

## **AIRPROX REPORT No 2013145**

Date/Time: 4 Oct 2013 1043Z

Position: 5148N 00118W  
(2.6nm S Oxford)

Airspace: Oxford AIAA (Class: G)

Aircraft 1                      Aircraft 2

Type: Grob Tutor T1              C550

Operator: HQ Air (Trg)              Civ Exec

Alt/FL: 5100ft                      5000ft  
            QNH (1007hPa)              QNH (1007hPa)

Conditions: VMC                      IMC

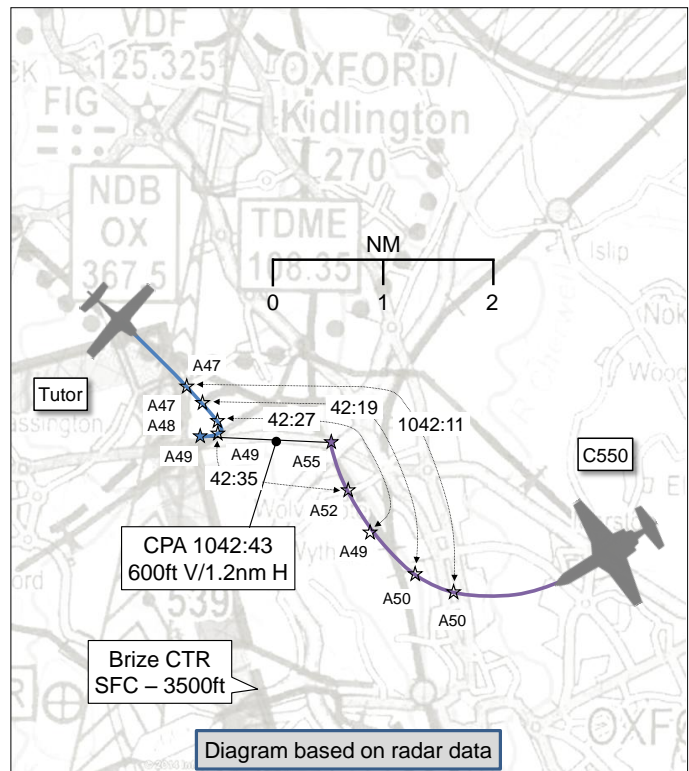
Visibility: 25km                      10km

Reported Separation:

Not Seen                      200ft V/0ft H

Recorded Separation:

600ft V/1.2nm H



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

**THE TUTOR PILOT** reports on recovery to his home base in a predominantly white aircraft with navigation, landing and strobe lights selected on, as was the SSR transponder with Modes A, C and S. The aircraft was fitted with a TAS. The pilot was operating VFR in VMC, in receipt of a Traffic Service from Benson APR. He initially descended into a large gap in the cloud to altitude 4000ft, in sight of the surface, but was unable to descend further due to CAS below. He requested a Deconfliction Service and was given Traffic Information on 2 aircraft, both below him. Seeing a 'large cloud band' 3nm ahead, a climb was commenced to remain VFR above. Traffic in the left 10 o'clock was called, as the cloud was over-flown at altitude 5100ft in the climb. The solid stratocumulus cloud tops were at about 4800ft. He did not see the called traffic although the TAS showed another transpondering aircraft 300ft above and 2nm in the 10 o'clock position. At this point a suggestion was made from ATC to stop climb, and an immediate 40° bank turn to the right was commenced, which was 'hardened up' after 40° of turn to a 2g descending right turn, maintaining clear of cloud, as the TAS issued an audio warning. The pilot rolled out heading west. No visual sighting was made of the conflicting aircraft. The Tutor pilot subsequently turned left to heading 145° once the traffic was clear on TAS. On rolling out of this turn an aircraft was seen in the 7 o'clock, range 5nm, believed to be heading west. He stated that the canopy arch may have obscured the other aircraft.

He assessed the risk of collision as 'High'.

