

Investigation Synopsis

The DJI Matrice 210 small unmanned aircraft was being operated commercially to record video footage of an outdoor athletics event. The pilot started to position the aircraft back towards the landing site due to an increase in the rainfall. The pilot then saw the aircraft "wobble" slightly and as it neared the landing site it flipped over before descending rapidly to the ground from a height of about 3 m (10 ft). No one was injured. During the accident flight the aircraft had been operating at heights of up to about 30 m (100 ft) near to, and above people on the ground. This investigation reviewed other similar accidents and the risk of injury to people on the ground.

Two Safety Recommendations are made to the UK CAA.

Safety Recommendation 2020-001

Although it was not confirmed if moisture ingress caused this accident, information shows that other Matrice 200 series accidents have been caused by moisture entering the aircraft. The manufacturer's analysis also showed that 27% of accidents were attributed to a loss of propeller motor propulsion that were for reasons other than a fault with the ESC. The manufacturer did not provide guidance on ascertaining if the rainfall exceeded limitations, or the duration that the IP 43 protection may remain in place. It is therefore possible that pilots of the Matrice 200 series could operate the aircraft in rain without knowing that it could result in the loss of control of the aircraft due to moisture ingress.

Therefore, the following safety recommendation is made:

It is recommended that the Civil Aviation Authority notify users of the DJI Matrice 200 series of the possibility of moisture entering the aircraft when operating in rain and that this could result in a sudden loss of control of the aircraft.

Date Safety Recommendation made: 02/01/2020

Response Status Adequate

Action Status Planned actions completed

Safety Recommendation status Closed

LATEST RESPONSE

Response received: 25/02/2020

The publication of CAA Safety Notice SN-2020/001 "Small Unmanned Aircraft – Water Ingress" highlights the issue of water ingress to all types of Unmanned Aircraft Systems and not just specifically for the DJI Matrice 200 series.

AAIB Assessment – Adequate - Closed

(EU Regulation 996/2010 article 18 refers).

RESPONSE HISTORY

N/A

(SRIS Reference: GB.SIA-2020-001)

DJI Matrice 210,
UAS (0G0DF8F0240057)

Temple Newsam, Leeds,
Yorkshire

16 Mar 2109

Accident

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Two Safety Recommendations are made to the UK CAA.

Safety Recommendation 2020-002

In accordance with the ANO, a person must not 'permit an aircraft to endanger any person' and may only fly the aircraft 'if reasonably satisfied that the flight can safely be made'. It is therefore up to the operator or remote pilot to decide if flying a UA over people will endanger them. However, there is no guidance available from the CAA on how to make that assessment. This could include consideration of standards of safety, reliability, UA mass and type, the operational environment and whether any secondary safety systems are fitted.

Therefore, the following safety recommendation is made:

It is recommended that the Civil Aviation Authority specify the conditions that must be met for an unmanned aircraft to be flown safely over people.

Date Safety Recommendation made: 02/01/2020

Response Status Adequate

Action Status Planned actions completed

Safety Recommendation status Closed

LATEST RESPONSE

Response received: 01/12/2020

The CAA believes that this recommendation is met through the introduction of the European Commission's new regulations pertaining to UAS that will be implemented in the UK on 31 Dec 20. With the extant regulations, there are no specific requirements that must be met for UAS to be flown over people; the existing rule set specifies that uninvolved third parties must be avoided by a 50m 'bubble,' which allows for overflight. Advice on the requirements to achieve this safely were covered through the release of Safety Notices and assessment of individual Operational Authorisations, but it was not within our remit to change the legislation directly to disallow overflight or enforce these requirements.

The new regulations specify that the 50m 'bubble' will be replaced by a 'cylinder,' meaning that UAS cannot fly within a 50m horizontal distance of uninvolved 3rd parties when operating in the A2 and A3 categories. The A2 category also demands extra requirements in terms of pilot competence and product standards. Overflight in the A1 category is permitted and mitigated by the mass limit of 250g and additional product standards.

AAIB Assessment – Adequate - Closed

(EU Regulation 996/2010 article 18 refers).

RESPONSE HISTORY

Response received:

25/02/2020

Publication of CAA Safety Notice SN-2020/002 “Small Unmanned Aircraft – Overflight of Uninvolved People” in January 2020 provides recommended guidance to remote pilots when flying small unmanned aircraft over uninvolved people.

AAIB Assessment – Partially adequate - Open

(EU Regulation 996/2010 article 18 refers).

(SRIS Reference: GB.SIA-2020-0002)