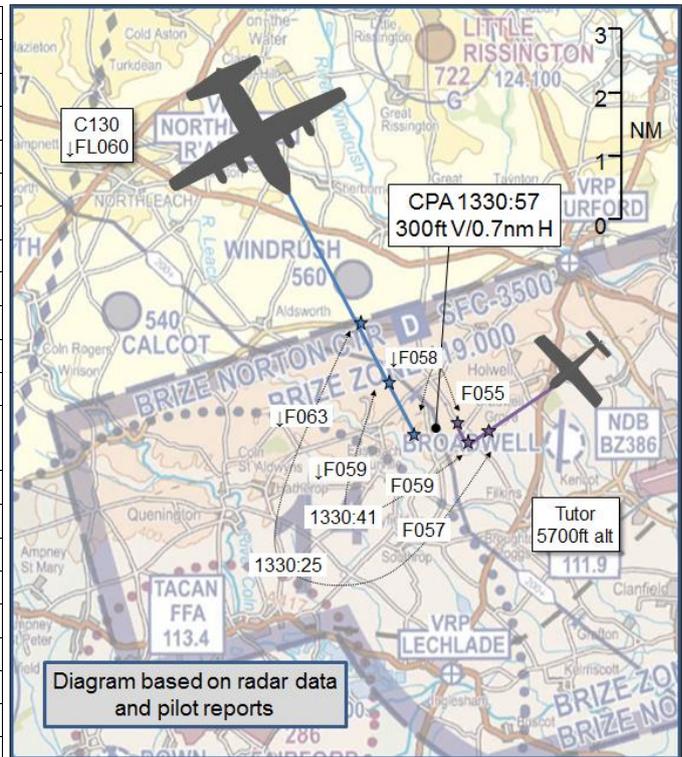


**AIRPROX REPORT No 2016094**

Date: 27 May 2016 Time: 1330Z Position: 5146N 00142W Location: Brize Norton

**PART A: SUMMARY OF INFORMATION REPORTED TO UKAB**

| Recorded          | Aircraft 1      | Aircraft 2            |
|-------------------|-----------------|-----------------------|
| Aircraft          | C130            | Tutor                 |
| Operator          | HQ Air (Ops)    | HQ Air (Trg)          |
| Airspace          | Lon FIR         | LON FIR               |
| Class             | G               | G                     |
| Rules             | VFR             | VFR                   |
| Service           | Traffic         | Traffic               |
| Provider          | Brize           | Benson                |
| Altitude/FL       | FL058           | FL055                 |
| Transponder       | A, C, S         | A, C                  |
| <b>Reported</b>   |                 |                       |
| Colours           | Green           | White, Blue           |
| Lighting          | Nav, Strobes    | Strobes, Nav, Landing |
| Conditions        | VMC             | VMC                   |
| Visibility        | 20km            | 20km                  |
| Altitude/FL       | FL55            | 6000ft                |
| Altimeter         | 1013 hPa        | QNH (1016 hPa)        |
| Heading           | 085°            |                       |
| Speed             | 170kt           | 100kt                 |
| ACAS/TAS          | TCAS II         | TAS                   |
| Alert             | RA              | TA                    |
| <b>Separation</b> |                 |                       |
| Reported          | 0.8nm H         | 1nm H                 |
| Recorded          | 300ft V/0.7nm H |                       |



**THE C130 PILOT** reports that he was on recovery to Brize via the Daventry corridor. Prior to the handover to Brize, Swanwick Mil advised him that Brize was very busy and, on establishing on the Director’s frequency, it became apparent that that was indeed the case, with numerous aircraft types in the instrument pattern. A Traffic Service was established and they were instructed to descend from FL70 to FL50 and take up a direct track to hold in the Brize overhead. They complied and turned towards the TACAN hold for RW07, in the descent to FL50. There were numerous TCAS contacts displayed on the Nav radar, but they all appeared to be in the area expected for a busy radar pattern. They were about 6nm on the 265° radial from the BZN beacon, heading towards it, and descending through FL60, when they received an amber TCAS contact in close proximity and an associated ‘traffic, traffic’ aural alert. The crew quickly reduced the scale on the Nav radar to get a better idea of the traffic’s position. By now they were 5nm from the BZN and passing FL55, the captain looked out in the direction of the traffic warning and saw a Tutor aircraft, co-altitude and on a reciprocal heading, displaced to the left and thought to be about 1nm away. Simultaneously the TCAS symbology turned red and a TCAS RA commanded ‘climb, climb’. The Captain stopped the descent and climbed the aircraft in accordance with the RA. The co-pilot informed Brize Director about the TCAS RA and that they were climbing. At FL059, the TCAS announced ‘clear of conflict’ and again ATC were informed. Happy that the Tutor was now well behind them, they resumed the descent to FL50. The Brize Director confirmed that there had been a Tutor in the overhead, but he had not seen it on his radar. The C130 recovery continued without further incident.

