## AIRPROX REPORT No 2011137

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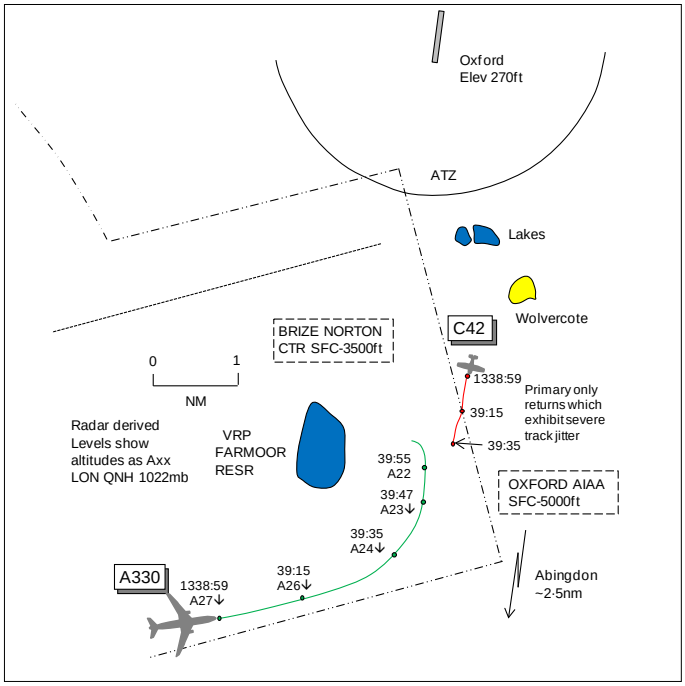
|---|---|---|
| *Date/Time:* | 8 Oct 2011 1340Z (Saturday) | |
| *Position:* | 5145N 00119W (10nm E Brize Norton - elev 288ft) | |
| *Airspace:* | CTR | (*Class: D*) |
| | *Reporting Ac* | *Reported Ac* |
| *Type:* | A330 | Ikarus C42 |
| *Operator:* | CAT | Civ Club |
| *Alt/FL:* | 2800ft QNH (1026mb) | 2200ft QNH (1021mb) |
| *Weather:* | VMC CLOC | VMC CLBC |
| *Visibility:* | 50km | >10km |
| *Reported Separation:* | 500ft V | 500ft V/0·25nm H |
| *Recorded Separation:* | NR | |




## PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE A330 PILOT** reports inbound to Brize, IFR and in receipt of a DS from Brize, squawking an assigned code with Modes S and C. The visibility was 50km flying clear of cloud in VMC and the ac was coloured white/blue with strobe, nav and landing lights all switched on. Turning through heading 300° to establish on the ILS level at 2800ft QNH, he thought, 1026mb at 200kt traffic was seen, after a warning from ATC, to turn R in their 2 o'clock range 5nm and 500ft below crossing from R to L. The relative bearing remained almost constant with other traffic, a white coloured light ac, appearing to pass 500ft below. He assessed the risk as high.

**THE IKARUS C42 PILOT** reports outbound from Oxford, VFR at 80kt and in receipt of a BS from Oxford Approach on 125·325MHz squawking 7000. Earlier, when trying to reach Turweston from Old Sarum, they had diverted into Oxford owing to worsening Wx after reaching Bicester. During their stop-off they refuelled and put some marks on the map and considered going back direct to Old Sarum by the quickest route. During their walk back to the ac across the apron they decided the Wx was unpalatable for a trip to the N, the cloud base looked 2300-2500ft, so they decided to fly back via Newbury and Andover. Once airborne from RW19 things started to go awry. In retrospect he thought they should have stayed in Oxford's airspace and climbed to transit height or headed E over Oxford staying well clear of Brize airspace. When planning his route he had decided to fly down some water meadows and a reservoir near Wolvercote [Oxford ARP 170° 2·5nm], which he could see on his 1:250,000 map, following a river to the S of Kidlington. However, as they climbed out, he must have gone further than he intended – he had a slight tailwind. Instead of making a sharp turn and heading for Oxford he continued straight ahead, perhaps steering slightly further R of 190°. He could see a reservoir very clearly in the distance but it could not have been the one S of Kidlington. In retrospect it must have been Farmoor Reservoir much further to the SW. As they drew level with the reservoir his pilot colleague asked him where they were in relation to Brize Norton; he pointed out that they were drawing level with the extended centre-line of the main RW, 3-5nm away in their 3 o'clock. At this point he realised that the main N-S RW at Abingdon was directly in their 12 o'clock and much closer than expected. He had dialled up Brize frequency on the radio before leaving Oxford and was in the process of leaving the Oxford frequency when he saw an airliner high in his 2 o'clock about 3nm away crossing his path from R to L and climbing, he thought. His co-pilot spotted it at the same time and pointed as it began to turn towards them, about 1nm away and about 300-400ft higher. He made a remark to Oxford that he was taking immediate action to turn and descend

