

## AIRPROX REPORT No 2012165

Date/Time: 15 Nov 2012 1505Z

Position: 5255N 00240W  
(7nm N RAF Shawbury)

Airspace: Shawbury AIAA (Class: G)

Reporting Ac      Reported Ac

Type: Squirrel HT1      GA-8 Airvan

Operator: HQ Air Trg      Civ Club

Alt/FL: 1500ft      1200ft  
(QFE 1011hPa)      (QFE 1002hPa)

Weather: VMC CLAC      VMC CAVOK

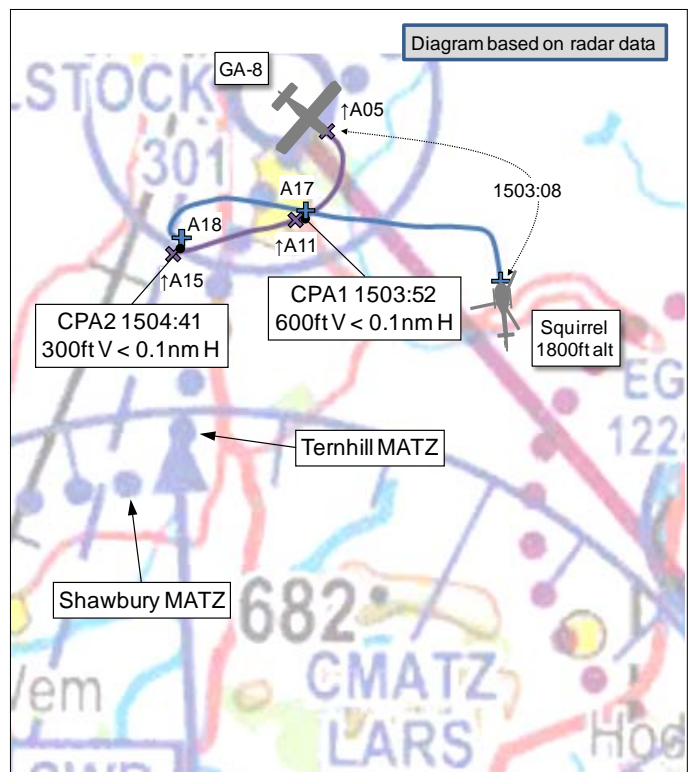
Visibility: 50km      10km

Reported Separation:

200ft V/300m H      100ft V/600m H

Recorded Separation:

300ft V/0.1nm H



## PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

**THE SQUIRREL HT1 PILOT** reports conducting an instrument flying training sortie, positioned on L base at height 1500ft (QFE 1011hPa) in the RW18 radar pattern. He was operating under IFR in VMC, 500ft above cloud in 50km visibility, with a TS from Shawbury APP [282.000Mhz]. The black and yellow helicopter had HISLs, landing lamp and navigation lights selected on. The SSR transponder was selected on with Modes A and C; the ac was not fitted with an ACAS. Whilst monitoring his student, he completed a visual scan and sighted a FW piston ac in his 1 o'clock position, approximately 500ft below him in a shallow climb passing from R to L. This ac passed out of view below him and he informed ATC of its presence. ATC confirmed that they were not in communication with the FW ac. Shortly afterwards he was directed on to a S'y heading and visually reacquired the FW ac, which was still climbing, in his low 10 o'clock position. Having assessed a risk of collision (the FW ac was maintaining a fixed position in his windscreen) he initiated a LH level turn through 360°, at 90kt, to pass behind the other ac. On completion of the turn, the FW ac was seen to be co-altitude, but still climbing, in his 2 o'clock position at a safe distance.

He assessed the risk of collision as 'Low'.

**THE GA-8 AIRVAN PILOT** reports conducting a parachute drop flight, climbing out from Tilstock A/D RW14 after checking that Shawbury had been informed of his parachuting operations. He was operating under VFR, in VMC, with a BS from Shawbury [133.150MHz]. The white ac had strobe lights selected on, as was the SSR transponder with Modes A, C and S. The ac was not fitted with an ACAS.

