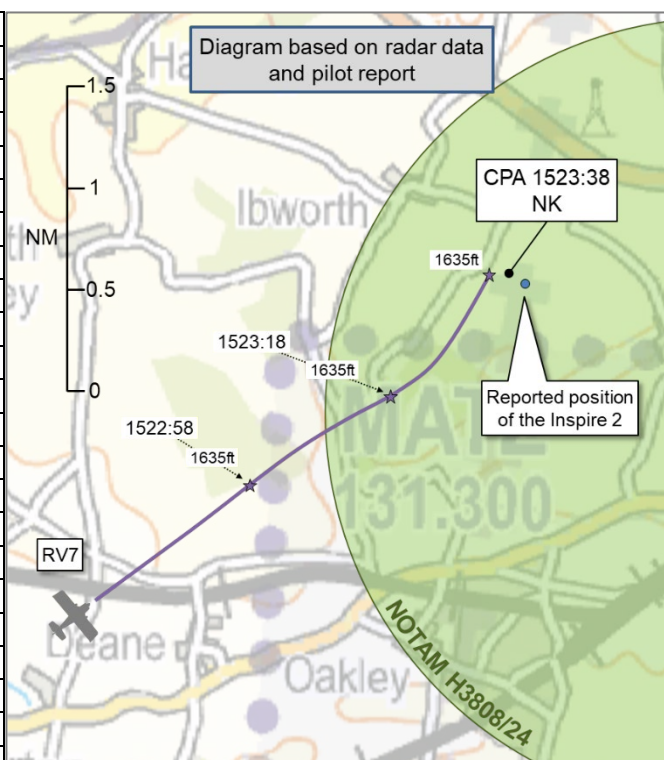


AIRPROX REPORT No 2024138

Date: 20 Jun 2024 Time: 1524Z Position: 5117N 00110W Location: 3NM WNW Basingstoke

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	Inspire 2	RV7
Operator	Civ UAS	Civ FW
Airspace	London FIR	London FIR
Class	G	G
Rules	VLOS Specific cat.	VFR
Service	None	Listening Out
Provider	N/A	Farnboro' LARS W
Altitude/FL	NK	1635ft
Transponder	Not fitted	A, C, S
Reported		
Colours	Grey	Orange, purple
Lighting	White strobes	Strobes
Conditions	VMC	VMC
Visibility	>10km	>10km
Altitude/FL	997ft	2000ft
Altimeter	AGL	NR
Heading	090°	NR
Speed	"hovering"	150kt
ACAS/TAS	Not fitted	Not fitted
Separation at CPA		
Reported	500ft V/150m H	"not seen"
Recorded	NK	



THE INSPIRE 2 UAS PILOT reports that they were collecting overview data from a height of just under 1000ft to the west of Basingstoke. The flight operation was being carried out under the conditions specified in the organisation’s Operational Authorisation. This included the raising of a NOTAM, which was in place at the time of the flight. The flight crew included the remote pilot, camera operator and unmanned aircraft observer. The crew has access to an ADS-B alert app, which was checked every time an aircraft was observed or heard in the vicinity. In addition, there were Chinooks operating out of Odiham. A call had been made to Popham, Blackbushe and Odiham ATC to alert them that the operation would be taking place from 1500 local time in the NW quadrant of the NOTAM’d area.

They observed and tracked a number of GA aircraft in the area during their flights. Most were a minimum of 400ft above the [Inspire 2’s] planned maximum AGL height. [The pilot of the Inspire 2 believed that] the Chinook pilots had switched on their ADS-B transponders for the period of [the Inspire 2] flights. The GA aircraft involved in the Airprox was not transmitting an ADS-B signal. It was spotted later than they would have liked because it was flying very low and appeared to be approximately half the height of the Inspire 2 UAS as it passed their position. Had [the pilot of the Inspire 2 UAS] been completing the flight and transiting back to their operating location, there was a high risk that they would have been required to take avoiding action.

[The Inspire 2 UAS pilot commented that] the aircraft was clearly below their UAS position. Moving the UAS down would have risked decreasing the separation.

The pilot assessed the risk of collision as ‘Low’.

THE RV7 PILOT reports that they were [enroute to their destination], in the cruise, and had not seen the drone but [had seen] aircraft in the circuit at Popham. [They commented that,] before every flight they go into SkyDemon to check NOTAMs, although it is possible that SkyDemon wasn’t online and they missed this one.

