

AIRPROX REPORT No 2013109

Date/Time: 7 Aug 2013 1253Z

Position: 5148N 00134W
(2.7nm NNE RAF Brize Norton)

Airspace: Brize Norton CTR (*Class:* D)

Reporting Ac **Reported Ac**

Type: Hercules C4 PA28

Operator: HQ Air (Ops) Civ Comm

Alt/FL: 1500ft NK
 QNH (1014hPa)

Weather: VMC CLBC VMC NK

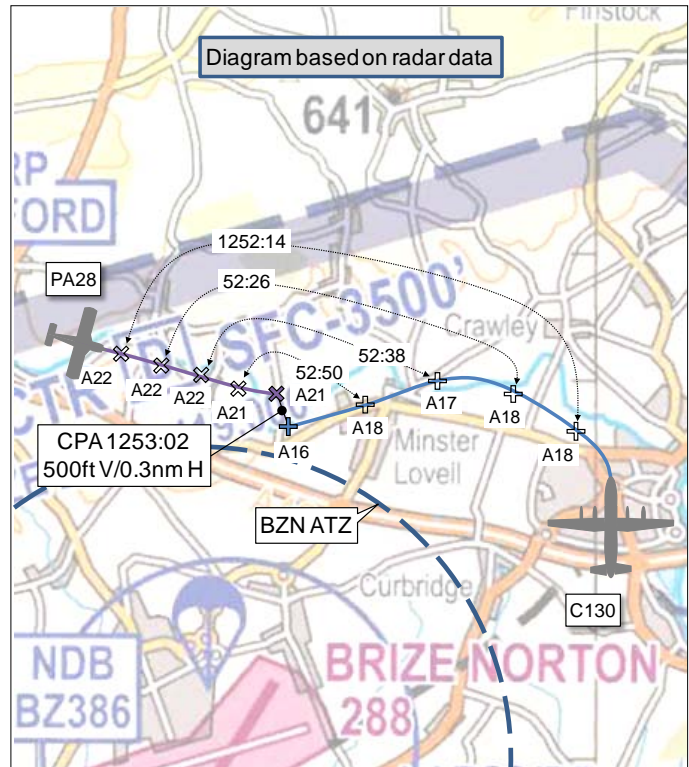
Visibility: 40km NK

Reported Separation:

200ft V/250yd H Not Seen

Recorded Separation:

500ft V/0.3nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE HERCULES PILOT reports being radar vectored for a PAR approach to RW08 at RAF Brize Norton (BZN). The green camouflaged aircraft had navigation lights and HISLs selected on, as was the SSR transponder with Modes A, C and S. The aircraft was fitted with TCAS. The pilot was operating under IFR in VMC, in receipt of a radar control service from BZN Director (DIR). Whilst being vectored for a 'short-pattern' PAR, heading 260° at 170kt, he received a TCAS RA against a light-aircraft. The aircraft was seen in the 1 o'clock position at about 500yd on a converging heading. The pilot followed the RA direction, resulting in a descent to 1500ft before recovering to the cleared level of 1800ft. Brize Director was informed at the time to 'log the RA in the ATC log'.

He assessed the risk of collision as 'Medium'.

THE PA28 PILOT reports conducting an instructional flight. The predominantly white aircraft had navigation lights and strobes selected on, as was the SSR transponder with Modes A and C. The aircraft was not fitted with a TAS or ACAS. The pilot was operating under VFR in VMC and reported being in receipt of a Basic Service from 'Oaksey Park/BZN'. The pilot reported his route, including a leg tracking East, inbound to the Bovingdon VOR, but that he had no specific recollection of seeing a C130 at close range but that, as he often operated in the area, seeing C130s was quite common.

THE BZN DIR reports screening a trainee DIR, working the C130 conducting a radar vectored short pattern PAR in the radar pattern. When level at 1800ft, the C130 pilot was given a downwind vector heading 260° for the standard radar pattern. A CTR transit track, VFR at 2300ft to the north west, was called to the C130 pilot during his left-hand turn and again when the C130 was steady on 260°. The transit traffic was co-ordinated 500ft above. Once the C130 pilot had passed beneath and slightly south of the CTR transit aircraft he reported climbing back up to 1800ft, having received a TCAS RA.