He assessed the risk of collision as ‘High’.

**THE TUTOR PILOT** reports that he was level at 6000ft and operating in an area 5nm SW of Brize in Class G airspace under a Traffic Service from Benson. Benson Approach passed Traffic Information on traffic 5nm north and 1000ft above, but this was neither sighted, nor reported on the Tutor’s TAS.

Further Traffic Information was given, placing the traffic 4nm north, 1000ft above and descending; although still not visual, it appeared on the TAS (which was set to the 5nm range in accordance with Tutor SOPs) as a proximity advisory contact. The bearing of the TAS contact could not be relied upon because the Tutor was in a turn, but a further report from ATC advised the traffic was now 2nm away and this coincided with him becoming visual with a C130, which appeared to be slightly above, offset to the left and in the descent. He estimated that without course alteration the CPA would be about 0.75nm, so he made a right turn to increase the distance. He recalled the C130 passed 1nm horizontally and slightly below him.

He assessed the risk of collision as 'Low'.

**THE BRIZE DIRECTOR** reports that he was controlling in the Director position during a very busy period with numerous inbound aircraft, including: 3 individual French Alphajets who were unfamiliar with Brize, required a lot of RT and were all on a Deconfliction Service; a C17 conducting multiple radar circuits; an inbound A330 for PAR; as well as the subject C130. Given the speeds of the aircraft, he decided to sequence the Alphajets first, followed by the A330, and asked the C130 to hold in the Brize overhead at FL50 which would ensure it was well above the C17 who would be climbing out to 3800ft. The C130 was on a Traffic Service and started to descend to FL50, and he turned his attention to the Alphajets and A330. As the C130 entered the radar overhead, the pilot declared a TCAS RA and a stop of descent. The controller immediately scanned the radar and a code-callsign-converted squawk appeared out of the radar cone of silence. He had not previously been aware of an aircraft in the overhead and was surprised that there was one, particularly displaying the code-callsign conversion. He acknowledged the pilot's call and waited for further response for about 5 seconds, after which the pilot declared the TCAS RA resolved and was continuing his descent. He noted that he had assumed that the safest place to hold his aircraft was in the Brize overhead, even if it was above the CTR, but because he couldn't guarantee solid radar coverage realised this assumption was flawed. Benson controllers had been deployed to Brize earlier that day (they had bolt-holed from Benson) and had inputted the callsign conversion of Benson squawks into the radar consoles, which explained why he could only see the callsign-converted squawk on his radar console. He opined that he would have thought that working at Brize would have given the Benson controllers an understanding of the radar cone of silence. He stated that the incident had made him lose confidence in his controlling ability.

He assessed the risk of collision as 'High'.

**THE BRIZE SUPERVISOR** reports that the unit's workload went from low to high in a very short space of time; not only was the workload high, the task also escalated from straight forward to complex. Several visiting foreign fast-jets were conducting individual approaches at Brize prior to returning to France, the usual language barriers mean that the Director's task was phraseology intensive, and the Approach controller was required on two occasions to hold aircraft off for Director, in addition to the Director holding off aircraft to the NW and above the Brize CTR. As the Supervisor, he was busy monitoring the Approach controller and ensuring that climb-out details for the fast-jets were passed as pre-notes to Swanwick Mil as well as dividing his attention between the Director and ADC. He was not made aware of any Tutors operating in the Brize overhead and did not believe that Traffic Information was passed by Benson ATC. He did not witness the confliction between the C130 and the Tutor, because it happened in the Brize radar overhead, but he heard the C130 pilot report the TCAS RA, immediately looked at the radar and could not see an aircraft. A few seconds later a code-callsign-converted squawk appeared on the radar display. Until this point the Director had worked well to ensure that all of the aircraft achieved their requests, but this confliction clearly distracted him and the 3<sup>rd</sup> fast-jet went straight to Swanwick Mil without making an approach because it had been holding off to the NW for too long. Holding above the Brize CTR is a routine action for the Brize Director when they are unable to descend into controlled-airspace, and it was a surprise to find a Tutor operating in the Class G above the Brize CTR without Traffic Information being passed.

