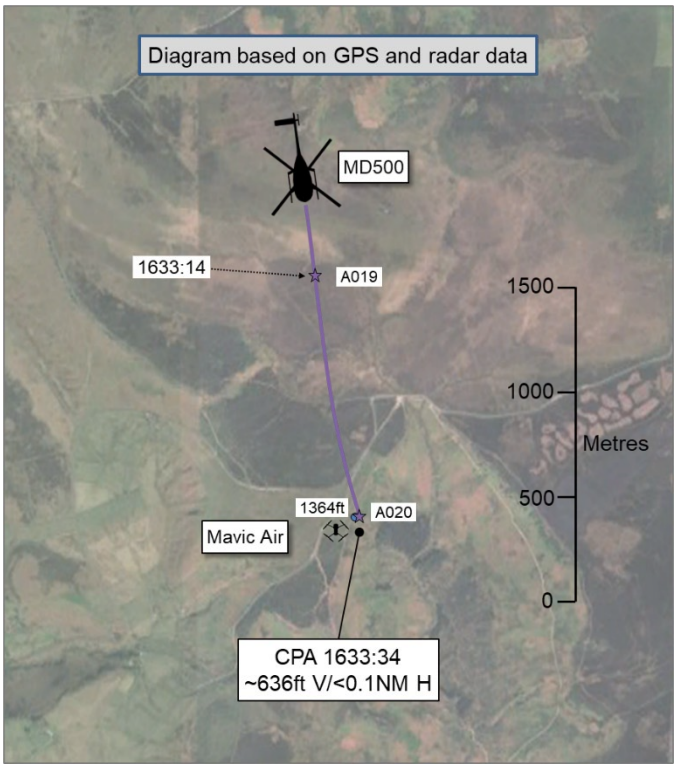
AIRPROX REPORT No 2024260

Date: 11 Oct 2024 Time: 1634Z Position: 5320N 00137W Location: 4.5NM ENE Camphill

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Mavic Air	MD500
Operator	Civ UAS	Civ Helo
Airspace	London FIR	London FIR
Class	G	G
Rules	VLOS (Specific Cat.)	VFR
Service	None	Listening Out
Provider	N/A	Leeds Bradford
Altitude/FL	1364ft	A020
Transponder	Not fitted	A, C, S
Reported		
Colours	White	Orange
Lighting	White, red	Position, anti-col
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	6m	NK
Altimeter	NK	QNH
Heading	"*NW*"	"*south*"
Speed	0kt	110kt
ACAS/TAS	Not fitted	TAS
Alert	N/A	None
Separation at CPA		
Reported	240ft V/0NM H	"*not seen*"
Recorded	~636ft V/<0.1NM H	



THE MAVIC AIR PILOT reports that they were conducting waypoint missions training for the search of missing personnel. On a previous flight, this included operating up to a height of 65m AGL during the search. The necessary landowner approval had been obtained and a 'flight plan' submitted via [a drone flight planning app] which indicated the area, altitude and time of the UAS operation.

The Mavic Air took-off at 1632 UTC and, approximately 30sec after takeoff, the sound of a helicopter could be heard approaching from the north of the Takeoff and Landing Area (TOLA). The mission was aborted and the UAS returned to the TOLA and hovered 5m above ground until the flightpath and altitude of the approaching helicopter could be ascertained. The helicopter flew directly overhead the TOLA on a southerly heading at a height of 80-100m AGL. After the event, the ADSB-exchange website was consulted and it was ascertained that [the MD500] had overflown the TOLA at the time reported.

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

THE MD500 PILOT reports that there were two pilots on board returning home from a private site. The helicopter was fitted with TAS and ADSB-out and nothing was seen on, nor a warning received by, the systems. There was zero risk to pilots or the helicopter. It was daylight and VFR.

As far as both pilots were aware, there was zero to little risk of a collision.

The pilot assessed the risk of collision as 'None'.

Factual Background

The weather at Manchester was recorded as follows:

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METAR COR EGCC 111620Z AUTO 19003KT 9999 NCD 10/04 Q1015 NOSIG
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Analysis and Investigation

UKAB Secretariat

An analysis of the NATS radar replay was undertaken and the MD500 could be positively identified from Mode S data (Figure 1). The MD500 was depicted on the replay as flying at a Flight Level. A suitable correction was applied to determine its altitude.