THE BZN SUPERVISOR reports that the aircraft were coordinated correctly iaw ATM regulations. However, this was one of many TCAS RAs triggered by 500ft separation. He stated that a larger CTR would allow for greater separation to be applied.

Factual Background

The weather at RAF Brize Norton was recorded as follows:

METAR EGVN 071250Z 05008KT 9999 FEW045 BKN250 21/09 Q1014 BLU NOSIG

Analysis and Investigation

Military ATM

This incident occurred 2.8nm NNE of RAF Brize Norton at approx 1253:04 on 7 Aug 13 between a C130 and a PA28. The C130 was operating IFR in the BZN Radar Training Circuit, in receipt of an ATS from BZN DIR. The PA28 was conducting a VFR transit of the BZN CTR in receipt of an ATS from BZN Radar (RAD).

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

Analysis of the BZN RT determined that the C130 was flying at 1800ft on the BZN QNH of 1014hPa, whilst the PA28 pilot had been instructed to cross the CTR at 2300ft on the BZN QNH in order to de-conflict from the C130. Both pilots confirmed that they were level at their respective altitudes prior to the incident, and this is borne out by the NATS Ltd radar replay.

At 1251:18, DIR provided the C130 pilot with TI on the PA28, and this was updated at 1252:23; at this point, 3.1nm lateral separation existed between the aircraft with the C130 indicating 1800ft and the PA28 indicating 2200ft. At 1251:07, RAD provided the PA28 with TI on the C130 and this was updated at 1252:34, with the PA28 pilot reporting “*visual, no threat*”; at this point, 2.3nm lateral separation existed between the aircraft with the C130 indicating 1800ft and the PA28 indicating 2200ft.

At 1252:46, the SSR Mode C from the PA28 indicated 2100ft, an altitude that was maintained for the remainder of the incident sequence; Figure 1 depicts the incident geometry at this point, SSR 3A 3701 was the PA28, SSR 3A 3741 was the C130.

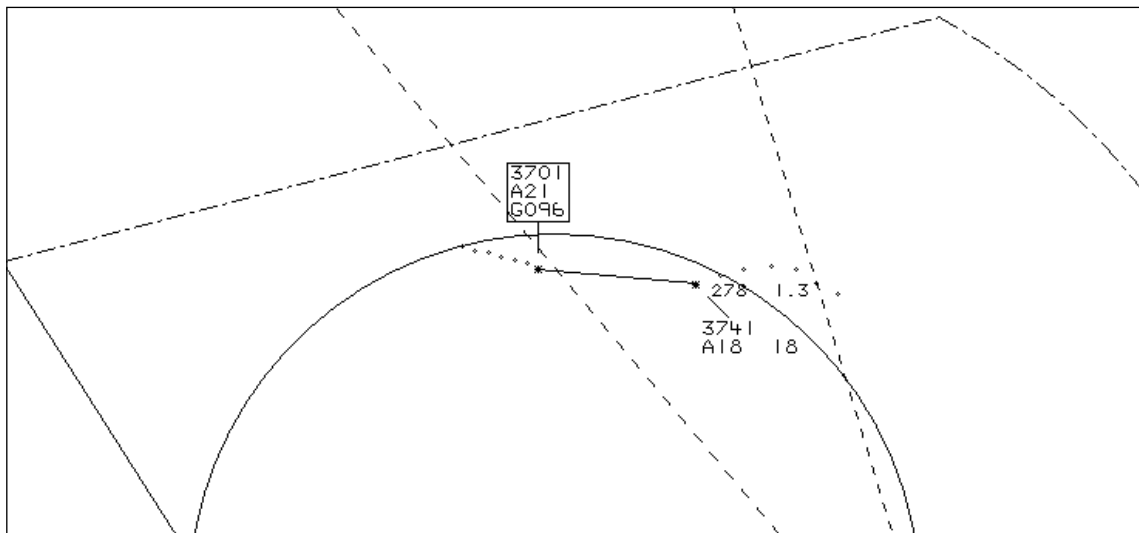


Figure 1: Incident Geometry at 1252:46

At 1253:02, the SSR Mode C from the C130 indicated that the aircraft had commenced a descent, presumably in response to the TCAS RA reported by the pilot. The CPA occurred between sweeps of the radar at approx 1253:04; Figures 2 and 3 depict the incident geometry at these points.

