event was extremely vague, the Board had to rely only on the Shadow pilot's recollection of the R/T calls that were made.

The Board noted that the Shadow pilot was inbound to Hawarden on a VFR plan and was carrying out an autopilot-coupled approach. He reported that whilst fully established on the ILS RW04, the Aerodrome controller had informed them about the departing EC135, which would be remaining west of the airport, tracking out to the south-west. The pilot recollected that the EC135 pilot had reported sighting their aircraft on his TCAS (as proximate traffic it transpired, not as a TCAS TA). The EC135 was then seen on their TCAS at a range of 5nm, 600ft below. Although the range of the EC135 to the Shadow continued to reduce, their tracks were in fact diverging, with the EC135 remaining outside TCAS alerting limits and hence no TCAS TA or RA was generated. Notwithstanding, the Shadow pilot was faced with the unenviable situation of being aware of unseen traffic climbing, as far as he was concerned, straight towards his aircraft, and so the Board understood why he had carried out his action to go around at that point. Pilot reaction to TCAS indications is covered in ICAO documentation[4] which is focused on IFR operations. Ordinarily, pilots should not autonomously manoeuvre on TCAS indications other than TCAS RAs due to the possibility of erroneous indications and the potential for the situation to be exacerbated by such manoeuvres. Proximate traffic and TCAS TAs should only be used for situational awareness building and to prepare for an RA should the aircraft come sufficiently close. However, in this instance, the Board recognised that the pilot was faced with a confusing situation and, especially being in Class G airspace, was at liberty to inform ATC that he was going around from his approach at any point if he judged that the safety of his aircraft was in doubt. That being said, the Board wished to highlight that pilots should not ordinarily respond to anything other than TCAS RAs, and that this incident was a salutary reminder that TCAS is not accurate in the horizontal aspect, often as a result of airframe structural interference and the influence of other antennas in the vicinity of the TCAS antenna which likely explained in this circumstance why the TCAS contact may have appeared to have been tracking towards the Shadow rather than diverging as in fact was the case. Although the EC135 pilot could not recollect the details of his flight, he did report that he was certain that he had not received any TCAS warnings at the time, this supported the notional analysis above.

The Board quickly agreed that the Shadow pilot filed an Airprox because he had believed that, from his TCAS information, the EC135 had been climbing directly towards his aircraft. TCAS indications had then led him to believe that the EC135 had passed directly under his aircraft, rather than nearly 1nm away as shown on the radar recording. It was understandable to the Board why he had been concerned about the safety of his aircraft, especially as he personally had no visual contact with the EC135 at the time. Consequently the cause of the Airprox was considered to be a TCAS sighting report. Because the two aircraft had been recorded passing 0.8nm apart, the Board considered that normal safety standards had pertained and there had been no risk of a collision. Accordingly, the Board assessed the Airprox as risk Category E.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: TCAS sighting report.

Degree of Risk: E.

[4] ICAO Doc 8168 PANS-OPS Ch 3 Part 3.2a) states: "…pilots shall not manoeuvre their aircraft in response to traffic advisories (TAs) only", for which Note 2 applies: "*The above restriction in the use of TAs is due to the limited bearing accuracy and to the difficulty in interpreting altitude rate from displayed traffic information."* Notwithstanding, Para 3.1.2 of the same document allows that: "*Nothing in the procedures specified in 3.2 hereunder shall prevent pilots-in-command from exercising their best judgement and full authority in the choice of the best course of action to resolve a traffic conflict or avert a potential collision."*