

AIRPROX REPORT No 2012163

Date/Time: 13 Nov 2012 1007Z

Position: 5253N 00231W (1.2nm NE
Ternhill - elev 272ft)

Airspace: Ternhill ATZ (Class: G)
Reporting Ac Reporting Ac Reported Ac

Type: Squirrel (A) Squirrel (B) R44

Operator: HQ Air (Trg) HQ AIR (Trg) Civ Comm

Alt/FL: 700ft↓ 1000ft 800ft
QFE (1013hPa) QFE (1013hPa) (QFE)

Weather: VMC CLBC VMC CLBC VMC NR

Visibility: 30km 50km 30km

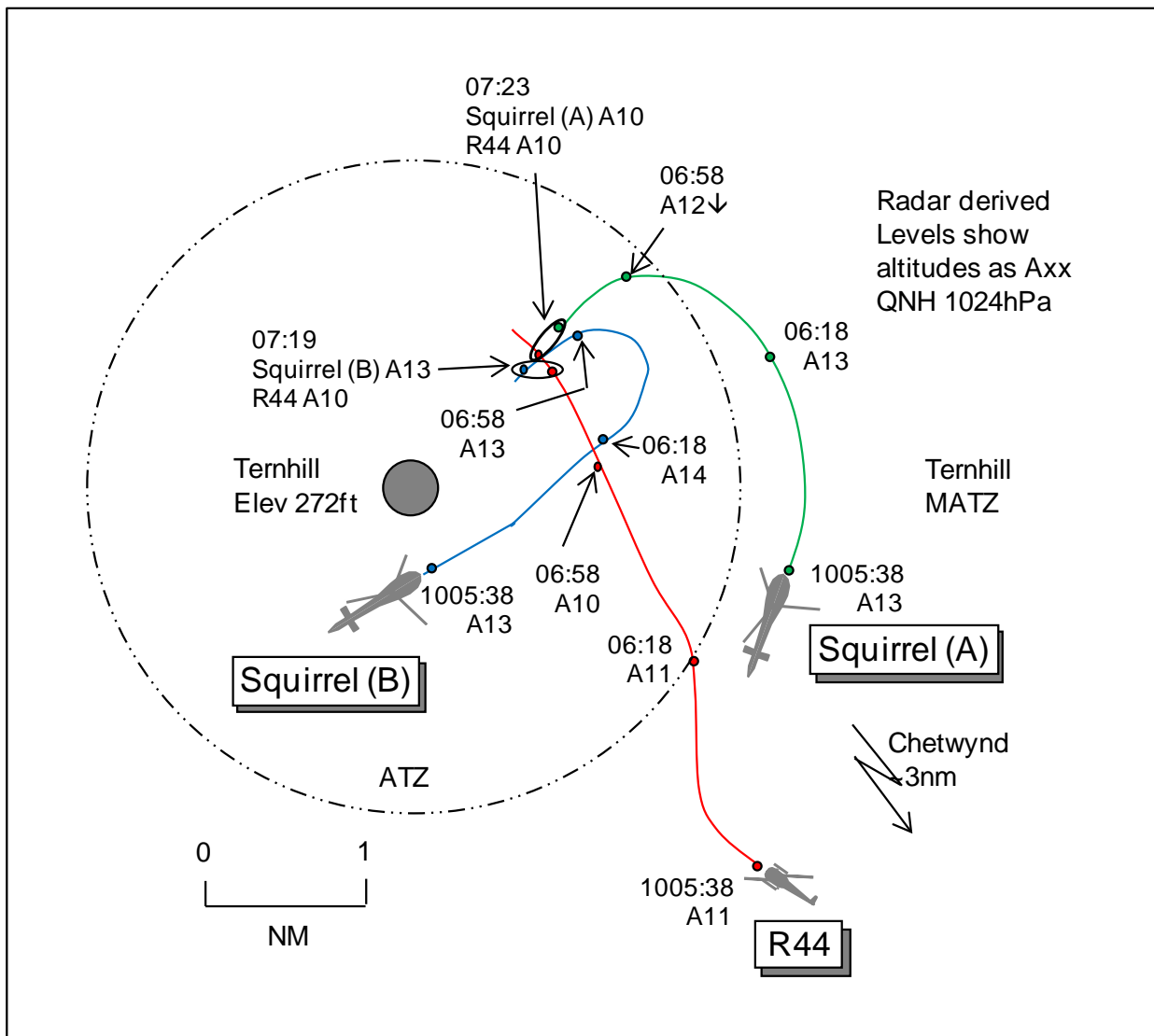
Reported Separation:

100m 300ft V/behind H 100ft V/200m H

Recorded Separation:

CPA 1 300ft V/0.2nm H

CPA 2 Nil V/0.2nm H



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE SQUIRREL (A) PILOT reports a dual training sortie from Shawbury, VFR and in receipt of a BS from Ternhill Tower on 376.4MHz, squawking 0221 with Modes S and C. The visibility was 30km flying 2000ft below cloud in VMC and the helicopter was coloured black/yellow with 2 HISLs switched on. Whilst joining Ternhill on a GH refresh sortie, responses to a PINS ac were heard from ATC, indicating that the ac was operating on VHF. Following the VHF conversation ATC put out a broadcast on UHF, informing those operating at Chetwynd and Ternhill that there would be a PINS ac crossing the ATZs initially W'ly through Chetwynd, followed by a S to N transit of the Ternhill ATZ. This was followed by another transmission announcing that the PINS ac would be not above 1000'. It was at this point that a question was raised in the ac commander's head as to the safety of having an ATZ crosser below 1000', across the active RW with both ccts active (one with EOLs). To add to the safety concern, the crossing ac would be operating on a different frequency. It was at this point that the ac commander highlighted his concerns to ATC. Concurrent with the completion of the transmission whilst heading 220° at 90kt and 700ft QFE descending, the PINS ac was spotted in approximately the 11 o'clock position at approximately 100m, if not closer, at the same level. This did not correlate with the expected position of the PINS ac, which was reported to have been transiting the Chetwynd ATZ at around that time. The ac commander then put out a second call, to get another Squirrel in area L to go-around from an EOL that would have placed him close to the passing PINS ac, which they did. The PINS ac, a white/blue coloured R44, passed from L to R at approx 100m, banking away slightly once their helicopter was seen, and departed the area to the N. The ac commander filed an Airprox with ATC at the time. The remainder of the sortie was aborted and the ac returned to Shawbury without further incident. On landing the Executive Flying Supervisor was advised, along with SATCO, of what had occurred. He assessed the risk as very high.

THE SQUIRREL (B) PILOT reports flying dual QHI training sortie from Shawbury, VFR and in communication with Ternhill Tower on UHF. The visibility was 50km flying clear below cloud in VMC and the helicopter was coloured black/yellow. He joined the Ternhill cct to conduct 2 EOL sorties. From the outset it was obvious that the RT from ATC was not as fluid as usual; regularly 2-3 RT calls were made by Tower where one would normally be sufficient. He was working in the 22 L cct to the triangle with another Squirrel (C) in the same cct also conducting EOLs. At about 1005Z ATC made a call that a Pipeline Inspector ac would be conducting an ATZ crossing of Chetwynd W'bound and then crossing the Ternhill ATZ. Subsequently ATC made another call that the ATZ crosser would be at 1000ft and below; he was turning final as this was unfolding. Given the disposition of Chetwynd and Ternhill, he presumed the ATZ crosser was in the vicinity of Chetwynd and therefore 5min away from Ternhill. He scanned the horizon in that direction but saw nothing of concern. Immediately after the last ATC transmission that the ATZ crosser would be at 1000ft or below, Squirrel (A) flight, in area R, asked on the frequency if having the ATZ crosser transiting through 2 active ccts was a good idea. At this point Squirrel (C) flight called "Final 180 EOL to the triangle" and then his (Squirrel (B)) student, a QHI, called "final EOL for the triangle". It then became obvious that Squirrel (A) pilot was alarmed by what he had seen and called, "Squirrel (C) c/s overshoot" but in the confusion Squirrel (C) pilot did not hear this call, nor did he overshoot. Electing not to allow the student QHI to enter autorotation, Squirrel (B) pilot took control, flew through at 1000ft and repositioned on final. Having not seen anything of concern he then continued and the student conducted an EOL iaw the sortie profile. During this manoeuvre Squirrel (A) pilot stated he wished to, "file against the ATZ crosser", overshoot his approach and returned to Shawbury. On completion of the sortie Squirrel (B) pilot was made aware that the ATZ crosser had passed close behind his helicopter about 300ft lower; however, he had not seen the ATZ crosser at any stage.

THE R44 PILOT reports en-route from Coventry to Sandtoft, VFR and in receipt of a BS from Ternhill Tower on 122.1MHz, squawking 0036 [pipeline conspicuity] with Modes S and C. The visibility was 30km clear below cloud in VMC and the helicopter was coloured white with nav, landing and strobe lights all switched on. The flight was a routine inspection of a government owned pipeline, Stourport to Ellesmere Port, flying at 500ft MSD therefore typically 600-800ft agl at 90-110kt. Initially he contacted Shawbury LARS when E of Telford [11nm SSE Ternhill] and was told to, "standby". They called him back as he passed Lilleshall [9nm SSE Ternhill] and he requested MATZ and ATZ transit

of Ternhill. He was told to contact Ternhill Tower and he did so and repeated his request. At the ATZ boundary he reported his position and was given TI on 4 ac and, "ATZ transit approved". He could see all 4, 1 on the ground, 1 in a climb and 2 over Market Drayton. One over Market Drayton [Squirrel (B)] was higher and passed O/H whilst the second to his R [Squirrel (A)], was slightly lower (100ft) than him. He kept checking its position, it seemed slow, and did not think a collision was likely but on passing he did think it was closer than expected (200m) and commented so to his observer. A company SMS (safety management system) entry was made. Having spoken to Shawbury ATC it appeared there had been an assumption that the pipeline helicopter would be at 200ft agl at 60kt whereas the reality is 600ft agl and 110kt. A local agreement has been made to inform Shawbury by telephone in advance of flights through Ternhill ATZ/MATZ. He assessed the risk as none.