**THE C550 PILOT** reports conducting a Procedural ILS Approach to Oxford RW19. Colour scheme and lighting state was not reported. The SSR transponder was selected on with Modes A, C and S; the aircraft was fitted with TCAS. The pilot was operating under IFR in intermittent IMC, in receipt of a Procedural service from Oxford APP. He was cleared for the OX NDB, holding at altitude 5000ft due to other traffic commencing an approach. In the third holding pattern, when turning inbound to OX heading 340° at 180kt, the crew observed 'a target' on the TCAS at the 12 o'clock position, same altitude, moving towards them. Shortly after, the TCAS alerted 'Traffic, Traffic' followed by 'Climb, Climb'. He informed ATC stating 'TCAS RA' while the handling pilot disengaged autopilot to follow the TCAS commands. The green arc on the VSI was shown from 2000fpm upwards with red below. At the same time, he realized that the 'target' was also climbing; the closest he saw on the TCAS was 200ft just below them. After 'Clear of Conflict' they resumed 5000ft on request of ATC.

He assessed the risk of collision as 'High'.

**THE BENSON APR CONTROLLER** reports [Tutor C/S] was under a Traffic Service. The aircraft was about 2nm to the northwest of Oxford when the pilot stated that he was descending from 5500ft to 3500ft. Benson APR asked him to clarify whether he wished to do this in the Oxford overhead; the pilot responded in the affirmative. APR told him to avoid the Brize Norton CTR [Class D, surface to 3500ft] and report level at altitude 3500ft. APR then called Oxford to give them traffic information. The Oxford controller reported two tracks in their instrument pattern, one to the northeast of Oxford inbound at 3500ft and the second to the southeast of Oxford by approximately 4nm at 5500ft. Whilst speaking to the Oxford controller, [Tutor C/S] reported that he was levelling off at 4000ft. This was re-iterated to the Oxford controller by the supervisor. APR immediately called the affecting traffic to [Tutor C/S] and informed the pilot that he had traffic affecting his descent which were inbound to Oxford. APR called both tracks to the Tutor pilot and included that the second track was currently southeast but turning north to descend inbound to Oxford. APR called that aircraft to the Tutor pilot a further three times as he saw the Tutor Mode C indicating a climb. APR passed traffic information when the Oxford track was 400ft, 300ft and 200ft above. He then told the Tutor pilot firmly, 'suggest stop climb'. The pilot then turned westbound. The supervisor was speaking to the Oxford controller and confirmed that the tutor was now tracking west. APR then told the Tutor pilot that he was clear of the previously called traffic and he could now resume own navigation. He then asked to upgrade to a Deconfliction Service as he wanted to get 'VMC inbound'.

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

**THE OXFORD APP CONTROLLER** reports that [C550 C/S] was handed over late, entering the OX RW19 hold at altitude 5000ft. Traffic beneath had just gone outbound on the RW19 NDB/DME procedure. Whilst entering the hold, [C550 C/S] called 'TCAS RA'. After acknowledgement, the pilot reported an aircraft apparently performing aerobatic manoeuvres, opposite direction, same altitude. The APP used the radar display Mode S facility to ascertain the other aircraft's identity. The squawk was one usually allocated by RAF Benson. On further investigation with Benson, it was ascertained the aircraft was a 'G109 receiving a Basic Service' [sic] from Benson. Meanwhile, the C550 pilot reported the TCAS resolved but he was 'not happy with the situation'. Benson passed on apologies from the Grob commander.

## Factual Background

The weather at Oxford and Benson was recorded as follows:

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METAR EGVN 041050Z 23010KT 9999 BKN014 17/15 Q1008 GRN BECMG SCT022 WHT
METAR EGUB 041050Z 21015KT 9999 BKN020 BKN045 18/14 Q1008 WHT TEMPO 7000 SHRA WHT
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## Analysis and Investigation

### CAA ATSI

The incident occurred at 1042:37, 2.6nm south-southeast of Oxford Airport, within Class G airspace between a Grob Tutor G115E and a Cessna 550 Citation Bravo. The Tutor pilot was making a VFR recovery and was in receipt of a Traffic Service from Benson APR on UHF frequency 376.650MHz. The C550 pilot was operating IFR on a flight inbound to Oxford, for an ILS approach to RW19 and was in receipt of a Procedural Service from Oxford APP on frequency 127.750MHz. An extract from the UK AIP, Page AD 2-EGTK-8-2, dated 20 Sep 12, Oxford Instrument Approach chart, is reproduced below, see Figure 1.

