

chosen route to Enstone was to pass through a small corridor between the OXF ATZ and Weston-on-the-Green Danger Area [D129]. Both he and his passenger had flown extensively in the area over the past 20 years; he had been trained at OXF. Having become airborne, building amounts of cloud cover at higher levels with towering CUs were observed so the decision was taken to remain below and clear of cloud where visibility was excellent and in excess of 10km. The option of flying to the north around Bicester and Upper Heyford was discussed and it was decided to stay on a direct route as the weather was good. They also discussed flying higher but did not want to interfere with instrument traffic or have to dodge around clouds in the OXF overhead because they knew this was an area where one pilot of each aircraft would probably be solely focussed on instrument flying. A moving-map display was employed to aid keeping clear of the airspace that would be passed during the short flight planned. Knowing that this is typically a busy area, as much attention as possible was given to looking out of the cockpit. Approaching the area (crossing the M40) contact with OXF Radar was attempted twice. Nothing was heard. From experience it was assumed that OXF were quiet and therefore operating the TWR frequency only. They continued to squawk 7000 and looked up the frequency for OXF TWR, which took approximately 30sec to locate from their chart book. Their plan was to inform OXF of their intention to pass clear of the ATZ. On contact with TWR they were told to contact APP. This was acknowledged, he stated that he had been unable to raise them previously, and then changed back. They noted that when they contacted the TWR they had heard one pilot in the circuit, and they made visual contact with the traffic which was in excess of 3nm away at this point. Having travelled several miles during the process of establishing contact with OXF ATC, when they contacted OXF Radar the controller immediately asked "what are your intentions" and "you are inside Danger Area D129 by 0.25nm". This alarmed him and differed from their perception according to the map information that they had. He immediately moved further from the Weston 'Zone' to ensure that they remained clear. They stated their intention of remaining clear of the ATZ and routing to Enstone; they were just to the southwest of Weston at the time. The controller advised that there was traffic in the OXF circuit [the PA34]. They confirmed visual contact with the traffic (which they had seen before making contact with OXF ATC) which was now mid-way along the downwind leg. From their perspective the traffic was travelling slower than them and was not on a constant bearing. They discussed that the circuit traffic would be doing no more than 120kt and, because they were at 140-145kt, there was, in their perception, no conflict. They were clear to the right of the traffic by some distance and stated they would remain clear to the right of the circuit traffic and the ATZ. They then followed a curved path around the western edge of D129 based on a combination of the moving-map display and the information they had from the controller regarding their position. They then crossed the extended centre-line of the OXF approach at right-angles as the most expeditious route past the approach path having informed the controller prior to commencing the manoeuvre. The RV10 pilot stated that he had done everything to avoid any infringements, including using local knowledge and electronic aids, which were up to date. He did note however, that on certain map scales it is more difficult to see the actual airspace lines clearly because the width of the line represents a larger amount of distance; he acknowledged that he could have been on too large a scale initially, which would have given the impression of being clear of or on the airspace boundary when he was perhaps not.

He assessed the risk of collision as 'None'.

THE PIPER PA 34 PILOT reports that he was carrying out a VFR training flight at OXF. Strobe lights were illuminated. He recollected that he did not see the other aircraft³ and was not able to supply any further information concerning the Airprox.

³ The Oxford TWR RT transcript indicated that either he or the student had reported visual with the RV10, but had not expressed concern about its proximity.

Factual Background

The OXF weather was recorded as follows:

METAR EGTK 140920Z 24005KT 210V270 9999 FEW014 BKN017TCU 17/13 Q1009=

METAR EGTK 140950Z 23007KT 190V280 9999 FEW021 BKN028TCU 18/13 Q1009=

The OXF ATZ is a circle, 2nm radius, centred at the mid-point of RW01/19. The upper limit is 2000ft aal, 2270ft altitude. The ATZ is situated within Class G airspace.

