

## ACCIDENT

<b>Aircraft Type and Registration:</b>	DJI Matrice 210 (Serial No 0GODF8F0240020)	
<b>No &amp; Type of Engines:</b>	4 electric motors	
<b>Year of Manufacture:</b>	Unknown	
<b>Date &amp; Time (UTC):</b>	29 January 2019 at 1633 hrs	
<b>Location:</b>	Old Lane, Little Hulton, Manchester	
<b>Type of Flight:</b>	Aerial Work	
<b>Persons on Board:</b>	Crew - N/A	Passengers - N/A
<b>Injuries:</b>	Crew - N/A	Passengers - N/A
<b>Nature of Damage:</b>	Destroyed	
<b>Commander's Licence:</b>	Other	
<b>Commander's Age:</b>	33 years	
<b>Commander's Flying Experience:</b>	37 hours (of which 15 were on type) Last 90 days - 11 hours Last 28 days - 4 hours	
<b>Information Source:</b>	Aircraft Accident Report Form submitted by the pilot	

## Synopsis

The unmanned air system (UAS) had been used to carry out an aerial search during a police operation. On completion, it was being flown back to the launch point, when, without warning, it rapidly spiralled to the ground. It crashed into a small stream and was extensively damaged. An examination of the UAS data after the accident found the cause was a propulsion error in one of its four motors.

## History of the flight

The UAS was being flown on an aerial search during a police 'missing persons' operation over a built-up area on the outskirts of Manchester. The weather at the time was overcast with light sporadic snow and an estimated wind speed at the search area of 8 to 10 mph. The UAS was launched at about 1518 hrs with a 100% battery charge and spent approximately 23 minutes airborne. On landing the operator checked the UAS and dried a small amount of moisture from its surfaces and ensured there was no ice on the propeller blades. A second flight of 10 minutes was carried out after which the UAS was landed to remove droplets that had formed on the camera lens. After a further 15 minute flight the batteries were changed for a fully charged set.

The UAS was relaunched and flew another 19 minutes to complete the search. The UAS was at approximately 250 to 300 ft agl and 1,000 ft from the operator. The UAS was then

turned to fly back to the operator at the launch point. As it got to within 400 ft of the operator, without warning, it entered a tight spiral descent and plummeted to the ground. Whilst the UAS was in descent the operator quickly checked the control screen for warnings and found no error messages and noted the battery reserve at 40%. He described hearing the propulsion motors being louder and turning faster than he had ever heard them before. The UAS crashed upside down into a small stream and was extensively damaged. Both batteries had detached, the landing gear legs had broken and although all the propeller 'stubs' were present, all but one of the propeller blades were missing.

### **Cause**

The data from the UAS system was examined after the accident by the manufacturer. It indicated that there had been a propulsion error in one of its four motors whilst the UAS was at a height of 68.5 m (223 ft).