

AIRPROX REPORT No 2013130

Date/Time: 12 Sep 2013 1507Z

Position: 5247N 00223W
(2nm SE of Chetwynd)

Airspace: Shawbury AIAA (**Class:** G)

Reporting Ac **Reported Ac**

Type: Squirrel BAC 167
Strikemaster

Operator: HQ Air (Trg) Civ Club

Alt/FL: 300ft 500ft
QFE (1008hPa) QNH (NK hPa)

Conditions: VMC VMC

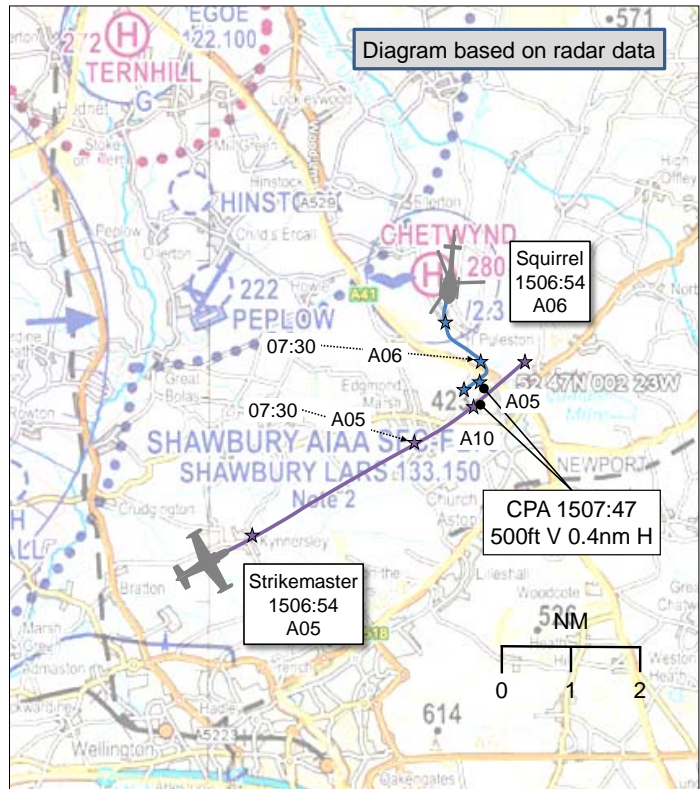
Visibility: 15km 10km

Reported Separation:

50-100ft V 500ft V
300m H ¼-½nm H

Recorded Separation:

500ft V/0.4nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE SQUIRREL PILOT reports flying a yellow and black helicopter, under a Basic Service from ‘Chetwynd Radio’, with the landing lamp and upper and lower white strobes turned on, VFR in VMC with no significant weather affecting their flight. The aircraft was crewed by Staff QHI¹ and a student QHI, who was the handling pilot. The aircraft was squawking transponder Modes 3/A, C and S and was fitted with a TAS² but the audio was deselected as the crew were operating ‘within the circuit’ in what they perceived to be a ‘sterile military ATZ’.

The student QHI was positioning the helicopter for a down-wind quick-stop, flying straight and level at 300ft, out of sun, when the Staff QHI saw a ‘fixed-wing aircraft’ in his right, 1 o’clock, at the same height, around 1-2km away. He monitored the other aircraft for a short period and assessed that it was on a conflicting flight-path so he took control of the Squirrel and initiated a ‘break to the right’. He saw what he thought to be a Jet Provost turn right and initiate a climb before it departed to the east. At the same time as he turned right, the Staff QHI broadcast a warning to the other pilots operating at Chetwynd.

He assessed the risk of collision as ‘Very High’.

THE STRIKEMASTER was crewed by a student and an instructor, who reports flying a grey aircraft with red anti-collision lights and the landing light turned on, VFR in VMC, heading 060° at 240kt, at 500ft (QNH, he recalls). The pilot had turned on transponder Modes A, C and S and was receiving a Basic Service from Shawbury Zone. As they were approaching around 2nm south of Chetwynd, the instructor saw a helicopter at ‘very low-level’ near the ‘top of a small ridge’, in his 11.30 position, around 1nm away, and below the Strikemaster’s altitude. The student did not notice the Squirrel straight away and appeared slow to react, so the instructor ‘intervened to increase separation’ by initiating a climbing right turn, and then rolled left to maintain visual contact with the helicopter as they passed 0.25nm ahead and 500ft above it.

