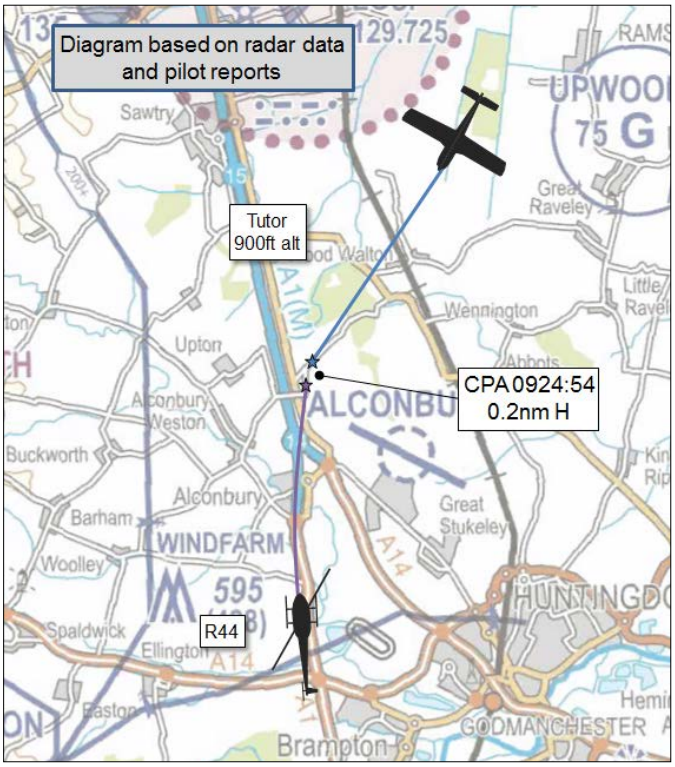
AIRPROX REPORT No 2016235

Date: 14 Nov 2016 Time: 0924Z Position: 5223N 00014W Location: 5nm NW Huntington

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Tutor	R44
Operator	HQ Air (Trg)	Civ Pte
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	None	Listening out
Provider		Conington
Altitude/FL	FL009	
Transponder	A, C, S	A,C
Reported		
Colours	White	White
Lighting	NK	Strobe
Conditions	VMC	VMC
Visibility	8km	10km
Altitude/FL	500ft	700ft
Altimeter	RPS (1019hPa)	1030hPa
Heading	218°	030°
Speed	120kt	90kt
ACAS/TAS	TAS	Not fitted
Alert	TA	N/A
Separation		
Reported	0ft V/ 0.25nm H	200ft V/1km H
Recorded	NK V/0.2nm H	



THE TUTOR PILOT reports that he was on a navigation sortie to the south of Cranwell. The TAS audio alarm sounded and a solid yellow circle appeared on his display. The TAS indicated that the contact was only 0.25nm away to the left. The pilot of the left-hand seat leaned forward to look behind the canopy arch and saw the conflicting traffic. It was on a constant bearing and at the same altitude, so an avoiding-action climbing turn to the left was commenced, followed by a right turn to remain visual with the other aircraft. A separation of 500ft was achieved, and it was perceived that the other aircraft did not become visual with them because its flightpath remained unchanged. The pilot opined that if TAS hadn't picked the other aircraft up, he may not have detected it because of the constant bearing and canopy-arch masking.

He assessed the risk of collision as 'High'.

THE R44 PILOT reports that the other aircraft was not on the Conington frequency so he was not aware it was there until he saw it at around 1km and 200ft above. He reported that he turned left and descended to increase that separation.

He assessed the risk of collision as 'Low'.

Factual Background

The weather at Wittering was recorded as follows:

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METAR EGXT 140850Z 19006KT CAVOK 09/08 Q1028 BLU
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UKAB Secretariat

The Tutor and R44 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard[1]. If the incident geometry is considered as head-on or nearly so then both pilots were required to turn to the right[2]. If the incident geometry is considered as converging then the R44 pilot was required to give way to the Tutor[3].

Figures 1 and 2 are radar screen shots taken from the NATS area radars. The Tutor is squawking 7001 and the R44 7000. Although the R44 pilot reported that he had Mode C switched on, it didn't display on the radar.

