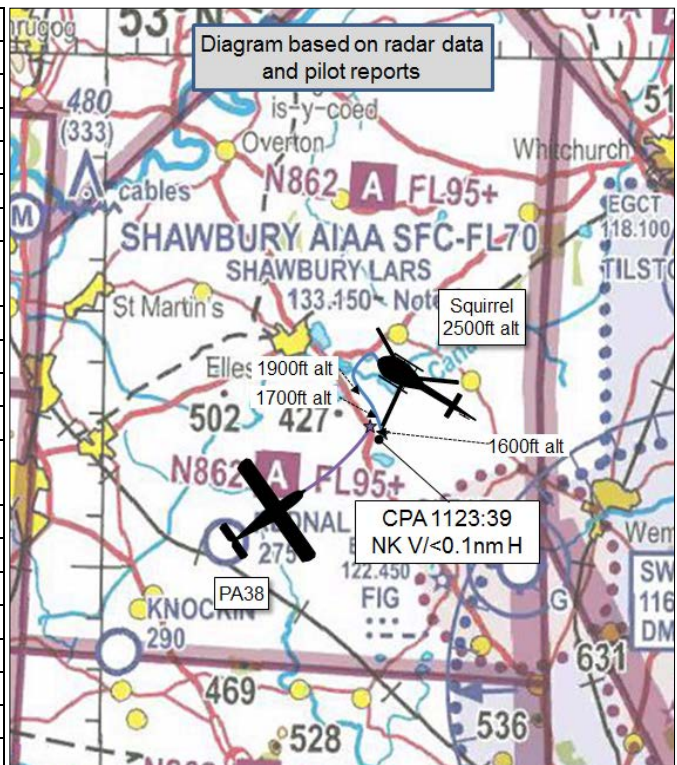


AIRPROX REPORT No 2016153

Date: 25 Jul 2016 Time: 1123Z Position: 5253N 00251W Location: Lower Hordley

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Squirrel	PA38
Operator	HQ Air (Trg)	Civ Trg
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	Basic	Basic
Provider	Shawbury Low Level	Shawbury Lars
Altitude/FL		NK
Transponder	C, S	On
Reported		
Colours	Black, Yellow	Blue, White
Lighting	Nav, HISL, Landing	Strobe
Conditions	VMC	VMC
Visibility	15km	>10km
Altitude/FL	2100ft	2300
Altimeter	QNH (1018hPa)	QNH (1018hPa)
Heading	170°	045°
Speed	NK	90kt
ACAS/TAS	TAS	Not fitted
Alert	TA	N/A
Separation		
Reported	100ft V/100m H	500ft V/NK H
Recorded	NK V/<0.1nm H	



THE SQUIRREL PILOT reports that the aircraft was positioned by the QHI at 2500ft on the Shawbury QNH for a demonstration autorotation. After conducting the HASEL checks, including a check of the TAS and a lookout turn with nothing seen, the QHI closed the throttle to idle and entered autorotation. At around 400' into the descent, the QHI (left seat) and the student both spotted the other aircraft at the same time. It was in the 1 o'clock position, slightly high, at an estimated 100m. It appeared to be level or in a slight climb, heading NE. The QHI elected to maintain the flight path in autorotation as the safest option. The TAS audio alert sounded a few seconds after the visual sighting, and a few seconds after that the other aircraft passed behind and above at an estimated closest range of 100 metres. The Airprox was reported to ATC.

He assessed the risk of collision as 'Medium'.

THE PA38 PILOT reports that he was a student pilot on the second leg of a navigation exercise. Shortly after setting heading, and in the cruise at 2300ft, he saw the helicopter in his 10 o'clock in a descent to pass below him, there was no information heard on the radio.

He assessed the risk of collision as 'Low'.

