

AIRPROX REPORT No 2013166

Date/Time: 23 Nov 2013 1201Z (Saturday)

Position: 5145N 00252W
(2.8nm NNE Usk)

Airspace: London FIR (Class: G)

Aircraft 1 Aircraft 2

Type: C42 Microlight C404

Operator: Civ Club Civ Comm

Alt/FL: 2900ft NK
QNH (1026hPa)

Conditions: VMC VMC

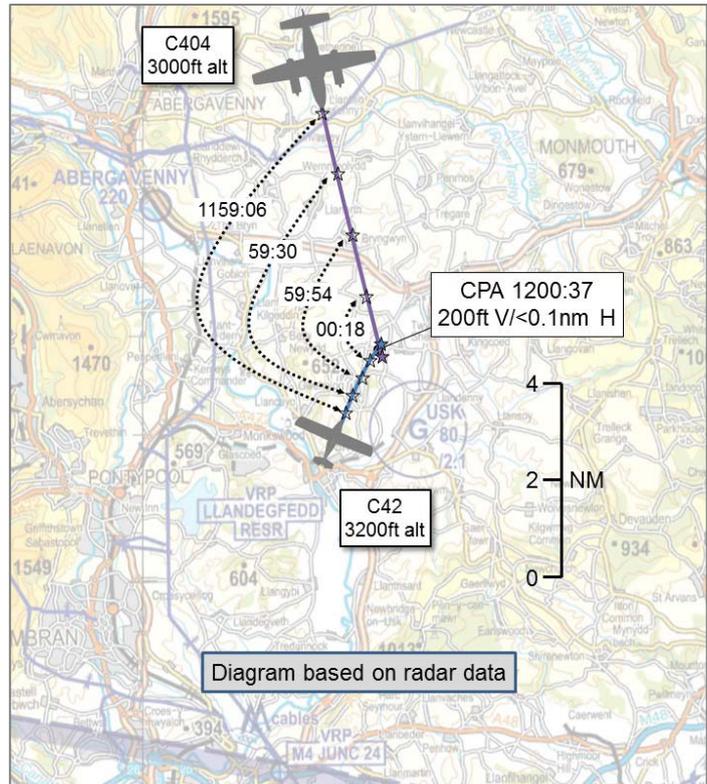
Visibility: 10nm >10km

Reported Separation:

NK V/0ft H Not seen

Recorded Separation:

200ft V/0.2nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE IKARUS C42 (C42) PILOT reports he was en-route VFR from Swansea airport to fly overhead Shobdon, via Usk in South Wales, as a navigational exercise. His aircraft was coloured white; a tail strobe light was fitted but it was unserviceable. He was squawking Mode C; ACAS was not carried. He left Swansea at around 1100, changing from Swansea's frequency to Cardiff radar (119.15MHz) on passing Port Talbot. He had just travelled across the Cardiff area, tracking just to the north of the M4, staying under 2000ft to remain outside Controlled Airspace (CAS). He had received a Basic Service from Cardiff (squawking 3617). Once to the east of Cardiff's area, NE of Newport, he was called by Cardiff to say he was clear of their CAS, should squawk 7000, change to his en-route frequency and he recollected he could climb if he wished. He acknowledged this, changed his transponder back to 7000, cruise-climbed from just under 2000ft to nearly 3000ft QNH 1026hPa but continued to monitor Cardiff's frequency as he did not know of any more appropriate frequency for that area. In the climb, he went about 500ft above a very sparse layer of occasional small cumulus tufts which were just beginning to form from thermal action as the day warmed up. He noted that the weather conditions east of Cardiff were more hazy than the air he had just left to the west. He did not want to go higher as the developing cumulus layer and haze would make his cross-country navigation harder. He also had a GPS on board, so was not particularly worried but the decrease in visibility was noticeable ahead as he headed east out of the Cardiff M4 corridor. After he turned north overhead Usk, he was conscious of needing to route to the east of Danger Areas D147 and D216, passing overhead Hereford, before turning left towards Shobdon. He was to some extent 'eyes in' for a short while as he consulted his map and checked against his GPS, maybe as much as 15 sec over the course of about a minute glancing in to the map and back out again forwards through the windscreen. A short while after he had put the map back on the passenger seat, he suddenly became aware of an aircraft, possibly twin-engine, approaching fast from his extreme left, about 80° off his course, slightly below him but on a collision course, about 1 sec before it passed beneath him. He just had enough time to form the impression it was going to miss him, with no time to take any other action. The other aircraft appeared to be flying straight and level, no indication of any course change to avoid him. He commented that it was possible that its pilot had already taken action, e.g. descended sharply, to avoid hitting him before he became aware of its presence. Since the Airprox he has fitted a new strobe light.

