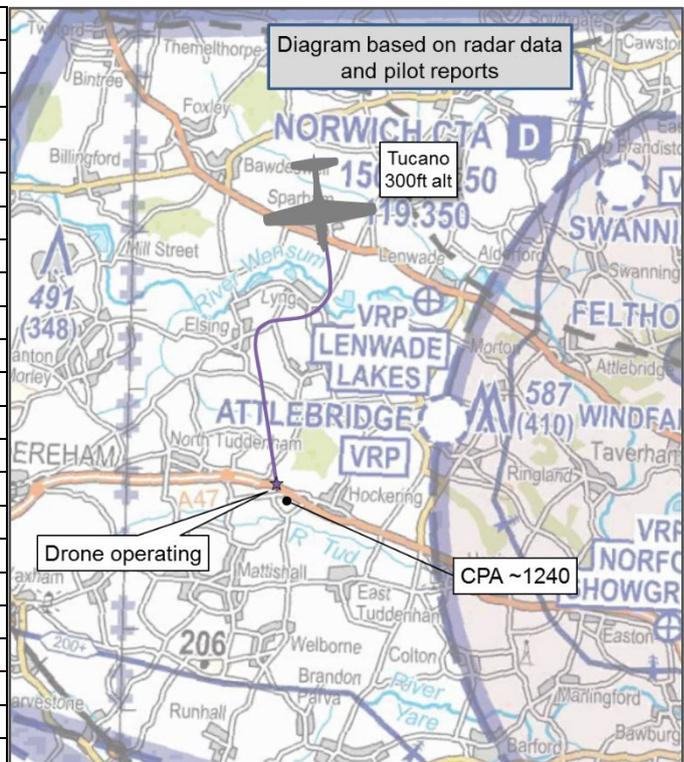


**AIRPROX REPORT No 2018231**

Date: 22 Aug 2018 Time: 1240Z Position: 5240N 00101E Location: North Tuddenham, Norfolk

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

Recorded	Aircraft 1	Aircraft 2
Aircraft	Drone	Tucano
Operator	Civ UAS	HQ Air (Trg)
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	None	Basic
Provider		Norwich
Altitude/FL		
Transponder	Not fitted	A, C, S
<b>Reported</b>		
Colours		Black, Yellow
Lighting	Nil	NR
Conditions	VMC	VMC
Visibility		
Altitude/FL	160ft	250ft
Altimeter	agl	msd
Heading		NK
Speed		240kt
ACAS/TAS	Not fitted	TAS
Alert	N/A	None
<b>Separation</b>		
Reported	50ft V/100ft H	Not seen
Recorded	N/K	



**THE DRONE OPERATOR** reports that he was operating a UAV (drone) on a flight involving aerial photography of a private property in North Tuddenham, Norfolk. At approximately 1245hrs, a light-aircraft flew over the property at an estimated altitude of 200ft. At the time, he was operating the UAV at 50m (~165ft) according to information on the remote control at the time. The aircraft flew within an estimated 100ft of the static UAV, it was a single-engine monoplane, non-military, bright blue in colour.

**THE TUCANO PILOT** reports that he was only made aware of the Airprox some weeks after the event. The description of the position and time of the Airprox matched his sortie profile, but he did not see a drone during the flight. He maintained 250ft MSD throughout the flight.

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

**THE NORWICH CONTROLLER** no longer works in the UK. However, a Norwich investigation found that the Tucano pilot had called Norwich requesting to pass 8nm west of Norwich. He was given a Basic Service and confirmed his level at 250ft. Radar screenshots indicated the Tucano was in the area of Tuddenham at 1240z.

**Factual Background**

The weather at Norwich was recorded as follows:

METAR COR EGSB 221220Z 23012KT 190V280 9999 FEW023 23/16 Q1016 NOSIG=

## Analysis and Investigation

Figure 1 is a screenshot taken from the Norwich radar at 1240:57. The Tucano can be seen indicating 300ft, the drone cannot be seen on the radar.