THE PA38 PILOT INSTUCTOR reports that the student pilot had flown the route dual before going solo on the same day. The student was aware of a good lookout required for military helicopters in the area and was in communication with Shawbury LARS. The student did not report the incident on return because he felt the Squirrel pilot had avoided him by descending and that he had right of way. The instructor has reinforced the requirement to report such incidents as this on return to the club and the importance of good lookout at all times. [UKAB Note: pilots should also report any Airprox on the

frequency in use at the time so that ATC and other pilots can be made aware and record/preserve any pertinent information or notes.

THE SHAWBURY LOW-LEVEL CONTROLLER reports that after he took over the Low-Level position, the first call he received was from an aircraft calling an Airprox with a fixed-wing aircraft around Baggy Moor. He saw nothing on radar, but the Zone controller informed him that he had an aircraft last reported at 1900 feet QNH using Rednal as a turning point.

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

THE SHAWBURY SUPERVISOR reports that he was informed by the LFA controller that the Squirrel had reported that he would be submitting an Airprox on return to Shawbury against a fixed-wing aircraft near Baggy Moor. He impounded the tapes and informed the relevant authorities that an Airprox had been declared.

Factual Background

The weather at Shawbury was recorded as follows:

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METAR EGOS 251050Z 26013KT 9999 FEW026 BKN050 17/11 Q1018 BLU NOSIG
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Analysis and Investigation

Military ATM

The tape transcripts between Shawbury Low-Level and the Squirrel Helicopter show no relevant transmissions prior to the Airprox. The radar replay pictures used in this analysis are from a different source to that used by Shawbury controllers and do not represent the displays available to them at the time.

At 1122:26 (Figure 1), the Squirrel is tracking North West setting up for the auto-rotation at 2500' on the Shawbury QNH (1018 HPa). The PA38 is establishing on a north easterly track and reported being level at 2300' (1018 HPa); note that no mode/C is showing on the aircraft squawk.