**THE BENSON APPROACH CONTROLLER** reports that he was the combined Benson Approach/Director controller and had been in position for approximately 30 minutes prior to the incident. The traffic levels were of medium intensity; he was providing a Traffic Service to 3 Tutors

general handling to the west of Benson. The Tutor involved in the incident was operating 5-10nm west of Benson, in a block from surface to FL80, maintaining outside controlled airspace, and was at FL60 at the time of the incident. He saw a large primary radar contact, wearing a Brize squawk 5nm north of the Tutor 1000ft above; he gave Traffic Information to the Tutor pilot, who reported not visual. He called the traffic again at 4nm, 1000ft above but now descending, and again the Tutor pilot reported not visual. He then answered a call from a pilot on VFR recovering, and went back to the Tutor to call the traffic at 2nm and 300ft above still descending. This time the pilot responded that he was visual. Shortly afterwards Brize called to ask to control the Tutor because they were going to have a C130 and a C17 in their overhead, the Tutor was duly handed over, and he was relieved from console about 15 minutes later, unaware that there had been an incident.

He assessed the risk of collision as 'Medium'.

**THE BENSON SUPERVISOR** reports that Benson ATC were controlling a number of Tutors during the afternoon. He had a discussion with the Brize Supervisor regarding the imminent arrival of a C130 and a C17 in the Brize overhead. Discussions were on-going with the Tutors to try and reach a course of action that could meet all requirements, but all aircraft were operating in Class G and there was no obligation for any Captain to restrict the completion of his task. The Benson App/Dir controller called the C130 3 times to the Tutor pilot, who was visual by 2nm and took his own separation.

## Factual Background

The weather at Brize was recorded as follows:

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METAR EGVN 271250Z 08009KT 9999 FEW036 18/10 Q1017 BLU NOSIG=
METAR EGVN 271350Z 08007KT 9999 FEW040 18/09 Q1017 BLU NOSIG=
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## Analysis and Investigation

### Military ATM

At 1330:01 (Figure 1), the C130 is to the north west of Brize Norton by approximately 8nm tracking south east, in the descent to FL50 and routing into the overhead. The Tutor is west-north-west of Brize Norton by approximately 3nm at 6000ft on the Benson QNH.

