

ACCIDENT

Aircraft Type and Registration:	DJI Inspire 2 (UAS, registration n/a)	
No & Type of Engines:	4 electric motors	
Year of Manufacture:	2017 (Serial no: 095XDAX002027D)	
Date & Time (UTC):	25 March 2019 at 1444 hrs	
Location:	Chobham Common, Surrey	
Type of Flight:	Aerial Work	
Persons on Board:	Crew - N/A	Passengers - N/A
Injuries:	Crew - N/A	Passengers - N/A
Nature of Damage:	Destroyed	
Commander's Licence:	Other	
Commander's Age:	33 years	
Commander's Flying Experience:	76 hours (of which 7.5 were on type) Last 90 days - 2.2 hours Last 28 days - 0.4 hours	
Information Source:	Aircraft Accident Report Form submitted by the pilot	

Synopsis

The DJI Inspire 2 UAS was returning from a surveillance flight when it unexpectedly yawed and uncontrollably descended, contacting the ground. An object was seen to be released from the aircraft prior to the loss of control which was thought to be a part of a propeller blade. The operator has implemented safety action as a result of this investigation.

History of the flight

The operator was conducting a surveillance operation of a heathland fire utilising a DJI Inspire 2 which was able to stream footage to observers on the ground. Prior to the flight the operator's standard checklist was followed to check the aircraft ready for flight. Two successful flights were completed with no incident. Between each flight the pilot changed the battery, which is known as a 'warm start'.

During the third flight, the DJI Inspire 2 ascended to 365 ft whilst travelling in a south eastern direction from the Take-Off and Landing Site (TOLS). It then held station surveying the site 1,635 ft from the TOLS. Approximately four minutes later a decision was made to return the UAS to the TOLS so it could operate from a different location. As the aircraft returned it was seen to yaw suddenly to the right whilst rapidly descending. The pilot attempted to regain control but did not get any response. Both the pilot and spotter shouted warnings to those in the vicinity of the falling aircraft. An observer who was not part of the operating team heard the warnings and took cover in undergrowth near-by. The UAS crossed a road and struck

the verge approximately 5 m from him. Both the pilot and the spotter reported seeing an object fly off the aircraft moments before control was lost, they also heard a loud high pitch squeal as the UAS fell.

Aircraft examination

Examination of the UAS, by the operator, confirmed that all four propellers had been fitted correctly to their hubs, however of the eight propeller blades, only two remained intact and connected to the hubs. The remainder of the blades had fractured at or near to the propeller hubs. An examination of the fracture surfaces of the propeller blades was not made.

The investigation completed by the operator concluded that the likely cause of the accident was as a result of an inflight propeller blade failure, however a speed controller failure could not be ruled out.

Analysis

When a warm start was carried out by the operator, there was no requirement for an inspection, similar to that completed prior to the first flight, to be done. It is considered that if an inspection had been carried out during each battery change a cracked propeller blade may have been detected.

Safety actions/Recommendations

As a result, the operator has taken the following safety action.

During warm starts the operator has introduced physical checks, including an inspection of the propellers, before the next flight.

The operator has also instructed its pilots not to overfly people.