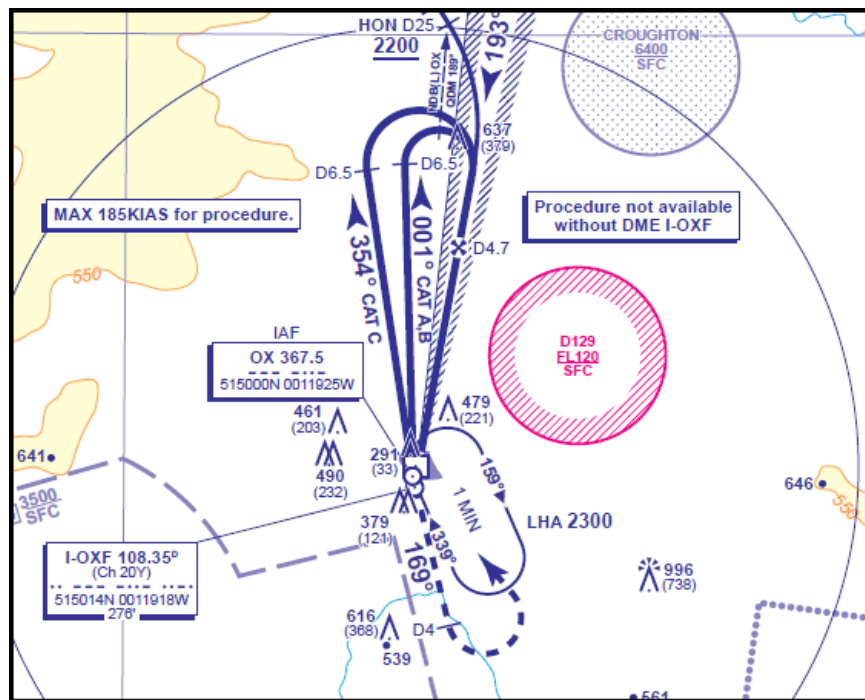


Figure 1: Extract from the UK AIP Page AD 2-EGTK-8-2

Due to an insufficient number of radar validated staff, Oxford were only able to provide a Procedural Service without the aid of surveillance equipment. ATSI had access to RTF recording from Oxford, area radar recording, written reports from both pilots together with a written report from the Oxford Approach controller.

The C550 pilot contacted Oxford Approach at 1036:34:

C550 "Oxford good day [C550 C/S] descent altitude five thousand feet QNH one zero zero seven just entered the Oxford holding er going Oxford outbound descending to 5000ft having just entered the hold and going Oxford outbound"

APP "[C550 C/S] Oxford Approach er good morning to you sir Procedural Service cleared to the OSCAR XRAY altitude five thousand feet to report entering the hold for the ILS approach runway one nine short delay traffic inbound beneath you [A PA34 Seneca] from the north will be going outbound shortly"

C550 "That is er copied are we already entered the holding so continue with the hold er to maintain five thousand upon reaching er Procedural Service [C550 C/S]"

The C550 pilot crossed the Oxford 'OX' (NDB) on a south-easterly track and completed an entry procedure turning right to join the holding pattern. The C550 was number two in traffic following the PA34 Seneca inbound from the north at 3500ft.

At 1038:30, the C550 pilot levelled at 5000ft and crossed the 'OX' followed by a right turn in the holding pattern. The C550 pilot reported maintaining 5000ft which was acknowledged by the controller. At this point the Tutor pilot was manoeuvring 5nm west of the 'OX' at an altitude of 5500ft. The Tutor pilot then took up an easterly track and started to descend followed by a turn onto a south-easterly track.

At 1040:30, Benson APR contacted Oxford APP and advised that the 3611 squawk [the Tutor], 2nm west of the Oxford ATZ, was descending to 3500ft. The Oxford controller reported that he had traffic inbound about 4nm to the north, inbound to the 'OX' at 3500ft to follow the entry procedure and then go straight outbound and other traffic which was in the hold southeast of Oxford at 5000ft, see Figure 2.