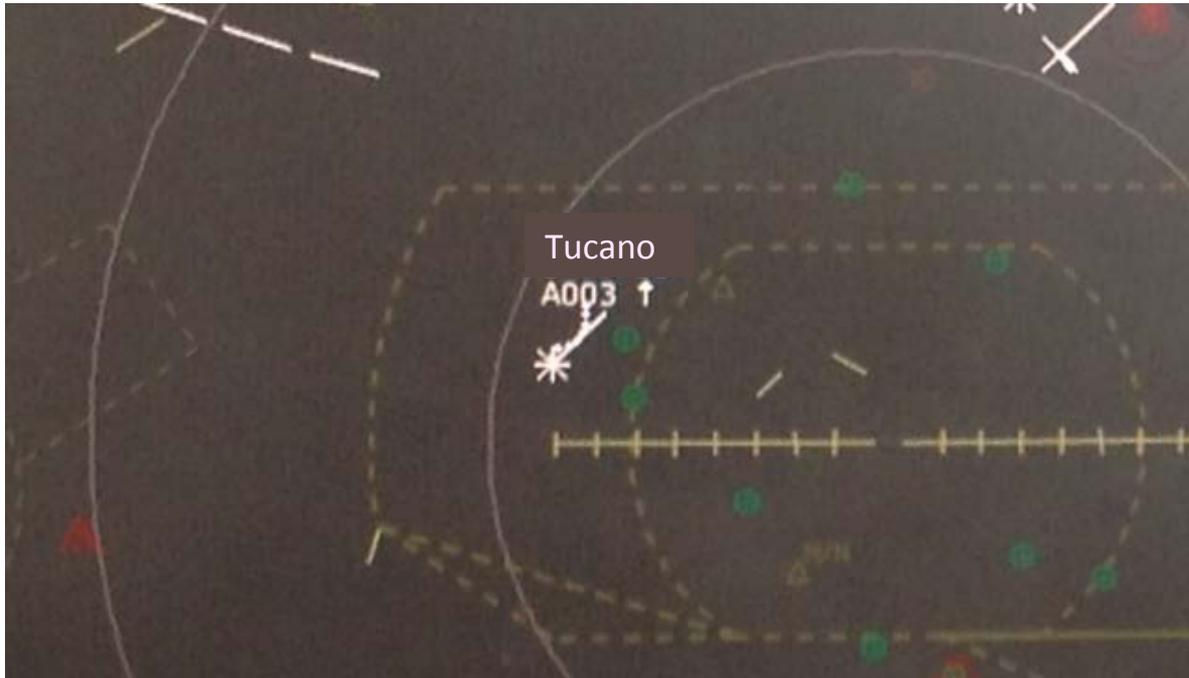


Figure 1

### UKAB Secretariat

The drone operator and Tucano pilot 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>.

### Comments

#### HQ Air Command

The Tucano crew had planned the mission in accordance with current procedures and had employed where possible all available barriers to MAC. The route had been entered onto CADS and there was no indication of drone activity in that area. The crew was also in receipt of an Air Traffic Service (ATS) – albeit a Basic Service – from Norwich. TCAS is fitted to the Tucano but this barrier was also denied as the drone was not equipped with anything that could interact with the TCAS. The only remaining viable barrier was lookout; the Tucano pilot states that they did not see a drone during the flight. The drone pilot does not state how much warning he had about the approaching Tucano, nor whether any avoiding action was deemed necessary or indeed undertaken.

The drone was operating approximately 8 miles on the extended centreline of a busy airfield. Whilst not obliged to do so, a call to Norwich informing the airfield of the drone pilot's intended activity may have caused this information to be passed to the transiting Tucano crew.

The MOD is not responsible for mandating requirements for civilian drone users. This must be driven by the Department for Transport. The Government proposed mandating the use of a Flight Information Notification System (FINS) for drone users in their most recent consultation (summer 2018), the ambition being to provide digital, interactive and real-time information on drone flights. Although the MOD urged the government to push this proposal into legislation, citing the risk of

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

MAC in the UKLFS, the decision was taken (7th Jan 2019) not to mandate FINS, but instead to continue to develop the policy as part of a future Unmanned Traffic Management system. The drone registration scheme which comes into effect on 30th Nov 2019 will be the first step on this path. The CAA is also considering whether the UK should move ahead of expected EASA mandating of electronic conspicuity for drones in 2022.

In the absence of any legislation or regulation to mitigate the risk of collision in the UKLFS and in the meantime, the RAF Safety Centre continues to address the issue using its 3E strategy. Through this strategy, it advertises the Freephone hotline to allow drone users to have their flights published on CADS and be informed of military low flying activity in their area of operation. It is also continuing to exploit opportunities to educate drone users about the risk of collision in the UKLFS using the 'Ask, Look, Listen' and 'Let's Share the Air Safely' campaigns through national drone events and organisations.

## Summary

An Airprox was reported when a drone and a Tucano flew into proximity at 1240hrs on Wednesday 22<sup>nd</sup> August 2018. The drone operator was flying the drone at about 165ft. The Tucano pilot was at 250ft MSD operating under VFR in VMC, in receipt of a Basic Service from Norwich.

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

Information available consisted of reports from both pilots, transcripts of the relevant R/T frequencies, radar photographs/video recordings and a report from the appropriate operating authority.

The Board first looked at the actions of the drone operator. He was entitled to fly his drone at that location and, being below 400ft agl was not required to file a NOTAM. He reported that he had not seen the Tucano until it flew overhead his position, and so the Board concluded that he had had no time to take any avoiding action. The Board noted that he had no way of knowing about the Tucano prior to it arriving overhead. In contrast, had the operator used the MOD freephone hotline<sup>2</sup> to voluntarily pass details of his task, the Tucano pilot may have seen these details on CADS prior to getting airborne and thus might have been forewarned to either raise his transit height or route around the drone's task area.