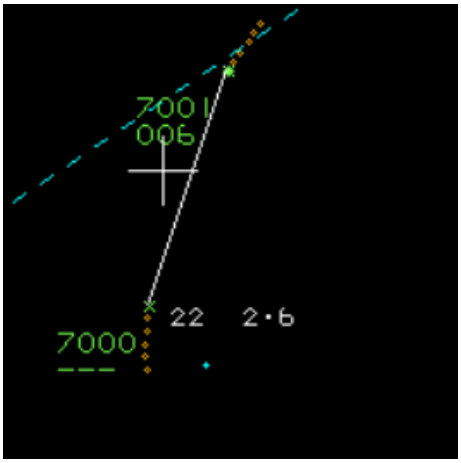


Figure 1 :0924:10

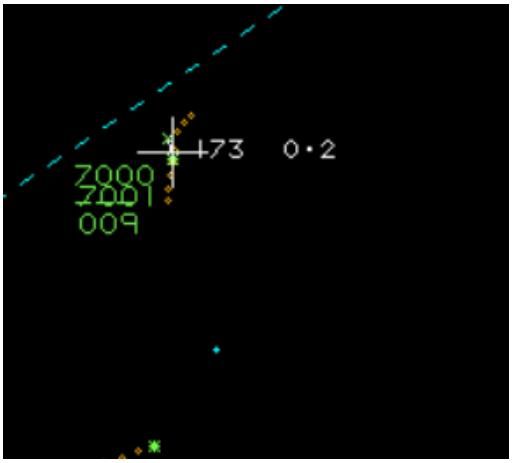


Figure 2 0924:54

Comments

HQ Air Command

The Tutor Pilot was conducting a low-level Navex on a standard route. Just prior to the event, he had been in receipt of a Traffic Service from Wittering when he was instructed to "Squawk 7000 and continue en-route". He then squawked 7001 (the low-level squawk) and very shortly afterwards had the Airprox. In hindsight it is not clear why Wittering released the Tutor so early and why the Tutor pilot accepted being released when there was still a portion of his route in range of the Wittering radar. This left electronic conspicuity and look-out as the remaining barriers; both of which worked to a degree. It is not clear why the TAS warning was so late (the TAS was set to 5nm range and switched ON as part of pre-take off checks); however it should be noted that the manufacturer's handbook states " The range at which an intruder is acquired depends on many factors, including the performance of the intruder's transponder and the geometry of the encounter. Not all intruders are acquired at the maximum range." The thickness of the canopy arch on the Tutor in being able to obscure other aircraft is well understood and Tutor pilots are trained to move their head in order to clear airspace obscured by the canopy arch. It appears that the R44 pilot visually acquired the Tutor before the Tutor pilot was prompted by his TAS and avoiding action was taken by both pilots.

Summary

An Airprox was reported when a Tutor and an R44 flew into proximity at 0924 on Monday 14th November 2016. Both pilots were operating under VFR in VMC, neither were in receipt of an ATS.

[1] SERA.3205 Proximity.
[2] SERA.3210 Right-of-way (c)(1) Approaching head-on.
[3] SERA.3210 Right-of-way (c)(2) Converging.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from the pilots of both aircraft, and radar photographs/video recordings.

The Board were told that the Tutor pilot had been receiving a Traffic Service from Wittering prior to the Airprox, but had been told to go 'en-route'. This explained why he hadn't called Conington as he passed by, and the Board agreed that it was better to remain with a radar equipped ATSU for as long as possible. Recognising that he would have been nearing the edge of their radar cover at 18nms away, the Board nevertheless considered it a shame that Wittering couldn't have continued with the service for a few more miles because there might have been the opportunity to give Traffic Information on the conflicting traffic. The Board were perplexed as to why the Tutor's TAS had not alerted before it did, although there were known limitations on the Tutors' TAS due to the positioning of the antenna, and it was possible that it was obscured by the aircraft itself on this occasion. That said, although late, it did alert in time to allow the Tutor pilot to see the traffic and avoid it.

In looking at the actions of the R44 pilot, the Board noted his concerns about the Tutor pilot not being on the Conington frequency, but also thought that with so many airfields in the area, it was difficult for pilots to call each one as they passed. Although the pilot had reported that his Mode C was switched on, it wasn't showing on radar and the Board wondered whether it was unserviceable at the time. Noting that the pilot reported seeing the Tutor at 1km away, they thought that he had probably seen it with enough time to take effective avoiding action.

In assessing the effectiveness of the safety barriers associated with this incident, the Board concluded that the key factors had been that:

- **ATC Conflict Detection and Resolution** was **inapplicable** because neither pilot was receiving an ATS at the time.

- **Flight Crew Situational Awareness** was considered to be only **partially effective** because neither pilot had any Traffic Information on the other.

- **Onboard warning/collision avoidance equipment** was only **partially effective** because the Tutor pilot received a late TAS warning and the R44's Mode C was either off or not functioning.

- **See and Avoid** was considered to have been only **partially effective** because although both pilots saw each other and took avoiding action, the resulting separation was less than ideal.

The Board then looked at the cause of the Airprox. Some members thought that the Airprox could be described as a late sighting by both pilots, whilst others thought that both pilots had seen each other early enough to take timely avoiding action and so the incident represented routine operations in Class G airspace. After some debate, in the end the latter view prevailed and it was agreed that although they had seen each other later than desirable, the cause of the incident was a conflict in Class G resolved by both pilots. In assessing the risk, the Board quickly agreed that although safety had been degraded, both pilots had been visual with each other and had taken timely and effective avoiding action; there had been no risk of collision and the incident was assessed as risk Category C.