¹ Qualified Helicopter Instructor

² Traffic Advisory System

He assessed the risk of collision as 'None'.

THE TERNHILL TOWER CONTROLLER reports providing a Basic Service to the Squirrel, with 3 other aircraft operating on her frequency at Chetwynd. She received Traffic Information, via land-line, from Shawbury Zone, on the Strikemaster transiting northwest to southeast, 2nm south of Chetwynd, at 500ft. Whilst Shawbury Zone was passing this information, the Ternhill Tower controller heard 2 of the pilots on her frequency speaking to each other; she could not hear them clearly because she was listening to the Zone controller, but thought that one pilot had 'called traffic' and another had reported 'visual'. As soon as the land-line conversation was complete, the Ternhill controller broadcast that she had received traffic information from Shawbury Zone, on the Strikemaster routing 'southwest northeast, 2 miles south, 500 feet'. Her broadcast was acknowledged but it was not clear by which callsign.

THE SHAWBURY ZONE CONTROLLER reports taking over the Zone position with the Strikemaster already on frequency; it had not been formally identified but was under a Basic Service and the controller was aware of its radar track. The Zone controller broadcast on the three frequencies that he was working on that there was a 'Strikemaster 8 miles south of Shawbury, doing an anti-clockwise navex of Ternhill at 500ft'. Zone 'kept an eye' on the Strikemaster's track and, when he noticed it was heading towards Chetwynd, he asked its pilot to confirm that he would keep 'clear of Chetwynd'; the Strikemaster pilot replied that he was 'turning away'. After 'another track mile' Zone had not seen the Strikemaster's track alter significantly and it was now approximately 2nm south of Chetwynd; the Zone controller could see radar returns at Chetwynd and the Strikemaster was indicating Mode C of 100ft above the Mode C of one of the returns [the Squirrel]. Zone passed Traffic Information to the Strikemaster pilot and opened the landline to the Ternhill Tower controller to establish the circuit state at Chetwynd; Ternhill Tower replied that there were 4 helicopter at Chetwynd and Shawbury Zone passed Traffic Information to her on the Strikemaster and then passed updated Traffic Information to the Strikemaster pilot, who reported 'visual' and said that he was now 'above the traffic'.

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

Factual Background

Chetwynd is a Helicopter Landing Site that benefits from Air-Ground radio services operated from ATC at Ternhill.

The Shawbury weather at 1450 was reported as:

METAR EGOS 121450Z 22007KT 9999 FEW024 BKN028 BKN250 20/15 Q1017 BLU NOSIG

Analysis and Investigation

Military ATM

The Squirrel was operating VFR within the visual circuit at Chetwynd in receipt of a Basic Service from Ternhill Tower. The Strikemaster was operating VFR at low-level in receipt of a Basic Service from Shawbury Zone.

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

The Squirrel's crew comprised a student QHI and an instructor. The Strikemaster was also crewed by a student and an instructor and reported VMC. Shawbury Zone reported low levels of workload and task complexity, having assumed the Zone control position approx 2½ mins prior to the CPA; whilst it has not been possible to determine the types of Air Traffic Service provided, Shawbury Zone was providing Air Traffic Services to in excess of 10 aircraft at the time of the

incident, split between the LFA³ 9 Dedicated User Area frequencies and LARS⁴. Ternhill Tower also reported low levels of workload and task complexity, providing a Basic Service to 4 helicopters operating at Chetwynd.

In addition to providing an Aerodrome Control Service at Ternhill, the Tower Controller provides a Basic Service (effectively an Air-Ground service) to aircraft operating at Chetwynd field on a separate UHF (c/s 'Chetwynd'). Two controllers are rostered to operate at Ternhill, with the additional controller providing the ability to 'split' the Ternhill Tower and Chetwynd Radio tasks during periods of increased workload. Figure 1 depicts the respective locations of RAF Shawbury, Ternhill and Chetwynd; Chetwynd lies 6 nm SE of Ternhill.



Figure 1: Locations of RAF Shawbury, Ternhill and Chetwynd.