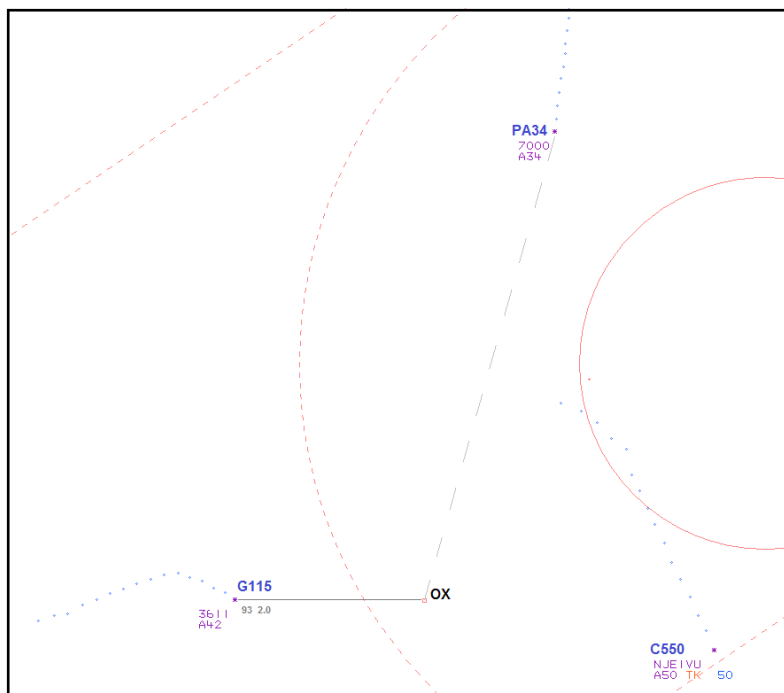


Figure 2: Swanwick MRT at 1040:30

Benson APR advised Oxford APP that the Tutor pilot was now stopping the descent at 4000ft, which was acknowledged by Oxford. The Tutor pilot descended to 3900ft and, at 1040:57, commenced a right turn onto southwest followed by a left turn onto southeast and then started to climb. At 1041:58, the C550 pilot was turning back towards the OX at 5000ft and the Tutor pilot was on a reciprocal track at a range of 3.9nm indicating 4800ft, see Figure 3.

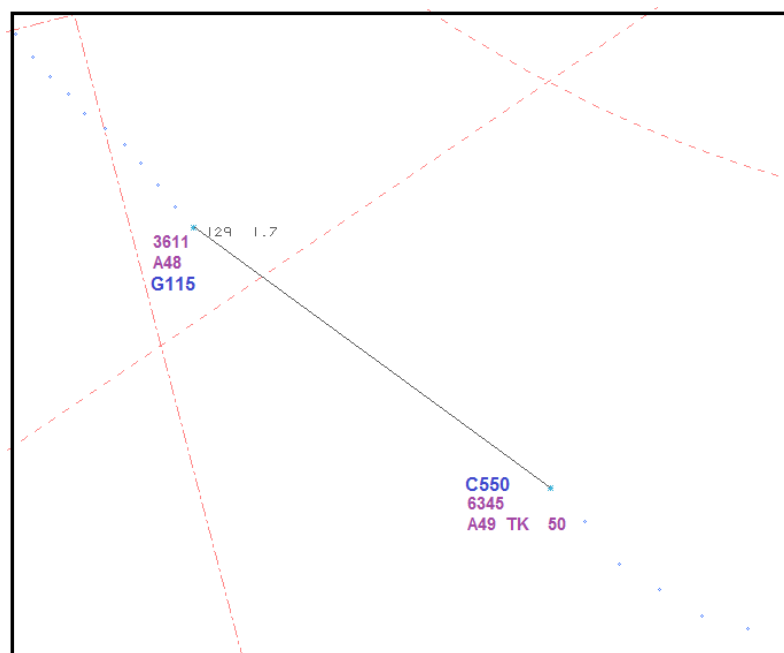


Figure 3: Swanwick MRT at 1041:58

At 1042:21, the C550 pilot reported a TCAS RA which was acknowledged by the controller. At 1042:37, the Tutor pilot made a right turn at 4900ft and the C550 was shown in the climb passing 5200ft. The lateral distance between the two aircraft was 1.3nm and vertical distance was 300ft, see Figure 4.