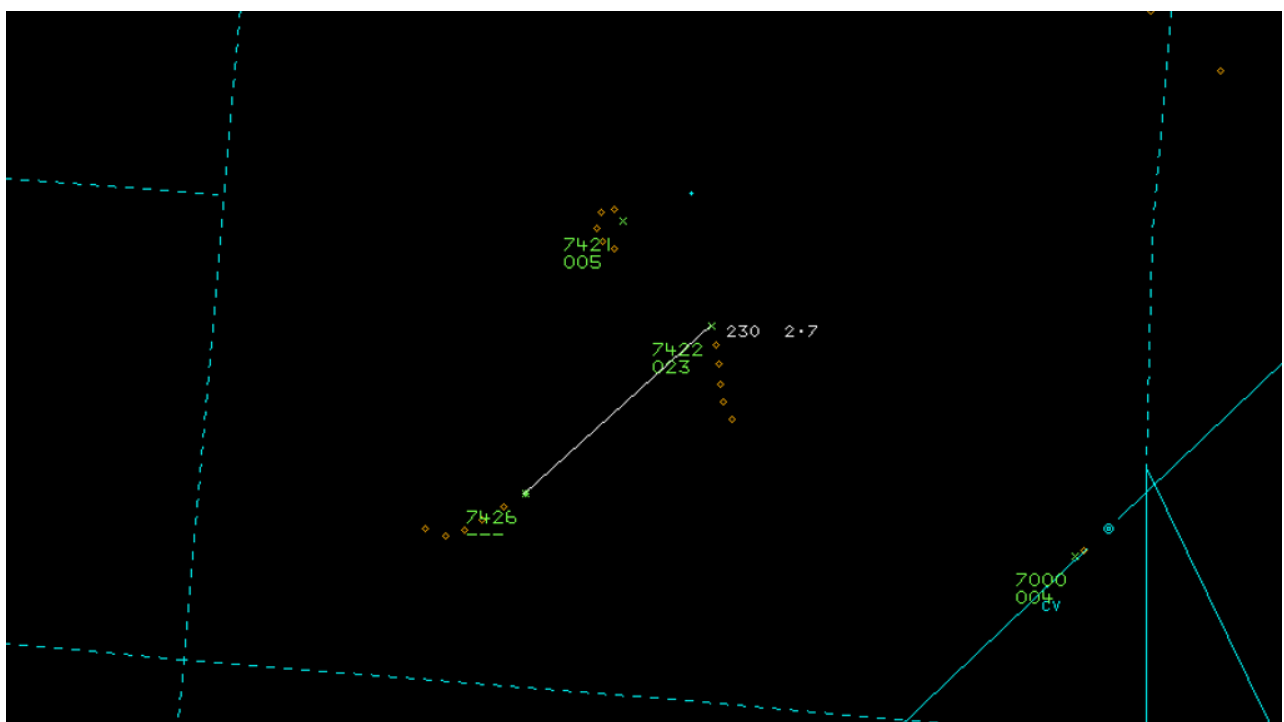


Figure 1: Geometry at 1122:26 (Squirrel squawking 7422; PA38 squawking 7426).

At 1123:29 (Figure 2), the Squirrel entered auto-rotation on a south easterly track in the descent. The PA38 is believed to be maintaining 2300' (1018 HPa) on a north easterly track. The PA38 pilot reports sighting the Squirrel in the 10 o'clock position at approximately 600m at 2000' in the descent. This report correlated with the radar replay and would indicate that the PA38 pilot became visual with the Squirrel at approximately this time.

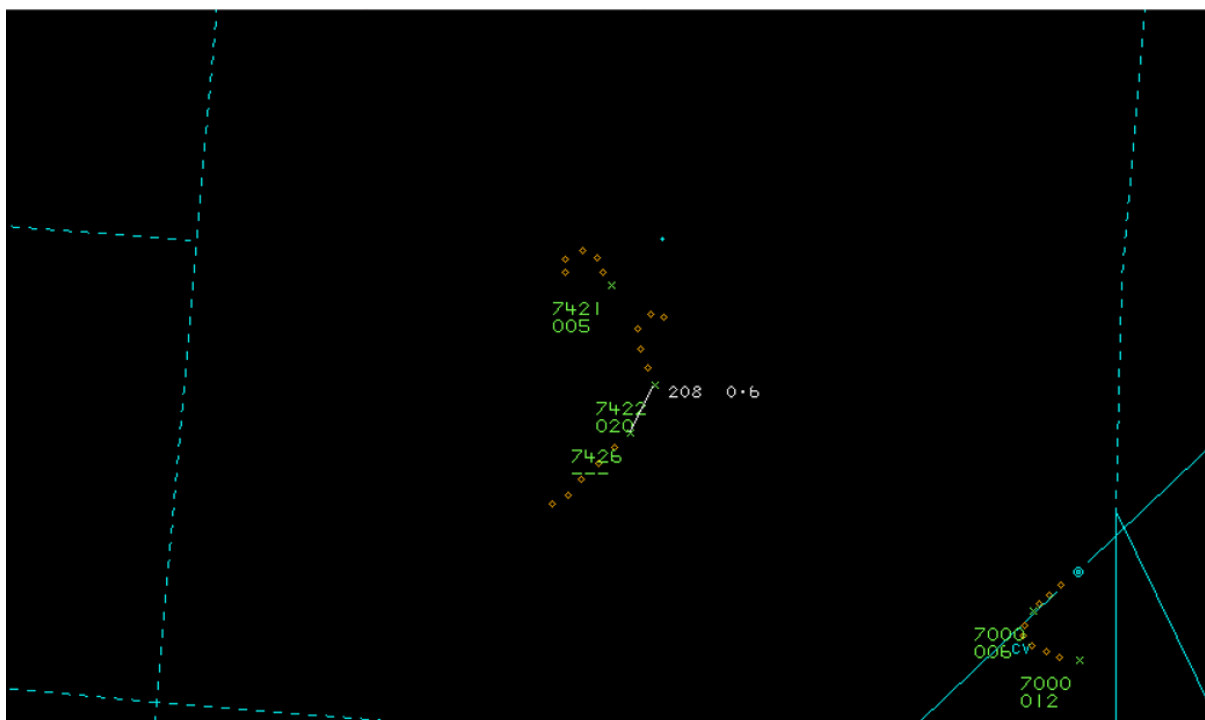


Figure 2: Geometry at 1123:29 (Squirrel squawking 7422; PA38 squawking 7426).