The combined transcript of the RV10 pilot's conversation with the OXF Approach and Tower controllers is reproduced below:

From	To	Speech Transcription
APP	RV10	[RV10 C/S] Oxford Radar are you on this (0923:20)
APP	RV10	[RV10 C/S] Oxford Radar good morning, er delta one two nine is active to flight level one three zero and the Oxford A T Z is extremely busy, (0923:30) request your intentions
APP	RV10	(0923:40) [RV10 C/S] Oxford
RV10	TWR	(0923:50) Oxford Tower good morning from [RV10 C/S]
TWR	RV10	[RV10 C/S] Oxford Tower er Weston on the Green is active, also the A T Z is active what are your intentions (0924:00)
RV10	TWR	Our intentions is to er avoid both the A T Zs, we're routeing to Enstone, currently at er fifteen hundred feet on one zero zero nine
TWR	RV10	Roger remaining outside delta one two nine, contact (0924:10) Radar one two seven decimal seven five zero, traffic is one P A thirty four in the circuit, altitude one thousand five hundred feet, just turning downwind
RV10	TWR	That's all copied and one two seven seven five (0924:20) [RV10 C/S]
RV10	APP	(0924:20) Radar hello from [RV10 C/S]
APP	RV10	[RV10 C/S] Oxford Radar I believe you're entering an active danger area up to flight level one (0924:30) three zero, request your intentions
RV10	APP	Er negative, we're just keeping outside of er the Weston zone and er just routeing around the edge of your zone en-route to Enstone (0924:40) at fifteen hundred feet
APP	RV10	[RV10 C/S] visual circuit active runway one nine left hand, circuit height one thousand five hundred feet, instrument traffic also inbound to runway one nine, radar shows you half a mile inside delta one (0924:50) two nine
RV10	APP	Okay my apologies for that, we're just routeing clear of that and er we'll remain clear of your A T Z, just routeing towards Enstone, thank you for your help
APP	RV10	[RV10 C/S] roger you're, (0925:00) circuit traffic is in conflict with you left eleven o'clock one mile
RV10	APP	Visual with the traffic, er we'll keep to the right of him [RV10 C/S]
RV10	APP	And [RV10 C/S] we're now going to turn (0926:00) perpendicular to your extended centreline and er cross clear
APP	RV10	[RV10 C/S] roger can you give us a call on the ground at Enstone please
RV10	APP	Wilco [RV10 C/S]
APP	RV10	Thank you (0926:10)

The transcript of the PA34 pilot's conversation with the OXF Tower controller is reproduced below:

From	To	Speech Transcription
PA34	TWR	[PA34 C/S] downwind for low approach
TWR	PA34	[PA34 C/S] there is traffic just on the southern edge of Weston on the Green this time, heading west, indicating altitude one thousand five hundred feet, now (0924:50) working radar, er report final, caution that traffic
PA34	TWR	Looking for the traffic er report final [PA34 C/S]
TWR	PA34	[PA34 C/S] I've got him in sight, I would say he's in (0925:00) about your two o'clock now, same attitude
PA34	TWR	Roger [PA34 C/S]
TWR	PA34	Advise when you have him in sight please, he appears to be turning on to a northwesterly heading now (0925:10)
PA34	TWR	Er visual [PA34 C/S]
TWR	PA34	Sorry did you say you had him
PA34	TWR	Affirm we're visual [PA34 C/S]
TWR	PA34	[PA34 C/S] thank you (0925:20)
PA34	TWR	Appears????? going to go straight through the approach path
TWR	PA34	Yeah thanks, (0925:50) er Radar have got him now
PA34	TWR	Okay

Analysis and Investigation

CAA ATSI

ATSI had access to reports from both pilots and the OXF Radar controller together with area radar recordings and RTF and transcripts of the OXF Tower and Radar frequencies. Screenshots produced in this report are from area radar recordings and not the OXF radar. The PA34 pilot was operating under VFR on a local flight from OXF and was in receipt of an Aerodrome Control Service from Oxford Tower. The RV10 pilot was operating under VFR on a flight to Enstone and was in contact with OXF Radar but a service had not been agreed.

At 0923:50, the RV10 pilot contacted OXF Tower when 5.4nm east of OXF (Figure 1.)

