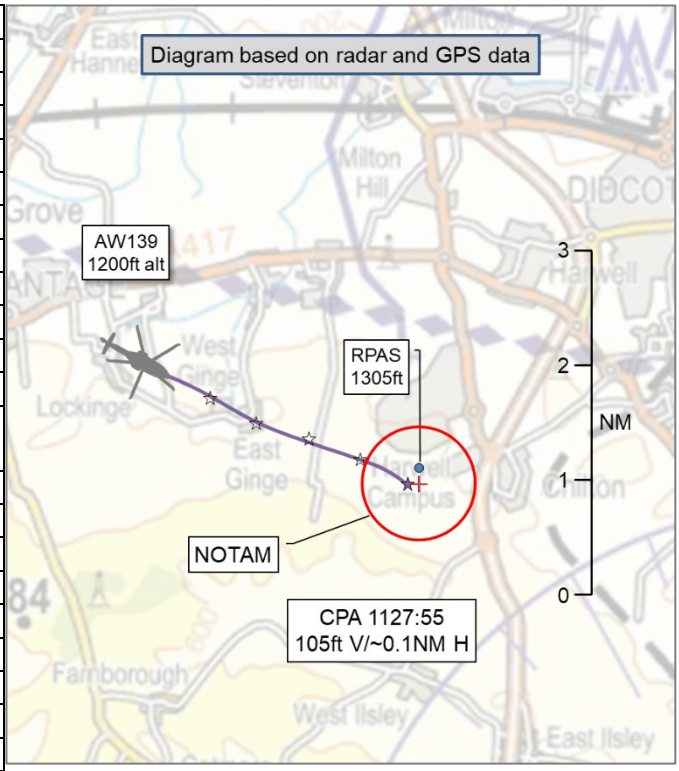
AIRPROX REPORT No 2022047

Date: 09 Apr 2022 Time: 1128Z Position: 5134N 00119W Location: Harwell

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	RPAS	AW139
Operator	Civ UAS	Civ Comm
Airspace	London FIR	London FIR
Class	G	G
Rules	VLOS	VFR
Service	N/A	None [1]
Provider	N/A	N/A
Altitude/FL	1305ft	1200ft
Transponder	Not fitted	A, C, S+
Reported		
Colours	Black	Grey
Lighting	Green/red position lights	Anti-col
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	1300ft	1300ft
Altimeter	QNH (1016hPa)	QNH (NK hPa)
Heading	N/A	090°
Speed	0kt	140kt
ACAS/TAS	Not fitted	TCAS II
Alert	N/A	None
Separation at CPA		
Reported	~250ft V/200m H	Not seen
Recorded	105ft V/~0.1NM H	



THE RPAS REMOTE PILOT reports being in command of a small quadcopter UAV with a MTOM of 6.6kg and a cross-section of about 0.5m. The purpose of the flight was to conduct scientific measurements of an antenna on the ground, which involved flying the UAV above the antenna, at heights of up to 500m (1640ft) AGL, utilising a specialised payload. The ground level at the operating area was 130m (430ft AMSL) and as such the maximum operating altitude was 2070ft AMSL. An operational authorisation for the flight had been obtained from the CAA and a NOTAM had been issued (H1696/22) which was current at the time of the incident. The operation made use of a Remote Pilot (RP) in command of the UAV plus a Visual Observer (VO) to monitor the surrounding airspace for potential traffic. Two additional staff operated the payload independently of the RP. The RP controlled and monitored the UAV using both a handheld controller and a Ground Control Station (GCS). The GCS included two screens, one to display the UAV flight telemetry and another to display traffic information (for electronically conspicuous traffic) using a live feed from the PlaneFinder website. The GCS was set up in the rear of a van positioned near the antenna in an open field. They stood outside the van to monitor the GCS and facilitate visual contact with the UAV. The VO was positioned nearby where they had a good view of the airspace. The RP and VO were in verbal contact with each other. At about 1125, they detected the conflicting traffic on the traffic display screen. The traffic was about 4NM to the northwest at 800ft and appeared to be tracking south of the UAV operating area. At this time the UAV was positioned directly above the antenna, stationary and at 500m AGL (2070ft AMSL). They informed the VO of the potential traffic. Within a minute, at about 3NM, the traffic altered course about 20° left (towards the operating area), displaying an altitude of about 1000ft, a speed of 140kts and a rate of climb of about 1000fpm. The RP then initiated a descent (at the maximum rate for the UAV of 3m/s, 600fpm), anticipating that the traffic would continue a climb. At the same time, the RP repositioned clear of the van in order to look for the traffic. The traffic was sighted shortly afterwards at a distance of about 2km, on track to overfly their position. At this time the RP directed the UAV to the northeast, on

[1] A Procedural Service with 'NATS' reported but the aircraft was squawking the VFR conspicuity code.

a course perpendicular to that of the traffic and at its maximum speed of about 18m/s (achieving about 11m/s groundspeed due to the prevailing wind). The descent was continued. As the traffic approached it became clear that it was not climbing and was still at low level. The RP stopped the UAV descent at 400m (1300ft) AMSL, but this was only seconds before the traffic passed by, below the height of the UAV and to the southwest of the UAV's position. They estimated that at the closest point the separation was about 200-300ft vertically and 200m horizontally. The traffic did not appear to take avoiding action.