out of the way of a large jet ac. He commenced a steep descending LH turn which took him out of the airliner's flightpath. His pilot colleague maintained visual contact with the airliner, which passed about 500ft above and >0·25nm away to their R. He thought he then switched to Brize frequency to request a BS but did not obtain a response. The call would probably have been too late anyway but he suspected that he may not have been heard because Brize was talking to other flights at the time. At no time did he think that his ac caused a hazard to other ac or the other ac cause any danger to his. Clearly he was several miles W of their intended course and could see Abingdon ahead which he wanted to avoid overflying. He tracked S towards Lambourn and successfully made contact with Brize and obtained a BS. Later he was asked by Brize if he had passed by an airliner which he confirmed. Also later he telephoned Brize Supervisor at his request to discuss the incident. He opined that several factors had occurred. This had been their first visit to Oxford and, owing to their unexpected landing, they did not have the relevant airfield plate or procedures. The unexpected diversion had led to him being more flustered and less pragmatic in his actions. Although Oxford had told him to avoid Brize airspace, he didn't appreciate how quickly he would find himself in that airspace and he did not turn sharply enough to the L when he departed. On passing 1000ft he should have turned on course immediately away from Brize airspace. He did not carry a copy of an airfield flight guide and should have sought one at Oxford or should have found the briefing room and briefed himself more thoroughly on the airspace restrictions. Failing that he should have obtained a more detailed brief from ATC. Before leaving Oxford he had spoken to Brize to find out if the Salisbury Plain Danger Area E was active but omitted to ask about any procedure for avoiding Brize airspace. He concluded that his planning had been poor. He had drawn a line from Oxford to Old Sarum which passed through the Brize CTR which was clearly an error and his co-pilot /navigator would have been confused by this when he handed the map to him. The number of reservoirs had also led to his confusion. When he saw a reservoir ahead it was probably Farmoor but he mistook it for a smaller patch of water near the junction of the A34 near Wolvercote which put him 2-3 miles off track, inside Brize airspace. It was only his good lookout and prompt action in diving away which prevented this incident from being more serious. He did not believe there was any risk of collision.

**THE BRIZE RADAR CONTROLLER** reports working the inbound A330 charter flight. When it was on base leg RW26 descending to 2300ft QNH a faint radar contact appeared on the radar E of Farmoor VRP tracking SW. This unknown ac was not squawking and could have been above the CTR. Presented with this confliction the A330 was given an immediate avoiding action turn inbound; however, the turn still resulted in the primary contacts merging. When clear of confliction the A330 crew was asked if they had seen the unknown ac and they replied yes and that it passed below. The unknown ac at this point had faded from radar. The A330 continued inbound making a normal ILS approach to land. Later the C42 pilot called LARS giving his position W of Abingdon at 1800ft requesting a BS en-route to Old Sarum. As the C42 had departed Oxford the pilot was asked if, during his initial departure, he had flown close to a heavy jet ac inbound to Brize. His reply indicated that the C42 was the ac that had infringed the Brize CTR without an ATC clearance. The pilot later contacted ATC and explained that he was staying clear of Abingdon, owing to the aerodrome being active with motor-gliders, which resulted in the ac infringing the CTR E of Farmoor VRP. The pilot reported being visual with the A330 and had turned L and descended to avoid. Although the A330 crew did not report an Airprox, he thought that this incident was far from satisfactory and could have resulted in a potential collision.

**BM SAFETY MANAGEMENT** reports that the Airprox occurred between an Airbus A330 operating IFR in the Brize Norton CTR and a C42 Ikarus operating VFR, in receipt of a BS from Oxford Approach.

All heights stated are based upon SSR Mode C from the radar replay unless otherwise stated.

Brize DIR, also acting as the ATCO IC, was an experienced controller and reported that his and the Unit's workloads were low, with low task complexity.

The A330 was being vectored for an ILS to RW26 at Brize, descending to 2300ft Brize QNH 1022mb and, at 1339:06, was issued a L turn onto a base-leg heading of 330°. This L turn is evident on the radar replay at 1339:15.

[UKAB Note (1): Earlier the A330 crew had requested a DS, shortly after initial contact, and this was agreed by Brize DIR at 1334:27, *(A330 c/s) deconfliction service outside controlled airspace reduced traffic information from all around due limits of surveillance cover"*. After issuing descent and a radar heading, at 1336:47 DIR informed the crew, *"(A330 c/s) entering controlled airspace"* which was acknowledged.]