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

Factual Background

A NOTAM for the operation of a UAS in the vicinity of Basingstoke:

H3808/24 NOTAMN
 Q) EGTT/QWULW/IV/BO /W /000/016/5116N00109W003
 A) EGTT B) 2406191500 C) 2406212000
 D) 1500-2000
 E) UAS OPR WI 2NM RADIUS OF 511609N 0010846W (VCY OF BASINGTSTOKE)
 MAX HGT 1000FT AGL. FOR INFO 07789 893035. AR-2024-3943/AU2
 F) SFC G) 1600FT AMSL

The weather at Odiham was recorded as follows:

METAR EGVO 201520Z 35003KT CAVOK 20/04 Q1018 NOSIG RMK BLU BLU

Analysis and Investigation

UKAB Secretariat

An analysis of the NATS radar replay was undertaken. The Inspire 2 UAS was not observed on radar. The RV7 was positively identified from Mode S data (Figure 1).

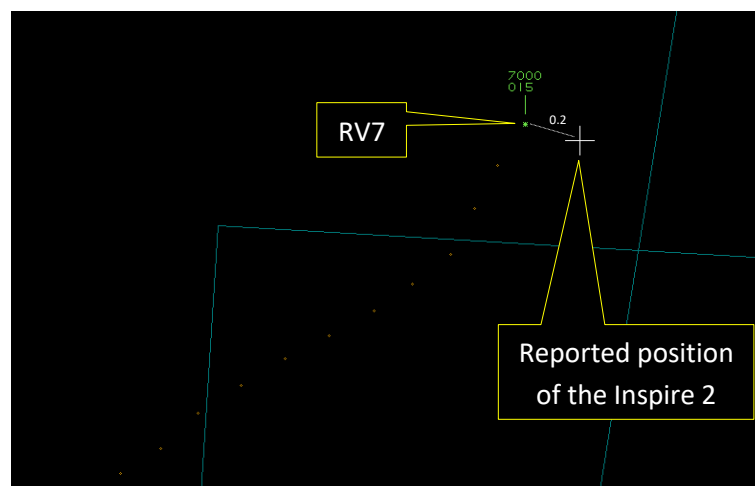


Figure 1 – CPA at 1523:38

The vertical extent of the NOTAM'd area H3808/24 was from the surface to 1600ft AMSL. At CPA, the RV7 was observed on radar to have been at FL015 which, by reference to the QNH measured at Odiham, equated to approximately 1635ft AMSL. The pilot of the Inspire 2 had reported their height as 997ft AGL. The elevation of the terrain at the reported position of the Inspire 2 UAS is 465ft. Therefore, the separation between the Inspire 2 and the RV7 was estimated to have been around 173ft (with the RV7 higher than the Inspire 2 UAS) but this could not be verified. The horizontal separation between the RV7 and the reported position of the Inspire 2 was 0.2NM but the actual separation could not be verified.

The Inspire 2 UAS and RV7 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 For VLOS flights above 400ft above surface level, in controlled airspace outside the FRZ, the UAS operator must notify the relevant Air Navigation Service Provider (ANSP) when required by the instructions detailed in AIP Section ENR 2.1.² Flights above 400ft must be promulgated with a NOTAM.² Flights must be

¹ (UK) SERA.3205 Proximity.

² Operational Authorisation (Specific category) issued to the UAS operator (sections 4.4(c), 4.5(c), 4.6(a))

conducted within VLOS as per the definition given in UK Regulation (EU) No 2019/947, Article 2 and must not exceed 500m from the Remote Pilot.²

Summary

An Airprox was reported when an Inspire 2 UAS and an RV7 flew into proximity 3NM west-northwest of Basingstoke at 1524Z on Thursday 20th June 2024. The Inspire 2 UAS pilot had been operating under VLOS in the Specific Category, in VMC, not in receipt of an ATS. The pilot of the RV7 had been operating under VFR in VMC, listening out on the Farnborough LARS W frequency.