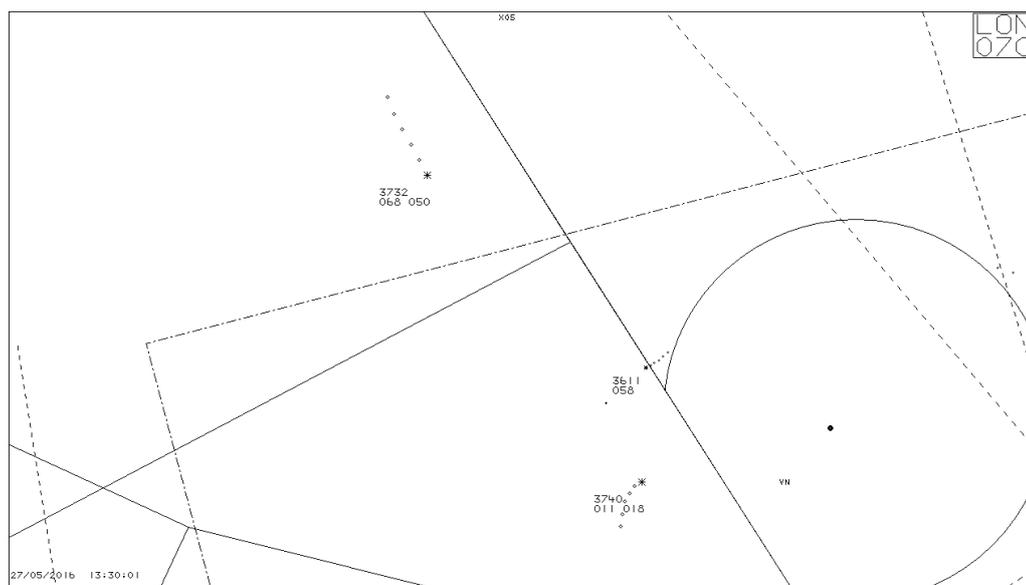


Figure 1: Geometry at 1330:01 (C130 squawking 3732; Tutor squawking 3611).

At 1330:18 (Figure 2), the Benson Approach controller passed Traffic Information for the third time to the Tutor on the C130 to the north. '{Tutor c/s}, previously called traffic north west two miles tracking South West indicating three hundred feet above and descending'.

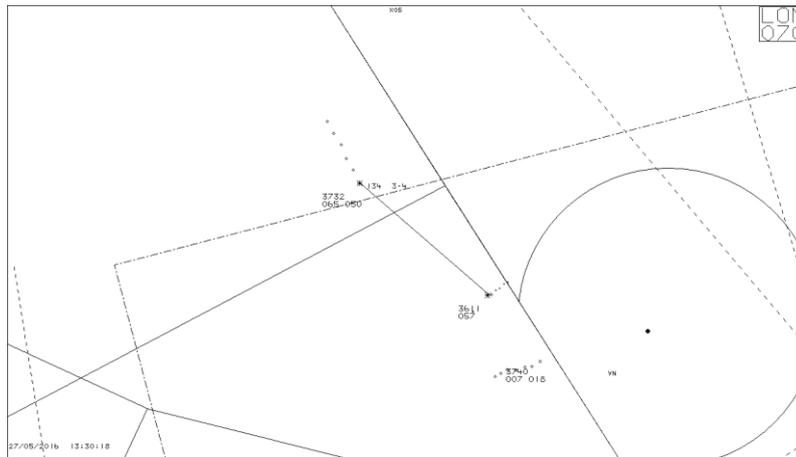


Figure 2: Geometry at 1330:18.

At 1330:26 (Figure 3), the Tutor pilot called 'Traffic in sight,'. The radar replay indicates the Tutor calling visual with the C130 with 2.8nm separation.

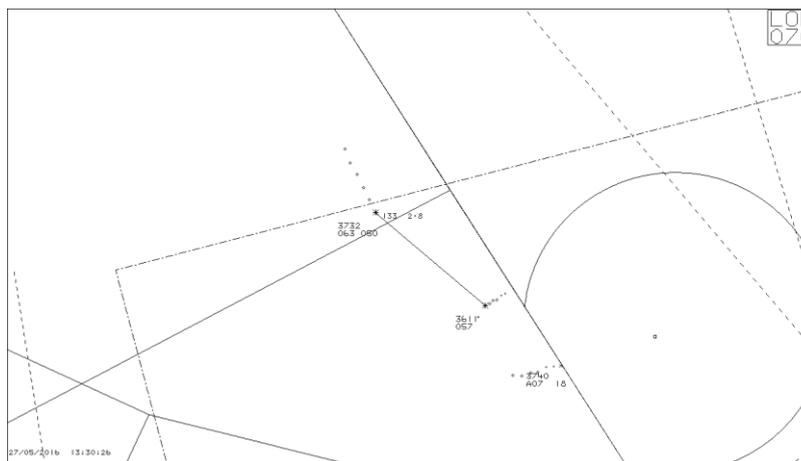


Figure 3: Geometry at 1330:26.

At 1330:52 (Figure 4), the radar replay shows the Tutor turning away to the right with 1nm separation, as reported by the Tutor pilot.

