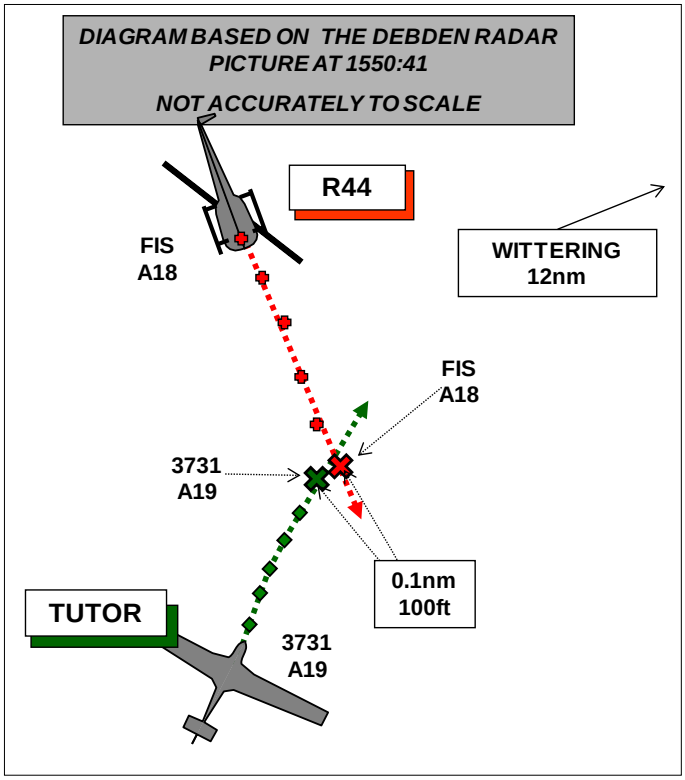
AIRPROX REPORT No 2011079

Date/Time:	12 Jul 2011 1551Z	
Position:	5231N 00045W (12nm WSW Wittering)	
Airspace:	Lon FIR	(*Class: G*)
	Reporting Ac	*Reported Ac*
Type:	Tutor	R44 Helicopter
Operator:	HQ Air (Trg)	Civ Pte
Alt/FL:	1600ft QFE (1009mb)	NR
Weather:	VMC NR	VMC
Visibility:	35km	NR
Reported Separation:	100ft V/ NR H	NR
Recorded Separation:	100ft V/ 0.1nm H	



PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

THE TUTOR PILOT reports that the Airprox occurred during a mixed profile pre Final Handling Test (FHT) sortie in a white ac with all external lights switched on. The student had successfully carried out a simulated Low-Level Abort and during the climb to above MSA he had obtained a TS from Wittering APP. At 3000ft on the RPS, heading N, squawking 3731 with Mode C, Wittering QFE (1009) was set and ATC instructed them to descend to 1600ft QFE. The radar headings kept them clear of Corby en-route for a PAR for Wittering RW08; ATC also provided regular TI which was all acknowledged. At 1600ft the pre-landing checks were completed and they were on a heading of 060° at 100kt, about 12nm WSW of Wittering (to the S of Eyebrook Reservoir) when ATC gave urgent TI on an unidentified ac, at a similar alt tracking SE, 2nm N of their position. Since the student was under an IF hood, he (the Instructor) took control in case evasive action was required. The Tutor's TAS indicated a target to the right of their track 100ft lower in white symbology. Bearing in mind recent history of the unreliability of TAS in azimuth, he carried out a full lookout scan which was impeded by the broad canopy structure, the student's helmet and the IF hood. ATC made further Traffic calls to the effect that targets were merging. Seconds later TAS changed to yellow symbology and announced "Traffic, Right, Low, 1 o'clock less than 1 mile". He caught a glimpse of a yellow helicopter 250m away, moving left to right, slightly lower and just appearing from behind the left-hand canopy arch so he immediately pulled up and rolled slightly to the left of the threat (the flaps were at take-off and the G meter indicated 2G post event). The helicopter was identified as a Robinson R44 and it did not appear to take any evasive action.

ATC were informed and an airborne Airprox filed with an event time of 1650L given. He assessed the risk as being very high.

He commented:

The poor view is well documented (by AAIB/RAF SI) and deficiencies in Tutor Canopy design (wide canopy arches) with added restrictions to right hand side caused by side by side seating, helmets and in this case student I/F visor were contributory factors as was Tutor visibility to others (White

aircraft against Light Grey/white background); a Cranfield University report into Grob ac paint schemes detailed visibility issues. The R44 was working in the London FIR and took no avoiding action as it appears that the pilot did not see the Tutor throughout the incident.

