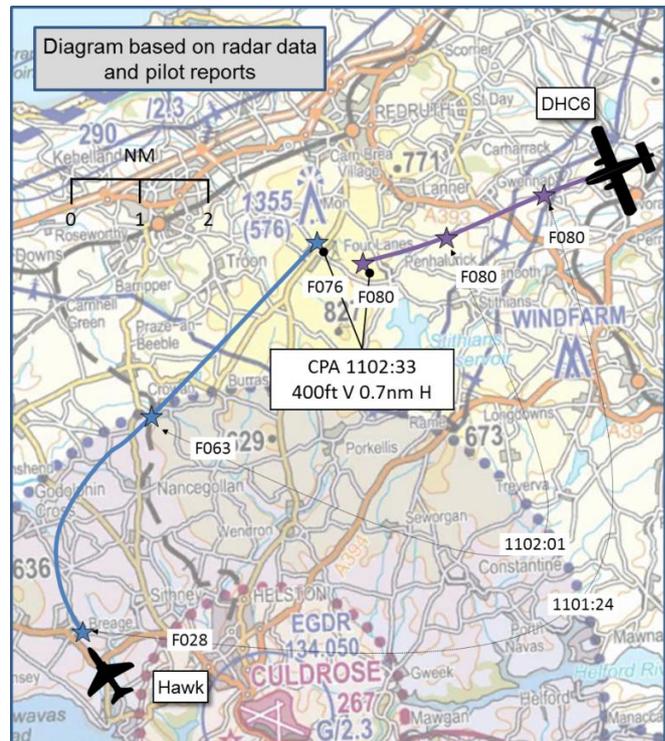


AIRPROX REPORT No 2014061**Date/Time:** 13 May 2014 1102Z**Position:** 5011N 00514W
(6nm North of Culdrose)**Airspace:** London FIR (Class: G)**Aircraft 1** **Aircraft 2****Type:** DHC6 Hawk**Operator:** CAT RN**Alt/FL:** FL80 NK**Conditions:** VMC VMC**Visibility:** 10km 20km**Reported Separation:**

0ft V/0.5nm H NK V/2nm H

Recorded Separation:

400ft V/0.7nm H

**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

THE DHC6 PILOT reports flying a white aircraft under VFR in VMC, with TCAS 1 fitted, strobes and beacon illuminated, and transponder Modes 3/A, C and S selected. The crew were in receipt of a Traffic Service from Culdrose Approach on VHF, whilst cruising at FL80, at 140kt and heading 245°. They received Traffic Information on a Hawk climbing out of Culdrose, in their 9 o'clock position, and 'within approximately 10 seconds' they received a TCAS Traffic Alert on an aircraft in their 11 o'clock, at a range of 6nm and indicating 300ft below them. A second Traffic Alert was received on traffic in their 12 o'clock, at the same level, within 1nm and the crew then saw a Hawk passing left-to-right, turning and passing down their right-hand side; the DHC6 crew assessed that the Hawk was at the same level and 0.5nm away, and they elected not to take any additional avoiding action.

He assessed the risk of collision as 'Medium'.

THE HAWK PILOT reports flying a QFI¹ sortie VFR in VMC with transponder Modes A, C & S selected but with no TCAS installed. Because he was only made aware of the Airprox report 9 days after the occurrence he could not remember the exact state of the aircraft's lighting or the detailed weather conditions. He recalls receiving a Traffic Service from Culdrose Approach, but does not recall being aware of any confliction. The pilot does not report receiving any Traffic Information but recalls seeing the other aircraft 2nm away; he assessed that separation was adequate, no avoiding action was necessary, and thought that the other aircraft passed abeam, around 2nm away, in the opposite direction.

He assessed the risk of collision as 'Low'.

THE CULDROSE APPROACH CONTROLLER reports that workload and task difficulty were low, and the frequencies had been cross-coupled to allow military aircraft on UHF and civilian aircraft on VHF awareness of all controller and pilot transmissions. He was providing a Traffic Service on a VHF frequency to the DHC6 crew at FL80 when he received a pre-note on a Hawk, whose pilot was requesting departure from Culdrose heading 040° to operate in a block from FL150 to FL300. A heading of 040° would have put the Hawk in to confliction with the DHC6 so the Approach controller imposed a climb-out restriction of FL75 on the Hawk in order to ensure at least 500ft separation from

¹ Qualified Flying Instructor.

the DHC6. Because the aircraft was in the visual circuit at the time, the climb-out restriction was passed to the Hawk pilot via the Tower controller; when the Hawk pilot initially called on Approach's UHF frequency, the controller repeated the instruction to climb, initially, to FL75. When the Hawk was on a steady heading, the controller passed its pilot Traffic Information on the DHC6; the traffic information was broadcast on both VHF and UHF because the frequencies were cross-coupled. The controller then passed Traffic Information on the Hawk to the DHC6 crew on VHF and received an acknowledgement from its pilot. The Approach controller recalls updating the Traffic Information to the Hawk pilot on two further occasions and, after the third call, the Hawk pilot reported visual with the DHC6 'passing down his right-hand side'. The Hawk pilot then reported that he was clear of the DHC6 and requested a further climb; the controller approved a further climb to FL190 and handed the Hawk over to Swanwick Military. Shortly after the hand-over, the DHC6 pilot reported that he was going en-route and free-called Land's End. The DHC6 pilot did not voice any concern about the proximity of the Hawk, report an Airprox, or indicate he had received a TCAS alert.