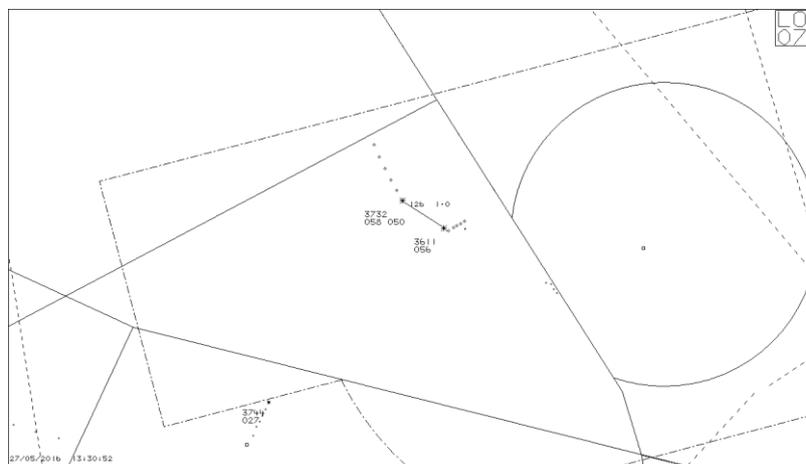


Figure 4: Geometry at 1330:52.

At 1330:55 (Figure 5), the C130 pilot reports the TCAS RA on frequency, separation at this time is 0.7nm.

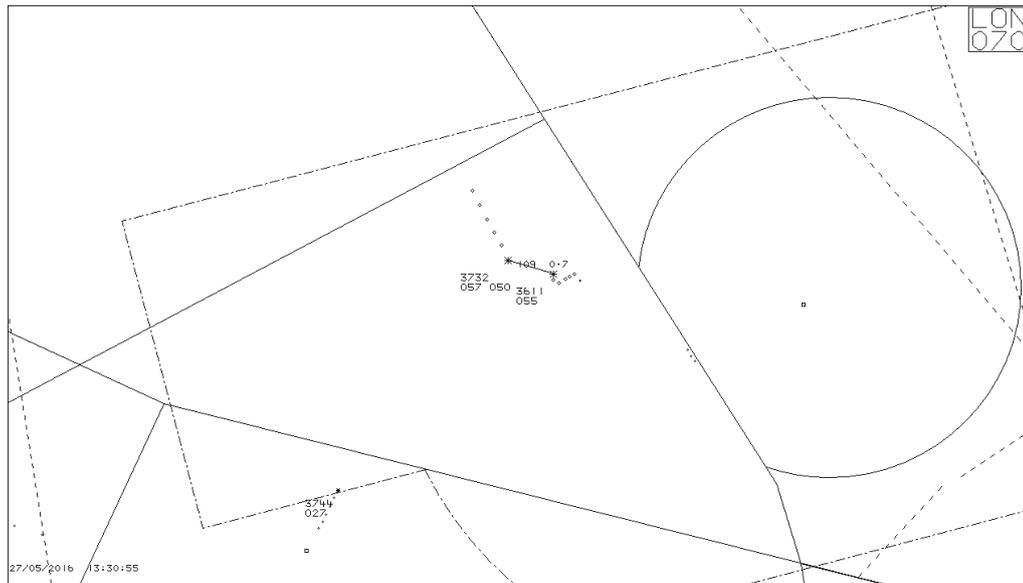


Figure 5: Geometry at 1330:55.

The C130 pilot reported being warned from Swanwick Mil prior to handover that Brize Director was very busy, and it was apparent on handover that this was the case with many callsigns and aircraft types in the instrument pattern. The pilot was given a Traffic Service by the controller, directed to descend from FL70 to FL50, and asked to route to the overhead to hold for other inbound traffic. There was no further communication from the controller to the C130 pilot until he reported the TCAS RA, at which point the controller communicated that the Tutor was in the overhead and had not been seen on the radar. The radar data correlates with the C130 pilot's report of the Tutor at co-altitude within 1nm.

The Tutor pilot reported being level at 6000ft on the Benson QNH, operating 5nm south west of Brize Norton under a Traffic Service with Benson Approach. The pilot reported being passed Traffic Information on an aircraft north 5nm 1000ft above but was not sighted, then again at 4nm but now appearing on TAS. The third call of traffic was at 2nm and this coincided with the pilot becoming visual with the C130. The radar replay and tape transcript correlate this information and indicate that the Tutor pilot became visual with the C130 at 2.8nm and 600ft separation. The pilot subsequently turned the aircraft to the right and estimated that the C130 passed 1nm horizontally and slightly below. Outwith the DASOR, the pilot reported that the reason for general handling overhead Brize Norton CTR was that it is a clear piece of airspace free from GA and Gliders because they are less likely to transit over the top of Class D Airspace.