[UKAB Note(1): The GippsAero GA-8 Airvan is a single-engine piston, high-wing, fixed tricycle undercarriage, utility ac of Australian design and manufacture. It has a MTOW of 1814kg,  $V_{ne}$  of 130kt and  $V_{so}$  of 57kt (the picture below is not of the subject Airvan, attribution GippsAero):



He called Shawbury [APP] on passing height 2-300ft [QFE 1002hPa, elevation 301ft] and requested a BS. He noted that the controller queried whether he needed a squawk, which he thought unusual as he always used code 0033 for 'parachuting at Tilstock'. He explained this to the controller, made a R turn to an approximate heading of 240° and continued climbing. At 'about 1200ft agl', one of the skydivers on the R side of the ac said that he could see a helicopter. He rolled the ac L, to raise the R wing, in an attempt to gain visual contact but was unable to see the helicopter. He stated that 'one or two seconds later' he saw a blue and yellow helicopter on the R, at a range of about 600m, paralleling his course, slightly ahead and above, which then passed behind him.

He assessed the risk of collision as 'Medium'.

[UKAB Note(2): The Shawbury weather was reported as follows:

METAR EGOS 151450Z 15007KT 7000 HZ FEW009 SCT250 08/05 Q1020 WHT TEMPO SCT009 GRN  
METAR EGOS 151514Z 13007KT 6000 HZ BKN009 SCT250 07/05 Q1020 GRN NOSIG]

**THE SHAWBURY APPROACH CONTROLLER** reports that she was the approach controller monitoring all frequencies with [the subject Squirrel] in the instrument pattern 'turning in for RW18 from the E at 1500ft at approximately 6 miles'. The Airvan pilot called on Zone frequency, requesting a BS. No primary contact or squawk was seen when he called and she applied a BS when the squawk was seen. She passed TI on the Squirrel to him on VHF whilst, at the same time, the Squirrel pilot reported a FW a/c in close proximity, on UHF. When able, she reported that it was an Airvan, climbing out from Tilstock. As a consequence of operating both VHF and UHF frequencies, she was unable to receive from one ac whilst transmitting to the other and was therefore not sure of the order of events. She turned the Squirrel pilot in for his approach, noting that he had 'initiated his own orbit' prior to this. She stated that she was not aware that 'Tilstock was becoming active', and that once this was known, an avoid was 'placed on the screen' and subsequent ac vectored in from the W.

She perceived the severity of the occurrence as 'High'.

**THE SHAWBURY SUPERVISOR** reports that he was the SUP at the time of the incident. Tilstock Parachute centre, sited approximately 7nm N of RAF Shawbury, was regularly active for parachute dropping and notified RAF Shawbury of intended activation by telephoning the RAF Shawbury Switchboard. The radar screens have a red circular overlay applied, with a 2nm radius centred on Tilstock, so any traffic being fed in for an instrument approach to RW18 is kept clear of the site. On this day, due to poor weather, Tilstock had not become active in the morning. About an hour prior to the incident, a phone call from Tilstock was received 'through the Switchboard'. Afterwards, the assistant said, 'Tilstock trying to become active', he thought, which he interpreted as meaning they were not active yet and would tell Shawbury if they were about to launch their ac. As such, he did not order the avoid overlay to be selected for the screens and did not ensure that APP was informed.

After the incident he checked with the assistant who said she had confirmation from Tilstock at the time of the call that they were active and were attempting to launch an ac. No previous launch from Tilstock had taken place that day.

**THE SHAWBURY FLIGHT OPERATIONS ASSISTANT** reports that she had just taken over as the Switchboard Operator when she took a telephone call, at approximately 1230, from 'a lady at Tilstock' informing her that they were 'trying to become active up to FL100'. On receipt of this information she 'passed it down' to the approach room and received acknowledgement. After receiving the acknowledgement she took no further action and sometime later was informed that there had been an incident.

**BM SAFETY POLICY & ASSURANCE** reports that this Airprox occurred on 15 Nov 12 between a Squirrel helicopter, operating IFR in receipt of a TS from Shawbury APP, and an Airvan operating VFR from Tilstock airfield in receipt of a BS from Shawbury APP.