Within the civil AIP, Chetwynd is listed as a hang-gliding site of 2nm radius, with an upper limit of 2000ft agl (aerodrome elevation 280ft amsl). No reference is made within the civil AIP of any military activity at Chetwynd. The UK Military AIP states that Chetwynd has 'no official ATZ, although Surface to 2000ft aal is recognised by Shawbury operations (promulgated aerodrome elevation 275 ft AMSL).

Shawbury Zone assumed the control position at 1505:12, 2min 34sec prior to the CPA, with the frequencies previously being monitored by Shawbury Approach in a bandboxed Approach/Zone configuration. Prior to this time, both Shawbury Approach and Shawbury Zone had provided warning on the Dedicated User Area frequencies of the Strikemaster's presence in the LFA, advising of "one Strikemaster, south of Shawbury by 8 miles, doing an anti-clockwise nav-ex round Ternhill over to Hawarden, at 500 feet A-G-L."

At 1506:04, the Strikemaster passed outside NATS surveillance coverage approx 8nm southwest of Chetwynd, tracking northerly, indicating 500ft. The Strikemaster was then detected again at 1506:43, approx 5.1nm southwest of Chetwynd, tracking northeast, indicating 500ft. The Strikemaster's subsequent northeasterly track approximately paralleled the southwest/northeast orientation of the ridge associated with the Wrekin. The Strikemaster would not have been

³ Low Flying Area
⁴ Lower Airspace Radar Service

masked to Shawbury's radar by the Wrekin and, as confirmed by Shawbury ATC personnel, the Strikemaster was continuously visible on their surveillance displays from approx 1504. Based on exclamations from Shawbury Zone captured on 'live-mic' recording, BM SPA contends that Zone saw the Strikemaster adopt a northeasterly track at approx 1506:15; a time that correlates with the Strikemaster's observed track on the radar replay and the probable point at which the Strikemaster turned. The Strikemaster maintained this northeasterly track for the remainder of the incident sequence, passing from 2nm south to 1.6nm southeast of Chetwynd. Figure 2 depicts the incident geometry at 1506:54 and highlights the northerly then northeasterly track adopted by the Strikemaster (SSR 3A 7426, circled). The aircraft with the highlighted SSR Mode 3/A 7421 was the incident Squirrel, with the approximate location of Chetwynd circled.

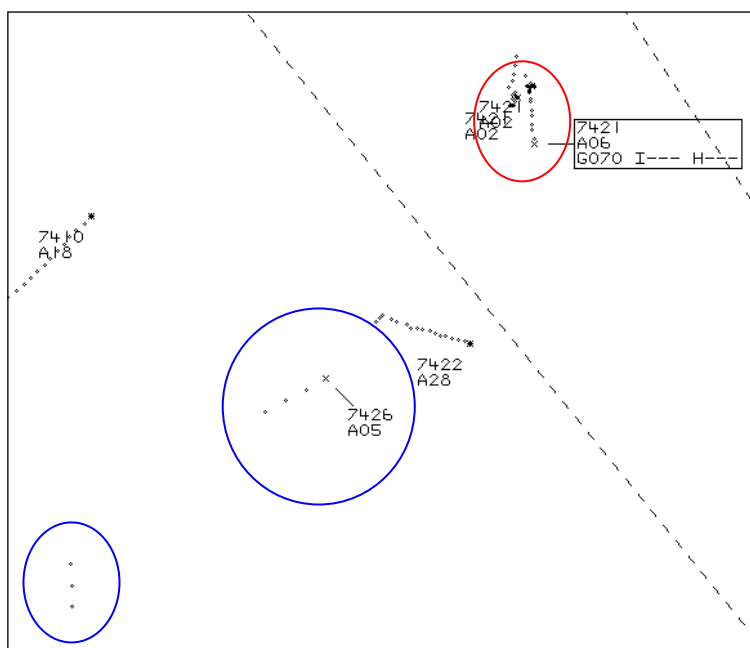


Figure 2: Incident Geometry at 1506:54

Shawbury ATC assign the 7421 SSR squawk for all aircraft working within the Dedicated User Area not above 1000ft Shawbury QFE, including aircraft operating at Chetwynd, and assign the 7426 SSR squawk for other aircraft, operating within their area of responsibility, in receipt of a Basic Service.