He assessed the risk of collision as 'Very High'.

THE CESSNA 404 (C404) PILOT reports that he was not aware of the Airprox until informed by his company operations department. He did not see the C42. He was operating a VFR flight, initially in receipt of a Basic Service from Cardiff approach, which was subsequently changed to a Traffic Service. His aircraft was coloured white; strobes and navigation lights were illuminated; SSR Modes C and S (elementary) were selected. He was flying into sun, VMC, with visibility in excess of 10km.

THE CARDIFF RADAR CONTROLLER reports that Unit management informed him that the pilot of a microlight aircraft reported being involved in an Airprox and that he was the controller on duty at the time of the incident. He had no recollection of the event or observed/heard anything untoward. He recalled that at the time of the Airprox the Radar position was bandboxed, the amount of VFR/LARS traffic was building, and there were a number of pending IFR movements. Therefore, he had decided to open Radar 2 in preparation for him handing over the position.

Factual Background

The Cardiff airport weather was:

METAR 231150Z 03005KT 9999 FEW032 07/02 Q1026

Solar noon in the Cardiff area was at 11:59, with the sun 17° above the horizon.

Analysis and Investigation

CAA ATSI

ATSI had access to the C42 pilot's report, retrospective report from the Cardiff Radar controller and a copy of the ATC initial and unit investigation. Area surveillance was reviewed and frequency 119.150MHz (Cardiff Radar) recorded. Cardiff Radar was operating with no known unserviceabilities. The Radar 1 position was open and traffic was deemed light to moderate but building. The Radar 1 controller had called for the position to be split and this was in the process of being achieved at the time of the Airprox. Cardiff ATC was only made aware of the incident 3 days after it had occurred and the controllers had no recollection of the event. Note: Cardiff Radar frequency 119.150MHz has a notified Distance of Coverage (DOC) of 50nm/19000ft.

The C42 pilot initially called Radar at 1121:34 requesting a Basic Service. Radar instructed the C42 pilot to squawk 3617 and pass his details; the pilot read back the squawk and stated he was descending to 2000ft. The Radar controller's attention then turned to other traffic on frequency.

The C42 pilot called again on the frequency at 1127:50 stating, "*About one mile to go to your control area confirm I'm cleared to enter*". Radar responded, "*Negative pass your details*." The C42 pilot then passed aircraft type, route, level and current pressure setting. Radar instructed the C42 pilot to remain outside CAS and a Basic Service was agreed. Radar then asked if the C42 pilot was squawking 3617 as nothing was on radar. After a pause the pilot replied, "*now squawking 3617*". There were no further exchanges between the C42 pilot and Radar until 1152.

At 1152:32 Radar assessed that the C42 was approaching an area where, at the C42 pilot's level, RTF coverage was known to be degraded. The C42 was 20nm northeast of Cardiff Airport at FL028 (approximate altitude 3151ft (Q1026)). The C42 pilot was instructed to squawk 7000 and change frequency en route. The C42 pilot's read back was only partially audible. The C42's Mode A changed to 7000.

The C404 had previously been pre-noted to Cardiff by Birmingham ATC. At 1153:40 the C404 pilot changed his squawk to Cardiff's Mode A code 3635. The C404 was 47nm north-east of Cardiff Airport at FL027 (~3051ft). The C404 pilot attempted an initial contact with Radar at 1155:45; however, the transmissions were broken (readability 1) and the C404 pilot was requested to call back in a couple of minutes. There was no agreement of service. The C404 was 41nm northeast of Cardiff Airport at FL026 (~2951ft).

At 1156:30 the C404 became visible on Radar's situation display.

At 1157 Radar began the process of splitting the sector with a second controller. This process took approximately 4min to complete due to the volume of RTF traffic.

The two aircraft had been on parallel tracks 11nm apart; however, at 1157:34 the C42 pilot turned on to a more northerly track, followed by the C404 pilot turning on to a southerly track at 1158:06.

The C404 pilot attempted to establish service with Radar at 1159:07 but was requested to standby and remain outside controlled airspace. At 1159:09 a Short Term Conflict Alert (STCA) activated at Cardiff.