PART B: SUMMARY OF THE BOARD'S DISCUSSIONS

Information available consisted of reports from both pilots and radar photographs/video recordings. 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 Inspire 2 UAS and noted that they had complied with the conditions in their Operational Authorisation for their flight. Members commended the pilot of the Inspire 2 UAS to have enhanced their situational awareness of traffic in the vicinity through the use of an ADS-B app. However, it was noted that the transponder fitted to the RV7 had not had an ADS-B-out signal. Consequently, members agreed that the pilot of the Inspire 2 UAS had not had situational awareness of the presence of the RV7 until it had been visually acquired. Some members pointed out that a study released in 2023 concluded that Electronic Conspicuity devices may detect less than 50% of General Aviation aircraft³ and that, whilst EC devices may provide extremely valuable situational awareness in some circumstances, they are likely to provide an incomplete picture of the traffic situation (as was the case in this particular Airprox). Other members wished to comment on the establishment of a NOTAM and, specifically, that the NOTAM'd area had not provided 'protection' for the activities conducted within the area. Indeed, the qualifier line of the NOTAM in question included the code /W to indicate that it had been a 'Navigation Warning' and that entry into the area had not been prohibited. Notwithstanding, members were keen to emphasise that it would have been especially prudent for a pilot to have avoided the area if at all possible.

Members next noted that the pilot of the Inspire 2 UAS had reported that the RV7 had flown below the height of their UAS and pondered the relative vertical positions of the aircraft. The altitude of the RV7 had been recorded by the NATS radar replay as having been FL015 (which equated to 1635ft AMSL, approximately 1170ft AGL at the reported position at CPA). The Inspire 2 UAS was reported as having been at 997ft AGL. Members concluded that, perhaps, the pilot of the Inspire 2 UAS had perceived that the RV7 had been lower than their UAS by a visual illusion of their positions caused by the significant horizontal separation. Nevertheless, members were in agreement that the perceived proximity of the RV7 had caused the pilot of the Inspire 2 UAS some concern. One member noted that the pilot of the Inspire 2 had described in their narrative report that they had considered avoiding action based upon their perception that the RV7 had been below the height of their UAS. The member expressed a concern that, given the incorrect perception of the relative heights of the two aircraft, the avoiding action considered may have inadvertently decreased the separation of the aircraft.

Turning their attention to the pilot of the RV7, members noted that it appeared from their narrative report that, perhaps, they had not had prior knowledge of the NOTAM that had been in place for the flight of the Inspire 2 UAS. Notwithstanding, it was noted that the pilot of the RV7 had flown marginally above the volume of airspace described by the NOTAM. It was surmised by members that the pilot of the RV7 had not had situational awareness of the presence of the Inspire 2 UAS and agreed that it had not been visually acquired.

Concluding their discussion, members agreed that, despite neither pilot having had situational awareness of the presence of the other aircraft, the separation between them had been such that no

³ <https://www.caa.co.uk/newsroom/news/new-study-on-electronic-conspicuity-published-by-aviation-regulator/>
<https://www.caa.co.uk/publication/download/20799>

risk of collision had existed. Members were satisfied that normal safety margins had pertained, assigned Risk Category E to this event and agreed on the following contributory factors:

- CF1.** Neither pilot had had situational awareness of the presence of the other aircraft.
- CF2.** The pilot of the RV7 had not visually acquired the Inspire 2 UAS.
- CF3.** The pilot of the Inspire 2 UAS had been concerned by the proximity of the RV7.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK

Contributory Factors:

2024138				
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
• See and Avoid				
2	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
3	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 Assessment⁴

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 neither pilot had situational awareness of the presence of the other aircraft.

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

Airprox Barrier Assessment: 2024138		Outside Controlled Airspace						
Barrier		Provision	Application	Effectiveness				
				Barrier Weighting				
				0%	5%	10%	15%	20%
Ground Element	Regulations, Processes, Procedures and Compliance	○	○					
	Manning & Equipment	○	○					
	Situational Awareness of the Confliction & Action	○	○					
	Electronic Warning System Operation and Compliance	○	○					
Flight Element	Regulations, Processes, Procedures and Compliance	✔	✔					
	Tactical Planning and Execution	✔	✔					
	Situational Awareness of the Conflicting Aircraft & Action	✘	✔					
	Electronic Warning System Operation and Compliance	○	○					
	See & Avoid	✔	✔					
Key:		<u>Full</u>	<u>Partial</u>	<u>None</u>	<u>Not Present/Not Assessable</u>	<u>Not Used</u>		
Provision	✔	⚠	✘	○				
Application	✔	⚠	✘	○	○			
Effectiveness	█	█	█	█	□			