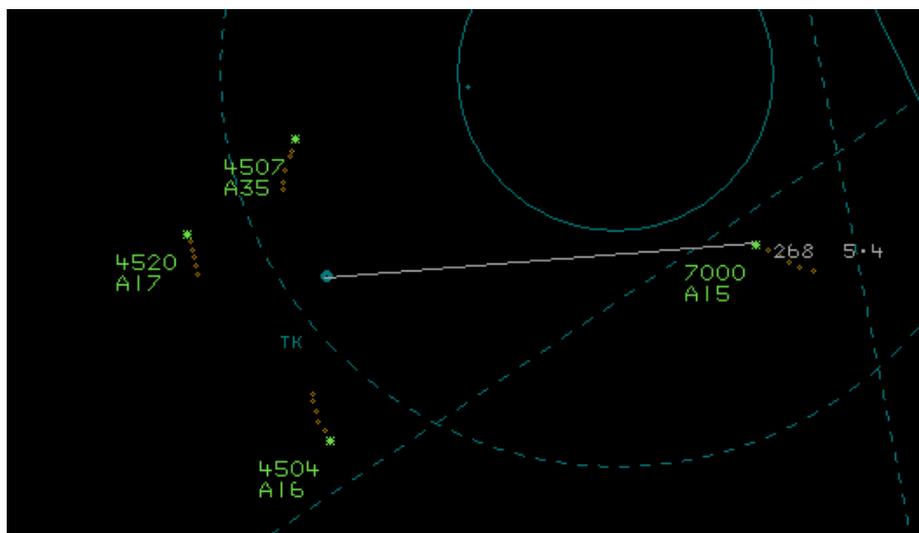


Figure 1 – 0923:50 (RV10 7000 squawk. PA34 4504 squawk.)

The OXF Tower controller advised the RV10 pilot that Weston-on-the-Green and the OXF ATZ were active and requested the pilot's intentions. The RV10 pilot replied that his intentions were to avoid "both the ATZs" and the Aerodrome controller instructed the pilot to remain outside D129 and contact OXF Radar. Traffic Information was passed on the PA34 in the circuit, at 1500ft, just turning downwind.

At 0924:24, the RV10 pilot contacted OXF Radar. The Radar controller advised the RV10 pilot that he believed he was entering a Danger Area active up to FL130 and requested his intentions (Figure 2.)



Figure 2 – 0924:30

The RV10 pilot stated that he was just keeping outside the Weston 'Zone' and was routeing "around the edge of your zone en route to Enstone at fifteen hundred feet". The OXF Radar controller advised the RV10 pilot that the Oxford visual circuit was active, left-hand RW19 at 1500ft, and that instrument traffic was also inbound to RW19. Meanwhile the OXF Aerodrome controller passed Traffic Information to the PA34 pilot on the RV10 stating that the RV10 was just on the southern edge of the Weston 'Zone' heading west indicating 1500ft. The OXF Radar controller then informed the RV10 pilot that radar showed that the aircraft was half a mile inside D129. (Figure 3.) At this point area radar recordings show the RV10 just crossing the boundary of D129 having previously entered the danger area by 0.2nm.

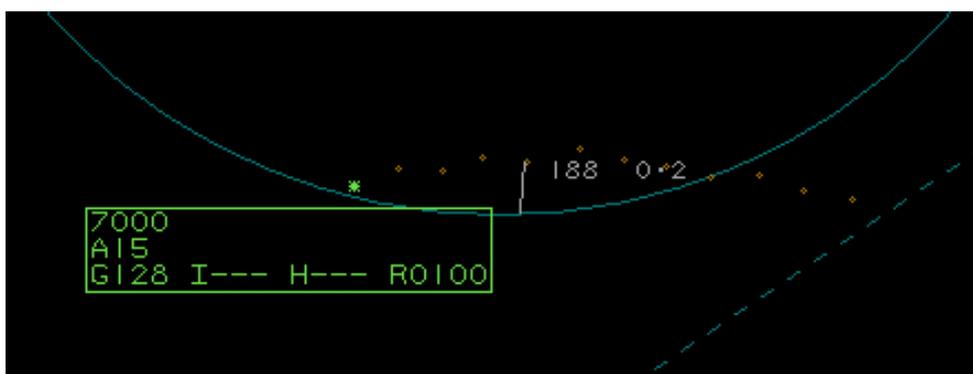


Figure 3 – 0924:50

The pilot apologised and stated that he was routeing clear of D129 and would remain clear of the OXF ATZ. The OXF Radar controller passed Traffic Information on the PA34 stating that the circuit traffic was in conflict with the RV10 in the RV10's eleven o'clock at 1nm. (Figure 4.) The RV10 pilot replied that he was visual with the traffic and would keep to the right of it.