Between 1506:35 and 1506:46, Shawbury Zone passed Traffic Information to Ternhill Tower on an unrelated aircraft crossing the MATZ at Ternhill; no mention was made at this point of the Strikemaster in relation to Chetwynd.

At 1506:54, Shawbury Zone asked the Strikemaster to “confirm you are maintaining clear of Chetwynd?” At that point, 3.9nm lateral separation existed between the Squirrel and the Strikemaster, with the aircraft's altitudes remaining as depicted in Figure 2. The Strikemaster pilot replied “affirm [c/s] we're just about to turn” which was acknowledged by Shawbury Zone, who further advised the Strikemaster crew of “traffic north er east of you, two miles, manoeuvring, Shawbury rotary wing er indicating 100 feet above”, which was acknowledged. This helicopter traffic was the incident Squirrel and the radar replay showed that 3.2nm lateral separation existed at this point.

Subsequent to completing his report, the Shawbury Zone controller related that the Squirrel had ‘popped up’ on the surveillance display, that he was unsure whether the traffic was operating at Chetwynd, given that it was approximately 1.5nm south and that they had not previously seen any traffic in the Chetwynd area. The incident Squirrel had climbed out from Chetwynd and indicated climbing through 500ft at 1506:43. At that point, the other 3 Squirrels operating at Chetwynd were not detected by Shawbury's surveillance equipment and were indicating between 200ft and 400ft. On that basis, it is reasonable to argue that the base of surveillance coverage in that area was

approx 500ft and thus 1506:43 represents the time at which the incident Squirrel became visible on Shawbury Zone's surveillance display.

During the Strikemaster's acknowledgement of Shawbury Zone, at 1507:03, the Squirrel initiated a left turn onto an east-southeasterly track. Although no turn by the Strikemaster was evident on the radar replay, given that their routing took them approx 2nm south of Chetwynd, it may be that they perceived no requirement to avoid Chetwynd by any specific margin. Moreover, Shawbury Zone had not specified any dimensions for the Chetwynd area of helicopter operations.

Shawbury Zone immediately rang Ternhill Tower, with the call being answered at 1507:17. Shawbury Zone asked Ternhill Tower "how many have you got at Chetwynd at the moment?" and was informed that there were "four Charlie callsigns" which relates to 4 Shawbury based helicopters. Shawbury Zone replied "Sorry? Four Charlie callsigns? Can you say that there is a Strikemaster routing er south er west to north east, to pass 2 miles south." Shawbury Zone then interrupted the landline exchange at approx 1507:30 to update the Traffic Information on the Squirrel to the Strikemaster, advising them "previously called traffic er 12 o'clock, half a mile, crossing left-right, indicating 100 feet above". Figure 3 depicts the incident geometry at the point that Shawbury Zone updated the Traffic Information to the Strikemaster.

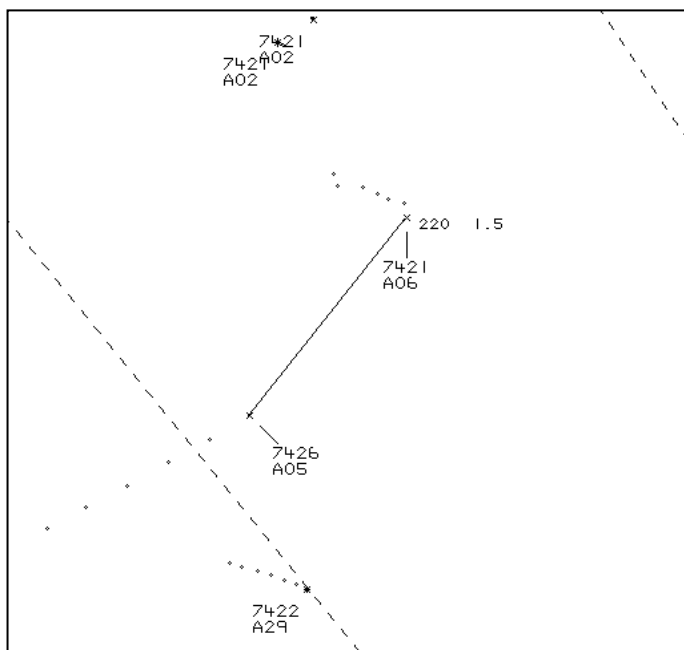


Figure 3: Incident Geometry at 1507:30.