The Shawbury Low-Level controller reported workload as medium-to-low intensity and had just taken the control position when the Squirrel reported the Airprox. The Squirrel was under a Basic Service, and the controller reported seeing nothing on radar. The Lower Airspace Radar (LARS) controller told the Low-Level controller they had had an air system on frequency using Rednall as a turning point that had last reported 1900ft QNH. The controller perceived the severity as medium.

The PA38 pilot was under a Basic Service with Shawbury LARS. The pilot was a solo student conducting a Navigation Exercise from Rednal to Crewe and reported cruising at 2300ft. The pilot reported seeing the Squirrel in his 10 o'clock in the descent to pass below him. The PA38 was not fitted with any collision avoidance system. Further information from the PA38 pilot indicates he was fully aware of the information he would receive under a Basic Service and was not expecting traffic information from the controller. The PA38 pilot reports cruising at 2300' which differs from the LARS controllers report; however, the PA38 pilot last reported their altitude whilst turning at Rednall which is west of the Airprox location by approximately 10-15 miles. This could have provided ample time to change altitude, but without a mode/C readout it is difficult to confirm the altitude of the PA38.

The Shawbury Low-Level position is established to monitor and log the movements within LFA 9, for which Shawbury is the control authority for the dedicated user area. Although the position is a radar position, the aircraft that work the frequency are placed under a Basic Service and on busy days can number over 20 speaking units at a time. Aircraft operating on the frequency depart using the Shawbury gate system and are allocated either a 7422 or 7421 squawk in order for ATC to apply height 'deeming' rules. Once away from Shawbury, this can make it difficult for a controller to maintain track identification with multiple aircraft utilising the same squawk code (7422 and/or 7421). As per CAP 774 under a Basic Service, the controller is not responsible for providing traffic information; the purpose of the Low Level position is to provide a tracking and

logging function and a radar service can be sought from the LARS controller if required. Radar coverage in certain areas around Shawbury is known to be poor and the 300-350 radial between 7-15 miles from Shawbury is one of the known areas of poor coverage.

The prime barrier for both pilots in this Airprox was 'see and avoid'. The Squirrel Helicopter and PA38 aircraft were under Basic Services working the Low-Level and LARS frequencies respectively; this would have limited the opportunity for the controllers to pass traffic information under a duty of care. Given the controller's report it is also unlikely that the aircraft were visible on radar. TAS was a secondary barrier and, had the Squirrel pilots not acquired the PA38 visually, may have alerted them to the presence of the PA38, albeit with a reduced time to react to the situation.

UKAB Secretariat

The Squirrel and PA38 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard¹. If the incident geometry is considered as converging then the Squirrel pilot was required to give way to the PA38².

Comments

HQ Air Command

The barriers to MAC that were available in this incident were electronic conspicuity; an appropriate radar-assisted Air Traffic Service; and lookout. The TAS installation on a Squirrel has the aerials fitted to the underside of the aircraft – the pilot had just completed a lookout turn to the right and this may well have had a 'blanking effect' on the TAS, thus weakening the barrier. The two aircraft involved were on different ATC frequencies and both in receipt of a Basic Service. In reality, the 'Shawbury Low Level' frequency cannot offer any more than a Basic Service due to the number of tracks that are normally operative in the area and the poor low level radar coverage. Therefore, an increase in level of service was not really an option and thus that barrier was also weakened. The final barrier is see and avoid – the Squirrel pilot gained visual contact with the PA38 upon entry into the autorotation exercise and considered that the best course of action to increase separation was to continue with the descent under autorotation; the PA38 pilot saw the Squirrel during this time.