A primary radar contact, believed to be the Ikarus appears on the radar replay at 1338:24, 0·4nm E of the CTR, 10·4nm E of Brize and 6·4nm NE of the A330. The Ikarus then enters the CTR tracking SW at 1339:15, 3nm NE of the A330.

DIR reported that a "faint radar contact" with no associated SSR Mode 3A or C information appeared on their surveillance display "east of Farmoor VRP, tracking south-west." Immediately thereafter, at 1339:33, DIR issued the A330 flight with an "avoiding action turn inbound" stating, *"(A330 c/s) avoiding action, turn left immediately heading three-zero-zero degrees, traffic was north-east, one mile, south-west bound, no height information."* This was read back by the A330 crew. DIR has subsequently confirmed that at the point the avoiding action turn was issued, the primary contact was within the CTR.

Immediately thereafter, at 1339:47, the A330 pilot reported, *"we have the traffic in sight (A330 c/s) it's below us*." This statement was roughly co-incident with the CPA with zero lateral separation evident from the radar replay. Both pilots estimated vertical separation as 500ft, with the Ikarus pilot estimating that they passed 0·25nm behind the A330.

Subsequent to the Airprox at 1342:48 the Ikarus pilot contacted Brize LARS for a service and confirmed that it was his ac that had come into close proximity with the A330. Moreover, he reported that his transponder was operating and that a SSR 3A code of 7000 was selected throughout the incident sequence.

Although the Ikarus pilot reported that his transponder was operating, the fact that this was not detected by the BZN MSSR or NATS radars until after the Airprox at approximately 1344, suggests that the transponder was either u/s, selected to stand-by or off. The absence of this information prevented the operation of the safety barrier afforded by the A330's TCAS and, based upon the time of detection of the Ikarus on the Brize PSR, shortened DIR's available time to react.

On the basis that at 1339:33 the Ikarus had only recently "painted" on the Brize surveillance display, there was little track data available to DIR on which they could base a decision. Given the late detection of the Ikarus by the Brize PSR and that the A330 was already established in a L turn onto 330°, DIR had little option other than to issue an avoiding action turn to position the A330 further inside the CTR. However, the radius of turn of the A330 was such that separation between the 2 ac continued to decrease, resulting in the radar contacts merging.

The key causal factor in this incident was the infringement of the Brize CTR by the Ikarus which, based upon the report of the Ikarus pilot, was the result of a chain of events culminating in a number of HF-related errors.

From an ATM perspective, given the limited time between the Ikarus "painting" on PSR and the CPA, the lack of SSR information and the radius of turn of the A330, DIR had no opportunity to take action that could have prevented this incident.

This Airprox was caused by the infringement of the Brize CTR by the Ikarus, aggravated by the lack of SSR information from the Ikarus and the late detection of the Ikarus on the Brize PSR.

**ATSI** reports that the Airprox occurred at 1339:50 UTC, 9·5nm to the E of Brize Norton and within the Brize Norton Control Zone (CTR) Class D airspace, which lies to the S and SW of Oxford airport and extends from the surface to an altitude of 3500ft.

The A330 was operating an IFR flight from Larnaca (LCLK) to Brize Norton and was in receipt of a RCS.

The Ikarus C42 Microlight was operating on a VFR flight from Oxford to Old Sarum and was in receipt of a BS from Oxford Tower.

The Oxford controller was providing a combined Aerodrome and Approach control service without the aid of surveillance equipment.

CAA ATSI had access to area radar recordings, together with RT recordings from Oxford Tower, together with written reports from the 2 pilots.

METAR: EGVN 081250Z 27008KT 9999 BKN024 14/08 Q1022 WHT NOSIG=
METAR: EGVN 081350Z 28009KT 9999 BKN022 15/09 Q1021 WHT NOSIG=

The C42 had landed at Oxford earlier after aborting a planned flight from Old Sarum to Turweston. This was due to deteriorating weather conditions to the N of Oxford. After refuelling the pilot decided to return to Old Sarum via Newbury and Andover.

At 1325:48 the C42 pilot contacted Oxford Tower requesting the airfield information for a flight to Old Sarum. The controller passed the QNH 1021, RW19 and the C42 was cleared to taxi to the holding point for RW19.

At 1333:49 the C42 pilot reported ready for departure. The Oxford controller replied, *"(C42 c/s) Runway one nine remaining outside the Brize Control Zone you're cleared for take off two seven zero zero eight."* The C42 pilot responded, *"(C42 c/s) er ready for take off we will avoid the Brize Zone er two seven zero zero eight."* The controller transmitted, *"(C42 c/s) confirm you are cleared for take off Runway one nine,"* which the pilot acknowledged.

At 1336:01, the C42 pilot reported, *"(C42 c/s) er we're turning left to avoid Brize."* The controller replied, *"(C42 c/s) roger as you clear the circuit to the -at- as you clear the circuit the southeast sorry Basic Service report changing enroute."* The C42 pilot replied, *"(C42 c/s)*."

