

AIRPROX REPORT No 2013160

Date/Time: 15 Nov 2013 1331Z

Position: 5252N 00301W
(0.5nm NW of Oswestry)

Airspace: Shawbury AIAA (*Class:* G)

Aircraft 1 **Aircraft 2**

Type: Squirrel PA28 Warrior

Operator: HQ Air (Trg) Civ Pte

Alt/FL: 2500ft 2700ft
QNH (1033hPa) QNH (1033hPa)

Conditions: VMC VMC

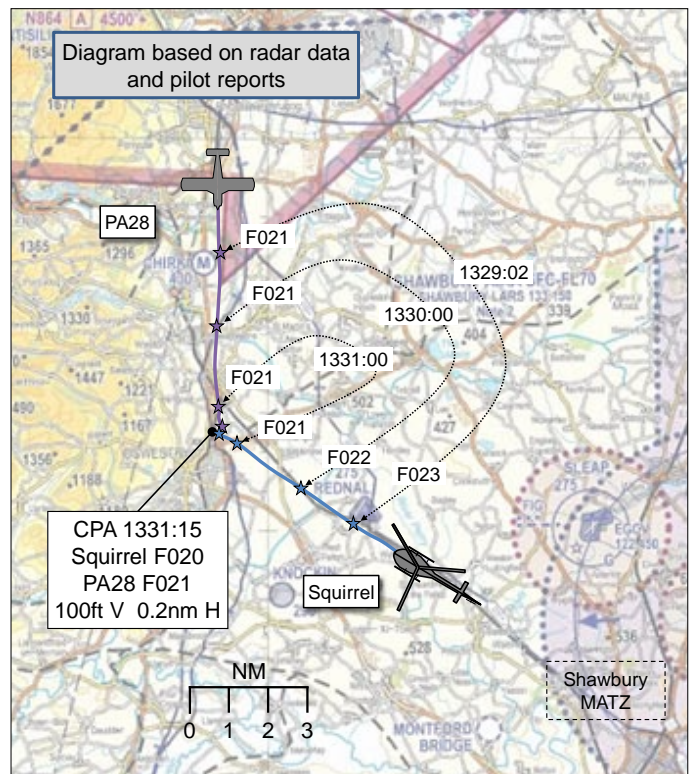
Visibility: 30km 10nm

Reported Separation:

0ft V/100yds H 100-150ft V
300-350m H

Recorded Separation:

100ft V/0.2nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE SQUIRREL PILOT reports flying a black and yellow helicopter with navigation, upper and lower strobes, and landing lights turned on, squawking transponder Modes 3/A, C and S and receiving a Basic Service from 'Shawbury'. Whilst flying VFR, in VMC, 500ft below cloud, 0.5nm north of Oswestry, at 2500ft, heading 300°, at 110kt, the pilot noticed a contact on the TAS¹ display 'closing from the 10 o'clock' position. Neither of the pilots could see anything in that area so they continued scanning and spotted what they thought to be a Grob Tutor in their 2 o'clock, 100 yards away, heading directly towards them. The handling pilot commenced a left-hand avoiding action turn and the QHI then took control, continuing the turn and initiating a descent.

He assessed the risk of collision as 'Medium'.

THE PA28 PILOT reports flying a predominantly white aircraft level at 2700ft, VFR in VMC with a red rotating beacon, strobe lights, navigation lights and landing lights selected, and squawking transponder Modes 3/A, C and S. He had been receiving a Basic Service from Shawbury Zone since he had passed Ellesmere. Having routed to the edge of Wrexham, the pilot turned towards Oswestry, looked down to check his next heading and the instruments, and then returned to visual scanning. He spotted a yellow helicopter 'above' and to his right and immediately banked and turned his aircraft to the left, taking up a new heading towards Shrewsbury. On returning to level flight, the pilot assessed that there had not been 'an imminent risk of collision'. Further along his track to Shrewsbury he saw 3 more helicopters in the distance to his right; Shawbury Zone informed the PA28 pilot that there were several helicopters in his area at the same height and he replied that he had seen 4 of them.

He assessed the risk of collision as 'Low'.