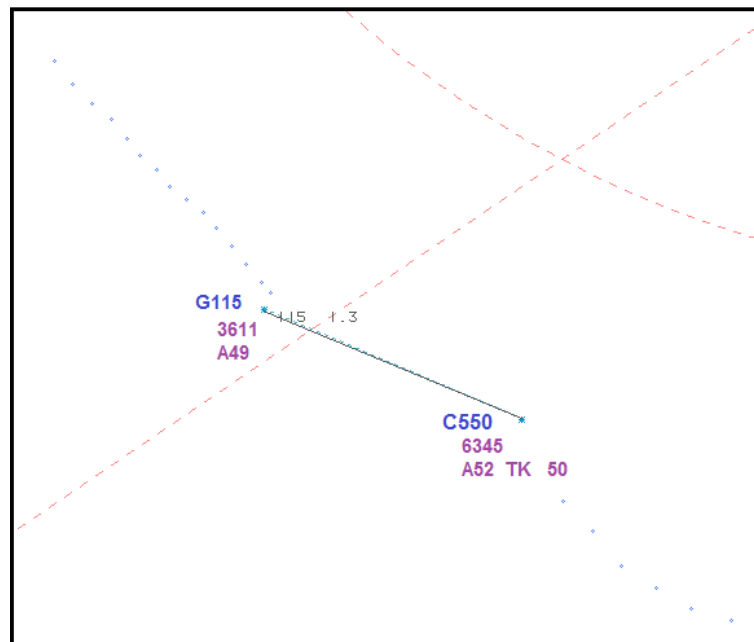


Figure 4: Swanwick MRT at 1042:37

At 1042:38, the Oxford APP controller contacted Benson Supervisor:

Benson *"Benson Supervisor"*

Oxford *"Oxford your 3611 you were saying level was going to level at four..."*

Benson *"Yeah he's um apologies he's decided to start climbing again and we've now given him a turn to the west to avoid"*

Oxford *"Standby"*

At 1042:42, the C550 pilot reported, *"[C550 C/S] there's an aircraft doing some aerobatics or whatever and he's in our holding area we're not er very happy about it so we're clear of conflict now er do you have any information about the er ??? traffic"*.

The Oxford controller confirmed that the traffic was working Benson. The two aircraft passed abeam at 1042:53 when the lateral distance was 1.2nm and the vertical distance was 700ft. Separation then continued to increase. At this point the conversation between Oxford and Benson continued:

Oxford *"Apparently he's doing aerobatics"*

Benson *"Yeah we've given him a turn to avoid he's um wanted a recovery inbound to Benson but he's intermittent IMC so we've given him a turn to avoid your six three four five"*

Oxford *"Thanks he was at five he's had a TCAS RA so climbing"*

Benson *"Yep thank you Benson"*

The C550 pilot reported 5000ft in the hold and continued without further incident. At 1044:42, the C550 pilot advised that he intended to file a report and requested, after landing, the details on the other aircraft. Oxford then advised Benson. ATSI did not have access to the military investigation report and it was not clear what action or what information was passed to the Tutor pilot regarding the C550 which was known to be holding at 5000ft. The Oxford ATSU reported that due to the depletion in the number of radar qualified staff at the unit, radar was not available and a Procedural Service was being provided. Since the occurrence a number of staff have been trained and the provision of radar services has normalised.

CAP774 UK Flight Information Services, Chapter 5, Page 1, Paragraph 1 states:

'A Procedural Service is an ATS where, in addition to the provisions of a Basic Service, the controller provides restrictions, instructions, and approach clearances, which if complied with, shall achieve deconfliction minima against other aircraft participating in the Procedural Service. Neither traffic information nor deconfliction advice can be passed with respect to unknown traffic.'

No coordination was requested by either controller. It was likely that the Oxford controller perceived that there was no conflict. CAP774 UK Flight Information Services, Chapter 5, Page 1, Paragraph 5 states:

'The controller shall provide traffic information, if it is considered that a confliction may exist, on aircraft being provided with a Basic Service and those where traffic information has been passed by another ATS unit; however, there is no requirement for deconfliction advice to be passed, and the pilot is wholly responsible for collision avoidance. The controller may, subject to workload, also provide traffic information on other aircraft participating in the Procedural Service, in order to improve the pilot's situational awareness.

*Under a Procedural Service, the controller has no ability to pass traffic information on any aircraft that he is not in communication with, unless he has been passed traffic information by another ATS unit.'*

An Airprox was reported when the Tutor and a C550 came into conflict whilst operating within Class G airspace, where the pilots ultimately remain responsible for their own separation.