Squirrel pilots are well aware of the limitations on the TAS as fitted to their aircraft and so do not rely on this information in isolation. Disciplined lookout, before and during the autorotation exercise permitted acquisition of the other aircraft – albeit later than one would like – and a decision to be made.

Summary

An Airprox was reported when a Squirrel and a PA38 flew into proximity at 1123 on Monday 25th July 2016. Both pilots were operating under VFR in VMC, the Squirrel pilot in receipt of a Basic Service from Shawbury Low Level and the PA38 pilot in receipt of a Basic Service from Shawbury LARS.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from the pilots of both aircraft, 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.

The Board first turned to the actions of the Squirrel pilot and the military member explained the implications of the Squirrel TAS having its aerials located on the underside of the aircraft. This

¹ SERA.3205 Proximity.

² SERA.3210 Right-of-way (c)(2) Converging.

limitation can sometimes result in a late indication from the equipment of conflicting transponding traffic, and he opined that this may have been the case in this situation which would explain the Squirrel pilot sighting the PA38 prior to the TAS alerting. The Board agreed that although electronic warning systems are an excellent barrier to alert pilots to the presence of possible conflicts, they could not be relied upon in current circumstances due to the vagaries of the differing systems, and their potential incompatibilities, and so use of see-and-avoid remained an important barrier as a last line of defence. The later than ideal sighting by the Squirrel pilots being acknowledged, members agreed that because the Squirrel was already descending in a practice autorotation manoeuvre, the pilot's decision to continue the descent and avoid the PA38 vertically was the most sensible option.

The Board then turned to look at the actions of the PA38 pilot. Mindful that he was a solo student pilot, they debated when he might have seen the Squirrel and whether he had time to react accordingly. Some members wondered if he had been visual throughout the encounter and, notwithstanding that he was on the right of the Squirrel (who was thus required to give way to him), whether he could thus also have performed an avoiding manoeuvre rather than rely on the Squirrel pilot seeing him. They warned of the dangers of assuming that the other pilot had seen you and would manoeuvre away. Others felt that he had probably seen the Squirrel late also, and had had little time to react. If this had been the case then the profile that the Squirrel was flying (a rapid descent manoeuvre), meant that the most probable conclusion was that the Squirrel was relatively high above the PA38 initially, and that the PA38 pilot would only have seen the Squirrel as it descended through his level. This may then have resulted in the PA38 pilot's impression that the Squirrel was descending to avoid him as it gave way. The Board agreed that the latter scenario was the most likely, although they reinforced the warning about not assuming that the other pilot had seen you even if they were required to give way. The Board were grateful to the instructor for highlighting to the student the need to report such instances, but also reflected on the need to do so at the time on the radio so that ATC and other pilots who might have been involved were aware and able to record relevant details.

The Board then considered the cause and risk of the Airprox. Members noted that even though the Squirrel pilot had carried out lookout checks prior to commencing the autorotation he had not seen the PA38 until after he had descended 400ft. They also noted the lack of TAS indications for the reasons discussed. For his part, the Board concluded that the PA38 pilot had probably not seen the Squirrel until it had descended through his level. With all these points in mind, the Board agreed that the cause of the incident was a late sighting by both pilots. Turning to the risk, there was much discussion about the severity of the incident and the actions carried out by both pilots. Some members opined that the incident owed more to serendipity rather than timely actions by the pilots, and that safety had been much reduced below the norm (Category B). Others thought that there had been time for conscious and timely decision-making by both pilots in that they had prevented the incident from becoming more serious by their deliberate (in)actions (Category C risk). After a lively debate that swung between both camps, in the end the majority view was that although safety had been degraded and this incident was at the top end of a Category C risk, timely and effective actions had been taken to remove the risk of collision.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A late sighting by both pilots.

Degree of Risk: C.