THE SHAWBURY ZONE CONTROLLER reports that at the time of the Airprox he was not made aware of the position of the Squirrel and, although 2 or 3 aircraft on the Zone frequency were receiving a Basic Service, none of them were Grob Tutors and so the Zone Controller did not believe, at the time, that any of the aircraft on the Zone frequency had been involved. Three days later it was

¹ Traffic Alerting System

confirmed that the aircraft involved was the PA28, which had been receiving a Basic Service on the Zone frequency, but by that time the controller could not recall which aircraft were 'painting' on the radar display at any particular time.

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

THE SHAWBURY APPROACH CONTROLLER reports controlling on the Approach frequency and two low-level frequencies; the traffic level was described as 'low' with 4 aircraft receiving Basic Services on the low-level frequencies and 2 aircraft 'on radar'. The Squirrel pilot reported the Airprox on one of the low-level frequencies, stating that he had come within 200ft of a Grob Tutor, which he had seen in his 2 o'clock and had taken avoiding action by turning and descending. The Approach controller acknowledged the report but could not see radar returns for either aircraft, which were in a known area of poor radar performance.

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

THE SHAWBURY SUPERVISOR confirmed that neither aircraft was shown on the radar display and assessed the Unit's workload as 'low' and the Approach controller's workload as 'medium to low'.

Factual Background

The weather at Shawbury at 1250 and 1350 was recorded as:

METAR EGOS 151250Z 26005KT 9999 FEW027 BKN032 09/06 Q1033 BLU NOSIG
METAR EGOS 151350Z 27004KT 9999 FEW027 BKN032 09/05 Q1033 BLU NOSIG

Analysis and Investigation

Military ATM

All heights/altitudes quoted are based upon SSR Mode C from the radar replay unless otherwise stated. The images provided in all the figures were taken from the Clee Hill Radar.

The first indication of an Airprox to the controllers came from the Squirrel pilot, who reported at 1333:44, '[Squirrel callsign] *Squirrel two persons on board er had an Airprox at approximately thirteen thirty on the northern side of Oswestry two thousand five hundred feet on one zero three three er was with a Grob Tutor aircraft he was in my two o'clock er same altitude and got within a range of approximately two hundred feet and took us three dimensional avoiding action into the ten o'clock and descending er avoided collision.*'

The PA28 pilot was provided a Basic Service by Zone at 1317:48 and reported at 2,500ft on the Shawbury QNH of 1033hPa. No incident was reported by the PA28 but at 1334:31 the Supervisor asked Zone if they had been controlling a Grob Tutor, as per the report by the Squirrel; no Tutor was given a service by Zone and the mis-ident by the Squirrel pilot led to a delay in tracing the PA28. Once the PA28 had been confirmed as the other aircraft involved, the Zone controller completed a report but could not recall the radar/traffic picture because it was three days later.

The incident occurred in an area of known poor radar coverage for Shawbury and neither aircraft painted on the Shawbury primary or secondary radar. The Shawbury Flying Order Book² recognises the area of poor coverage and states:

'Radar services to Shawbury aircraft are deemed to be limited in the following areas owing to poor radar performance or ground masking: 300-350 radials, 7-15 nm up to 3000 feet.'

² Shawbury Flying Order Book, Para 12, 231

Figures 1 and 2 outline the build-up to the Airprox, and Figure 3 outlines the radial from Shawbury at the CPA. The incident radial of approx 291 radial at 13.8 nm falls within the area of known poor radar coverage.