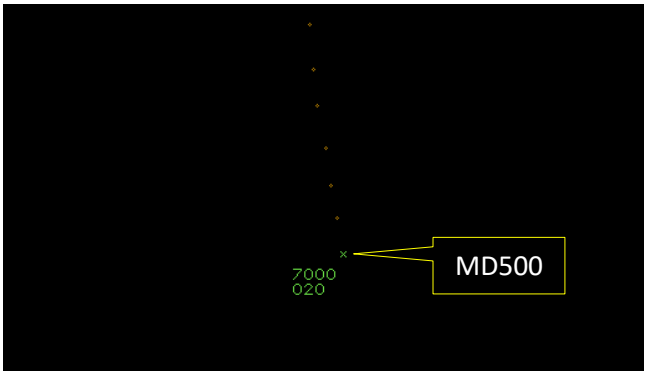


Figure 1 – CPA at 1633:34

The Mavic Air was not observed on the replay, however, the pilot of the Mavic Air kindly supplied GPS track data for their flight. At the moment of CPA, the elevation of the terrain at the position of the Mavic Air was 1349ft and its altitude was recorded as 1364ft. It was by combining the various data sources that the diagram was constructed and the separation at CPA determined.

The Mavic Air and MD500 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] The Operational Authorisation issued to the operator of the Mavic Air specified that: Flights may be conducted within 150m of any residential, commercial, industrial, and/or recreational area.[2] The Unmanned Aircraft must be maintained within 120 metres (400ft) from the closest point of the surface of the earth.[3] Flights must be conducted within VLOS as per the definition given in UK Reg (EU) 2019/947, Article 2(7) and must not exceed 500m from the remote pilot.[4] During the flight, the remote pilot shall avoid any risk of collision with any manned aircraft. The remote pilot shall discontinue the flight if the operation poses a risk to other aircraft, people, animals, environment or property.[5]

Summary

An Airprox was reported when a Mavic Air UAS and an MD500 flew into proximity 4.5NM east-northeast of Camphill at 1634Z on Friday 11th October 2024. The Mavic Air pilot was operating under VLOS in VMC not in receipt of an ATS. The MD500 pilot was operating under VFR in VMC listening-out on the Leeds Bradford frequency.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings and GPS track data for the Mavic Air. 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.

The Board first considered the actions of the pilot of the Mavic Air and members noted that they had attended to their pre-flight preparation appropriately. It was noted that the pilot of the Mavic Air had

[1] (UK) SERA.3205 Proximity.
[2] Operational Authorisation (Specific Category) as issued to the operator of the Mavic Air 2.1
[3] Operational Authorisation (Specific Category) as issued to the operator of the Mavic Air 6.1
[4] Operational Authorisation (Specific Category) as issued to the operator of the Mavic Air 7.1
[5] Assimilated Regulation (EU) 2019/947- UAS.SPEC.060 Responsibilities of the remote pilot (3)(b)

heard the sound of an approaching helicopter and members agreed that they had therefore gleaned sufficient situational awareness of the presence of the MD500 to have prompted a visual scan of the area. Members agreed that, upon the subsequent sighting of the helicopter, the pilot of the Mavic Air had taken the appropriate avoiding action in a timely manner. Nevertheless, members appreciated that to have sighted the MD500 as it transited overhead their position had caused concern.

Turning to the actions of the pilot of the MD500, members agreed that the TAS fitted to the MD500 would not have been expected to have detected the presence of the Mavic Air. It was further agreed that the pilot of the MD500 had not had situational awareness of the Mavic Air and that it had not been visually acquired. One member pondered the MD500 pilot's assertion that "*The helicopter was fitted with TAS and ADSB-out and nothing was seen on, nor a warning received by, the systems. There was zero risk to pilots or the helicopter*". The member was keen to point out that the 'Electronic Warning System' barrier had not functioned in this scenario and the electronic conspicuity equipment fitted to the MD500 had not been an effective mitigation for collision avoidance.

Members concluded their discussion and agreed that, once the pilot of the Mavic Air had been aware of the presence of the MD500, they had correctly discontinued their flight and had taken avoiding action in sufficient time for there to have been no risk of collision. Whilst it was appreciated that the encounter may have been concerning for the pilot of the Mavic Air, members agreed that normal safety parameters had pertained. The Board assigned Risk Category E to this event.

Members agreed on the following contributory factors:

CF1. The pilot of the MD500 had not had situational awareness of the presence of the Mavic Air.

CF2. The TAS equipment fitted to the MD500 would not have been expected to have detected the presence of the Mavic Air.

CF3. The pilot of the MD500 had not sighted the Mavic Air.