He perceived the severity of the incident as 'Low'.

THE CULDROSE SUPERVISOR reports that the Approach controller's and the Unit's workloads were low, but could not recall any further details of the occurrence.

Factual Background

The weather at Culdrose at 1050 was recorded as:

METAR EGDR 130950Z 34013KT 9999 FEW020 BKN022 12/07 Q1023 WHT NOSIG

Analysis and Investigation

Military ATM

The Culdrose Approach controller was aware of the conflicting flight paths and imposed a climb-out restriction of FL75 on the Hawk, against the DHC6 at FL80. Traffic Information was passed to the DHC6 pilot and, on three occasions, to the Hawk pilot. The Hawk pilot had reported visual and was allowed to climb when he assessed that he was clear of the traffic. The Hawk was handed over to Swanwick(Mil) and the DHC6 pilot reported switching to his en-route frequency; at no point was the controller aware of an Airprox or TCAS TA.

At 1100:43, the Approach controller instructed the Hawk pilot to climb to FL75, own navigation, and a Traffic Service were agreed at 1100:53. At 1101:07, Approach passed Traffic Information to the Hawk crew, "[Hawk callsign] *traffic north east, 10 miles, crossing right to left with me at FL80.*" The DHC6 pilot was passed Traffic Information at 1101:07 as, "[DHC6 callsign] *traffic left 11 o'clock, 8 miles manoeuvring, is a Hawk in the climb FL75.*" The Burrington Radar used by the Radar Analysis Cell could not initially detect the departing Hawk at this time due to its height, but Figure 1 shows the DHC6 at the time the Traffic Information was passed to its crew.

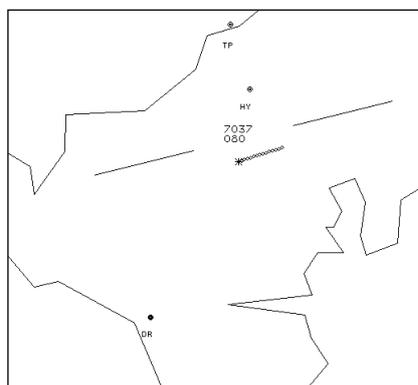


Figure 1: Traffic Information passed to the DCH6 at 1101:17.

At 1101:38, the Hawk pilot confirmed steady on 040° and Approach updated the Traffic Information: “*previously called traffic, 12 o'clock, 6 miles, opposite direction, maintaining FL80*”, as per Figure 2.

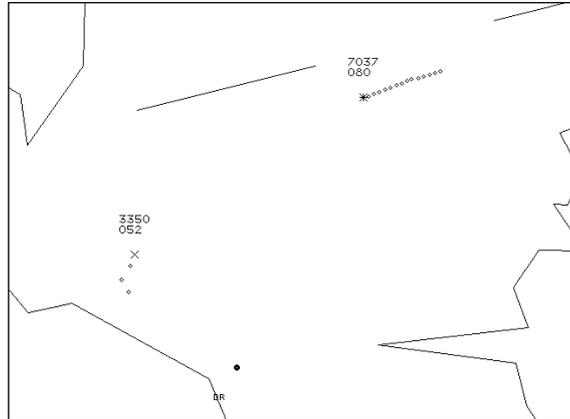


Figure 2: Traffic Information at 1101:43.

At 1102:01, the Hawk pilot reported at FL75 and at 1102:07, Approach updated the Traffic Information with, “*previously reported traffic now 12 o'clock, 2 miles, opposite direction at FL80*”, as per Figure 3; the Hawk pilot confirmed that he was looking for the traffic.

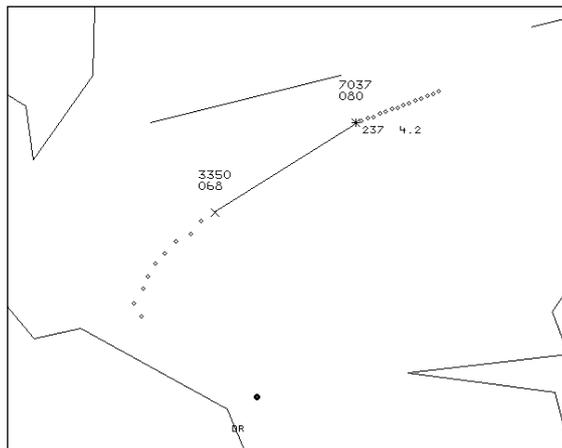


Figure 3: Traffic Information at 1102:07.