The RAF Shawbury ATC order book 'instructs controllers to pass Traffic Information to Ternhill Tower on traffic that would pass within 2nm of Chetwynd, below 1500ft QFE'. No Hi-Brite⁵ is provided at Ternhill Tower and, given the distance between Ternhill and Chetwynd, the Ternhill Tower Controller is unable to see any of the activity at Chetwynd; thus they are wholly reliant on the passage of information from Shawbury ATC. Following Airprox 163/12, work is being conducted by RAF Shawbury to determine the viability of providing a Hi-Brite capability at Ternhill.

As Shawbury Zone updated the Traffic Information, the Squirrel turned right and re-adopted a southerly heading. As Shawbury Zone finished updating the Traffic Information, Ternhill Tower asked "what height is the Strikemaster at?" and was advised "500 ft." Co-incident with this, the Squirrel transmitted on the Chetwynd frequency, "Chetwynd traffic, [Squirrel c/s] got a fixed wing just to the south-east possibly gonna go through the overhead". A second Squirrel then transmitted at 1507:47, "yeah [garbled] that [c/s] thanks."

⁵ Hi Brite is a non-calibrated display showing radar derived data. It is used to improve controllers' situational awareness not for controlling.

This transmission by the second Squirrel coincided with the CPA as the incident Squirrel was observed on the radar replay to have 'initiated a break to the right' and the Strikemaster was observed to have climbed, indicating 1100ft. Figure 4 depicts the incident geometry at this point. As soon as the second Squirrel's transmission ended, Ternhill Tower broadcast a warning to "Chetwynd all stations, traffic information from Shawbury Zone, Strikemaster, south-west to north-east, 2 miles south er 500 feet."

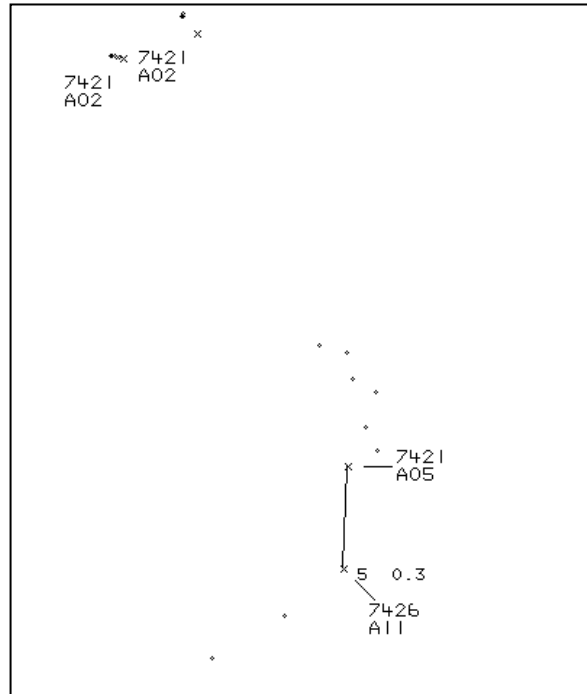


Figure 4: Incident Geometry at 1507:47.

During the Unit's investigation, the Squirrel pilot related that they were aware that Chetwynd 'did not have an ATZ' but thought 'that there was an un-official military ATZ and that it offered him some protection whilst he was operating at Chetwynd'. The Ternhill Tower Controller also related his perception that aircraft operating at Chetwynd would be 'within close proximity' to the field.

From the Ternhill Tower Controller's perspective, they were unable to affect the outcome of the incident until they received Traffic Information on the Strikemaster from Shawbury Zone. Moreover, once they had received that Traffic Information, the incident Squirrel had visually acquired the Strikemaster, warned the other Chetwynd traffic, and taken action to break the conflict. From Shawbury Zone's perspective, given their workload and that the Squirrel only became visible to them at approx 1506:43, their rapid assimilation of a risk of collision between the Squirrel and Strikemaster was laudable. Moreover, they provided the Strikemaster with a timely warning of the Squirrel and updated that Traffic Information as the conflict developed. Whilst Shawbury Zone attempted to pass a warning to the Ternhill Tower Controller of the Strikemaster's presence, the requirement for that information to be relayed to the Chetwynd aircraft through Ternhill meant that the warning came too late.

