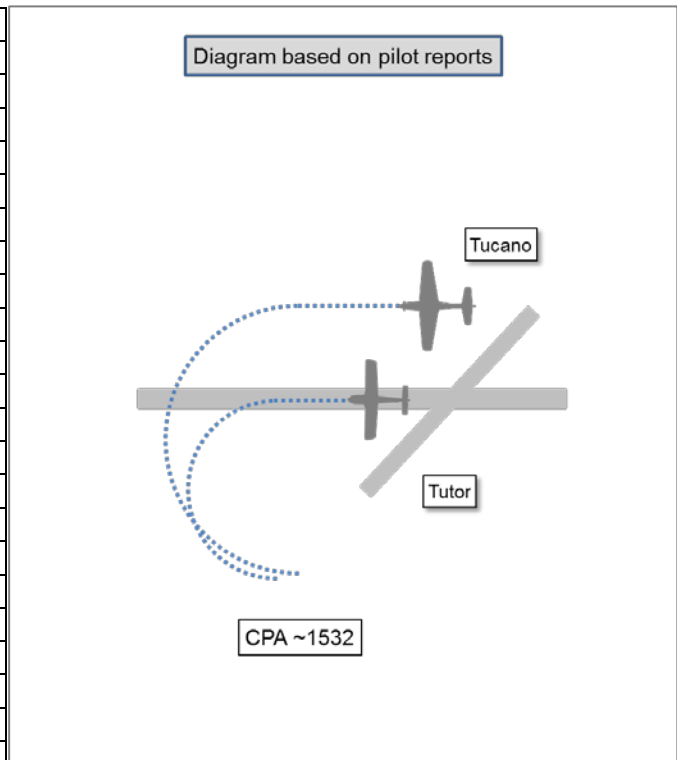


AIRPROX REPORT No 2017014

Date: 24 Jan 2017 Time: 1532Z Position: 5100N 00240W Location: RNAS Yeovilton

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Tutor(A)	Tucano
Operator	RN	HQ Air (Trg)
Airspace	Yeovilton ATZ	Yeovilton ATZ
Class	G	G
Rules	VFR	VFR
Service	Aerodrome	Aerodrome
Provider	Yeovilton TWR	Yeovilton TWR
Altitude/FL	NK	NK
Transponder	NK	NK
Reported		
Colours	White	Black
Lighting	HISL, nav	NK
Conditions	VMC	VMC
Visibility	25km	NK
Altitude/FL	800ft	1000ft
Altimeter	QFE (1025hPa)	QFE (NK hPa)
Heading	180°	NK
Speed	80kt	140kt
ACAS/TAS	TAS	TAS
Alert	TA	None
Separation		
Reported	150-200ft V/30m H	NK
Recorded	NK	



THE TUTOR(A) PILOT reports conducting a first circuit detail for a grading student. Having been cleared for take-off, the student levelled off accurately at 800 ft in the upwind left hand turn. Halfway around the turn, the instructor looked left and saw a Tucano belly up to them, also in a left turn. The Tucano engine noise was clearly audible above their own cockpit noise. No avoiding action was taken as the Tucano was already pulling away. The airfield was busy at the time with mixed Rotary Wing, Tutor and Tucano traffic, including Tucano solo students. The instructor noted that there were a total of 5 TAS contacts within one mile.

He assessed the risk of collision as 'Medium'.

THE TUCANO PILOT reports returning to RNAS Yeovilton following a solo land-away sortie. After joining the visual circuit he went around from his first approach because he had not received landing clearance. He moved onto the fixed-wing dead side (north for RW27) and climbed to 1000ft QFE. On reaching the upwind threshold he commenced a level left turn onto the downwind leg. After rolling wings-level downwind he looked to the left and saw a Tutor in the 7 - 8 o'clock position, slightly below and in a left turn. As the event occurred over a week before being notified he could not accurately recall the range, but he was surprised to see a Tutor in that position. However, he had vertical separation, he was already ahead, and it did not pose a collision threat. He elected to continue the circuit and landed without further incident. After flight, the Tucano pilot was informed that the captain of the Tutor had reported an Airprox. On reflection, he believed he could not see the Tutor during his go-around and upwind turn because he was climbing away from the runway and the Tutor was in the blind spot beneath the Tucano's nose. He had not heard a clearance for an aircraft to take off, but this may have been because the radio was busy with multiple calls from different pilots and ATC. The Tutor did not appear on his TCAS and he received no audio Traffic Alert.