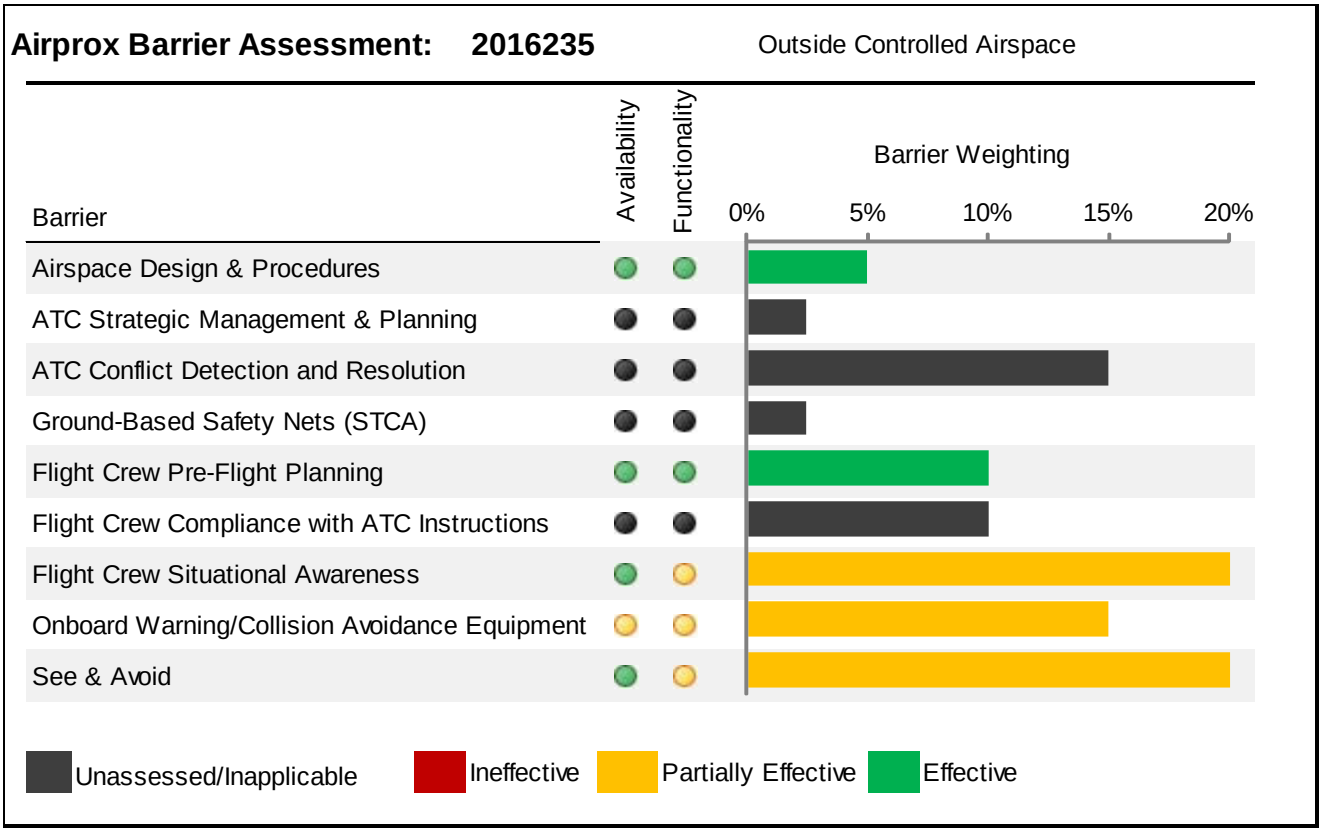
PART C: ASSESSMENT OF CAUSE AND RISK

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

Degree of Risk: C.

Barrier Assessment[4]:

Modern safety management processes employ the concept of safety barriers that prevent contributory factors or human errors from developing into accidents. Based on work by EASA, CAA, MAA and UKAB, the following table depicts the barriers associated with preventing mid-air-collisions. The length of each bar represents the barrier's weighting or importance (out of a total of 100%) for the type of airspace in which the Airprox occurred (i.e. Controlled Airspace or Uncontrolled Airspace).[5] The colour of each bar represents the Board's assessment of the effectiveness of the associated barrier in this incident (either Fully Effective, Partially Effective, Ineffective, or Unassessable/Absent). The chart thus illustrates which barriers were effective and how important they were in contributing to collision avoidance in this incident.



[4] The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the UKAB Website

[5] Barrier weighting is subjective and is based on the judgement of a subject matter expert panel of aviators and air traffic controllers who conducted a workshop for the UKAB and CAA on barrier weighting in each designation of airspace.