UKAB Secretariat

Both pilots had equal responsibility to avoid each other⁶. Given that, initially, the aircraft were converging, and the Squirrel crew had the Strikemaster on their right, the Squirrel crew were required to give way⁷. However, the Strikemaster knew that Chetwynd was active and was required to keep clear of the Chetwynd traffic patterns⁸.

⁶ Rules of the Air 2007, Rule 8, Avoiding aerial collisions

⁷ Rules of the Air 2007, Rule 9, Converging

⁸ Rules of the Air 2007, Rule 12, Flight in the vicinity of an aerodrome

Comments

HQ Air Command

Both aircraft involved in this incident had been passed a degree of Traffic Information on each other (despite being under a Basic Service), either directly by Shawbury Zone or through the Ternhill Tower controller. It is clearly a misconception that the airspace around Chetwynd offers any protection to helicopters operating in that area, and this should be highlighted to those that regularly conduct training at Chetwynd. It could also be argued that the Strikemaster pilot's decision to pass close to Chetwynd at a similar operating height to that of the helicopters may have been unwise and that a more prudent course of action would have been to give a wider berth to the airfield. However, the aircraft involved in the incident were operating within Class G airspace under the 'see and avoid' principle. Once again this incident reinforces the importance of effective lookout aided by an appropriate level of ATS.

Summary

The Airprox occurred approx 2nm south-southeast of Chetwynd Relief Landing Ground at 1507:46 on 12 Sep 13, between a Squirrel and a Strikemaster, in Class G, uncontrolled airspace. Chetwynd does not have an ATZ and sits just outside the Shawbury/Ternhill combined MATZ. Both crews were receiving a Basic Service, the Strikemaster from Shawbury Zone and the Squirrel from Ternhill Tower on the Chetwynd Radio frequency.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included 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 considered the actions of ATC and noted that, despite having 10 speaking units on frequency, the Shawbury Zone controller had done well to pass Traffic Information, on more than one occasion, to the Strikemaster pilot, who was only receiving a Basic Service. Notwithstanding, during the discussion, members noted that the passing of Traffic Information from the Shawbury controller to the Ternhill controller had become protracted; it was apparent that, without any form of radar data display, it had taken longer than desirable for the Ternhill controller to achieve the same level of situational awareness that the Shawbury controller had. The Board decided to recommend that HQ Air Command should consider the installation of a suitable radar data display, such as HiBrite, in the Ternhill ATC tower.

Turning to the helicopter pilot's actions, a member with military helicopter experience informed the Board that the Squirrel's positioning to the south of Chetwynd was normal for a down-wind quick-stop; however, he was surprised that the QHI did not know they were flying in Class G airspace, outside of the ATZ and MATZ. He opined that it was possible that the QHI had misunderstood the 'Hang/paragliding' map symbol at Chetwynd since there was clearly an impression by the QHI that there was a protected military zone around the site. Other members noted however that the Squirrel was outside the area covered by that symbol on the map, and they could not understand how an experience helicopter pilot had come to such a misunderstanding. Notwithstanding, when the Squirrel QHI saw the Strikemaster, he took timely action by taking control of the helicopter, making an effective avoidance manoeuvre, and then making a broadcast to ensure other pilots in the area were alerted.

The Board then discussed the actions of the Strikemaster pilot and noted that, whilst he perhaps could have turned a little earlier to give Chetwynd a wider berth, he had avoided Chetwynd and had seen the Squirrel early enough to take timely action; again the Instructor had taken control and carried out an effective avoidance manoeuvre.

Because both pilots had seen the other aircraft and had carried out timely and effective avoidance manoeuvres, the Board agreed that the cause of the Airprox was that the Strikemaster pilot had flown close enough to the Squirrel to cause its pilot concern, and that the degree of risk was C (effective and timely actions were taken to prevent the aircraft colliding).

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Strikemaster pilot flew close enough to cause the Squirrel pilot concern.

Degree of Risk: C

ERC Score⁹: 2

Recommendation(s):

1. HQ Air Command ensures Shawbury pilots are aware of the nature of the airspace at Chetwynd.
2. HQ Air Command considers the provision of Hi-Brite at Ternhill.

⁹ 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.