THE SHAWBURY APPROACH CONTROLLER reports the incident occurred towards the end of an initially quiet session with Zone, Director and Low-Level frequencies bandboxed to the Approach position when traffic levels increased to a manageable medium/high level. During this period he received a freecall request for a BS from the R44 flight and, although not positively identified, the presence of a 0036 squawk and a correlating DF trace indicated the ac was in the area NE of Telford. On that basis, and due RT loading at the time, he asked the R44 flight to standby while he continued to work through other traffic. On returning to the R44, which had tracked about 3nm NNW, he ascertained that the pilot wanted to route through Chetwynd and on through Ternhill ATZ. He established a height 'not above' on Shawbury QFE and elected immediately to pass the flight onto Ternhill for actual crossing clearance as it was apparent they were active at the time. In the time taken to cover this RT exchange and the liaison call to Ternhill the helicopter was finally told to contact Ternhill when it was bearing 210° from Chetwynd range 2nm tracking NNW. He subsequently handed over the control position to a colleague and was later informed of the incident.

THE SHAWBURY ATC SUPERVISOR reports that owing to controller sickness the section was undermanned and, as there was little flying at Shawbury, all of the radar frequencies were selected on the Approach position. At the time of the incident he was away from the ACR dealing with other issues.

THE TERNHILL TOWER CONTROLLER reports that he was screening a UT controller in the Ternhill ADC position. At the time there were 4 ac in at Chetwynd and 3 in at Ternhill, conducting ccts and EOLs. They received a call from Shawbury Approach warning of a pipeline inspection ac, an R44, wishing to pass O/H Chetwynd and through the Ternhill ATZ not above 1000ft, and to listen out on VHF as the ac was on that frequency. During this call, Squirrel (A) flight called to join at Ternhill and the UT controller passed joining instructions. The R44 pilot then called on VHF, stating his intention to fly from S to N through the Ternhill ATZ not above 1000ft. The UT controller asked the PINS R44 pilot to confirm his intentions; he responded that he would transit S to N, passing 1nm to the E of the airfield. The UT controller informed the R44 pilot that there were 4 ac in at Chetwynd and 4 at Ternhill, to which the R44 pilot replied he was visual with all 4 ac. The UT controller then confirmed that the ATZ transit was approved, to which the R44 pilot responded he was 2nm S. The UT controller then broadcast on the Ternhill and Chetwynd frequencies that there was an ATZ crosser, proceeding W through the Chetwynd O/H and then S to N through Ternhill, not above 1000ft. They then attempted to spot, using binoculars, the R44 making its transit. They spotted him much closer and travelling much faster than anticipated, apparently on a track between the airfield and 2 ac on finals for area L and R, 1 for an EOL to area L, 1 final for normal ccts to area Right. The R44's flightpath was taking it right in front of these ac very shortly. When the EOL flight [Squirrel (B)] called final, Squirrel (A) pilot warned Squirrel (B) pilot, he thought, to go around and the R44 continued through and was sent back to Shawbury Zone. Squirrel (A) pilot reported his intention to file an Airprox for this incident.

BM SAFETY POLICY AND ASSURANCE reports that this Airprox occurred between 2 Squirrel helicopters (A and B) operating independently within the Ternhill visual cct and an R44 conducting a pipeline inspection.

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

At the time of the incident, RW22 was the designated duty RW at Ternhill; however, given its use as a RW RLG, Ternhill has a number of operating surfaces available as depicted at Figure 1.



Figure 1: Operating Surfaces at Ternhill.

In addition to providing an Aerodrome Control Service at Ternhill on UHF 'Stud 7', the ADC also provides a BS (effectively an A/G service) to ac operating at Chetwynd field on a separate UHF (Stud 8 'Chetwynd Radio'). 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 2 depicts the respective locations of Shawbury, Ternhill and Chetwynd; Chetwynd lays 6nm SE of Ternhill. No Hi-Brite VRD is available to the Ternhill ADC.



Figure 2: Local Area Map.

