



**BM SAFETY MANAGEMENT** reports that this Airprox occurred between Squirrel (A), operating VFR conducting a Tower-to-Tower transit between Shawbury and Ternhill and Squirrel (B) operating VFR within LFA9.

The pilot of Squirrel (A) reports that they were in receipt of a BS from Ternhill TOWER, but the ADC at Ternhill does not state a type of ATS. Moreover, Ternhill is not equipped with a Hi-Brite display as the airfield is VFR-only, with no requirement to integrate IFR and VFR traffic. Anecdotally, whilst a Hi-Brite display has been requested in the past to increase the ADC's situational awareness, this has been refused on financial grounds. Consequently, the ADC is only able to provide warnings on known traffic.

At 1044:17, Squirrel (A) left Shawbury TOWER's frequency and stated their intention to contact Ternhill TOWER. At this point, Squirrel (A) was 2.2nm SE of Shawbury, tracking ENE at 1300ft Mode C (1013mb); Squirrel (B) was 0.5nm W of Squirrel (A) at 1400ft Mode C (1013mb). When routeing direct from Shawbury to Ternhill, the standing operating procedure is for crews to be transferred from TWR to TWR; they do not receive an ATS during the transit from a controller with access to a surveillance display.

At 1045:05, the crew of Squirrel (B) left Shawbury TOWER's frequency and stated their intention to contact Shawbury LOW-LEVEL, where they were provided with a BS iaw standard operating procedure on-route to Follies, a confined area used for Shawbury helicopter training, about 2nm NE of Ternhill. Although the unit has been unable to provide a definitive statement on the low-level controller's workload, from reviewing the radar replay it is possible to determine that the controller had at least 8 speaking units on frequency at the time of the Airprox, with all ac assigned an identical SSR Mode 3A code of A0221. At this point Squirrel (A) and Squirrel (B) were maintaining similar headings, with Squirrel (A) indicating 1500ftALT in Squirrel (B)'s 1 o'clock at a range of 0.4nm, the latter at 1400ftALT. The pilot of Squirrel (B) stated that as they departed eastern gate at Shawbury, they were visual with Squirrel (A) ahead of them and remained so throughout the incident sequence. The pilot of Squirrel (B), cognisant that Squirrel (A) would turn L for Ternhill, advised his student QHI to position to the R of Squirrel (A). Squirrel (B) then "*passed behind, right and lower than [Squirrel (A)] on an opening heading.*"

[UKAB Note: The combined LAC radar system 'best picture' shows the Airprox quite clearly, although the return from Squirrel (A) fades just after the 'overtake'. After departure from Shawbury both ac track due E; at 1045:04, Squirrel (A) is 0.4nm ahead in Squirrel (B)'s 12:30 position. At approximately 1045:17, Squirrel (A) commenced a L turn to take up a broadly NE'ly track. At 1045:24, Squirrel (B) commenced a wide L turn to take up an ENE'ly track, slowly diverging to that of Squirrel (A). At this point, 0.4nm lateral separation existed, with both ac indicating 1400ftALT. With a Radar Ground Speed (RGS) about 20kt faster Squirrel (B) starts to close on Squirrel (A). At 1046:16, Squirrel (B)'s track was slowly converging with that of Squirrel (A), the latter in Squirrel (B)'s 10 o'clock 0.2nm, with both ac indicating 1500ftALT. Squirrel (B) then starts to draw abeam Squirrel (A); the CPA of 0.1nm occurs at 1046:32, as Squirrel (B) overtakes (A) and starts to draw slowly ahead into the latter's 2 o'clock. Thereafter, however, Squirrel (A)'s radar return fades on the recording, whilst Squirrel (B)'s radar return continues to be displayed albeit with occasional lost returns through the latter part of the incident sequence. Both acs' tracks alter slowly L over the next 30sec. Squirrel (A) is next shown at 1047:00, just to the SE of the plotted position for Peplow A/D – Squirrel (A) pilot's reported Airprox location, indicating 1400ftALT. Squirrel (B) has now drawn ahead into Squirrel (A)'s 1 o'clock at a range of 0.2nm, diverging from Squirrel (A), and still co-altitude after completing the overtaking manoeuvre.]

From an ATM perspective, without a Hi-Brite display, Ternhill's ADC was not in a position to affect the outcome of the occurrence. Moreover, given the workload of Shawbury LOW-LEVEL and that the crew of Squirrel (B) was under a BS, it is unreasonable to expect that the controller could have affected the outcome. In the absence of a CWS fitted to the Squirrel, the sole remaining safety barrier was 'see and avoid'. Given the aircrafts' tracks, Squirrel (B) was the only crew that was in a position to 'see and avoid'; they were visual with Squirrel (A) throughout the incident sequence and overtook in accordance with the Rules of the Air.

**HQ AIR (TRG)** comments that the overtake manoeuvre was flown close enough to cause concern to the pilot of Squirrel (A). The radar trace does not accord with the statement that the overtake was flown on opening headings so the situational awareness of Squirrel (B) must be in doubt. This highlights the need to afford ample lateral separation when overtaking a non-cooperating aircraft, which may still manoeuvre unpredictably.

## **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 and reports from the appropriate ATC and operating authorities.

The Board agreed that ATC played no part in this Airprox and would have been unable to forestall it. The military helicopter pilot Member pointed out that Squirrel (B) was flown by a QHI instructing a qualified helicopter pilot, whereas that flown by the reporting pilot was crewed with a QHI instructing a basic student. It was evident to the Member that at this stage even flying straight and level may have been a challenge to the student in the RH seat of Squirrel (A), furthermore, his look-out to starboard may not have been as all-encompassing as that of a qualified pilot and Squirrel (B) could not have been seen by either crew-member in Squirrel (A) until it started to draw abeam. The report from the QFI in Squirrel (A) states that he spotted Squirrel (B) when it suddenly appeared in their 5 o'clock position so this was probably the earliest opportunity he could have detected it and he estimated that when the other helicopter passed it was about 70ft away. For their part, the crew of Squirrel (B) had Squirrel (A) in plain sight throughout as they approached from its starboard quarter and it was the PIC of Squirrel (B) that determined the horizontal separation when they overtook – he estimated they passed 300ft away horizontally and the radar recording suggested it was in the order of 0.1nm co-altitude – but helicopter pilot Members could not understand why they had flown unnecessarily so close. The HQ Air Training Member's comments had reinforced this view and helicopter pilot Members agreed that it would have been better airmanship to have afforded Squirrel (A) a wider berth. Without further debate the Board concluded that this Airprox had resulted because Squirrel (B) crew flew close enough to cause Squirrel (A) crew concern.

Irrespective of whether the QHI of Squirrel (B) had correctly surmised that Squirrel (A) would be turning L for Ternhill, instructional sorties can be somewhat unpredictable and at this range there was little time to react to any sudden manoeuvre by the student pilot flying Squirrel (A); furthermore no warning was possible on the RT as they were operating on different frequencies. Nevertheless helicopter pilot Members judged that the crew of Squirrel (B) had kept Squirrel (A) in sight throughout the overtaking manoeuvre and could have turned away if necessary. This allowed the Members to agree, unanimously, that there was no Risk of a collision in these circumstances.

## **PART C: ASSESSMENT OF CAUSE AND RISK**

Cause: Squirrel (B) crew flew close enough to cause Squirrel (A) crew concern.

Degree of Risk: C.