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

#### Information

Both crews reported VMC with the Squirrel crew reporting 50kms visibility with no Wx or cloud. The Squirrel was crewed by a QHI and a student. Due to low traffic levels, APP was 'bandboxed' with DIR, Zone and Low-Level; whilst BM SPA does not consider this degree of 'bandboxing' to be 'good practice' it was neither causal nor contributory to this Airprox. Shawbury APP described their workload and the task complexity at the time of the Airprox as low and was providing a TS to one further ac, in addition to the 2 involved in the incident.

The incident sequence commenced at 1502:28 as APP instructed the Squirrel to, "*turn left heading 2-8-0 degrees*"; the Squirrel was operating within the radar training cct at Shawbury and being vectored to RW18. At this point, the Squirrel was 2nm SE of Tilstock, heading 010° at height 1500ft (QFE 1011hPa); on the radar replay, the Squirrel indicated 1800ft based on a QNH of 1021hPa, thus verifying the SSR Mode C information.

Given Tilstock's proximity to RAF Shawbury (7nm N Shawbury), a Letter of Agreement exists between RAF Shawbury and Skydive Tilstock to deconflict the 2 operations. At the time of the incident, the agreement required Tilstock to contact Shawbury ATC to advise them of the commencement of operations. In turn, Shawbury ATC would activate a red avoid symbol over Tilstock on their surveillance displays and vector IFR traffic around it.

At 1503:00, the L turn instructed by APP to the Squirrel at 1502:28 becomes evident on the radar replay; the Squirrel was 1.4nm ESE of Tilstock. Almost simultaneously, at 1503:01, the Airvan called APP on the Zone VHF, "*Shawbury, good afternoon, [Airvan c/s] Tilstock*"; the Airvan is not visible on the radar replay and, based upon APP's DASOR, neither was it visible on their surveillance display. Shawbury APP replied to the Airvan and the Airvan pilot requested a, "*Basic Service please*". As this request was being made, at 1503:08, the Airvan appears on the radar replay ½nm N of Tilstock, tracking SE'ly, indicating a climb through altitude 500ft (200ft Shawbury QFE, corresponding with the Airvan pilot's report). Simultaneously, the Squirrel had steadied on 280°, 1.4nm ESE of the Airvan.

Shawbury APP then applied a BS and asked the Airvan, "*do you require a squawk or have you got your own squawk on?*" Whilst this response was not in accordance with CAP 413 Chapter 6 Section 1.17, outlining the standard RT to be used on initial contact, it is likely that APP was surprised by an ac free-calling from Tilstock, when they had not been notified that the site was active. Thus APP was trying to determine whether the Airvan was a para-dropping ac, or a GA departure. During APP's reply, the Airvan commenced a L turn to track SSW'ly.

At 1503:16, the Airvan replied, "*we're parachuting squawk, 0-0-3-3*" which was acknowledged by APP, followed by a request for the Airvan to, "*pass your details.*" At 1503:23, the Airvan pilot replied,

“Er, Airvan out of Tilstock, we’re parachuting and we’ll be to Flight Level 100, we’ll change and inform you when we’re 2-way with Scottish.” Subsequent to their investigation, the unit has confirmed that it was during this transmission that the Airvan began to paint on APP’s surveillance display. Immediately after this transmission, APP passed a traffic warning to the Airvan about the Squirrel stating that there was a, “Shawbury rotary, er just to the south-east of you, half a mile, er radar er inbound radar”. At this point, the Airvan was 0.4nm WNW of the Squirrel, tracking SW’ly, indicating a climb through altitude 900ft (600ft Shawbury QFE). Immediately after this transmission, at 1503:41, the Squirrel instructor transmitted, “Approach, [Squirrel C/S] just got what appears...[rendered unreadable by the Airvan transmitting on VHF; unfortunately, the Airvan’s transmission was also unreadable].” This transmission corresponds with the Squirrel pilot’s DASOR, following their first sighting of the Airvan in their ‘1 o’clock, approx 500ft below, in a shallow climb, passing from right to left’. Figure 1 depicts the incident geometry at this point.