The ADC position was manned by an ab-initio trainee conducting his 4th day of training at Ternhill and an instructor; Ternhill was the trainee's first exposure to live controlling since graduating from the Joint Air Traffic Control Course. The instructor reported that the workload for the trainee was high to medium with a high level of task complexity. Four Squirrels were operating at Chetwynd on Stud 8 and 4 Squirrels were operating at Ternhill on Stud 7.

The incident sequence commenced at 1000:19 as the R44 flight called Shawbury Approach/Radar (RAD) for a, "...Zone transit, Basic Service." RAD noted a 'Pipeline' squawk NE of Telford and, correlating this with a DF trace associated with the R44 flight's transmission, instructed the R44 pilot to, "standby" in order to allow them to complete a pre-note on unrelated LARS traffic from Brize Radar; at this point, the R44 was 13.1nm SSE of Ternhill. Due to low traffic levels at Shawbury that were expected to require surveillance-based ATS, RAD was 'boxed' with DIR, Zone and Low-Level. RAD described their workload as 'high to medium' with 'routine' task complexity. Although it has not been possible to determine conclusively the number of ac that RAD was providing with an ATS, analysis of the tape transcript indicates that at least 3 ac were in receipt of a BS on Low-Level and 3 ac were in receipt of an ATS on Zone; based on analysis of the radar replay, there were approximately 5 ac operating within the Shawbury visual cct. The Supervisor was unavailable throughout the incident sequence dealing with an unrelated, non-operational matter elsewhere within the Tower. Although the Supervisor has reported that, 'due to controller illness, the section was undermanned', this did not drive the decision to 'box' the radar positions and would not have impacted the unit's ability to deliver ATSS until the lunch period.

RAD completed the prenote from Brize Radar at 1000:45 but then became involved in exchanges of RT with 2 flights on Low-Level and 2 further flights on Zone. RAD was able to return to the R44 at 1001:55 asking them to, "pass message"; at this point, the R44 was 10.2nm SSE of Ternhill. The R44 pilot replied, "(R44 c/s) R44, Coventry to Sandtoft, we're at 1300 feet 1-0-1-3, we'd like to transit through Ternhill MATZ and ATZ, entering at Chetwynd and exiting to the north, ah, transit, Basic Service." RAD answered, "(R44 c/s) Basic Service, maintain squawk, request your operating height not above, Shawbury Q-F-E 1-0-1-3?" The R44 pilot read back the QFE and reported that they would be, "not above 1000 feet" which was acknowledged by RAD. Immediately thereafter at 1002:43, RAD became engaged in an exchange of RT with an ac on the ground at Shawbury conducting radio checks, delaying them contacting Ternhill until 1003:12; at this point the R44 was 7.6nm SE of Ternhill, tracking NNW'ly, indicating 1200ft.

Having requested the Ternhill ADC to, "turn on 1-2-2 decimal 1 [NATO Common Tower VHF]" RAD advised the ADC of a, "Chetwynd and Ternhill Crosser, not above 1000 feet Q-F-E is (R44 c/s)...R44 helicopter, 2 miles south of Chetwynd, coming to you now" which was acknowledged; the landline call was terminated at 1003:30. At 1003:35, RAD instructed the R44, "for Chetwynd and Ternhill cross, contact Ternhill Tower 1-2-2 decimal 1"; at this point, the R44 was 6.9nm SE of Ternhill and approximately 2.4nm SW of Chetwynd, tracking NNW'ly, indicating 1200ft.

At 1003:52, now 6.4nm SE of Ternhill, the R44 pilot contacted Ternhill TWR requesting "...zone transit." The ADC transmitted on both VHF and Stud 8 requesting the R44's, "routing and height not above." The R44's pilot replied at 1004:04 that they were, "not above a thousand, 1-0-1-3, I'm just to the W of Chetwynd (unreadable) zone transit through the eastern edge of the A-T-Z, about a mile east of the airfield, then we vacate to the north with Zone." However, Squirrel (A) pilot transmitted a request to join the Ternhill cct on Stud 7 at 1004:10, thus stepping on the majority of the R44 pilot's transmission. The ADC replied to the R44 flight, initially incorrectly transmitting on Stud 8 at 1004:20, then on VHF at 1004:26, "(R44 c/s) roger, after, say again after not above 1000 feet?" The R44 pilot restated that they were, "entering the MATZ just to the west of Chetwynd, route vaguely north through the ATZ at Ternhill, one mile [at this point, the ADC transmitted on Stud 7 to Squirrel (A), "station calling, standby"] and then out towards Beaston Castle."

At 1004:32 there was an unreadable transmission on Stud 7 from a flight, followed by a reply on Stud 7 from the ADC instructing the flight to, "standby." The ADC then replied to the R44, initially incorrectly transmitting on Stud 7 at 1004:42, then on VHF at 1004:43, "(R44 c/s) roger."

Immediately thereafter, between 1004:48 and 1005:28, the ADC was involved in exchanges of RT with Squirrel (A) flight and 1 other Squirrel within the Ternhill cct.