### Military ATM

The incident took place at 1042 on 4 Oct 2013 overhead Farmoor Reservoir, Oxon. The Tutor pilot was under a Traffic Service from RAF Benson APR and the C550 pilot was receiving a Procedural Service from the Oxford APP controller. The Tutor pilot was on a training sortie from RAF Benson. The Cessna 550 pilot was inbound to Oxford.

All heights/altitudes quoted are based upon SSR Mode C from the radar replay unless otherwise stated. All RT and landline communications were recorded and transcribed.

During the Tutor sortie, a mixture of Traffic and Deconfliction Service, with avoiding action, had been provided and, at the time of the reported Airprox, the Tutor pilot was in the recovery phase, which had to take into account finding a gap in the cloud for a VFR recovery and remaining clear of Brize Norton airspace. Previous avoiding action and a cap on manoeuvring heights to remain below controlled airspace indicates that the APR controller was fully aware of the Tutor's positioning. As early as 1005:25, Oxford were requesting TI on the Tutor.

At 1039:47, the Tutor pilot requested descent to 3,500 feet, to enable a VFR recovery. APR asked if the Tutor pilot was planning to route via the Oxford overhead and the Tutor pilot replied, 'Negative, we were just er twelve miles north er northeast of Brize Norton.'

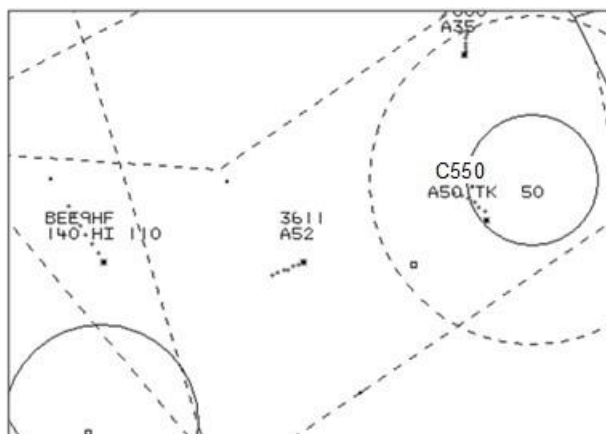


Figure 1: Tutor squawking 3611 and C550 at 1039:47

The APR passed TI on the Tutor's descent to Oxford and received an update on two aircraft inbound to Oxford. Following the update from Oxford, the APR controller passed TI to the Tutor pilot at 1041:07. The radar replay, at Figure 2, captures the traffic situation at 1041:07; the TI from APR is accurate and timely.

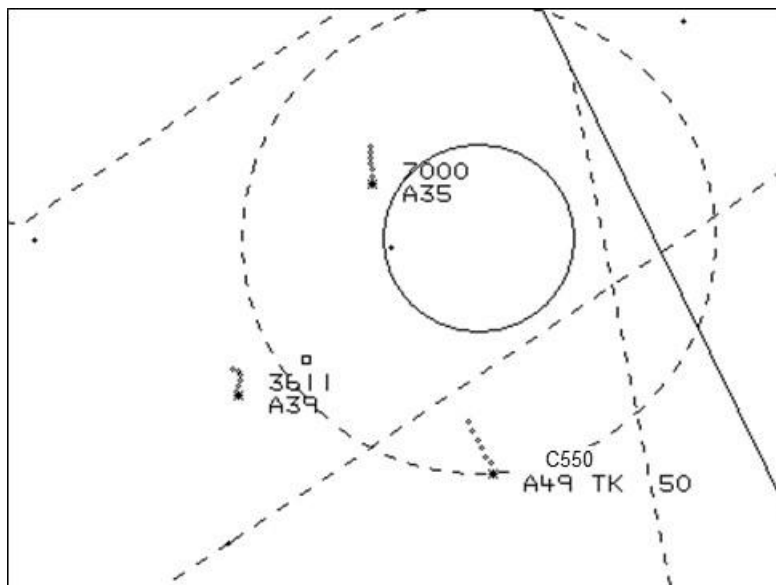


Figure 2: Aircraft geometry at 1041:07

The Tutor pilot copied the TI and changed intention to climb back to 5000ft, to remain VFR, and requested a radar pick up. The Benson APR updated the C550 position on three occasions, at 1041:59, 1042:09 and 1042:46 and at 1042:20 suggests that the Tutor pilot stops the climb; Figure 3 shows the aircraft geometry at 1042:09.