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

THE TUCANO DETACHMENT COMMANDER reports the Tutor pilot contacted him after both aircraft had landed to discuss the incident as nothing had been said on the radio at the time. Having discussed it with the student, the incident happened exactly as per the DASOR narrative; it would seem that both aircraft were in each other's blind-spot and only deconflicted because the Tutor circuit is at 800ft vs 1000ft for other FW aircraft. He noted that, as this was a solo student, there was also a DAO in the tower. The Detachment Commander noted that the upwind turn cannot be seen from ATC and that RNAS Yeovilton has a mixed visual circuit with FW operating to the south and RW to the north which, as per the ATC area brief, forces a very tight deadside to the north.

THE YEOVILTON CONTROLLER reports he was not aware of any incident. He was screen controller for a trainee during an extremely busy control period involving FW aircraft of differing speeds in the visual circuit as well as arriving and departing the airfield. In addition to this, they had multiple station-based RW arriving and departing to/from the north as well as the south. The Tutor pilot was caught up in this as he had a delayed departure due to the high traffic density. A point was chosen to give the Tutor a clearance to take off. At this time one of the aircraft in the visual circuit was a Tucano. With the Tutor still on the runway the Tucano pilot called "Finals" and was given a "Go Round" as he would not get the runway. The controller observed the Tutor taking off and the Tucano commence his Go Around. All instructions given by the trainee were correct iaw SOP and neither of them witnessed the Airprox filed later by the Tutor pilot.

THE YEOVILTON SUPERVISOR reports he was not aware that there had been an Airprox incident until the next day. It was an extremely busy period and to his knowledge the Tower trainee and screen controllers controlled all traffic iaw SOPs.

Factual Background

The weather at Yeovilton was recorded as follows:

METAR EGDY 241550Z 23003KT 9999 FEW040 BKN250 07/05 Q1027 BLU BECMG 6000 HZ WHT=

A transcript of the Yeovilton Tower frequency was provided, as follows:

From	To	Speech Transcription	Time
Tucano	TWR	Yeovilton Tower [Tucano C/S] request join 2000 feet	15:28:30
TWR	Tucano	[Tucano C/S] Yeovilton Tower good afternoon, join runway 27, 3 in, Tutors, QFE 1025	15:28:38
Tucano	TWR	1025, join maintaining 1500 feet [Tucano C/S]	15:28:46
Tutor(B)	TWR	[Tutor(B) C/S] downwind touch and go	15:28:49
TWR	Tutor(B)	[Tutor(B) C/S] 1 ahead surface wind calm	15:28:54
Tutor(B)	TWR	[Tutor(B) C/S]	15:28:57
TWR	Tutor(B)	[Tutor(B) C/S] we have 1 aircraft wanting to get airborne for the circuit if you could allow spacing for him please to get airborne after 218	15:29:05
	TWR	[Tutor(B) C/S] on the glide circuit will give you spacing on the next one	15:29:09
Tutor(A)	TWR	[Tutor(A) C/S] happy to wait	15:29:11
TWR	RADAR	Radar Carbon 09 clear to land threshold runway 22	15:29:20
Tucano	TWR	[Tucano C/S] initials	15:29:23
Tamar 218	TWR	Tamar 218 extending upwind	15:29:25
TWR	Tucano	[Tucano C/S] we've got 1 short finals 2 downwind	15:29:30
Tucano	TWR	Roger [Tucano C/S]	15:29:32
Tutor(C)	TWR	[Tutor(C) C/S] final	15:29:35
TWR	Tutor(C)	[Tutor(C) C/S] clear to touch and go	15:29:39
Tutor(C)	TWR	Clear touch and go [Tutor(C) C/S]	15:29:47
TWR	Tucano	[Tucano C/S] roger	15:29:52
Tutor(B)	TWR	[Tutor(B) C/S] final number 2	15:30:03
TWR	Tutor(B)	[Tutor(B) C/S] continue	15:30:07