At 1005:43, the R44 pilot advised the ADC that they were, *“just approaching the ATZ boundary, confirm er transit?”* At this point the R44 is 3nm SE of Ternhill, tracking NNW'ly, indicating 1200ft. The ADC did not immediately reply to the R44 flight but transmitted on Studs 7 and 8 and VHF at 1005:50, *“all stations, all stations, pipeline inspection helicopter, routing west through Chetwynd MATZ then routeing through Ternhill ATZ.”* Around 8sec after that transmission, the ADC added on Stud 7, *“all stations, all stations, that is not above 1000 feet.”* There then followed a number of transmissions on the 3 frequencies in use, as the ADC tried to authorise the R44 flight's transit on VHF (at 1006:16) and ensure that he had provided the 'height not above' information on all frequencies in use. The ADC's instructor reported that following this, they 'attempted to spot, using binoculars, the R44 making its transit. We spotted him much closer and travelling much faster than anticipated, apparently on a track between the airfield and 2 ac on finals'. The unit investigation determined that the speed (reported as 105kt airspeed) and height of the R44 surprised the controllers as they were expecting a pipeline inspection to be completed at a much lower height and at around 60kt.

At 1006:16 the ADC transmitted on VHF, *“(R44 c/s) A T Z penetration approved”*. The R44 pilot acknowledged, *“A-T-Z penetration approved (R44 c/s) I'm about 2 miles now and visual with your multiple rotary traffic”*; the R44 was 2.1nm ESE of Ternhill, tracking N'ly, indicating 1100ft. The ADC replied that they, *“...believe there's four at Chetwynd and will be four at Ternhill”* and the R44 pilot confirmed that he was, *“visual with the four at Ternhill.”* At that point, the R44 was 1.7nm ESE of Ternhill, tracking NNW'ly, indicating 1100ft. Squirrel (B) was 1.2nm N of the R44, commencing a left hand turn towards finals, indicating 1300ft; Squirrel (A) was 1.8nm NNE of the R44, commencing a LH turn towards Ternhill, indicating 1300ft; a 3rd Squirrel (C) was manoeuvring 2.4nm WSW of the R44 positioning for finals; a 4th Squirrel 1.9nm SSW of the R44, tracking ENE'ly, indicating 1300ft had no part in the Airprox.

[UKAB Note (1): Following the R44 pilot's report of, *“...visual with the four at Ternhill”* the pilot of Squirrel (A) at 1006:56 questioned the wisdom of ATC to, *“...have an aircraft go through Ternhill and Chetwynd at the (unreadable) height er with other ac operating at that height and then dropping (unreadable)”*.]

The pilot of Squirrel (A) stated in their DASOR that, as they highlighted their concerns over the transiting R44, at approximately 1007:10, they visually acquired the R44 in their 'approximately 11 o'clock position, at approx 100m if not closer'. Comparison of the radar, RT transcript and DASOR shows that lateral separation between the R44 and Squirrel (A) at this point was 0.7nm. At 1007:11, immediately following the Squirrel (A) pilot's last transmission, Squirrel (C) flight (SW of Ternhill) reported, *“finals 1-80 engine off for the triangle”*; Figure 3 depicts the building incident geometry at this point. Squirrel (A) pilot immediately transmitted to Squirrel (C) flight at 1007:14, *“(Squirrel C c/s) standby go-around”* which was not acknowledged by either the ADC or Squirrel (C). The Unit's investigation determined that the pilot of Squirrel (A) erroneously believed that Squirrel (C) was Squirrel (B) ahead of them. At 1007:19, Squirrel (B) pilot reported, *“...finals, engine off for the go-around”*; Figure 4 depicts the incident geometry at that point. Due to further exchanges of RT, Squirrel (B) pilot's finals call was not acknowledged by the ADC.