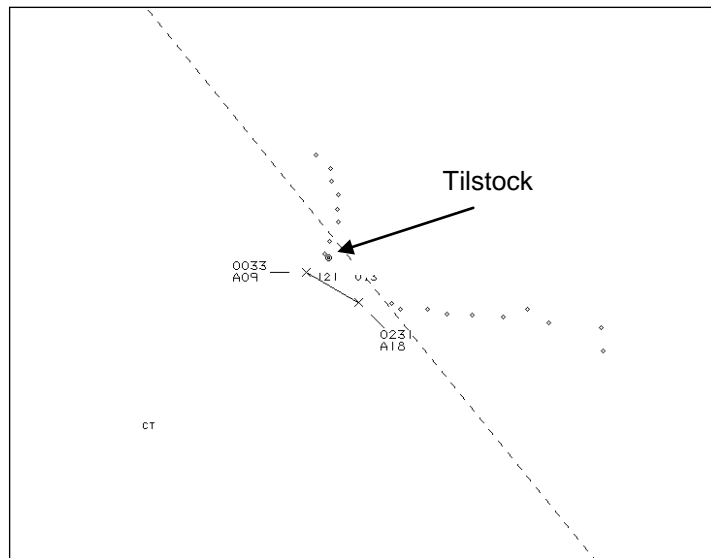


Figure 1: Incident Geometry at 1503:41

At 1503:47, APP requested the Squirrel pilot to, “say again” and he reported, “one fixed wing about 500ft below us.” APP replied, “yeah, it’s the er parachute aircraft at Tilstock, he’s just called me”, which was acknowledged by the Instructor pilot. The Airvan passed 0.1nm ahead and 600ft below the Squirrel between radar sweeps at 1503:52. At 1504:00, APP instructed the Squirrel pilot to, “turn left 1-9-0 degrees” which was read-back by the student pilot; Figure 2 depicts the incident geometry at that point. The ‘live-mic’ then recorded APP stating that, “Tilstock’s active, have we been...err. Well, he’s just airborne so...” Whilst it has not been possible to determine conclusively who APP was addressing, it is believed to have been the ATC Supervisor.

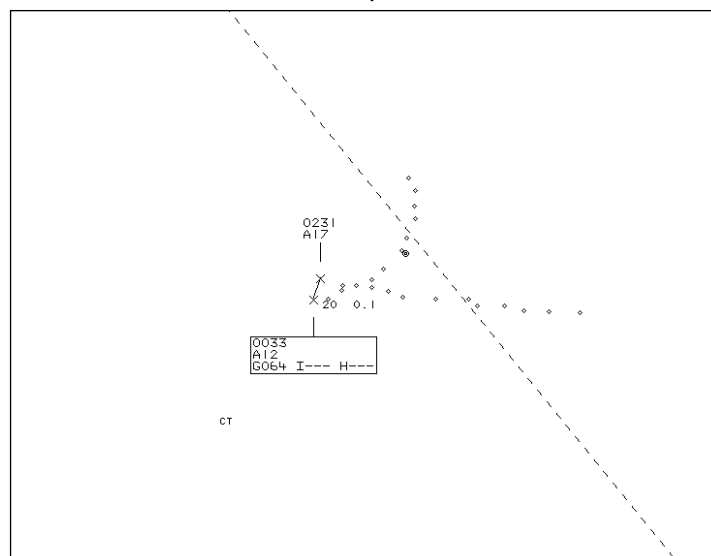


Figure 2: Incident Geometry at 1504:00

At 1504:25 the Squirrel's left-hand turn becomes evident on the radar replay followed, at 1504:27, by the Instructor pilot advising APP that they were, "orbiting left, that fixed wing in the climb"; Figure 3 depicts the incident geometry at that point.