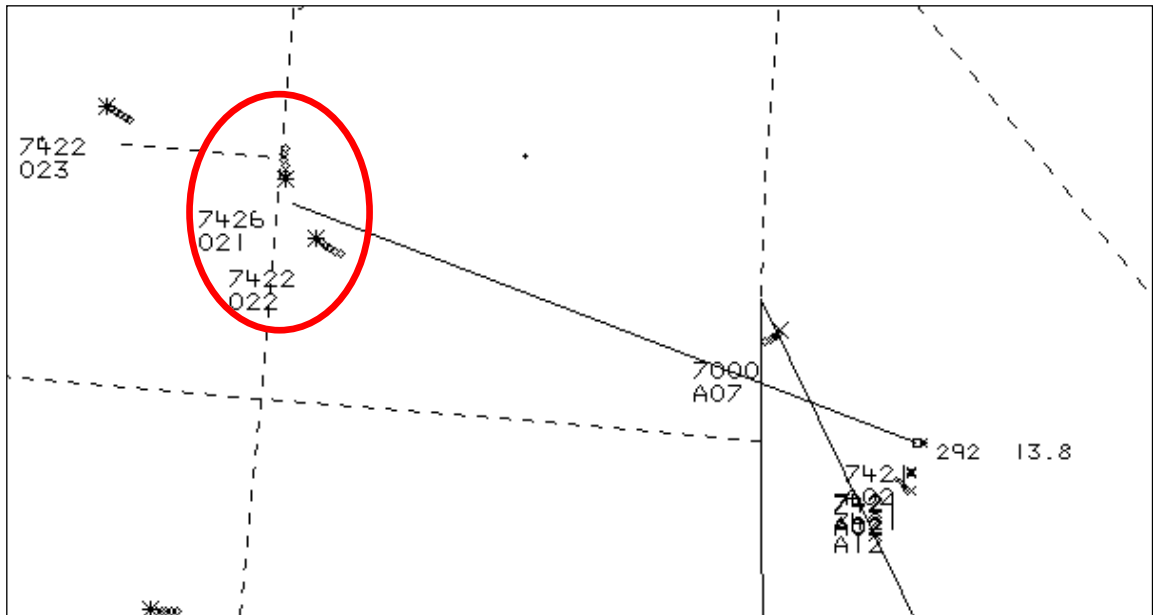


Figure 1: Aircraft geometry at 1330:53 (Squirrel squawking 7422; PA28 squawking 7426; Shawbury 292 radial 13.8nm)

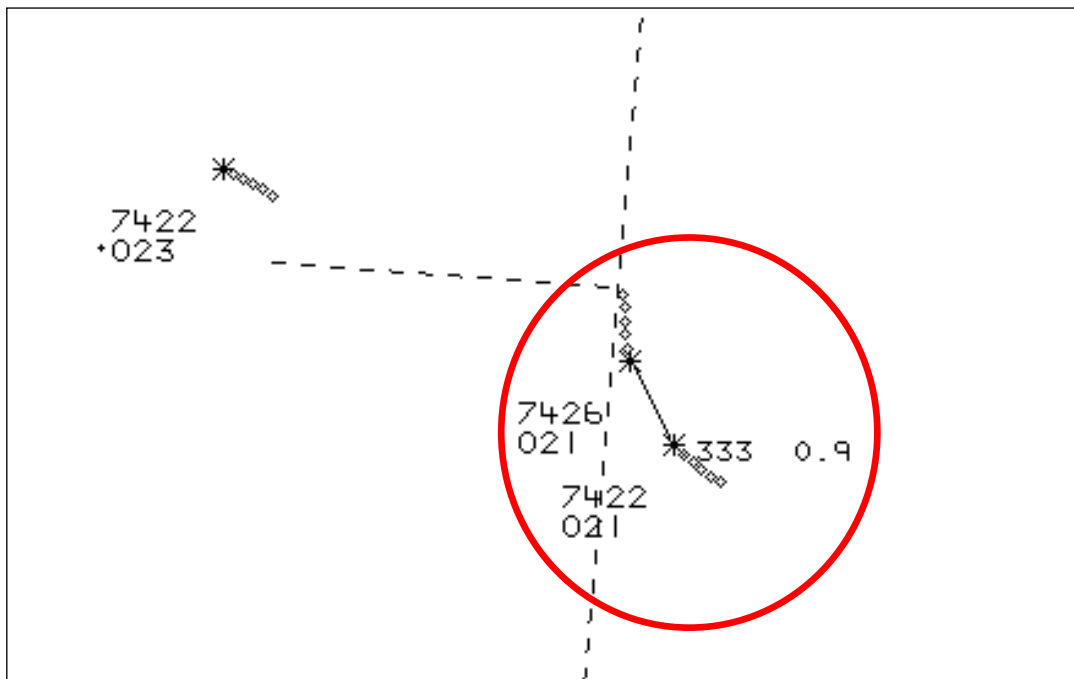


Figure 2: Aircraft geometry at 1331:00.