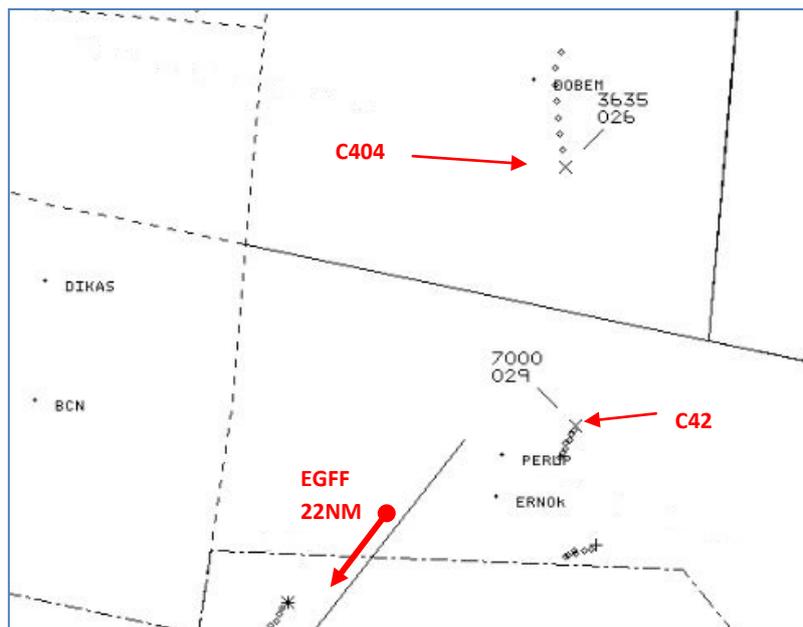


Figure 1: Cleve Hill – 1159:00 (Note: Trail history every 8 seconds)

Figures 2 and 3 below show the geometry of the encounter between the C404 and C42

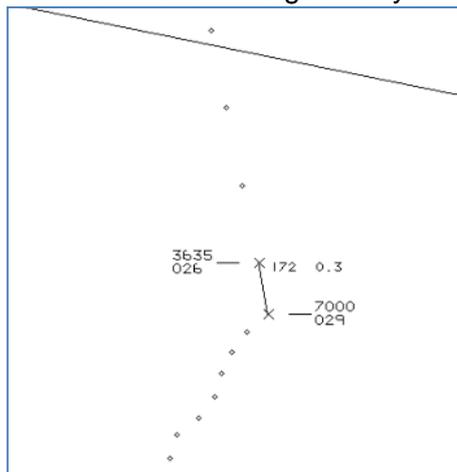


Figure 2: CLH – 1200:34

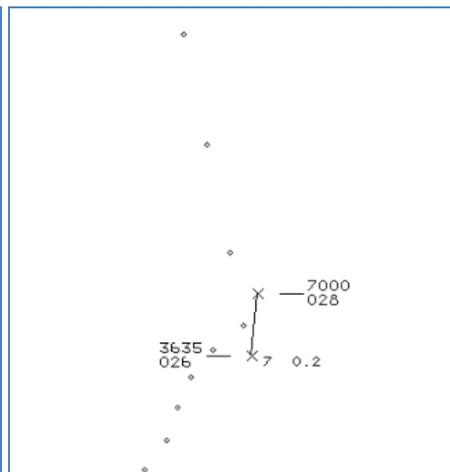


Figure 3: CLH – 1200:42

At 1201:01 the splitting of the Radar function was complete. The incoming controller took control of frequency 119.150MHz and at 1201:16 identified the C404 and a Traffic Service was agreed with the pilot.

At 1203:04 the C42 pilot altered his course in order to return to Swansea.

At 1206:25 the Radar controller was on the landline when the C42 pilot called on 119.150MHz, “[C42 C/S] back with you.” However, only words, “[probable partial C/S] back with you” were audible to the controller and the station calling was requested to say again call-sign. Only a brief transmitter modulation occurred in response.

At 1229:08 there was an extremely broken transmission on 119.150MHz within which letters from the C42’s registration were audible. Radar transmitted, “unreadable”; however, the transmission subsequently received, believed to be in reply, was even more unreadable.

UKAB Secretariat

Both pilots had equal responsibility for collision avoidance¹ and the pilot with the other aircraft on their right was required to give way².

Summary

The Airprox occurred in Class G uncontrolled airspace. At the time, neither of the pilots were in receipt of an air traffic service. Both pilots were operating in an area and at a level where coverage of Cardiff Approach’s frequency was extremely poor. The C42 pilot reported sighting the C404 only one second before the tracks of the aircraft crossed. The C404 pilot did not see the C42. The C404 pilot would have been flying into the noon sun in an area where conditions were reported to be slightly hazy.

PART B: SUMMARY OF THE BOARD’S DISCUSSIONS

Information available included reports from both pilots, transcripts of the relevant RTF frequencies, area radar recordings, reports from the controller concerned and reports from the appropriate ATC and operating authorities.