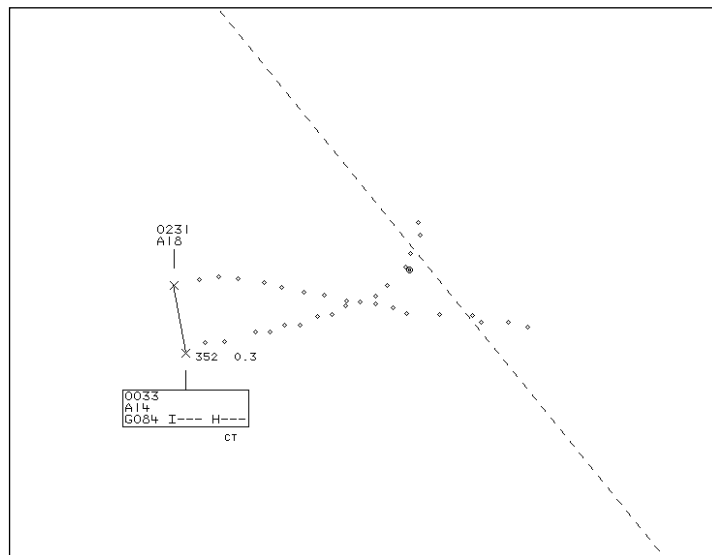


Figure 3: Incident Geometry at 1504:27

In reply, APP asked the Instructor whether the Airvan was, "just to the north of you now", who replied that the Airvan was, "about 300 metres in the 12 o'clock and 200 feet below me" which was acknowledged by APP. The CPA occurred between radar sweeps at 1504:41 as the Squirrel passed 0.1nm NE of the Airvan, 300ft above; Figure 4 depicts the incident geometry immediately after that point.

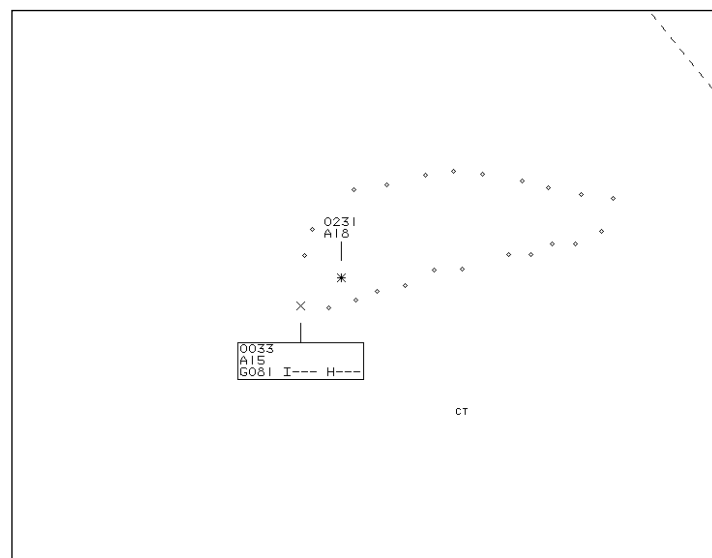


Figure 4: Incident Geometry at 1504:43

The Squirrel Instructor pilot reported that he had lost sight of the Airvan as it passed beneath his ac (at 1503:50) and reacquired it after being instructed to, "turn left 1-9-0 degrees" at 1504:00. The Airvan pilot reported that at about height 1200ft [approximately 1500ft on the radar replay] one of the skydivers sitting on the RH side of the ac said he could see a helicopter. One or 2sec later the Airvan pilot saw a blue and yellow helicopter paralleling his track, slightly ahead and above to his R, which then passed behind him. Based upon this description, it appears that the Airvan pilot first visually acquired the Squirrel at approximately 1504:27 (as shown at Figure 3), after the first pass at 1503:50.

The ATC Supervisor reported that Tilstock had not been active that morning due to poor weather and that around an hour prior to the incident, the ATC Switchboard Assistant had received a call from

Tilstock. Unfortunately, the Switchboard's landlines are not recorded, nor is there provision for a 'live-mic' function on that position. The ATC Supervisor recalled that the Switchboard Assistant had, as a result of the call from Tilstock, informed them that 'Tilstock was trying to become active' which they interpreted as them not being active yet. As a result, the ATC Supervisor did not direct that the Tilstock 'avoid' symbol should be activated on the surveillance displays, nor was APP informed about the conversation with the Switchboard Assistant.