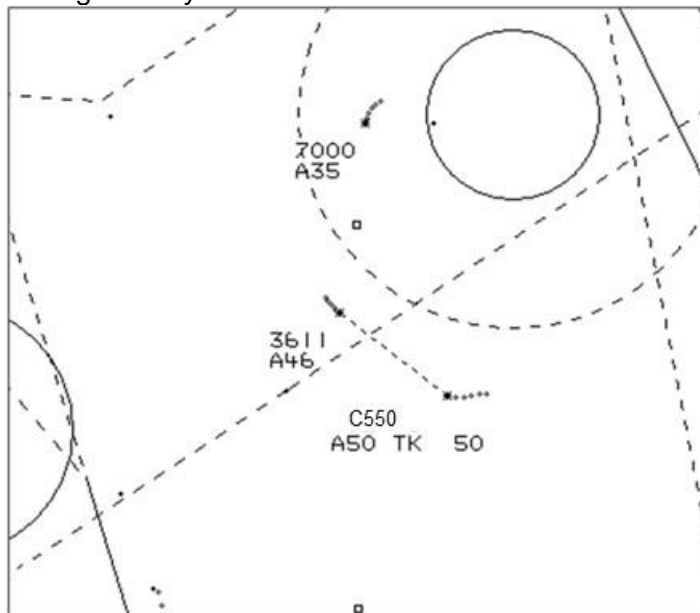


Figure 3: Aircraft geometry at 1042:09

The Tutor pilot reported an immediate 40° AOB turn following the stop climb instruction and whilst he did not get visual with the C550, the Tutor pilot did pick it up on TAS.

Throughout the incident, the APR controller constantly updated the Tutor pilot; the update at 1042:46, at Figure 4, demonstrates that the Tutor pilot had initiated a turn to the southwest and that the C550 pilot's inbound track would take it down the left hand side of the Tutor, with separation on the radar replay being reduced to 1.1nm. Oxford called Benson APR by landline at

1042:32 requesting if the Tutor was going to level off and informed APR that the Tutor was doing aerobatics. APR informed Oxford that the Tutor was intermittent IMC and that a turn had been initiated to avoid the C550. Oxford informed of the TCAS RA and the intention to file.

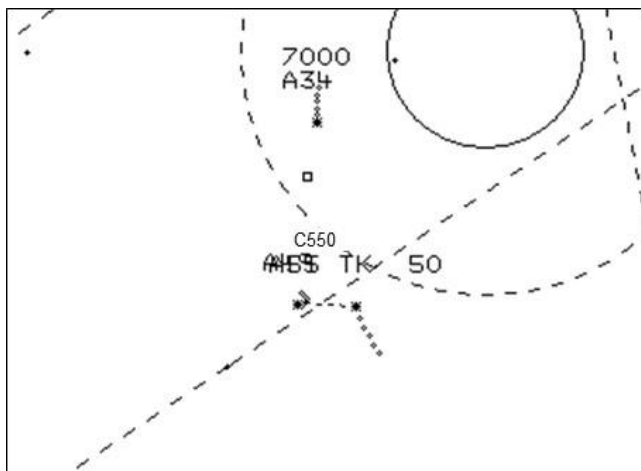


Figure 4: Aircraft geometry at 1042:46

As per the CAP 413, Chapter 5, the APR controller provided timely and accurate TI, using cardinal headings. The APR controller should be commended for persistent TI that eventually resulted in a turn from the Tutor pilot. The APR controller complied with the Traffic Service and liaised with Oxford as far as possible. The area is commonly used by Tutors for general handling and the OC of the Oxford University Air Squadron has questioned the new arrivals routing into Oxford, via BEMBO and KENET that routes through busy Tutor operating areas.

From a BM SPA perspective, this busy section of airspace requires the appropriate TOS, accurate TI and sound liaison between ATM units; all actions were evident during this incident. Weather and airspace classifications can funnel aircraft towards Oxford and a review of routings is recommended to facilitate a safer integration of traffic.