From	To	Speech Transcription	Time
Tutor(B)	TWR	[Tutor(B) C/S]	15:30:11
Tamar 218	TWR	Tamar 218 downwind land	15:30:18
TWR	Tamar 218	Tamar 218 1 ahead surface wind calm	15:30:21
Tamar 218	TWR	Tamar 218 1 on for departure	15:30:28
Junglie 423	TWR	TWR Junglie 423	15:30:33
TWR	Junglie 423	Junglie 423 standby	15:30:37
TWR	Tutor(A)	[Tutor(A) C/S] line up runway 27	15:30:40
Tutor(A)	TWR	[Tutor(A) C/S] line up	15:30:41
Tutor(B)	TWR	[Tutor(B) C/S] going around	15:30:43
TWR	Tutor(B)	[Tutor(B) C/S]	15:30:46
Junglie 423	TWR	TWR Junglie 423 ready for departure Point East	15:30:47
TWR	Junglie 423	Junglie 423 hold radar traffic short finals runway 22	15:30:53
Junglie 423	TWR	Hold Junglie 423	15:30:55
Carbon 10	TWR	Carbon 10 ready for departure Point W	15:31:00
TWR	Carbon 09	Carbon 09 hold	15:31:03
Carbon 10	TWR	That's Carbon 10	15:31:06
TWR	Carbon 10	Apologies Carbon 10 hold	15:31:08
Carbon 10	TWR	Carbon 10	15:31:10
Tucano	TWR	[Tucano C/S] downwind land	15:31:12
TWR	Tucano	[Tucano C/S] 1 ahead surface wind calm	15:31:15
Carbon 09	TWR	Carbon 09 is visual from radar	15:31:21
TWR	Carbon 09	Carbon 09 roger when ready fly along runway 22 hold short runway 27	15:31:25
Carbon 09	TWR	Fly along 22 hold short runway 27 Carbon 09	15:31:31
Vagabond 19	TWR	TWR Vagabond 19 holding PAR crosscut ready for departure outbound FWR	15:31:37
TWR	Carbon 10	Carbon 10 Point West clear for take-off surface wind calm	15:31:42
Carbon 10	TWR	Clear take-off Carbon 10	15:31:45
Tamar 218	TWR	Tamar 218 final	15:31:48
TWR	Tamar 218	Tamar 218 continue 1 on for departure	15:31:50
Tamar 218	TWR	Continue Tamar 218	15:31:52
Tutor(A)	TWR	[Tutor(A) C/S] just to confirm we are on a line up	15:31:59
TWR	Tutor(A)	[Tutor(A) C/S] affirm clear for take-off surface wind calm	15:32:02
Tutor(A)	TWR	Clear for take-off [Tutor(A) C/S]	15:32:06
Tucano	TWR	[Tucano C/S] going around circuit height	15:32:09
TWR	Tucano	[Tucano C/S] roger	15:32:14
Tutor(C)	TWR	[Tutor(C) C/S] downwind land	15:32:25
TWR	Tamar 218	Tamar 218 clear land runway 27	15:32:29
Tamar 218	TWR	Clear land Tamar 218	15:32:33
Tucano	TWR	(unreadable) [Tucano C/S] circuit height	15:32:37
TWR	Tucano	[Tucano C/S]	15:32:44

Analysis and Investigation

UKAB Secretariat

The Tutor and Tucano pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard¹. An aircraft operated on or in the vicinity of an aerodrome shall conform with or avoid the pattern of traffic formed by other aircraft in operation².

¹ SERA.3205 Proximity.

² SERA.3225 Operation on and in the Vicinity of an Aerodrome.

Comments

HQ Air Command

This incident occurred during a particularly busy time in the visual circuit. The Tucano pilot was passed timely and accurate information on circuit traffic at the 'join' call but, significantly, this was before the Tutor involved in the Airprox had been given clearance to line up. It was incumbent on the pilots already in the circuit to keep track of the traffic established there and also of anything that may become a factor, such as the subject Tutor – this vital piece of information was missed by the Tucano pilot, probably (and understandably) due to the volume of radio traffic.

Both pilots consider that they were unsighted on each other's aircraft due to blind spots. However, other barriers exist to mitigate the potential for loss of separation in the visual circuit, namely TCAS/TAS and procedural separation. The Tucano pilot states that there was no indication of the Airprox Tutor on his TCAS and the Tutor pilot's report states that his transponder and TAS were selected on and functioning, giving multiple contacts within 5nm; it is therefore unclear why the Tucano pilot was not cued to the presence of the Tutor. That said, the circuit heights differ for just this eventuality and, from the evidence available, it appears that this barrier was 100% effective.

In summary, this was an extremely busy circuit environment where it would have been very difficult for any pilot, irrespective of experience, to keep track of the positions of all the traffic. Therefore, adherence – by both pilots involved – to the procedures for circuit heights ensured that the aircraft never came closer than the 200ft vertical separation that is built in. Concerning visual conspicuity, work continues across Defence to address the low conspicuity of the Tutor's current colour scheme.

Navy HQ

This event between a Tutor and Tucano in the visual circuit again highlights the need for a good lookout, robust procedures and sound circuit management to ensure safety is not compromised. Even with correct and accurate RT from ATC, the Tucano was unaware of the Tutor's position due to a busy circuit and RT loading. The relative positions of the 2 aircraft; Tutor cleared take off to remain in the visual circuit and Tucano going around in the visual circuit, was such that the Tutor was beneath the Tucano and the aircraft did not become visual until both had levelled in the left-hand circuit at 800ft and 1000ft. Therefore, the circuit design (800ft Tutor circuit height vs 1000ft Tucano circuit height) served its purpose to separate the 2 aircraft.