## Analysis

Whilst technically the instruction by APP to the Squirrel at 1504:00 to, "*turn left 1-9-0 degrees*" vectored the Squirrel into conflict, BM SPA contends that this would be an unfair summation of this Airprox event. Given the representation of the 2 radar contacts to APP, it is likely that the contacts had merged, or at best significantly overlapped, on the surveillance display at the point that the instruction was passed. This would explain APP's query at 1504:32 as to whether the Airvan was to the N of the Squirrel; unfortunately, given the likely confused presentation of the situation on APP's surveillance display, it is unlikely that the Squirrel Instructor pilot's reply would have assisted APP in updating their mental picture. Moreover, in the absence of contradictory information from the Squirrel crew, it is unlikely that APP would have assimilated that they would have lost sight of the Airvan as it passed beneath them, albeit for a short period. Consequently, from APP's perspective, the Squirrel's crew were visual with the Airvan and, believing the Squirrel to be S of the Airvan, a heading of 190° was the best means of deconflicting the ac. A hindsight bias argument could be made that APP could have requested the Airvan to have levelled-off below the Squirrel; however, APP was faced with a rapidly developing situation and, given their understanding of the relative geometry of the ac and that the Squirrel crew had reported visual with the Airvan, believed that they had achieved a sensible course of action to deconflict the ac.

The root cause of the incident lies in the format and content of the liaison conducted between Tilstock, the Switchboard Assistant and the ATC Supervisor. Whilst it has not been possible to determine conclusively what was said between these 3 parties, what is clear is that Tilstock's activation was not communicated effectively. Consequently, APP was unaware of Tilstock's activation and vectored the Squirrel through the Tilstock overhead.

## Conclusion

A breakdown in communication between Tilstock, the Shawbury Switchboard Assistant and the ATC Supervisor caused a loss of situational awareness for Shawbury APP, resulting in the Squirrel being vectored through the Tilstock overhead, bringing it into conflict with the Airvan. The conflict was resolved by the Squirrel's Instructor pilot.

## Outcomes

RAF Shawbury conducted a thorough incident investigation and made a number of recommendations to adapt both local procedures and their Letter of Agreement with Skydive Tilstock. The majority of these recommendations have been accepted by the Stn Occurrence Review Group and are being implemented, with Skydive Tilstock's agreement. Notable amongst these is that the Letter of Agreement is being amended such that ac departing Tilstock will not climb above 1000ft agl until 2-way RT with Shawbury Zone has been established and ac are given positive clearance to climb.

This Airprox event adds further support to the recommendation made by BM SPA to the ATM Force Cdr following Airprox 2012163 to task a Force-level Safety Survey, to review the practice of 'bandboxing' with a view to providing additional guidance to units.

**HQ AIR TRG** comments that APP attempted to pass relevant TI to the Squirrel pilot and to the Airvan pilot. Visual sighting appears to have been coincident with this TI and the crew took appropriate avoiding action when required. The incident highlights the potential for otherwise sound preventative measures to be eroded by poor communication.

## **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.

Board Members agreed that the root Cause of this incident was a breakdown in communications between Tilstock Parachute Centre and RAF Shawbury ATC. ATC Members opined that the occurrence could have been prevented by the Shawbury SUP following up the message from Tilstock which, as reported, left some ambiguity as to whether the parachute centre was active or not. Shawbury APP was surprised by the presence of the Airvan and, although TI was passed, the situation was exacerbated by the mix of VHF and UHF RT transmissions. Shawbury APP then attempted to gain SA on the relative positions of the 2 ac but did not have sufficient radar resolution or traffic position information to avoid subsequently vectoring the Squirrel into conflict with the Airvan. Both pilots were operating in class G airspace with equal responsibility to 'see and avoid'. The Airvan pilot had right of way at CPA 1 and the Squirrel pilot had right of way at CPA 2. The Squirrel pilot gained visual contact first and was able to effect deconfliction by orbiting L at CPA 2.

Board Members commented that although the root cause was quickly identified, this Airprox displayed a number of causal factors which served to illustrate the classic accident 'chain of events'; in this case broken by the Squirrel pilot's lookout.

The Board was satisfied that, given the communication breakdown, the Squirrel pilot provided effective and timely action to prevent ac collision.

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

Cause: A breakdown in communications resulted in a conflict in the vicinity of the Tilstock freefall parachute drop zone.

Degree of Risk: C.