### UKAB Secretariat

Both pilots were equally responsible for collision avoidance and for not flying into such proximity as to create a danger of collision<sup>1</sup>. If the geometry is considered to be 'head-on' then both pilots were required to alter their course to the right<sup>2</sup>. When operating below FL100 but above 3000ft amsl or 1000ft above terrain, whichever is the higher, the VMC minima for flight under VFR are as follows: 1000ft vertically and 1500m horizontally clear of cloud with at least 5km in-flight visibility.

### Comments

#### HQ Air Command

It seems that the Tutor pilot was determined to effect a visual recovery to Benson even though the prevailing weather conditions (primarily cloud) were likely to make this difficult to achieve. There may be an HF element here, as in his efforts to maintain VMC it appears that the Tutor pilot did not fully assimilate the TI passed to him giving the relative position and, importantly, the height of the traffic inbound to Oxford. Furthermore, the intentions that the Tutor pilot passed to ATC were inconsistent with what the controllers saw on radar, thus making the task of separating the Tutor from the Cessna more difficult. The Tutor pilot could have presented a more predictable platform to the controllers, avoided the Cessna's level and accepted earlier that a radar descent was the most likely method of achieving a recovery to Benson.

<sup>1</sup> Rules of the Air 2007 (as amended), Rule 8 (Avoiding aerial collisions).

<sup>2</sup> *ibid.*, Rule 10 (Approaching head-on).



## Summary

A Tutor and a C550 flew into conflict at 1043 on 4<sup>th</sup> October, 2.6nm south of Oxford Airport. The Tutor pilot was operating under VFR, in receipt of a Traffic Service from RAF Benson, the C550 pilot under IFR and in receipt of a Procedural Service from Oxford.

### **PART B: SUMMARY OF THE BOARD'S DISCUSSIONS**

Information available included reports from the pilots of both ac, transcripts of the relevant RT frequencies, radar video recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

Considering the Tutor pilot's actions, the Board judged that he had been attempting to recover to RAF Benson whilst maintaining VMC. In the event, this had proved not to be possible and, in the process of trying to remain VMC by climbing above the cloud bank, he had manoeuvred into the proximity of the Oxford hold and therefore placed himself in a position where his flight path conflicted with that of a C550. The Tutor pilot had been passed Traffic Information on the C550 on several occasions, and subsequently saw the traffic on his TAS, which, together with a suggestion from ATC that he stop his climb, prompted an avoiding turn.

The Board next considered the actions of the C550 pilot. Although established in the hold in receipt of Procedural Service from Oxford ATC, he remained fully responsible for collision avoidance, albeit with deconfliction provided by ATC from other traffic with the same service. The Board questioned whether the C550 pilot was fully aware of his responsibilities under ATSOCAS, especially given his reported weather conditions of 'intermittent IMC'; because a radar-based service was not available from Oxford, some members opined that he would have been better served by seeking a radar-based service from Brize Norton. Additionally, some members opined that, especially for foreign pilots unfamiliar with ATSOCAS, the title 'Procedural Service' implied a greater degree of protection than is actually afforded, and that this misapprehension was prevalent. The Board therefore felt it appropriate to make a recommendation that the CAA review the required content of airfield briefs, specifically to ensure that foreign pilots were made fully aware of the limitations of ATSOCAS, the UK's implementation of ICAO Annex 11 FIS and regulation EU No 923/2012.

Ultimately, both pilots were operating in Class G airspace with equal responsibility for collision avoidance and without ATC separation. In the event, the C550 pilot reacted to his TCAS RA, increasing the separation at CPA, assisted by the turn-away manoeuvre of the Tutor pilot. The conflict of flight paths was therefore resolved by both pilots, in part with the valuable traffic information provided by ATC; effective and timely actions were taken to prevent the aircraft colliding.

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

<u>Cause:</u>	A confliction of flight paths resolved by both pilots and ATC.
<u>Degree of Risk:</u>	C.
<u>ERC Score<sup>3</sup>:</u>	2
<u>Recommendation:</u>	The CAA reviews the required content of airfield briefs with specific emphasis on informing foreign visiting pilots of their responsibilities under ATSOCAS.

<sup>3</sup> 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.