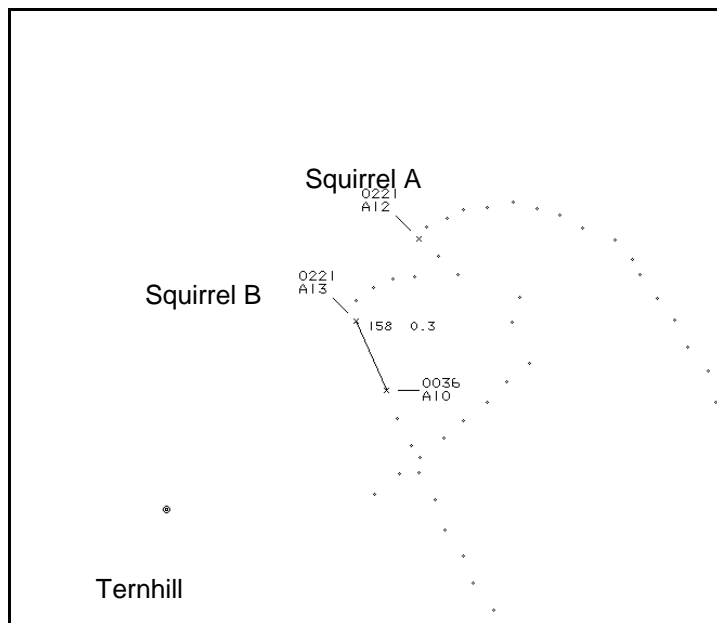


Figure 3: Incident Geometry at 1007:11

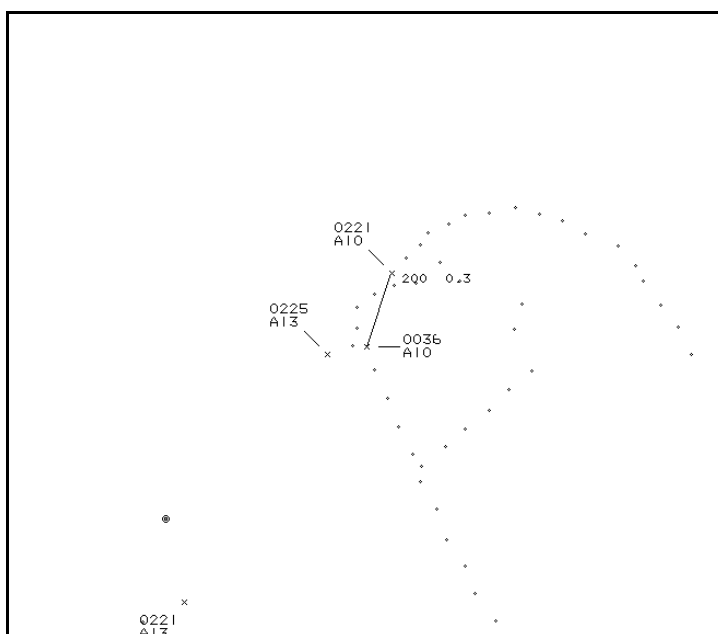


Figure 4: Incident Geometry at 1007:19

The CPA with Squirrel (B) occurs between radar sweeps at 1007:17 as the R44 crosses 0.2nm behind the Squirrel indicating 300ft below; the crew of Squirrel (B) did not visually acquire the R44. As can be seen in Figure 4, the PSR and SSR return of Squirrel (B) was subject to significant track jitter and code garbling following the Airprox. The CPA with Squirrel (A) occurs at 1007:23 as the R44 passes 0.2nm ahead of the Squirrel at the same indicated height. The R44 pilot stated in their report that Squirrel (A) was 'slightly lower' than them and 'seemed slow'; they did not 'think a collision was likely but on passing did think it (Squirrel A) was closer than expected'.

It is worthy of note that in completing the unit's investigation, the R44 pilot was contacted and stated that they had not submitted details of their flight through the PINS and cited its lack of utility as the reason.

Given that the R44 pilot was visual with Squirrel's (A) and (B) throughout the incident sequence and their comments highlighted above, it seems that the R44 flew sufficiently close to Squirrel (A) to cause its pilot and, to an extent, himself concern. However, there are a number of ATM related aspects that warrant further examination.

The unit's investigation reported that RAD's description of the R44's position to the ADC at 1003:21 as "2 miles south of Chetwynd" degraded the ADC's situational awareness and that RAD's 'rushed handover' of the R44 to the ADC reduced the time available to the ADC to 'manage' the R44's transit; however, both of these assessments were made without the benefit of a radar replay. Analysis of the replay demonstrated that RAD's report of the R44's position as "2 miles south of Chetwynd" was relatively accurate. Moreover, BM SPA contends that, given that the R44 pilot's initial contact with the ADC occurred when the ac was 6.4nm SE of Ternhill and 3min 25sec prior to the CPA, sufficient time existed for the ADC to have affected a plan to integrate the R44. Finally, whilst BM SPA does not consider the decision to 'bandbox' RAD, DIR, Zone and Low-Level as 'good practice' given the volume of Shawbury traffic operating in the area, this was neither a causal nor contributory factor in this Airprox. Specifically, given that the demands on RAD's time were all on the Zone and Low-Level positions, positions which would routinely be 'bandboxed', the workload for a 'split' Zone/Low-Level position would have been identical to that faced by RAD in this instance.