Turning to the Tucano pilot, he was also entitled to operate in that area within the military low-level system at 250ft MSD. He was receiving a Basic Service from Norwich (the only ATS he could get at that level), but, because they didn't know about the drone either, and without any electronic conspicuity on the drone, he had no way of knowing that the drone was present. Given the drone's small size and the fact that it would likely be difficult to discern against a dark background as the Tucano pilot looked down, it is unsurprising that he did not see it as he flew past and so was also unable to take any avoiding action.

In looking at the cause of the Airprox the Board quickly agreed that it had been a non-sighting by the Tucano pilot, and because he had only seen the Tucano as it flew over his location, effectively a non-sighting by the drone operator. Noting the drone operator's assessment that the Tucano flew within about 100ft above the drone, the Board determined that safety had not been assured and they agreed that the risk should be categorised as Category B.

The Board noted that this was the second incident that they had assessed in the last few months where a drone had come into close proximity with a military low-flying aircraft below 400ft. Both these sectors of the aviation community were sharing the same airspace with little ability to detect or avoid each other; noting the HQ Air Command comments regarding this aspect, Board members expressed their concern that safety could not currently be assured in this flight regime.

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<sup>2</sup> The Low Flying Booking Cell hotline number for drone operators to call is 0800 515544 for more details see <https://www.arpas.uk/drones-and-low-flying-military-aircraft/>

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

Cause: A non-sighting by the Tucano pilot and effectively a non-sighting by the drone operator.

Degree of Risk: B.

**Safety Barrier Assessment**<sup>3</sup>

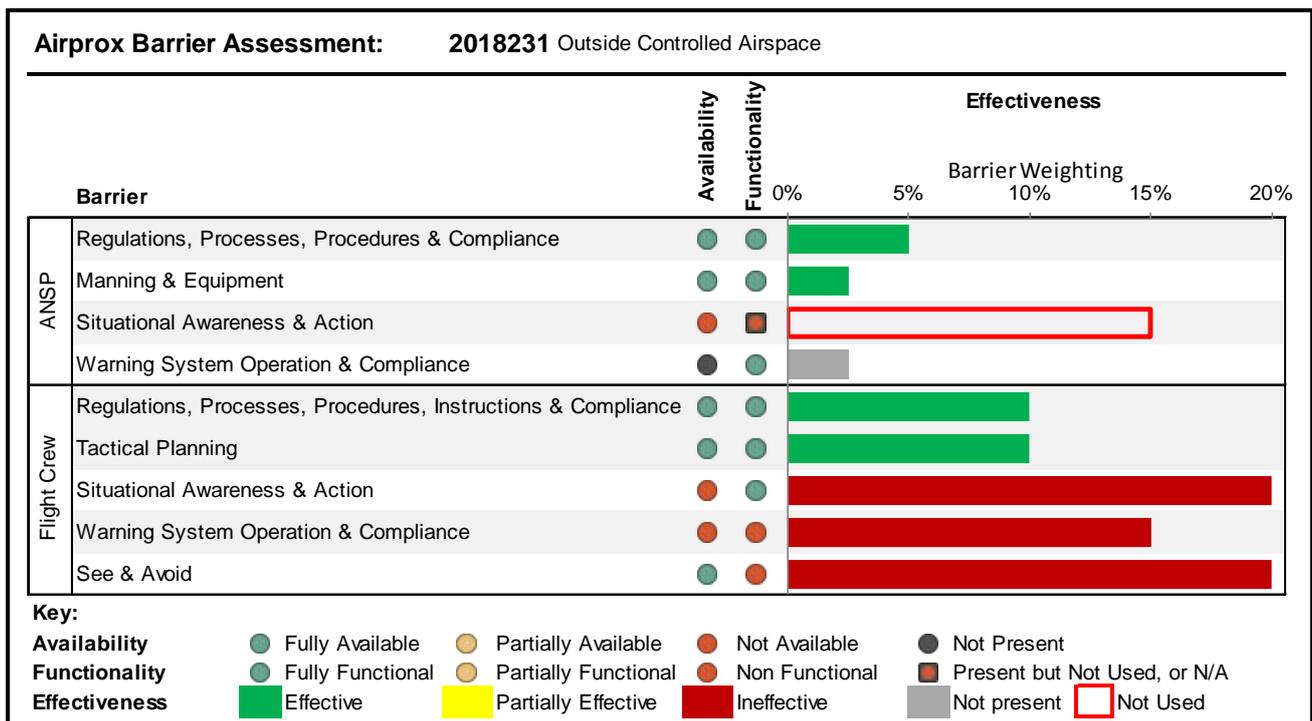
In assessing the effectiveness of the safety barriers associated with this incident, the Board concluded that the key factors had been that:

**Flight Crew:**

**Situational Awareness and Action** were assessed as **ineffective** because neither operator had any knowledge about the other.

**Warning System Operation and Compliance** were assessed as **ineffective** because the TAS on the Tucano could not detect the drone.

**See and Avoid** were assessed as **ineffective** because the Tucano pilot didn't see the drone, and the drone operator didn't see the Tucano in time to take any action.



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