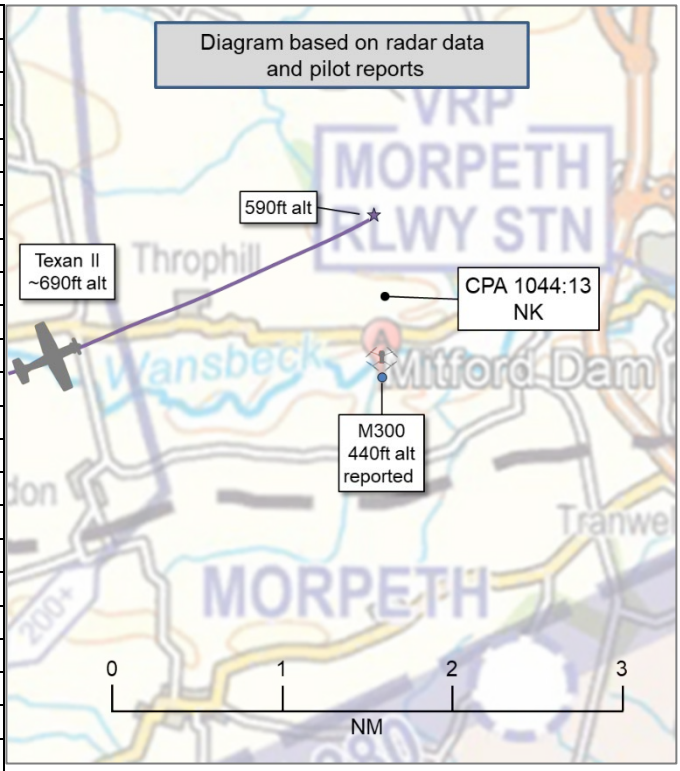
AIRPROX REPORT No 2023083

Date: 18 May 2023 Time: 1043Z Position: 5510N 00146W Location: Mitford Dam, Morpeth.

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	M300	Texan II
Operator	Civ UAS	HQ Air (Trg)
Airspace	Scottish FIR	Scottish FIR
Class	G	G
Rules	VLOS	VFR
Service	None	Unknown
Provider	N/A	NK
Altitude/FL	NK	590ft
Transponder	Not fitted	A, C, S+
Reported		
Colours	Black	Black
Lighting	Strobe	NK
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	84m (275ft)	NK
Altimeter	AGL	NK
Heading	NE	NK
Speed	0kt	240kt
ACAS/TAS	DJI AirSense	Unknown
Alert	Information	None
Separation at CPA		
Reported	250ft V/2.4km H	NK V/NK H
Recorded	NK	



THE M300 PILOT reports that the Airprox occurred on the Mitford Dam, Morpeth. The inbound aircraft in question was a silver and blue in-line two-seater turbo prop (they thought) operating at an altitude no greater than 80m AGL [262ft] by the time it passed over their position. Unfortunately, they were unable to get a tail number, or electronic identification (via an app) due to signal/data issues. They first became aware of the incoming aircraft after an alert on the M300 controller. The information they took on board, in the moment, was the aircraft distance from their position, direction of travel and altitude above their M300, which was 90m [295ft] and reducing as the aircraft closed in, as displayed on the M300 smart controller. The first alert was given at 2.3km [1.2NM] out, and 90m [295ft] indicated altitude on top of their M300 altitude. The survey altitude was set to 60m [197ft] ATO [altitude measured above take off]. The M300 was no further than 20m away, horizontally, from their position at this point. [The operator stated that] at an educated guess they would put the M300 height at no greater than 30m [98ft] before they paused to pay particular attention to the inbound aircraft.