Based on the ADC's 'all stations' ATZ crossing transmission at 1005:50, it is clear that the ADC team had not assimilated the positional information given to them by the R44 pilot at 1004:26 and 1005:43 and that their mental picture of the situation reflected that the R44 was approaching Chetwynd. Unfortunately, the lack of a Hi-Brite VRD at Ternhill meant that the ADC team was wholly reliant on visual scan to acquire the R44 and to update their mental picture of its location. It is noteworthy that the absence of a Hi-Brite display at Ternhill was cited as a contributory factor in the investigation of Airprox 086/11. As a consequence of their incorrect mental picture, the ADC team focussed their lookout on the Chetwynd area and, given the restricted field of view of binoculars and the angular difference between Chetwynd and the R44's track, they were unable to visually acquire the R44 until a late stage. Although it has not been possible to determine when the ADC team sighted the R44, the unit's investigation determined that it was too late for them to have issued an additional warning to the Squirrel crews operating at Ternhill. Subsequent to the Unit's investigation, the ADC instructor has stated that they felt somewhat reassured about the developing situation, by the R44 pilot's statement that he was visual with the Ternhill traffic, believing that the R44 pilot would sequence himself with the existing cct traffic. What is clear from analysis of the transcript is that the ADC was struggling to manage the 3 separate frequencies and that, as a result of the frequency separation between the R44 and the Squirrels, the Squirrel pilots' SA was severely affected. Previous Airprox have highlighted the weakness of the current MASCOT communications system and its inability to cross-couple frequencies; this Airprox provides further evidence for the requirement to provide frequency cross-coupling functionality within MASCOT.

Notwithstanding the fact that the ADC team were unable to update their SA of the R44's position, they did not impose active deconfliction measures to integrate the R44 with the Ternhill visual cct traffic. One option could have been to have instructed the Squirrels to maintain cct height until the R44 had cleared the ATZ; however, a better option may have been to have effected such deconfliction, having elicited from the R44 a specific transit height, rather than relying on a broader 'operating height not above'. This would have provided additional benefit such that a more specific ATZ crossing broadcast could have been made to the Ternhill visual cct traffic, thus aiding the development of their SA.

Finally, although the ADC was not required to engage with the Chetwynd traffic during the incident sequence, controller workload is based on a number of factors including the complexity of the task, task loading and the individual's perception of their ability to manage the task. Given the ADC trainee's inexperience and that they had 9 speaking units on 3 separate frequencies, it is possible that the ADC trainee was nearing overload and that this was exhibited through their frequency management errors during the incident sequence.

Whilst the R44's crew were visual with the Ternhill visual cct traffic, the R44 was flown close enough to Squirrel (A) to cause its crew concern. Moreover, whilst active deconfliction measures could have been implemented by the Ternhill ADC team, they were not. Finally, the ADC team had not utilised the information from the R44 to update their mental picture of its position and thus were unable to provide accurate information to the Ternhill visual cct traffic.

In mid-2012, following a period of incident trend analysis, the RAF ATM Force Cmd requested the Air Defence and Air Traffic Systems (ADATS) Design Team (DT) to investigate the feasibility and safety implications of frequency cross-coupling through MASCOT. An initial technical trial has been completed which highlighted a number of technical, safety and data assurance issues. The ADATS DT is continuing to work alongside the MASCOT system contractor to develop a technically compliant solution.

The Unit investigation team made a number of recommendations that have been accepted by the Unit Occurrence Review Group (ORG). Significant amongst these from an ATM perspective was that a review of the practice of 'bandboxing' would be conducted.

RECOMMENDATIONS

BM SPA supports the recommendations made to and agreed by the RAF Shawbury ORG and in addition, the Stn Cdr at RAF Shawbury has been requested to:

- a. Investigate the provision of a Hi-Brite VRD at Ternhill RLG.
- b. Review the practice of combining Ternhill Tower and Chetwynd Radio positions and the associated operating procedures and airspace deconfliction measures.
- c. Review the ATC Sqdn's training package to ensure that information on Pipeline inspection helicopters and their potential routeings and handling is included.
- d. Review the original unit investigation with regards to the new information derived from the NATS radar replay.

Given this and other related incidents, the ATM Force Cmdr has been requested to conduct a Force-level Safety Survey, to review the practice of 'bandboxing' with a view to providing additional guidance to units.

OUTCOMES

BM SPA received a reply from Stn Cdr RAF Shawbury stating that they agreed with the additional recommendations and advising of progress already made against those recommendations; specifically that:

	Recommendation	Action Undertaken
1	Provision of HI-Brite VRD at Ternhill.	<ol style="list-style-type: none"> a. Engineering Change Request (ECR) submitted in 2010. b. Cost approx £82k CDeI and £3k RDeI but Business Case stalled owing to lack of funding. c. New ECR to be submitted with improved safety assessment.
2	Review practice of combining Ternhill and Chetwynd positions and associated operating and airspace procedures.	<ol style="list-style-type: none"> a. 'Splitting Out' of Ternhill and Chetwynd was at the discretion of the controller. A maximum number of total speaking units (6 ac) has now been included in the ATC Order Book but does allow for controllers to split out the 2 positions prior to the number being reached. b. ATZ crossing procedures have been reviewed and strengthened with a greater emphasis on the radar controller gaining approval for an ATZ transit prior to the ac being handed to the Ternhill controller.
3	ATC Training Package for PINS ac.	<ol style="list-style-type: none"> a. All controllers have been re-briefed on pipeline ac. b. Whilst discussion of pipeline ac was part of the training package, it has now been formally included as a training objective and must be signed off by a SQEP controller.
4	Review of original investigation.	This has been passed to the chair of the ORG to action.