The Brize Norton controller was working a busy session with multiple aircraft types as well as foreign and unfamiliar fast jet aircraft in the radar training circuit. The controller reported a mix of Traffic Service and Deconfliction Service aircraft on frequency, and prioritised the task accordingly. The controller asked the C130 pilot if he could hold in the overhead at FL50 to ensure separation against an aircraft climbing out and to sequence other traffic ahead. As the C130 descended into the overhead the controller reported concentrating on the fast jets and fixed wing aircraft under a Deconfliction Service.

The Benson controller reported medium intensity and complexity at the time with 3 Tutors on frequency general handling mainly to the west of Benson. The controller reported passing Traffic Information to the Tutor on traffic from the north tracking southbound wearing a Brize Norton squawk. Traffic Information was passed at 5, 4 and 2nm with the pilot reporting visual at 2nm. At no point before the incident was information passed to Brize Norton ATC about the Tutor operating in the Brize overhead.

Three barriers were effective in this incident: timely Traffic Information from Benson ATC; TCAS/TAS on the C130/Tutor; and visual lookout. The Traffic Information to the Tutor was timely and updated on two occasions; but it was not fully accurate as traffic was called as tracking south west when the radar replays show the C130 track south east. However, the Tutor pilot was able to correlate the Traffic Information with his TAS resulting in the pilot becoming visual and able to maintain safe separation from the C130. TCAS alerted the C130 pilot to the confliction and provided a resolution against the Tutor. The Brize controller was unaware of the Tutor in the overhead and, due to radar coverage, was unable to see a primary or secondary return which may have allowed them to register the confliction and change their plan. That the Brize Norton controller did not pass Traffic Information to the C130 on the Tutor links to a variety of human factors and contextual conditions including: high workload, no radar cover in the overhead, prioritisation and communication. The controller could have reduced the service to the C130 for controller workload and radar coverage; which would have provided a warning to the pilot that the controller was busy.

Benson ATC provide a Traffic Service to Tutors general handling in the Brize Norton overhead because if the Tutors were to go to Brize ATC they would be without a radar service (due to the radar cone of silence in their overhead). The Tutor pilot identified the airspace above Brize Norton CTR as a quiet area to general handle due to lack of GA and glider aircraft. The drawback to the Tutors operating in this area is that Brize ATC are unable to see aircraft in their overhead due to radar cover. The Brize overhead is also a routine position for ATC to hold aircraft, and is part of their TACAN procedure. Unit level investigation and recommendations have seen Brize and Benson ATC now communicate, via landline, information on traffic manoeuvring in the Brize Norton overhead. This information is then displayed, using a blocking strip, in front of the approach controller who manages the airspace and liaises with the other controllers. Although in this instance Traffic Information, TCAS/TAS and ultimately visual lookout were effective, the incident and subsequent investigation prompted improved communication procedures between Brize and Benson ATC for aircraft working in the Brize Norton overhead.

### **UKAB Secretariat**

The C130 and Tutor pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard<sup>1</sup>. If the incident geometry is considered as head-on or nearly so then both pilots were required to turn to the right<sup>2</sup>. If the incident geometry is considered as converging then the Tutor pilot was required to give way to the C130, which he did.

## **Comments**

### **HQ Air Command**

It is understandable why the Tutor pilot made a conscious decision to operate in the Brize Norton overhead, and indeed, this is a common occurrence due to the density of gliders and GA in other local operating areas. However, with a little more communication between Benson and Brize Norton controllers and also possibly the Tutor pilot and Brize Norton, then on the occasions Brize Norton wish to utilise the Class G Airspace above the airfield, then sensible coordination could have taken place. Indeed, immediately after the Airprox, a negotiation and compromise on usage of the airspace immediately took place to the satisfaction of all concerned. It is a shame that such a conversation did not take place earlier!

A local investigation has prompted a change to the ATC Order Book which should mitigate the chances of re-occurrence; however, the collision warning systems of both aircraft, Traffic information from Benson controllers and pilot's look-out all played a part in preventing the situation becoming more serious.