CF4. The pilot of the Mavic Air had been concerned by the proximity of the MD500.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

CF	Factor	Description	ECCAIRS Amplification	UKAB Amplification
	Flight Elements			
	• Situational Awareness of the Conflicting Aircraft and Action			
1	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
	• Electronic Warning System Operation and Compliance			
2	Technical	• ACAS/TCAS System Failure	An event involving the system which provides information to determine aircraft position and is primarily independent of ground installations	Incompatible CWS equipment
	• See and Avoid			
3	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
4	Human Factors	• Perception of Visual Information	Events involving flight crew incorrectly perceiving a situation visually and then taking the wrong course of action or path of movement	Pilot was concerned by the proximity of the other aircraft

Degree of Risk: E.

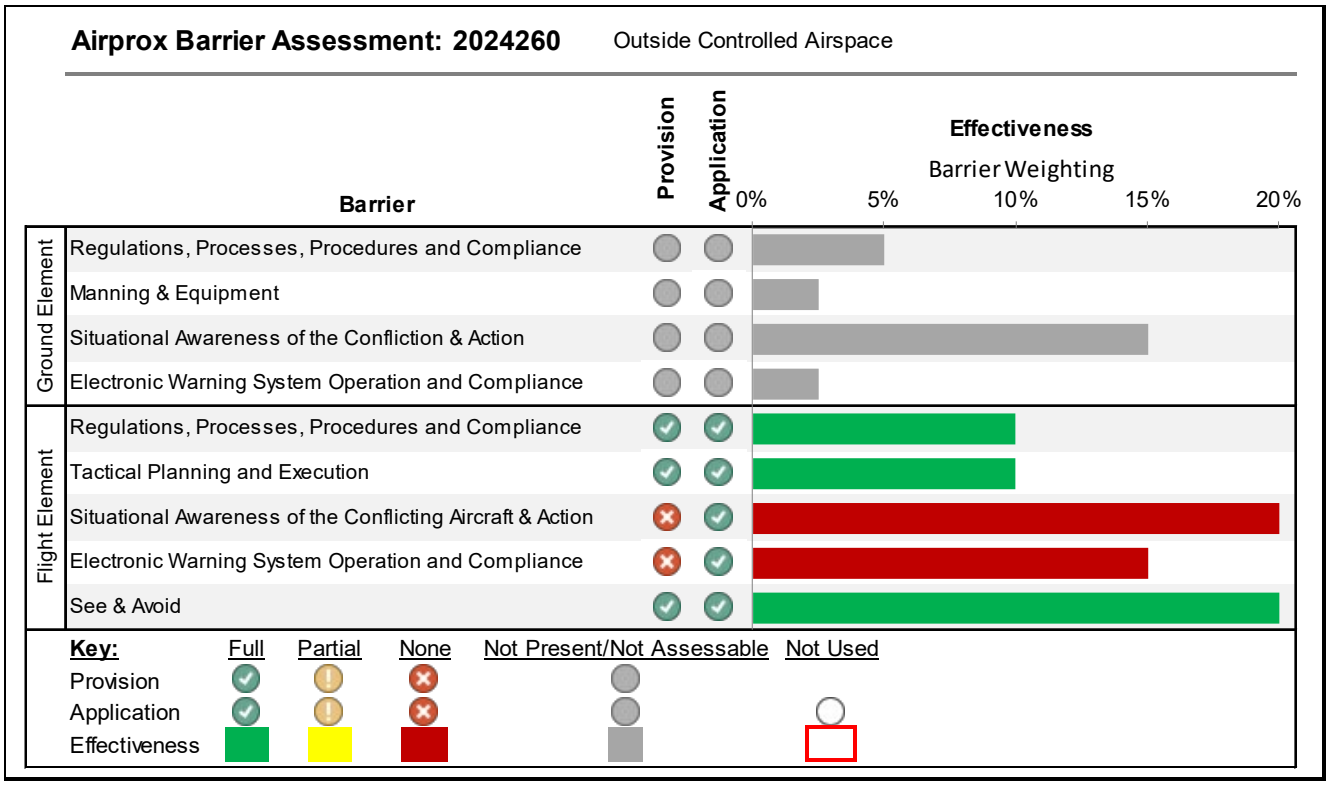
Safety Barrier Assessment[6]

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

Flight Elements:

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because the pilot of the MD500 had not had situational awareness of the presence of the Mavic Air.

Electronic Warning System Operation and Compliance were assessed as **ineffective** because the TAS fitted to the MD500 would not have been expected to have detected the presence of the Mavic Air.



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