Stn Cdr RAF Shawbury also highlighted their concern over the R44 pilot's statement 'that they had not submitted details of their flight through the PINS' because of 'its lack of utility'. BM SPA would like to request that the Board includes the utility of the PINS in their deliberations over this Airprox.

HQ AIR (TRG) comments that the PINS system was introduced decades ago following near misses between military fast jets and PINS helicopters and functioned by increasing awareness amongst aircrew of the potential presence of PINS helicopters. The current proliferation of PINS operations means that it is normal for PINS to be notified as active in all areas, creating a persistent but non-specific warning. It is hoped that a new online planning and deconfliction system will allow PINS operators to input their routes much more specifically, with a commensurate increase in awareness by military crews. In this sense, the concerns of the operator over the utility of PINS notification are valid.

This incident raises questions over the control of an ATZ and a visual cct by ATC. An ATZ is designed to protect the aerodrome users from passing traffic. In this case, this protection was breached when the R44 was permitted to enter, into conflict with the established traffic; the hazard was immediately apparent to the pilot of Squirrel (A) from ATC's transmissions. Arguably, the R44 pilot might have been expected to visually deconflict in any case, but this did not happen and the chosen flightpath was into direct conflict with traffic established in the pattern to land. The lack of planning for a sortie profile that clearly required a flight through a congested MATZ/ATZ, presumably following a pipeline of some kind, is of concern.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available included reports from the pilots of all 3 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.

It was clear that there had been a breakdown in information flow between all parties involved. With the Squirrel helicopters operating on UHF and the R44 on VHF, it was imperative that information exchanged between aircrew and ATC, which was then subsequently rebroadcast to the respective parties, was timely and accurate. The R44 pilot had contacted Shawbury Approach and passed his flight details which led to Shawbury notifying Ternhill of its position and its imminent transfer to the Ternhill frequency. The R44 pilot then called Ternhill and passed his flight details again as well as an update of his position. This flight was a routine and regular occurrence so should have not been a surprise to Ternhill ATC. Owing to frequency congestion some of the information was lost but eventually the R44 called approaching the ATZ boundary requesting an ATZ transit. This updated position was not assimilated by the ADC as his next 2 all-stations broadcast erroneously inferred that the R44 was in the Chetwynd area tracking towards Ternhill not above 1000ft. Unfortunately, Squirrel (A) pilot used this information to update his mental air picture, content that the R44 was quite some distance away so that he would be able to complete his approach before the R44 crossed through the final approach track. Following these 2 transmissions, the ADC approved the R44's ATZ transit without placing any restrictions on the flight or giving positive instructions to its pilot to ensure the R44 was deconflicted from, or integrated with, the Squirrel traffic in the cct. Members agreed that this was the cause of the Airprox. With the apparent high workload of the ADC trainee, Members wondered why the screen controller had not intervened to resolve the deteriorating situation. The trainee was having difficulty in relaying information on 3 separate frequencies, which had led to transmissions having to be repeated; Members agreed that cross-coupling, had it been available, would have improved the SA of the aircrew. The R44 pilot was given TI on the 4 helicopters in the cct area and he reported visual with all 4. Unbeknown to both Squirrel (A) and (B) pilots, the R44 was now within the ATZ on a conflicting track. Squirrel (A) pilot was surprised when the R44 suddenly appeared in his 11 o'clock before it quickly crossed ahead at close range. From the radar recording it appeared that the R44 was flying about 300ft below both Squirrels (A) and (B) when they commenced their final approach; however, Squirrel (A) then commenced a descent towards the R44. Members commended Squirrel (A) pilot for broadcasting an alert to Squirrel (B)

ahead but unfortunately he used Squirrel (C) c/s. Squirrel (B) pilot was concerned by (A)'s transmission and elected to maintain height as the R44 passed behind and below, unsighted to him. Although the R44 pilot had seen both Squirrels (A) and (B) and was maintaining his own separation from them, it appears he was slightly caught out by Squirrel (A)'s flightpath as it passed close to his R and slightly below. Three Board Members believed that the visual sightings by both Squirrel (A) and R44 pilots had ensured that the ac were not going to collide, risk C. This view was not shared by the majority who agreed that the dynamics and geometry were such that safety margins had been eroded below those normally expected during the encounter, risk B.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: The Ternhill ADC allowed the R44 to enter the ATZ but did not integrate it safely with cct traffic.

Degree of Risk: B.