Flight safety and diversion became their priority at this point. Their M300 was paused above the dam structure until they could attain visual line of sight (VLOS) to the inbound aircraft, and to better assess the situation. Once the inbound aircraft came into their visual line of sight, and was [seen] simultaneously by their [colleague and airspace observer] (AO), they took the decision to put the M300 into sport mode, with full forward flight while reducing height. They opined that had they not done this, they believe that by the time the inbound aircraft was over their position, it would have been within 50m [164ft] proximity of the M300. The AO supported this belief. Their immediate action, once the inbound aircraft had passed over the drone, was for them to ask [the AO] if they could still see the inbound aircraft, as they [the operator] could not. Due to [the AO's] position from them, although slightly elevated, [the AO] was no longer able to see the inbound aircraft due to tree cover on the horizon. The 2 Environmental Agency staff on site were stood further up the hill in an elevated position approximately 10m [33ft] higher than them and could both still see the aircraft. They both reported that the aircraft was 'coming about'. While the immediate airspace was clear, they (the operator) decided to manoeuvre the

M300 at low altitude back to their position, (TOL) and landed immediately. The inbound aircraft did not revisit the airspace over/around their position, and was heard flying away until it was out of earshot.

The pilot assessed the risk of collision as 'High'.

THE TEXAN PILOT reports that a 'pairs landaway' was conducted to RAF Leuchars as part of a syllabus event. Neither crew from either aircraft saw any drone or had any reasons to raise any concerns. Two weeks later [after the exercise] the Air Safety Team was advised that a drone operator had submitted an Airprox [about] a Texan operating in the area at the time of the landaway.

The pilot noted that there had been no NOTAM'd activity in the area or along the route, therefore all existing safety systems were in place and were used.

The pilot perceived the severity of the incident as 'Low'.

Factual Background

The weather at Newcastle had been recorded as follows:

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METAR EGNT 181050Z VRB02KT CAVOK 15/09 Q1026=
METAR EGNT 181020Z VRB02KT CAVOK 16/09 Q1026=
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Analysis and Investigation

RAF Valley Investigation

The drone's details were not published by a NOTAM or on CADS, and as such it is reliant on 'see and avoid' criteria. The Texan crew reportedly carried out a thorough lookout throughout the sortie but did not see the drone or realise that there had been an Airprox. As the drone was operating below 400ft there was no requirement for a NOTAM submission or CADS submission. They noted that the risk of drone Airprox is ever increasing for low-level aircraft below 400ft.

UKAB Secretariat

An analysis of the NATS radar replay was undertaken. The Texan could be identified using Mode S data. At 1043 the Texan aircraft could be seen in the vicinity of the Mitford Dam, close to the drone's reported position, marked by a white cross (Figure 1).

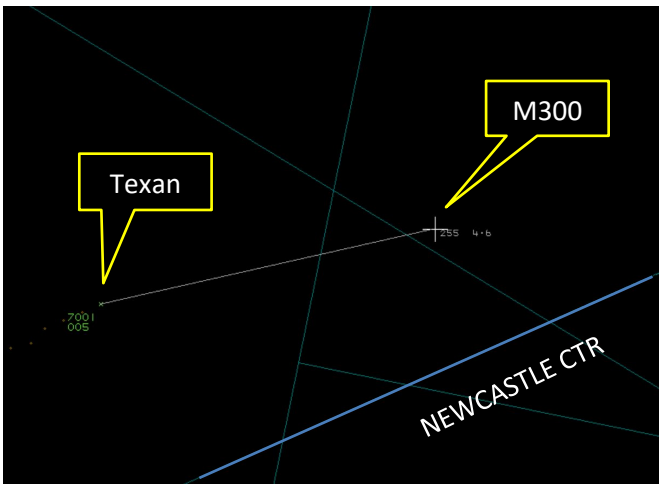

Figure 1 - 1043:01 Texan at 4.6NM separation bearing 255° from the M300

The M300 operator reportedly kept the drone stationary as the Texan approached the Mitford Dam area and the closest point of approach appears to be as the Texan passed the dam (Figure 2 and Figure 3).