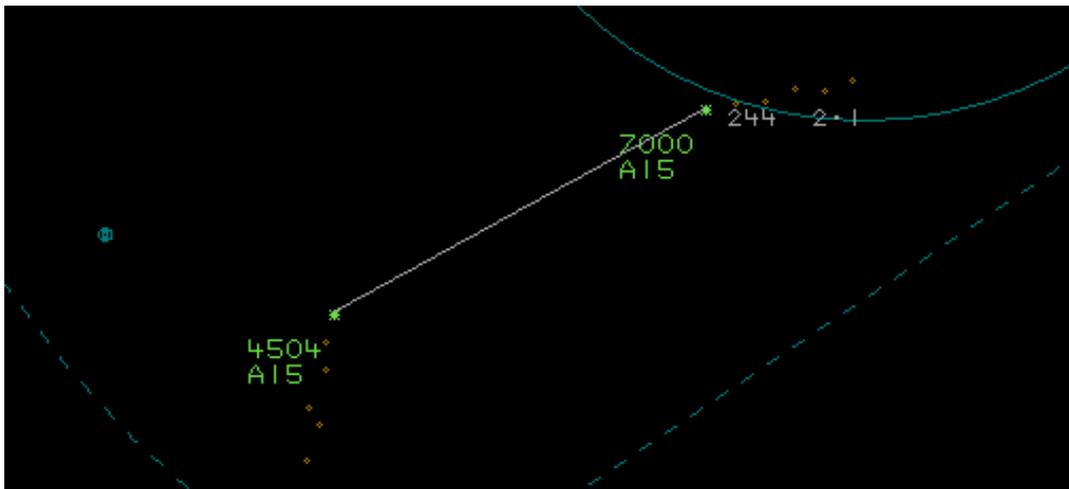


Figure 4 – 0925:00

The OXF Aerodrome controller advised the PA34 pilot that the RV10 appeared to be in the PA34's two o'clock at the same altitude.

The Aerodrome controller requested that the PA34 pilot advise them when he had the RV10 in sight and that the RV10 appeared to be turning onto a northwesterly heading. The PA34 pilot reported that he was visual with the RV10 at 0925:13 (Figure 5.)



Figure 5 – 0925:13

The two aircraft converged, with CPA occurring at 0925:41, when the two aircraft were 0.3nm horizontally and 100ft vertically apart. (Figure 6 at 0925:34.) The RV10 was 1.9nm from OXF indicating it was inside the ATZ.

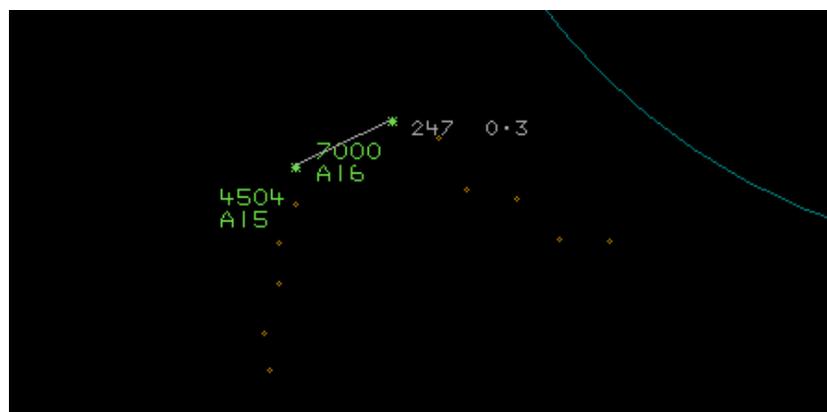


Figure 6 – 0925:34

The two aircraft subsequently diverged and the RV10 crossed the final approach path en route to Enstone.