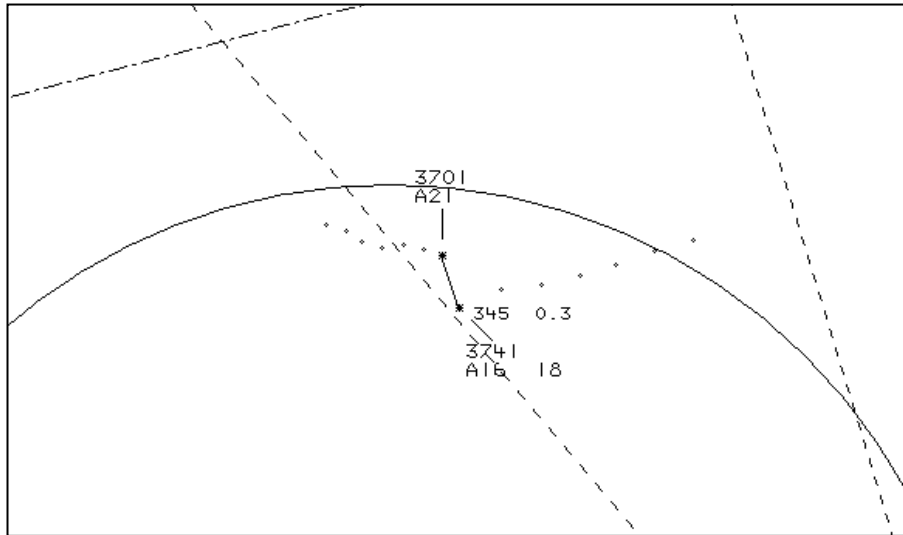


Figure 2: Incident geometry at 1253:02.

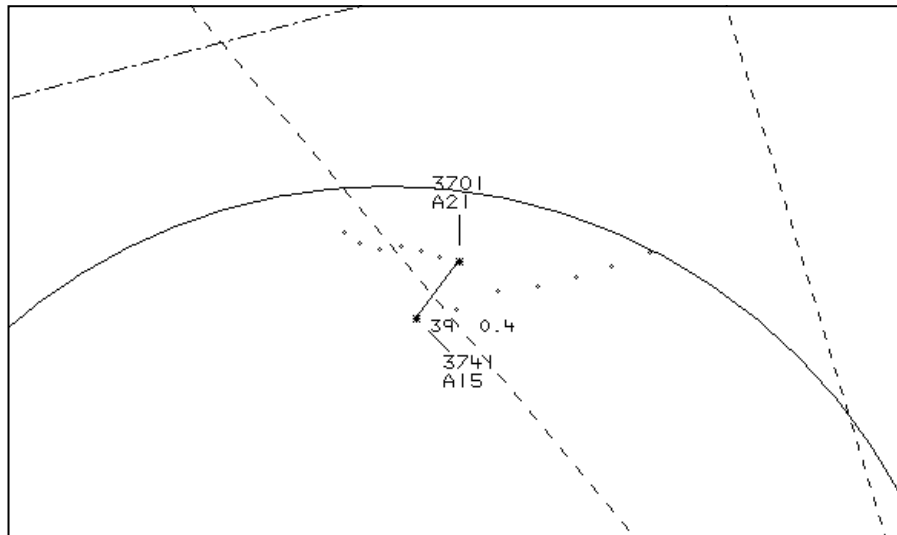


Figure 3: Incident geometry at 1253:06

MMATM, Chapter 35, paragraph 11a states that, in assessing level occupancy through the use of verified SSR Mode C data:

‘An aircraft can be considered to be at an assigned level provided that the Mode C readout indicates 200 ft or less from that level.’

In this instance the PA28 remained within the level occupancy criteria for being level at 2300ft BZN QNH 1014hPa.

MMATM Chapter 11, Annex B, paragraph 3 states that:

‘Within Class D airspace, ATC meets its responsibilities for preventing collisions between aircraft by ... passing IFR flights Traffic Information on VFR flights and traffic avoidance on request.’

MMATM Chapter 11, Annex B, paragraph 11 states that:

‘Responsibility for the separation of VFR flights from IFR flights and other VFR flights rests entirely with the VFR pilot. Nevertheless, controllers **should** provide VFR pilots with sufficient information about other aircraft in Class D airspace to assist them to achieve their own separation’.