Summary

An Airprox was reported when a Tutor and a Tucano flew into proximity at about 1532 on Tuesday 24th January 2017. Both pilots were operating under VFR in VMC, both in receipt of an Aerodrome Service from Yeovilton.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, a transcript of the relevant RT frequency, reports from the air traffic controllers involved and comment from the appropriate operating authorities.

The Board noted that the visual circuit was designed such that the Tutor was required to fly at 800ft QFE and the Tucano at 1000ft. Members agreed that each aircraft had been at the correct height, albeit with the Tutor(A) instructor monitoring the student to ensure that was the case, and that the circuit design had operated as intended by providing separation should other barriers, such as lookout and electronic conspicuity, fail. It was unfortunate that neither pilot saw the other aircraft earlier and, although horizontal separation at CPA was undoubtedly small, it was a matter of timing that the aircraft were not well separated laterally. However, the vertical spacing of the circuit design

had functioned correctly and had provided the desired level of separation. That being said, the Board noted that the Tutor pilot had been concerned that the safety of the aircraft involved may have been compromised and that he had therefore been correct to submit an Airprox. Some members wondered whether his surprise at suddenly seeing the Tucano had contributed to his unease, and whether the fact that he was in a turn at the time had meant that he might have perceived the aircraft to be closer vertically than they apparently were. Members commented that the high level of R/T indicated a complexity of operation that should be considered carefully before conducting solo student pilot operations, and members noted also that this probably contributed to a degree of SA saturation for the pilots involved. Lastly, the Board was heartened to learn that work was ongoing to improve the visual conspicuity of Tutor aircraft.

The Board agreed that although the encounter was no doubt alarming, the Airprox had occurred because the Tutor(A) pilot was concerned by the unexpected proximity of the Tucano. The safety barriers, though degraded, had operated as intended and it was considered that the event amounted to normal operations.

PART C: ASSESSMENT OF CAUSE, RISK AND SAFETY BARRIERS

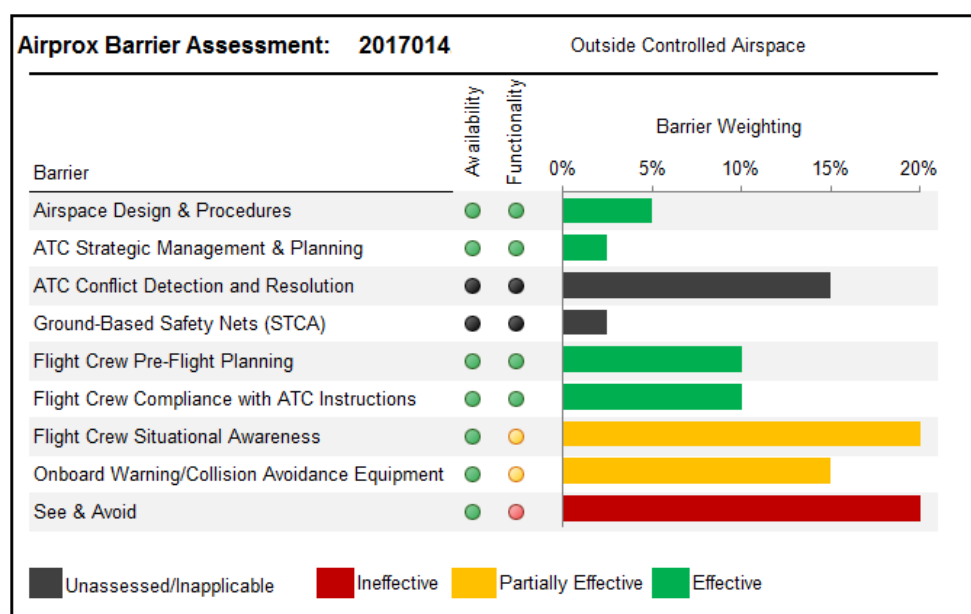
Cause: The Tutor(A) pilot was concerned by the proximity of the Tucano.

Degree of Risk: E.

Safety Barrier Assessment³

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

- **Flight Crew Situational Awareness** was assessed as **partially effective** because although the pilots were aware of traffic in the visual circuit, their SA was not at a level where they were aware specifically of each other's position and intentions.
- **Onboard Warning/Collision Avoidance System** was assessed as **partially effective** because the Tutor(A) pilot had received some information via his TAS, albeit generic only.
- **See and Avoid** was assessed as **ineffective** because neither pilot saw the other aircraft until about CPA.



³ The UK Airprox Board scheme for assessing the Availability, Functionality and Effectiveness of safety barriers can be found on the [UKAB Website](#).