As shown in Figure 4, at 1102:24, the Hawk pilot confirmed, “*got him passing down my right hand side now clear, request further climb.*”

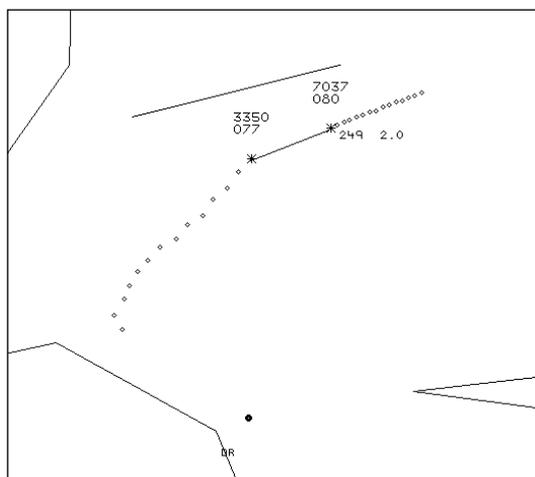


Figure 4: Hawk confirmed visual at 1102:24.

The Approach controller agreed a climb to FL190 with the Hawk pilot at 1102:30; CPA was at 1102:33, as per Figure 5, at 0.7nm lateral separation and 400ft height separation.

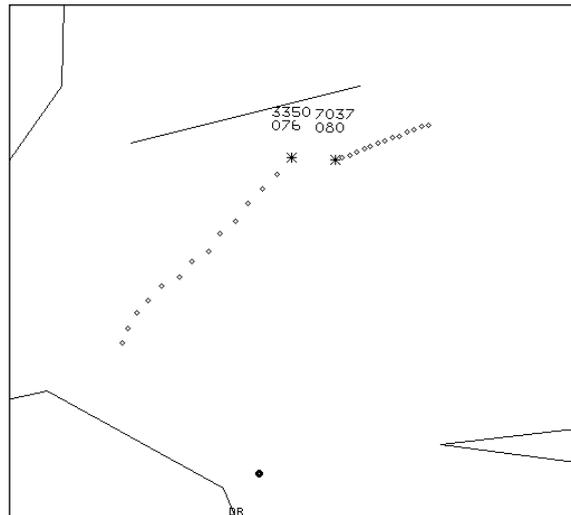


Figure 5: Aircraft geometry at CPA at 1102:33.

Analysis

The Culdrose Approach controller fulfilled his duty-of-care by ensuring there was height separation, passing Traffic Information and cross-coupling frequencies to allow situational awareness for both crews. Both crews were aware of each other through radar-based Traffic Information and this was supplemented with Airborne Collision Avoidance Systems. The Hawk pilot reported visual with the DHC6 2nm away and 11 seconds prior to the CPA. The climbing Hawk pilot may have had a better aspect to achieve visual contact, whilst the DHC6 pilot had the Hawk below his the aircraft's nose, which may have hindered the lookout and led to more of a surprise when the Hawk passed to the starboard, climbing through his level.

Comments

Navy HQ

The Culdrose controller performed as expected; accurate and timely Traffic Information was given to both pilots, ATC frequencies were cross-coupled to help improve aircrew situational awareness, and the Hawk was given a stepped-climb to below the cruising level of the DHC6. Once the Hawk crew was visual, and reported they were clear of the DHC6, they requested a further climb, which ATC approved.

Summary

This Airprox occurred 5nm north of Culdrose, in Class G Airspace, between a Hawk and a DHC-6, whose crews were both receiving a Traffic Service from Culdrose Approach.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

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

The Board observed that the Culdrose controller had passed Traffic Information to both crews and that this had helped the Hawk pilot to see the DHC-6 at a range of around 2nm. Once the Hawk pilot reported visual with the DHC-6, the controller allowed him to continue to climb VFR and the Hawk

crew maintained visual separation of at least 400ft and 0.7nm from the DHC-6. The Board noted that although the Hawk pilot had allowed sufficient VFR separation from the other aircraft, the head-on trajectory of the Hawk relative to the DHC-6 had likely triggered the Traffic Alerts on-board the DHC-6 as a function of TCAS algorithms, which were not optimised for VFR encounters. Although they made no criticism of the Hawk pilot *per se*, the Board noted that there had been numerous instances in recent Airprox where pilots had not been aware of the effect of pointing their flight vector at TCAS-equipped aircraft within a few miles. In this instance it had merely caused an advisory alert; in more extreme circumstances, even though VFR separation might be ensured, TCAS RAs can easily be generated, which then require mandatory avoidance responses for commercial aircraft. The Board recalled that they had previously recommended that HQ Air Command educate their fast-jet crews in this regard, and were heartened that the RAF Safety Centre had recently undertaken to do so.

The Board agreed that the cause was that the Hawk pilot flew close enough to cause the DHC-6 pilot concern, but that normal safety parameters had been maintained, and so the Degree of Risk was E.

PART C: ASSESSMENT OF CAUSE AND RISK

<u>Cause:</u>	The Hawk pilot flew close enough to cause the DHC6 pilot concern.
<u>Degree of Risk:</u>	E
<u>ERC Score²:</u>	2

² Although the Event Risk Classification (ERC) trial had been formally terminated for future development at the time of the Board, for data continuity and consistency purposes, Director UKAB and the UKAB Secretariat provided a shadow assessment of ERC