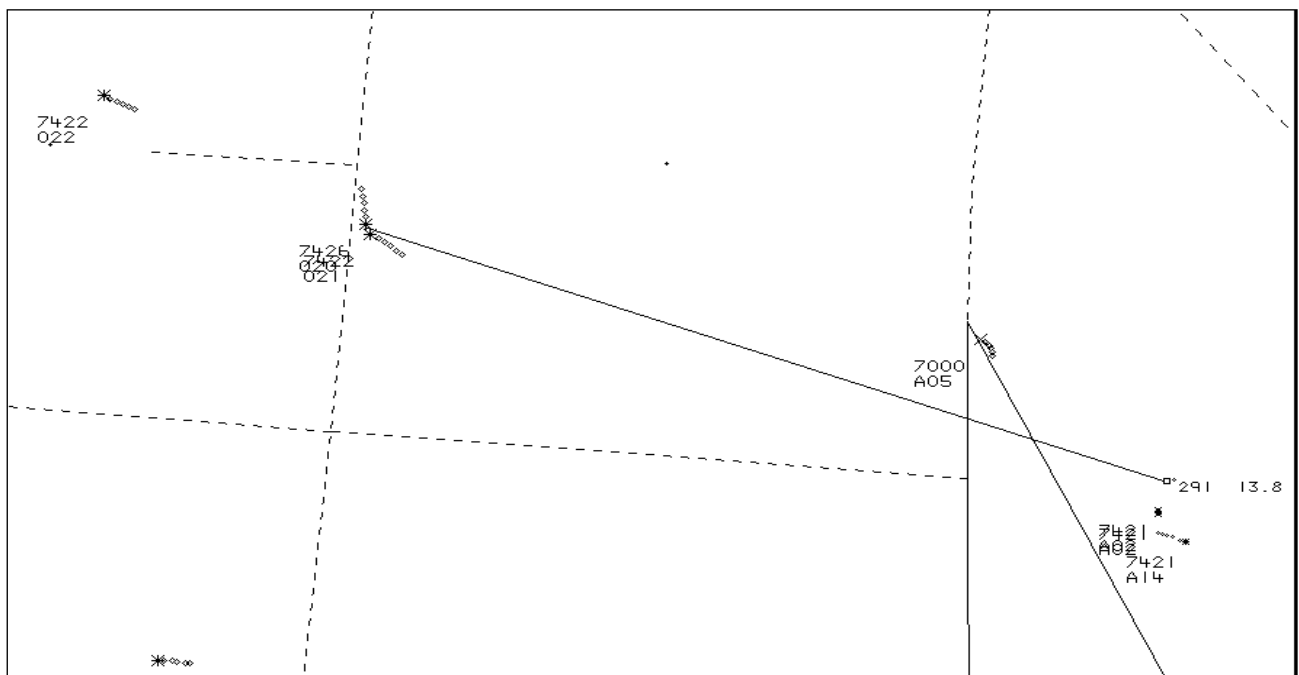


Figure 3: Radial from Shawbury at CPA at 1331:12.

The TAS appears to have given the Squirrel pilot an incorrect reading of traffic at 10 o'clock when the traffic was actually at 2 o'clock. TAS did provide an alert, which prompted the crew to scan, but the inaccurate information may have added a delay to the sighting the PA28. The TAS fault was traced to its processor and the item was replaced. Certain barriers that could have prevented the incident were absent because no airborne collision avoidance system was fitted in the PA28, and the Squirrel received information that, initially, lead to the crew search in the wrong direction.

The controllers could not act as a barrier because the incident did not paint on their radar. Both aircraft were under a Basic Service, but the poor radar coverage available to controllers in that particular area meant that the closing geometry was not visible to either controller; a Traffic Service could not be provided because track identity could not have been maintained.

UKAB Secretariat

Both pilots had equal responsibility to avoid a collision.³ The aircraft were converging, and the PA28 was on the right of the Squirrel so the Squirrel pilot was required to give way,⁴ which he did.