The Tutor TAS, although indicating threats, gives false lateral positions on the display and aural alerts gave the wrong direction despite the ac being straight and level.

The workload was reasonably low, the student had completed Pre-Landing Checks and no other ac were on frequency.

Despite degraded radar performance, TI updates were given by ATC and were accurate; however, had the Tutor been kept higher (2500 to 3000ft) until closer to the MATZ, the Airprox may have been avoided.

THE R44 HELICOPTER PILOT reports that he was flying a yellow helicopter with Nav and anti-collision lights switched on, on a private VFR/VMC flight from Sherburn to Elstree, in receipt of a BS from London Info and squawking 1177 with Mode C, but TCAS was not fitted. He was not aware of an incident but London Info did ask him during the flight whether he could see a Tutor ac in their vicinity and he remembered telling them that he could see only one fixed wing in about 2/3nm away in front of him in their 12-1 o'clock turning but not conflicting.

UKAB Note (1): The Wittering METAR was:

METAR EGXT 121550Z 04016KT 9999 FEW025 BKN060 17/11 Q1018 BLU NOSIG

BM SAFETY MANAGEMENT reports that this AIRPROX occurred between a Tutor on a mixed profile pre-FHT sortie, operating VFR in VMC in receipt of a TS from Wittering APP, and a R44 operating VFR in receipt of a BS from London Information.

The Tutor was operated by a QFI and a student, with the student as HP and under an IF hood. The pilot free-called APP at 1542:35 simulating a low-level abort and requesting a PD to Wittering. The Tutor was identified and, as requested, placed under a TS. At 1544:53, the ac was descended to 1600ft on the Wittering QFE of 1009Mb and, at 1546:04, turned right onto 020°.

The radar replay commences at 1546:48, at which point 12.5nm lateral separation existed between the Tutor and the R44, with both ac on a constant relative bearing, and indicating 1900ft and 1800ft respectively. Based upon the assumed closing speed, about 13.5nm lateral separation would have existed at the point that the turn onto 020° was issued.

At 1548:41 APP passed TI to the Tutor on the R44 stating, "*traffic north, five miles tracking south-east, indicating similar level*" (the radar replay shows 6.4nm), which was acknowledged by the pilot.

The TI was updated at 1549:45 as, "*previously reported traffic left eleven o'clock, two miles crossing left right, indicating similar altitude*" (the radar replay shows 3.1nm) and again at 1550:33 as, "*previously reported traffic twelve o'clock, half a mile, left right, indicating similar level*". The Tutor pilot reported visual with the R44 at 1550:44, immediately after the final TI.

The pilot's report of being visual with the R44 is broadly coincident with the CPA, with the radar replay showing the R44 to be slightly right of the Tutor's twelve o'clock, with 0.1nm lateral and 100ft vertical separation.

Following a landline conversation between Wittering ATC and London Info, the R44 pilot was asked whether he had seen a Tutor aircraft in the vicinity. Given the incident sequence, the R44 pilot's reply that they "could see one fixed wing in front…at about twelve to one o'clock, turning but not conflicting at about two or three miles" suggests that they did not see the Tutor involved.

Throughout the incident sequence, although the TAS was later found to be serviceable, the system appeared to display the conflicting R44 as right of the Tutor's track.

From an ATM perspective, Wittering APP provided a good level of TI that should have enabled the Tutor crew to acquire the R44 visually early enough to discharge their responsibilities for collision avoidance.

Following this Airprox, the Wittering ATC personnel involved felt that they were in some way responsible for the confliction incident in that they might have vectored the Tutor into confliction; however, based upon the dynamic situation and the lateral separation existing between the Tutor and the R44 at the time that APP issued the heading of 020°, BM SM is content that APP was not responsible.

Notwithstanding that, in accordance with the RoA the Tutor had right of way over the R44, it appears that although the aircrew were passed timely, accurate and relevant TI, they did not acquire the conflicting ac until late and did not take timely avoidance, to resolve the confliction; that said, some confusion may have arisen from the apparently contradictory TAS indications.

