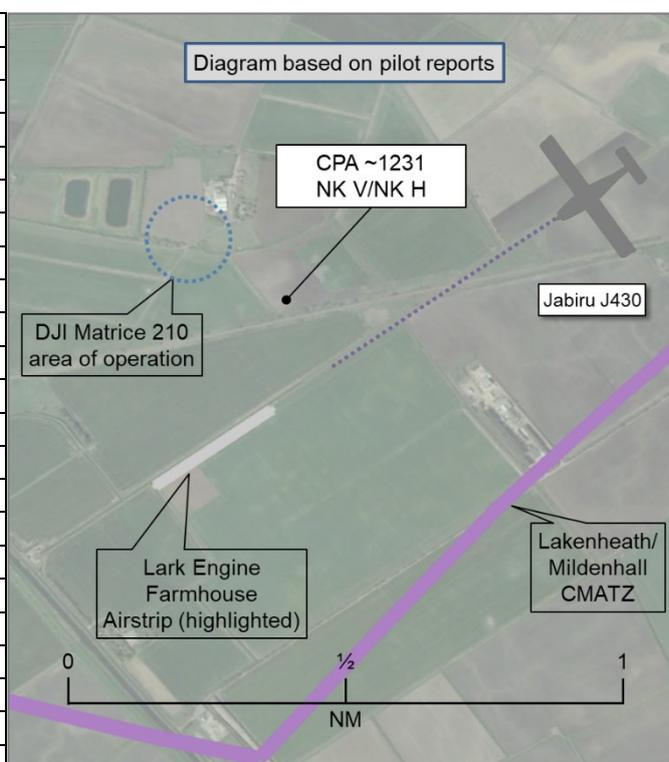


AIRPROX REPORT No 2021156

Date: 11 Aug 2021 Time: ~1231Z Position: 5226N 00023E Location: Lark Engine Farm airstrip

PART A: SUMMARY OF INFORMATION REPORTED TO UKAB

Recorded	Aircraft 1	Aircraft 2
Aircraft	DJI Matrice 210	Jabiru J430
Operator	Civ UAS	Civ FW
Airspace	London FIR	London FIR
Class	G	G
Rules	VFR	VFR
Service	None	None ¹
Provider	N/A	N/A
Altitude/FL	NR	NR
Transponder	Not fitted	A, C, S
Reported		
Colours	NR	White, orange
Lighting	NR	Strobe
Conditions	VMC	VMC
Visibility	NR	>10km
Altitude/FL	60m (~200ft)	1000ft
Altimeter	agl	QNH (NK hPa)
Heading	NR	NK
Speed	NR	65kt
ACAS/TAS	Unknown	Not fitted
Separation at CPA		
Reported	NR V/NR H	Not Seen
Recorded	NK V/NK H	



THE DJI MATRICE OPERATOR reports that they are a commercial UAS operator and were carrying out an agricultural drone survey near Ely, Cambridgeshire. At approximately 1300, a low flying Cessna aircraft [they thought] came flying over the area at 60-70m agl.

The pilot did not make an assessment of the risk of collision.

THE JABIRU PILOT reports that the given drone location is on the final approach to Lark Engine runway. At the time, they were descending and fully concentrating on landing the aircraft and did not see any drone.

THE LAKENHEATH CONTROLLER reports that they assigned the aircraft a 0456 squawk, the QNH and issued a Basic Service. The drone that was in conflict with the aircraft never showed on their radar so they did not issue Traffic Information.

Factual Background

The weather at Mildenhall was recorded as follows:

METAR EGUN 111156Z 23010KT 9999 FEW047 23/12 A3003=
 METAR EGUN 111256Z 25012G16KT 9999 SCT049 24/12 A3002=

¹ The Jabiru pilot reported being in receipt of a Basic Service from Lakenheath, but their squawk was seen to change to 7000 approximately 2min prior to the Airprox.

Analysis and Investigation

UKAB Secretariat

A review of the NATS radar replay was undertaken. The DJI Matrice 210 was not detected by the NATS radars and so a GPS log file was requested from the drone operating company; unfortunately, the operating company was unable to supply the GPS log file for the flight. The Jabiru 430 was visible on the NATS radars, identified using Mode-S data and was indicating a Mode-A code assigned to Lakenheath until 1228:55, whereupon the Mode-A code changed to 7000 (see Figures 1 and 2). The aircraft continued to track as if preparing for an approach to Lark Engine Farm airstrip and radar track was maintained until the Jabiru descended below 800ft altitude, at which point secondary surveillance radar data was lost. The primary radar continued to track the aircraft until 1230:01, at which point radar contact was lost and the aircraft was not detected again.



Figure 1 – 1228:20

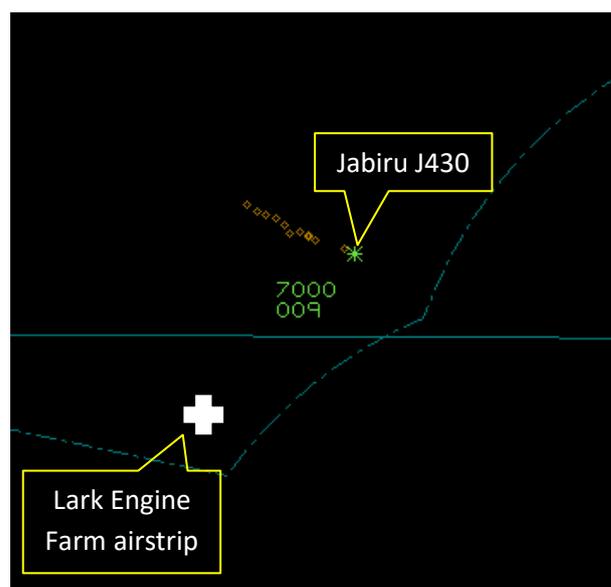


Figure 2 – 1228:55

The DJI Matrice operator and Jabiru pilot 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 a DJI Matrice 210 and a Jabiru J430 flew into proximity at Lark Engine Farm airstrip at approximately 1231Z on Wednesday 11th August 2021. Both pilots were operating under VFR in VMC; neither pilot was 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, 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.