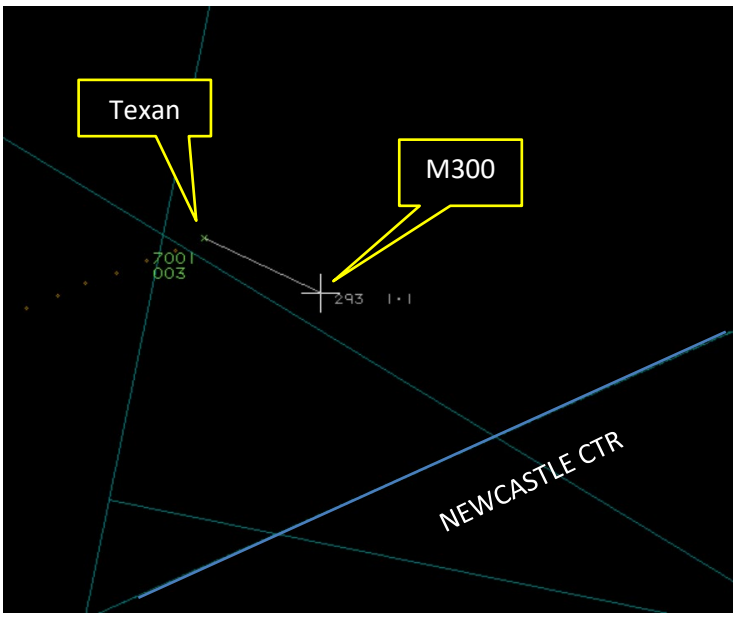

Figure 2 – 1043:56 Texan at 1.1NM separation, bearing 293° from the M300

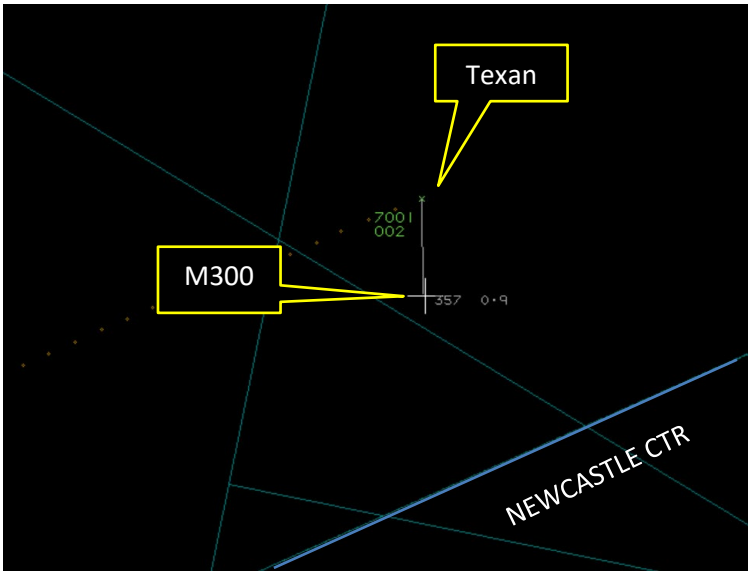

Figure 3 - 1044:13 Texan at 0.9NM separation, bearing 357° from the M300

The NATS radar recording indicated that the Texan had a height readout of '002' or FL002 which equates to 590ft AMSL based on a pressure setting of 1026hPa. The M300 drone operator reported a height of 84m AGL and the elevation of the ground at that position is mapped at 50m, so the altitude of the M300 is calculated to be 440ft AMSL. At the point of CPA the height separation was therefore in the region of 150ft.

It was later confirmed by RAF Valley that the Texan depicted on radar had been operating as a pair, and that the wingman had been on the left-hand side of the pair at a distance of approximately 0.75NM.

The M300 and Texan 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] During the flight, the remote pilot shall keep the unmanned aircraft in VLOS and maintain a thorough visual scan of the airspace surrounding the unmanned aircraft in order to avoid any risk of collision with any manned aircraft.

[1] (UK) SERA.3205 Proximity. MAA RA 2307 paragraphs 1 and 2.

The remote pilot shall discontinue the flight if the operation poses a risk to other aircraft, people, animals, environment or property.[2]

Comments

HQ Air Command

Drone flights sub-400ft pose a hazard for low flying military aircraft which routinely conduct training sub-400ft AGL. The CAP 722 states that, whilst there are no right-of-way rules set out in regulation between uncrewed aircraft and other airspace users, 'it is likely that the unmanned aircraft remote pilot will identify other airspace users before they identify the unmanned aircraft, and therefore the remote pilot will usually be first to manoeuvre away from any conflicting aircraft.' This is what occurred in this incident and indeed, the Texan pilot was never aware of the drone at all. The drone operator and support are thanked not only for their actions on becoming aware of the approaching Texan, but for the submission of an Airprox through which we can better understand the effective mitigations in place. It is encouraging that there are tools available to help increase situational awareness of potential conflicts for drone operators in good time. Until there are robust processes/regulations in place to make drones more detectable (electronically or otherwise) to piloted aircraft, the responsibility for collision avoidance falls primarily upon the remote pilot.