Comments

HQ Air Command

This incident serves to highlight 2 important facts – firstly, that a disciplined visual scan is the primary method of detecting other aircraft in VMC and, secondly, that electronic equipment has its limitations and these should always be borne in mind when interpreting the information presented by that equipment. It is natural to concentrate one's lookout in an area prompted by cueing of an on-board or off-board system, but it should be remembered that single means should not be relied upon for detecting possible conflicts whilst airborne. Once unable to visually detect an aircraft in the quadrant indicated by the TAS, the crew of the Squirrel returned to a broader visual scan and acquired the PA28. Prompt avoiding action by the pilots of both ac then prevented the situation deteriorating further.

³ Rules of the Air 2007, Rule 8, Avoiding Aerial Collisions

⁴ Rules of the Air 2007, Rule 9, Converging

Summary

The Airprox was reported 14nm west-northwest of Shawbury between a Squirrel helicopter and a PA28. The Squirrel pilot was operating under a Basic Service from Shawbury Approach and the PA28 pilot was under a Basic Service from Shawbury Zone. Shawbury ATC had no radar returns to assist them in providing other than a Basic Service because the location was in a known area of poor radar coverage from their radar head. Both aircraft were being flown VFR in VMC below the cloud-base. The Squirrel pilot reported a contact on TAS followed by an audio alert; the TAS indicated that the contact was closing from the 10 o'clock position, prompting the pilots to search for traffic. The PA28 was eventually sighted coming from the 2 o'clock position at approximately 100 yards and an avoiding action turn to the left and descent was initiated. The PA28 pilot reported spotting the helicopter on his right, 100-150 feet above with 300-350 metres horizontal separation, and immediately taking avoiding action to the left. Immediately prior to the incident the PA28 pilot had been checking his route and instruments.

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 noted that, although the Squirrel pilot had seen the PA28 very late, he had taken appropriate action in accordance with the Rules of the Air and all agreed that his turn and descent had prevented a serious conflict becoming worse. The PA28 pilot also took action but, as he had seen the Squirrel at or after the CPA, his avoiding action would not have reduced the risk of collision. The Board noted that the Squirrel crew had used their TAS wisely and, although they had initially used the Traffic Alert to focus their look-out, they quickly realised that the information was not accurate and widened their scan, enabling them to see the PA28 in time to take avoiding action. Members agreed that this was a salient lesson that electronic means of conflict detection should only be used as a supporting tool: effective visual scanning techniques were the primary method of collision avoidance in Class G see-and-avoid airspace.

Both pilots were receiving a Basic Service and, consequently, could not expect to receive Traffic Information; in addition, the controllers had not been able to see either aircraft on their radar displays due to an area of poor radar performance from their equipment sited at Shawbury. As had been shown from the subsequent analysis of this event, both aircraft were in fact detected by the Clee Hill radar, and members wondered why Shawbury ATC did not have routine access to that radar source in order to mitigate the poor coverage from their own radar in that area. The Board was informed that there were several reasons why Clee Hill radar data was not available to Shawbury controllers, including technical, safety case and financial issues, but that there is an on-going programme examining the future provision of military ATC services which tasks potential contractors to provide airspace surveillance solutions that will eradicate similar areas of poor radar performance. Notwithstanding, the Board noted that project timescales and specific solutions were uncertain, and that a Clee Hill radar solution could potentially provide a much quicker resolution to what has evidently been an enduring safety risk. As a result, they resolved to recommend that HQ Air Command considers supplementing Shawbury's radar picture through the provision of already existing off-site additional radar surveillance.

Members agreed that the cause of the Airprox was a late sighting by the Squirrel pilot and, effectively, a non-sighting by the PA28 pilot. Turning to the degree of risk, members agreed that, despite the squirrel crew taking effective action, the separation achieved had resulted in safety margins being much reduced below that normally appropriate for VFR flight in Class G airspace, and therefore this was a Risk Category B.

PART C: ASSESSMENT OF CAUSE AND RISK

<u>Cause:</u>	A late sighting by the Squirrel pilot and effectively a non-sighting by the PA28 pilot.
<u>Degree of Risk:</u>	B
<u>ERC Score⁵:</u>	20
<u>Recommendation:</u>	HQ Air Command considers the provision of additional surveillance in areas of poor radar performance.

⁵ 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.