At 1339:15, the radar recording shows the A330, 8·2nm ESE of Brize Norton, within the Brize Norton CTR (Class D airspace), positioning downwind LH for RW26 and passing 2600ft in the descent to an altitude of 2300ft. The radar recording also shows a primary contact, 10·2nm E of Brize Norton, tracking SSW and crossing the boundary of the Brize Norton CTR. From the evidence available to ATSI, it was considered that this contact was the C42 which was at an altitude of 2200ft (see para below). The distance between the 2 converging ac was 3·3nm.

At 1339:18, the C42 pilot transmitted, *"Oxford (C42 c/s) three miles to your south currently at two thousand two hundred..."* The Oxford controller replied, *"(C42 c/s) I got that you were s-to the south at two thousand two hundred the rest was broken off."* The C42 pilot advised, *"Visual with a very large airliner we are losing height rapidly."* The Oxford controller responded, *"Roger that's understood that will probably be traffic inbound to Brize Norton.*"

[UKAB Note (2): At 1339:35, the radar recording shows that the distance between the 2 ac was 1·5nm, with the A330 commencing a L turn onto base leg. The next sweep 4sec later shows the C42 having faded from radar.]

The written statement from the C42 pilot indicated that at this point he initiated a steep descending L turn and saw the A330 pass well above.

At 1341:42, the C42 pilot reported changing to the Brize frequency 124·275MHz, which the Oxford controller acknowledged.

The C42 departed Oxford in receipt of a BS. CAP774, UK Flight Information Services, Chapter 2, Page 1. Paragraphs 1, states:

> '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.'

As part of the departure instructions, the Oxford controller instructed the C42 pilot to remain outside the Brize Norton Zone. This was acknowledged by the C42 pilot and after departing from RW19, the C42 pilot reported, *'turning left to avoid Brize'*. The Oxford controller was providing a service without the aid of surveillance equipment and was unaware the C42 had mistakenly routed towards the Brize Norton CTR.

The C42 entered the Brize Norton CTR without a clearance and into conflict with the A330 in the radar pattern. The UK AIP Page, ENR 2-1-19 (20 Oct 11) states:

> '1.1 Brize Norton Control Zone
>
> 1.1.1 Pilots wishing to enter the Control Zone must observe the normal procedure for joining Controlled Airspace and should make their request for entry when 15nm or 5 minutes flying time (whichever is earlier) from the Control Zone Boundary. Pilots should make their request for Control Zone entry to BRIZE ZONE.'

Rule 29 (1b) of the RoA, 'VFR flight plan and air traffic control clearance in Class B, Class C or Class D airspace', states:

> '(1) Subject to Rule 31, before an aircraft flies within Class B, Class C or Class D airspace during the notified hours of watch of the appropriate air traffic control unit, the commander of the aircraft shall:
>
> (b) obtain an air traffic control clearance to fly within that airspace.'

The Oxford controller, operating without surveillance equipment, issued departure instructions to the C42 pilot which required the pilot to remain outside the Brize Norton CTR. The C42 pilot mistakenly infringed the Brize Norton CTR, without an ATC clearance and flew into conflict with the A330 which was operating inside CAS and in receipt of a RCS.

The Brize Norton DIR issued avoiding action to the A330 and the pilot of the C42 acquired a visual sighting of the A330 and initiated a steep descending LH turn.

## 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.

Members commended the C42 pilot for his open and honest report. The crux of the incident was the lack of planning prior to his departure from Oxford, which had led to him entering the Brize CTR without clearance and then flying into conflict with the A330. Following the appearance of the C42 as a faint radar contact crossing the CTR boundary, DIR had reacted well. As the A330 was already in a L turn onto 330°, he issued an avoiding action turn onto 300°, as well as TI on the C42, in the belief that the turn would tighten such that the A330 would turn further into the CTR and pass W of the unknown traffic. The A330 crew quickly acquired the C42 visually and watched it pass clear 500ft below. The C42 pilot had seen the A330 whilst it was positioning downwind and when it commenced

its L turn onto base leg he realised the potential for conflict and executed a descending L turn, estimating separation of 500ft as the A330 passed to his R. It was noted that whilst the ATC and 'see and avoid' safety measures worked, the TCAS safety barrier was inhibited owing to the C42's SSR not working. The ac's squawk only became apparent after the pilot called LARS, 3min post Airprox, who issued an allocated code which was then displayed on his radar. That said, the actions taken by all parties and the visual sightings by both crews were enough to allow the Board to conclude that the collision risk had been quickly and effectively removed.

## PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Ikarus C42 pilot entered the CTR without clearance and flew into conflict with the A330.

Degree of Risk: C.