UKAB Secretariat

Both pilots shared an equal responsibility to avoid collision and not to fly into such proximity as to create a danger of collision⁴. The RV10 pilot was required to conform to the pattern of traffic formed by other aircraft intending to land, or to keep clear of the airspace in which the pattern was formed⁵ and to obtain the permission of ATC in order to enter the Oxford ATZ⁶. The area radar replay track for the RV10 was subject to significant jitter close to CPA. Although the minimum indicated range on the radar was 0.3nm, by analysing the RV10 track before and after CPA it was considered that the horizontal separation at CPA was more likely of the order of 0.4nm.

Summary

The OXF Radar controller filed an Airprox report having perceived that the RV10 pilot entered the OXF ATZ without a clearance and flew into conflict with the PA34, which was downwind left hand to RW19. The OXF Aerodrome controller passed Traffic Information to the PA34 pilot on the RV10 and he reported visual. The OXF Radar controller passed Traffic Information to the RV10 pilot on the PA34 and he reported visual. Both pilots reported visual with the other aircraft by the time they had reached a range of 1.3nm. The minimum separation was estimated as 0.4nm horizontally and 100ft vertically.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from both pilots and the controller concerned, area radar and RTF recordings and a report from the appropriate ATC authority.

The Board noted that it was not possible, with the information available, to conclusively determine whether or not the RV10 pilot had entered the Oxford ATZ. They acknowledged that the Oxford radar may well have indicated that the RV10 was inside, or at least on the boundary of the ATZ; from the ATSI analysis of the NATS Area radar, when closest to Oxford airport the RV10 indicated a range of 1.9nm. Because the NATS radar accuracy is stated by the Radar Analysis Cell to be +/- 0.25nm, the Board had no firm evidence to show that the aircraft was definitely inside the 2nm boundary of the Oxford ATZ. All the Board could conclude was that, on the balance of probability, the RV10 had at least flown very close to the ATZ boundary.

The Board was aware from other recent Airprox that Oxford ATC was concerned about aircraft routeing through the narrow gap (approximately 0.5nm wide) between Danger Area 129 and the Oxford ATZ without making RT contacts with the ATSU. However, on this occasion the pilot of the RV10 had contacted Oxford ATC to inform them of his routing, and the Board commended him for this action and his attempts to communicate his intentions throughout; albeit it appeared that he had cut the avoidance of the ATZ at best very fine indeed. In discussing why the RV10 pilot had flown so close to the ATZ, and recognising that the Oxford Radar controller was trying to assist the RV10 pilot in avoiding/exiting D129, several Board members wondered whether, on receipt of the warnings from Oxford the pilot had over-compensated in his turn away and had consequently flown closer than he had intended to the OXF ATZ as he corrected his track.

The Board acknowledged that the advent of GPS navigation systems had provided a means for accurate navigation, but they reiterated that 'shooting the gap' with such equipment still required highly attuned navigational awareness and forethought in ensuring good communications with adjacent ATZs if they were not to be disrupted in their operations. In this case, the Board opined that navigational awareness may have been somewhat lacking, but the RV10 pilot had compensated by ensuring timely communications with Oxford ATC, and especially in informing them that he was visual with the PA34 at some distance. Although the Board understood why the controller, who believed

⁴ Rules of the Air 2007 (as amended), Rule 8 (avoiding aerial collisions).

⁵ *ibid.* Rule 12 (Flight in the vicinity of an aerodrome).

⁶ *ibid.*, Rule 45 (Flights within aerodrome traffic zones).

that the RV10 had entered the ATZ, was concerned about its proximity, they considered that both pilots were well aware of each other and that there was no risk of collision.

It was noted that Oxford ATC provided appropriate and timely Traffic Information to both pilots, assisting in them sighting the other aircraft. It was also noted that neither pilot reported being concerned about the proximity of the other aircraft. With an assessed minimum separation of 0.4nm, and because the issue of ATZ incursion was inconclusive (or at worst a minor tangential infringement), the Board decided that normal safety standards and parameters had pertained; the Airprox was categorised as Risk E.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Oxford controller was concerned by the proximity of the RV10.

Degree of Risk: E.

ERC Score⁷: 4.

⁷ 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.