Summary

An Airprox was reported when an M300 drone and a Texan II flew into proximity at Mitford Dam at 1044Z on Thursday 18th May 2023. The M300 pilot had been operating VLOS with an observer and the Texan pilot had been operating under VFR in VMC, the M300 pilot was not in receipt of an ATS and the Texan pilot had not reported being in receipt of an ATS.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings and reports from the appropriate operating authorities. Relevant contributory factors mentioned during the Board's discussions are highlighted within the text in bold, with the numbers referring to the Contributory Factors table displayed in Part C.

Members first considered the actions of the Texan pilot, and noted that no sighting of the drone operation had been reported and that the Texan pilot had not had any information that the drone had been operating in the area. Members discussed whether an ATC service may have been used to have improved situational awareness, but noted that low-level operation is not conducive to good air/ground radio reception nor would it have provided any information about the M300 drone operation.

Considering the operation and actions of the M300 drone operator, members noted that the radar return from the Texan had matched the reported height readout from the M300 operator, but that the distance of the Texan on the radar replay from the reported position of the drone depicted a separation of 0.9NM. They therefore thought that the operator had been concerned by the information that their electronic warning system had given them. However, members were heartened to note that the M300 operator had acted in a safe and cautious manner, in accordance with the regulated remote pilot responsibilities, by monitoring the inbound Texan and returning the drone to its TOL position.

Further discussion was made about the requirements to notify other airspace users either of military low-level flying exercises or drone operations. Current regulations do not require either operator to notify 'normal' activity and therefore neither operator had had the benefit of prior knowledge regarding the operation of the other.

In conclusion, members were satisfied that the drone alerting system had generated adequate notification to the M300 pilot and their AO, which had alerted them to the inbound Texan and enabled

[2] Regulation (EU) 2019/947 as retained (and amended in UK domestic law) Under the European Union (Withdrawal) Act 2018 - UAS.SPEC.060 Responsibilities of the remote pilot (2)(b).

them to create sufficient separation between the aircraft. It was concluded that there had been no risk of collision and that normal safety standards had pertained. As such, the Board assigned Risk Category E to this event. Members agreed that the following factors (detailed in Part C) had contributed to this Airprox:

CF1: Neither pilot had any information regarding the activities of the other.

CF2: The Texan pilot had no situational awareness of the presence of drone.

CF3: The M300 drone operator had been concerned on receiving an alert regarding the Texan aircraft.

CF4: The M300 drone operator had been alerted to the presence of the Texan by the drone's proprietary warning system.

CF5: The Texan pilot never saw the drone.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2023083			
CF	**Factor**	**Description**	**ECCAIRS Amplification**	**UKAB Amplification**
	Flight Elements			
	• Tactical Planning and Execution			
1	Organisational	• Flight Planning Information Sources	An event involving incorrect flight planning sources during the preparation for a flight.	
	• Situational Awareness of the Conflicting Aircraft and Action			
2	Contextual	• Situational Awareness and Sensory Events	Events involving a flight crew's awareness and perception of situations	Pilot had no, late, inaccurate or only generic, Situational Awareness
3	Human Factors	• Unnecessary Action	Events involving flight crew performing an action that was not required	Pilot was concerned by the proximity of the other aircraft
	• Electronic Warning System Operation and Compliance			
4	Contextual	• Other warning system operation	An event involving a genuine warning from an airborne system other than TCAS.	
	• See and Avoid			
5	Human Factors	• Monitoring of Other Aircraft	Events involving flight crew not fully monitoring another aircraft	Non-sighting or effectively a non-sighting by one or both pilots

Degree of Risk: E.

Safety Barrier Assessment[3]

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

Flight Elements:

Tactical Planning and Execution was assessed as **ineffective** because no information had been made available to either pilot regarding the activities of the other. Neither flight had been notified by CADS or NOTAM as there had been no requirement to do so.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because the Texan pilot had no awareness of the drone operation and the M300 pilot had been

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

concerned by the approaching aircraft and had taken precautionary action due to the perceived proximity of the Texan.