² (UK) SERA.3205 Proximity.

³ EASA Part UAS.OPEN.060 Responsibilities of the remote pilot (2)(b).

Due to the exceptional circumstances presented by the coronavirus pandemic, this incident was assessed as part of a 'virtual' UK Airprox Board meeting where members provided a combination of written contributions and dial-in/VTC comments.

The Board first considered the actions of the DJI Matrice 210 operator and members wondered whether they had known of the presence of Lark Engine Farm airstrip adjacent to their operating area. There then followed a lengthy discussion on the availability of this information and how the DJI Matrice operator may have found out that there is an airstrip associated with a farm near to their survey area. A member with experience operating drones informed the Board that the application that they use does include Lark Engine Farm airstrip and that it would be expected that most applications designed for drone operators would likely contain similar information. Whilst it could not be established whether or not the DJI Matrice operator had access to this information, the Board considered it wise that a commercial drone operation utilise flight planning software that is widely available and which contains small farm airstrips, as it is not only major airfields that may pose a risk to drone operations. Therefore, in light of the information from Board members that Lark Engine Farm airstrip is contained in multiple flight planning applications, the Board agreed that the DJI Matrice operator's pre-flight planning with respect to the proximity of the Lark Engine Farm airstrip had been contributory to the Airprox (**CF1**). Furthermore, members felt that the DJI Matrice operator may have been better served by monitoring either the Lakenheath Approach frequency (given their proximity to the Lakenheath CMATZ) or the Safetycom frequency and a further discussion then ensued regarding the training syllabus for commercial drone operators with respect to the monitoring of communications. The Board heard from an advisor member who had recently undergone the commercial drone operator training that there is no mention in the syllabus regarding the monitoring of air traffic frequencies. The Board acknowledged that there is no requirement for drone operators to monitor air communications frequencies but, nonetheless, felt that this would be sound advice that could potentially be included in the training syllabus for commercial drone operators and therefore resolved to recommend that '*The CAA considers highlighting the utility of monitoring relevant air communication frequencies to all drone operators, either through training syllabi or other appropriate media*'. In the event, the Board agreed that the DJI Matrice operator may have gained situational awareness of the Jabiru flying in to Lark Engine Farm airstrip from either the Lakenheath or Safetycom (135.480MHz) frequencies, but that they had not been monitoring either of those frequencies and so had not had any situational awareness of the presence of the Jabiru (**CF2**).

Turning to the actions of the Jabiru pilot, the Board quickly agreed that they had not had any situational awareness of the presence of the DJI Matrice (**CF2**) because there had not been any NOTAM advising of the activity (although members acknowledged that the DJI Matrice operator had not been required to submit a NOTAM for this particular activity) and the Lakenheath controller had been equally unaware of the drone's operation. This had left the Jabiru pilot to rely on their lookout and the Board recognised that the Jabiru pilot would have been concentrating on their landing and thus their wider lookout would naturally have been slightly compromised. Furthermore, the Board agreed that a drone the size of a DJI Matrice 210 (approximately 1m across) would be difficult to see whatever the phase of flight and so noted that, although the Jabiru pilot's non-sighting of the drone was considered to have been contributory to the Airprox (**CF3**), it had been extremely unlikely that the Jabiru pilot would have sighted such a small object.

Finally, the Board considered the risk involved in this Airprox. Members noted that the Jabiru pilot had not seen the DJI Matrice as they had been concentrating on their landing at the airstrip. Although the closest point of approach could not be measured, the Board noted that the DJI Matrice's area of operation had been approximately $\frac{1}{4}$ NM displaced from the extended centreline of the airstrip and considered that, because the Jabiru pilot would have been lined-up with the runway at the point that they passed closest to the DJI Matrice, there had likely been sufficient lateral separation to remove any risk of collision. Nonetheless, because neither pilot had been aware of the other's operation, members felt that safety had been reduced and, therefore, that this Airprox warranted a Risk Category C.

PART C: ASSESSMENT OF CONTRIBUTORY FACTORS AND RISK**Contributory Factors:**

2021156				
CF	Factor	Description	ECCAIRS Amplification	UKAB Amplification
Flight Elements				
• Tactical Planning and Execution				
1	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				
2	Contextual	• Situational Awareness and Sensory Events	Events involving a flight crew's awareness and perception of situations	Pilot had no, late or only generic, Situational Awareness
• 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

Degree of Risk: C

Recommendation: The CAA considers highlighting the utility of monitoring relevant air communication frequencies to all drone operators, either through training syllabi or other appropriate media.

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:

Tactical Planning and Execution was assessed as **partially effective** because the DJI Matrice operator had planned to conduct their aerial survey in the vicinity of an airstrip.

Situational Awareness of the Conflicting Aircraft and Action were assessed as **ineffective** because neither the DJI Matrice operator nor the Jabiru J430 pilot had any situational awareness of the presence of the other aircraft until the DJI Matrice operator saw the Jabiru.

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: 2021156 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	■	■	■	■	□			