APP provided a timely and appropriate level of TI yet the Tutor was unable to visually acquire the R44 until late due to a number of cockpit environment related issues. Further, the pilot did not manoeuvre their ac based upon the TI in order to attempt to simplify their visual acquisition task or increase separation.

ATSI reports that the R44 established communication with London Info (FIS) at 1526. The flight was routeing VFR from Sherburn to Elstree and the pilot requested a BS. The Swanwick AC MATS Part 2 states that:

> 'Pilots in receipt of a continuous Basic ATSOCAS from FIS are requested to select FIS SSR code 1177. When it is established that a pilot will receive a continuous Basic ATSOCAS from FIS, the FISO shall inform pilots: *"(Aircraft Callsign), squawk 1177 with Mode C, Basic Service".*

This phraseology was used on this occasion.

While it was on the FIS frequency an Airprox was filed by a Tutor pilot. As the FISO was not in contact with the other ac, he would have been unable to issue any TI about the flight. In any case, under a BS the avoidance of other traffic is solely the pilot's responsibility.

At 1556, the FISO asked the R44 pilot if he had seen a Tutor about 12nm ago in the Cottesmore/Wittering area. He responded that he had seen a single fixed wing ac going around in circles but he was not sure of the type; he added that it was about 1500/2000ft.

No further comments were made on the frequency about the incident.

UKAB Note (2). The recording of the Debden radar shows the incident clearly as depicted on the diagram above.

HQ AIR (TRG) comments that the Tutor pilot could have turned before becoming visual to deconflict from the called traffic. However, there is potential for confusion in this regard because the crew were flying on vectors from ATC but under a TS they need to take their own avoiding action, or upgrade to a DS, if they need to discharge their collision avoidance responsibility. The chain of events in this case is entirely consistent, with converging TI followed by a TAS alert. This should not have come as a surprise, nor should it have been a surprise that the TAS indication was inaccurate in azimuth. Indeed, the pilot would have been visually scanning the area where the TI was being called and the final lookout scan would sensibly have been biased in that direction. Despite being in the right under the Rules of the Air, avoiding action was required by the Tutor because the R44 pilot clearly did not see it so he could not have given way. The effectiveness of the TAS is commented on correctly by the Tutor pilot and is a published limitation with the installation on the Tutor; this is emphasised in

training hence the response of completing a full lookout scan. The effect of the IF hood on the instructor's lookout scan is also noted and the design of these devices is under review by 1 EFTS. Instructors should be prepared to take control early, or provide turn instructions to their students, to ensure they are able to maintain a robust lookout and to visually acquire contacts on problematic bearings.

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 recordings, reports from the air traffic controllers involved and reports from the appropriate ATC and operating authorities.

Members noted the Wittering APP passed accurate and timely TI to the Tutor pilot on several occasions but he did not act on it by turning his ac and breaking the conflict. In common with other airborne collision avoidance systems, the unreliability of the Tutor TAS in azimuth is a well-known and taught system limitation and there should have been little doubt in the instructor's mind that the TI was the more accurate of the two conflicting pieces of information (at least in azimuth). Despite that they were conducting a PD to Wittering under a TS, had the instructor taken control, broken off the approach and turned away for a short time the confliction would have been broken and, in the view of pilot Members, with little interruption to the instructional aims of the flight; alternatively, had he asked for a DS on receipt of the first TI the same outcome would have resulted. Pilot Members opined that under such circumstances with a trainee pilot under an IF hood in Class G airspace, the prime responsibility of an instructor is lookout and he must not allow other factors to limit this.

Despite that the ac had been on a line of constant bearing with the light-coloured Tutor above the helicopter and probably blending in with background of summer cumulous cloud, the R44 pilot had an equal responsibility to see and avoid it. Further, the R44 had the Tutor on his right and should have given way to it; however, he could not do so because he did not see it. Although not necessarily a factor in this incident, the ANO RoA advice to 'stand on' if they have right of way, as this incident demonstrates well, this is not a fail-safe course of action as it is dependent on the other pilot seeing your ac, which is often not the case. Members advise that avoidance is initiated on first seeing that a conflict exists and not left to the 'last minute'.

The R44 pilot did not see the Tutor and, although the Tutor pilot did initiate effective avoidance, the Board agreed that this had been at such a late stage that the safety of both ac had been compromised.

PART C: ASSESSMENT OF CAUSE AND RISK

Cause: A non-sighting by the R44 pilot and a late sighting by the Tutor instructor.

Degree of Risk: B.