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

THE AW139 PILOT reports that they received an email about an Airprox between their aircraft and a UAV, which they did not see.

Factual Background

The weather at Benson was recorded as follows:

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METAR EGUB 091150Z AUTO 30008KT 9999 // FEW048/// 10/M00 Q1016=
METAR EGUB 091050Z AUTO 29008KT 9999 // SCT034/// 09/01 Q1016=
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The subject NOTAM was issued as follows:

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(H1696/22)
NOTAMN Q) EGTT/QWULW/IV/BO /W/000/022/5134N00119W001
A) EGTT B) 2204040700 C) 2204101800 D) 0700-1800
E) UAS OPR WI 0.5NM RADIUS OF 513400N 0011856W
(HARWELL, DIDCOT, OXFORDSHIRE). MAX HGT 1640FT AGL.
FOR INFO 07927310258. 2022-04-0174/AS2
F) SFC G) 2180FT AMSL
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Analysis and Investigation

UKAB Secretariat

The RPAS and AW139 pilots shared an equal responsibility for collision avoidance and not to operate in such proximity to other aircraft as to create a collision hazard.[2] 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. The remote pilot shall discontinue the flight if the operation poses a risk to other aircraft, people, animals, environment or property.[3]

Summary

An Airprox was reported when an RPAS and an AW139 flew into proximity at Harwell at 1128Z on Saturday 9th April 2022. The AW139 pilot was operating under VFR in VMC, not in receipt of a FIS. The RPAS pilot was operating under VLOS.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots, radar photographs/video recordings, reports from the air traffic controllers involved 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 discussed the RPAS operator's actions and commended them on their professionalism. Their use of multiple sensors had allowed them to maintain a high degree of situational awareness and to proactively take effective action in a timely manner in order to mitigate the threat of mid-air collision.

[2] (UK) SERA.3205 Proximity.
[3] EASA Part UAS.OPEN.060 Responsibilities of the remote pilot (2)(b).

In contrast, members wondered to what degree the AW139 pilot was aware of the NOTAM and whether: their pre-flight Threat and Error Management assessment had included the position of the NOTAM; the probable lack of electronic conspicuity (**CF4**) or surveillance based information with a RPAS and the likelihood that they would not visually acquire a small converging RPAS until a late stage despite the see-and-avoid barrier being the only available to them as a mitigation to mid-air collision (**CF3**). The Board pointed out that the obvious solution to these threats was to remain clear of the NOTAM (**CF1**). In the event, the AW139 pilot bisected the NOTAM area (**CF2**) (which the Board felt suggested that they had had no situational awareness (**CF4**)) and did not see the RPAS (**CF6**). The RPAS operator was entirely correctly concerned by the proximity of the AW139 (**CF7**) and although some members felt that the AW139 passing below the RPAS, that they did not see, warranted a risk assessment of safety much reduced, Risk B, the Board agreed by a majority that the RPAS operator's actions and the separation at CPA were such that risk of collision had been averted, Risk C.

Finally, Board members agreed that the purpose of a NOTAM was to warn of circumstances precisely such as that associated with this Airprox and that it was the proactive planning and execution of all flights using effective Threat and Error Management that created the safety conditions necessary for flight in Class G airspace. Pilots disregarded such information at their peril.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

	2022047			
CF	**Factor**	**Description**	**ECCAIRS Amplification**	**UKAB Amplification**
	Flight Elements			
	• Tactical Planning and Execution			
1	Human Factors	• Action Performed Incorrectly	Events involving flight crew performing the selected action incorrectly	Incorrect or ineffective execution
2	Human Factors	• Aircraft Navigation	An event involving navigation of the aircraft.	Flew through promulgated and active airspace, e.g. Glider Site
3	Human Factors	• Pre-flight briefing and flight preparation	An event involving incorrect, poor or insufficient pre-flight briefing	
	• Situational Awareness of the Conflicting Aircraft and Action			
4	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			
5	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			
6	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
7	Human Factors	• Perception of Visual Information	N/A	Pilot was concerned by the proximity of the other aircraft

Degree of Risk: C.

Recommendation: Nil.

Safety Barrier Assessment[4]

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

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 the AW139 pilot's flight path bisected the NOTAM'd area.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because the AW139 pilot likely had no situational awareness of the RPAS presence.

Electronic Warning System Operation and Compliance were assessed as **ineffective** because the RPAS was not equipped with electronic conspicuity equipment.