The Board noted that although the C404 had established radio contact with Cardiff in preparation for an ATS, and was squawking a Cardiff SSR code having been pre-noted by Birmingham ATC (although yet to be identified), neither of the pilots, who were operating in Class G see-and-avoid airspace, were in receipt of any agreed ATS at the time of the Airprox. Therefore, collision avoidance fundamentally remained the sole responsibility of the pilots of both aircraft. It was noted from the pilots’ reports that the C42 pilot had only sighted the C404 one second before it passed him, an effective non-sighting; for his part, the C404 pilot did not see the C42 at all. The Board quickly decided that this was the root cause of the Airprox, albeit there were complicating factors regarding visibility and sun angle to consider. It was apparent from the analysis and the C42 pilot’s report that this was a very close encounter. Recognising that there were likely radar display and measuring/interpolation inaccuracies, the two aircraft were recorded as passing only 200ft vertically and 0.2nm horizontally from each other – the likely CPA was probably closer than this.

Because the C42 pilot did not see the C404 early enough to take any action and the C404 pilot did not see the C42 at all, it was considered that chance had played a major part in events, separation had been reduced to the minimum, and that this event had just stopped short of an actual collision. The Board unanimously agreed therefore that the Risk was Category A.

Having agreed the overall cause and risk, the Board then went on to conduct an extensive debate over controller responsibilities and ‘duty of care’ having noted that a Short Term Conflict Alert (STCA) associated to the aircraft had evidently activated on the Cardiff radar screens about 88 secs before the Airprox occurred.³ In exploring this issue, the Board first acknowledged that neither aircraft was in controlled airspace nor receiving an ATC service at the time. Both aircraft were, however, on

¹ Rules of the Air (2007) (as amended), Rule 8 (Avoiding aerial collisions)

² Ibid., Rule 9 (Converging).

³ The STCA activated at 1159:09; CPA was assessed as occurring at 1200:37.

Cardiff frequencies. The C42 had been cleared en route, had changed squawk, but had decided to listen out on his last ATC frequency; the controller would likely have noted the change in squawk and, because the end of the C42 pilot's last transmission was unreadable, the Board agreed that the controller would have reasonably expected that the C42 pilot had checked out. Conversely, although not yet identified, the C404 was in two-way contact with Cardiff and had been told by the controller to standby and remain outside controlled airspace; the C404 could conceivably have been warned had the conflict been recognised and it deemed appropriate.

It was evident to the Board that the STCA had been an available safety barrier that had not been employed because either the controller had not assimilated that it was present during those 88 secs; had decided not to action the alert; or had been unable to action the alert. The ability for the controller to action the STCA depended on him: observing and associating it with the C404; having sufficient workload capacity to absorb the task and prioritise it amongst his other tasks; and being able to transmit an appropriate warning to the C404 pilot. The NATS advisor commented that STCA are quite common events and, because Cardiff ATC was only made aware of the Airprox three days after the event, the controller had no recollection of it; consequently, it was not possible to determine whether he was or was not aware of the alert. The NATS advisor also commented that, even if the controller was aware of the STCA, actioning it would be inconsistent with MATS Part 1 policy in that there was no requirement for controllers to act on STCA that might activate for aircraft not under their control.^{4,5} In the end, the discussion focussed on the concept of 'duty of care', for which CAP774 (UK FIS) Appendix A (Duty of Care) Section 4, states that:

"there is a need for controllers/FISOs to remain free to use their professional judgement to determine the best course of action for them to take for any specific situation".

Recognising that this was a potentially emotive issue that was open to interpretation, the Board expressed their disquiet that a safety barrier had been present but might not have been employed because it hadn't been noticed or that it was deemed not necessary to do so because the aircraft wasn't being controlled by Cardiff ATC.

Finally, beyond the STCA issue, as a further aside the Board's gliding member was concerned that the C404 pilot appeared to be routing directly towards the overhead of the Usk gliding site at the time of the Airprox. Although not pertinent to this particular Airprox, he considered that it would have been prudent if the C404 pilot had planned to remain laterally clear of the site given the hazy into-sun conditions.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: An effective non-sighting by the C42 pilot and a non-sighting by the C404 pilot.

Degree of Risk: A.

ERC Score⁶: 2.

⁴ MATS Part 1 states that: "In the event an STCA is generated in respect of controlled flights, the controller shall without delay assess the situation and, if necessary, take action to ensure that the applicable separation minimum will not be infringed. Specific local STCA procedures shall be detailed in MATS Part 2".

⁵ Cardiff MATS Part 2 offers the following advice: "STCA alerts may or may not require positive action to be taken by the controller to resolve the potential conflict. It in no way reduces or replaces the controller's responsibility to provide standard separation as detailed in MATS Part 1 and MATS Part 2."

⁶ 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.