From an ATM perspective, BZN ATC provided timely and accurate TI to the crews of both aircraft and exceeded the regulatory requirement by separating the C130 and PA28 vertically by 500ft. The PA28's crew was able to utilise this TI to visually acquire the C130 at a range of 2.3nm and deemed the aircraft to be "*no threat*", thus there was no risk of collision. Although the PA28's SSR Mode C remained within the tolerance that indicated level flight at 2300ft, the aircraft may have deviated from this altitude sufficiently to trigger a TCAS RA onboard the C130. Given the minimal lateral separation that existed between the PA28 and the C130 at the point that the PA28 first indicated 2100ft, it would not have been possible for BZN ATC personnel to have taken any meaningful action to have prevented the C130 crew from receiving a TCAS RA. Moreover, given the conflicting tracks of the 2 ac, it is likely that a TCAS RA would have been generated without the observed SSR Mode C altitude deviation of the PA28. BM SPA have highlighted to the MAA the potential hazards associated with the generation of 'nuisance' TCAS RAs through the utilisation of reduced vertical separation and have requested that they review the relevant Regulation.

UKAB Secretariat

The legal basis of flight in Class D airspace is complex. After consultation with CAA FOI and ATSI it was determined that the pilot of the C130, operating under IFR in Class D, was required to comply with the air traffic control clearance in accordance with the Rules of the Air Rule 36 (Compliance with air traffic control clearance and notified procedures) whilst also being required to give way to converging traffic on the right in accordance with Rule 9 (Converging). This would have been achievable by requesting permission from ATC before manoeuvring to give way but the indication of a TCAS RA necessitated an immediate manoeuvre for the purpose of avoiding danger and as such the pilot was authorised by Article 160 of the Air Navigation Order to depart from the rules to the extent he felt necessary.

Comments

HQ Air Command

This incident has served as a timely reminder that lookout remains a vital element of the work-cycle when operating in airspace that includes VFR traffic, whether controlled or not.

Summary

A C130 and a PA28 flew into conflict at 1253:02 on 7th August 2013, 2.7nm NNE of RAF Brize Norton, within the Class D airspace of the Brize CTR. Both pilots were in receipt of ATC clearances, the C130 pilot operating under IFR and the PA28 pilot VFR.

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 video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

The Board first considered the pilots' actions. The C130 pilot was operating under IFR with an ATS in Class D airspace, following radar vectors in the RTC. He saw the PA28 at a reported range of 500yd and followed a TCAS 'descend' manoeuvre RA. The C130 pilot had been given timely Traffic Information on the PA28, and the Board opined that the C130 crew's visual sighting at a reported range of 500yd was much later than the conditions allowed. The Board reflected that ATC separation is provided only between IFR/IFR, and IFR/SVFR traffic in Class D, and that it is the sole responsibility of VFR pilots to avoid IFR traffic. Additionally, no separation minima are stipulated by which such VFR pilots have to avoid IFR traffic. The PA28 pilot was in receipt of a clearance to transit the BZN CTR under VFR. Members opined that it was likely he slowly descended to an altitude indicated as 2100ft by his Mode C, but that it was not possible to establish whether this was

an actual altitude of 2100ft or whether his Mode C was simply under-reading by 200ft and that he was slowly descending to his cleared altitude of 2300ft. In either case, the Board opined that a TCAS RA would probably have been generated in the C130 given their lateral juxtaposition.

Members discussed at length the integration of VFR and IFR traffic in Class D, with some opining that ATC could usefully apply a degree of lateral separation to traffic when applying vectors. However, it was agreed that both pilots and the controller had complied with all the requirements of their operating environment, and that this Airprox stemmed from the fact that Class D rules are not designed to avoid occurrences of TCAS alerting. Members reiterated the undesirability of TCAS RAs at any stage of flight and noted that this issue was currently being studied after recommendations from previous Airprox events¹.

Ultimately, and despite the generation of a TCAS RA, the Board agreed that normal procedures, safety standards and parameters pertained to this incident.

PART C: ASSESSMENT OF CAUSE AND RISK

<u>Cause:</u>	A TCAS sighting report.
<u>Degree of Risk:</u>	E.
<u>ERC Score²:</u>	1

¹ Airprox 2013095 and 2013099 recommended that the CAA review VFR/SVFR traffic procedures within CAS with respect to RA occurrences in TCAS equipped aircraft.

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.