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<sup>1</sup> SERA.3205 Proximity.

<sup>2</sup> SERA.3210 Right-of-way (c)(1) Approaching head-on.

## Summary

An Airprox was reported when a C130 and a Tutor flew into proximity at 1330 on Friday 27<sup>th</sup> May 2016. Both pilots were operating under VFR in VMC, the C130 pilot in receipt of a Traffic Service from Brize and the Tutor pilot in receipt of a Traffic Service from Benson.

### **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 looked at the actions of the C130 pilot and noted that although he was receiving a Traffic Service in the Brize Radar pattern, he had reported that he knew that the controller was busy. Members thought that although he could have reasonably expected that he would receive Traffic Information from the controller, in its absence due to radar coverage he had used his TCAS effectively and this had ultimately enabled him to see, and a short time later, avoid the Tutor. This incident was a salutary reminder to all pilots that ATC is not all-seeing, and that all available aids must be employed to gain situational awareness and achieve visual acquisition.

Turning to the Tutor pilot, the Board could understand why he would want to operate in the airspace above Brize Norton because it was routinely clear of GA and glider traffic which were, arguably, the greatest threat to their operations. Some members wondered whether he should have given Brize a call to let them know he was there, but it was agreed that he could reasonably have expected that Benson ATC would do that on his behalf; that being said, others opined that he could usefully have prompted Benson to do so as he transited towards the area. Notwithstanding, the Board noted that he was sensibly receiving a Traffic Service from Benson, who gave Traffic Information on the C130 to him three times, which, coupled with his TAS, had enabled him to visually acquire and then avoid the other traffic. There followed some discussion about whether he had avoided it by a large enough margin given that the C130 received a TCAS RA, but members noted that TCAS was mechanised for procedural IFR collision avoidance requirements whereas VFR collision avoidance requirements were not specific. Ultimately, members agreed that the Tutor pilot had clearly been content with the separation, reporting the risk of collision as low.

The Board then looked at the actions of ATC. It was agreed that the Brize controller was extremely busy and, unable to see the conflicting traffic in the overhead due to the lack of radar cover; he was not able to give timely Traffic Information. Some members wondered whether he should have seen the Tutor tracking towards the overhead before it disappeared, but this was quickly dismissed as unreasonable given the traffic levels and workload. The Board then wondered about the wisdom of having a TACAN hold that went into the radar overhead, given that aircraft could not be seen there. They were informed by military members that this was a legacy procedure from the days when Brize Radar had access to another radar head that ensured that radar coverage was maintained. This radar was no longer available to the controllers, leading members to question whether the procedure was still viable. Again military members advised that there were to be various changes in the way that military ATS was provided in the near future, and consequently there was little utility in making sweeping procedural changes at the moment.

ATC members commented that the Benson controller was the person who had all of the information available to him; he knew that the Tutor was manoeuvring in the Brize overhead, and presumably could see that the Brize radar pattern was busy. Having seen the C130 turning towards the Tutor, some members wondered why he didn't think to liaise with Brize directly, or at least to give Traffic Information to them. Ordinarily the Board would have made a recommendation that improvements in liaison should take place between the two units to avoid such a situation developing again, but they were heartened to hear that such liaison had already happened, and that procedures had been put in place to prevent a re-occurrence.

Ultimately, whether or not the pilots were receiving an ATS, members noted that this incident had happened in Class G airspace where pilots were responsible for their own separation and were required to maintain a good look-out. That being said, the value of Traffic Information and TCAS/TAS had also been clearly demonstrated in that both pilots had received information on each other, enabling them both to take action. Therefore, in determining the cause the Board agreed that this had been a conflict in Class G airspace, resolved by both pilots. Notwithstanding, the Board felt bound to comment that there had been a contributory factor of lack of liaison between Benson and Brize ATC regarding the Tutor's operation overhead Brize Norton. In assessing the risk, the Board quickly agreed that this was Category C, timely and effective action had been taken to avoid a collision.

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

Cause: A conflict in Class G resolved by both pilots.

Contributory Factor: Lack of liaison between Benson and Brize ATCs regarding the Tutor.

Degree of Risk: C.