Accident

Aircraft Type and Registration:	UAS Boresight BQ400 Raider LR
No & Type of Engines:	4 Electric motors
Year of Manufacture:	Unknown (Serial no: 165BTDQ4001911)
Date & Time (UTC):	6 February 2025 at 1100 hrs
Location:	Throckmorton Airfield, Worcestershire
Type of Flight:	Commercial Operations (UAS)
Persons on Board:	Crew - None Passengers - None
Injuries:	Crew - N/A Passengers - N/A
Nature of Damage:	UA destroyed. Damage to rotors and rotor arms
Commander's Licence:	Other
Commander's Age:	48 years
Commander's Flying Experience:	30 hours (of which 5 were on type) Last 90 days - 2 hours Last 28 days - 2 hours
Information Source:	Aircraft Accident Report Form submitted by the pilot

Synopsis

When the UA was powered on, it took off and flew away. The pilot was unable to control the UA from his controller, so used a termination function to which the UA responded. The UA flew about 320 m from the takeoff location, striking the ground approximately 4 m from an uninvolved person, who was uninjured. The UA was destroyed.

The operator has taken safety action to notify businesses in the vicinity of the flying location of future trials and test flights.

History of the flight

The flight, operating in the A3 Open Category, was supporting the development of processes to test a ground-based product. The intended flight path was along one of the disused runways at Throckmorton (a disused airfield), and at least 200 m from other businesses and uninvolved persons based within the airfield perimeter. It was the operator's fourteenth flight involving this UA type, and the accident UA's first flight. All previous flights were uneventful.

The flight team consisted of a pilot and two observers. The UA was prepared for flight at the intersection of two disused runways, and the pilot reported that the UA established communication with the control system normally. There was a gentle northerly breeze, visibility of about 600m, and a temperature of 1°C. When the UA was 'armed' to enable flight, it took off and climbed to an estimated height of about 20 m; it then veered west.

The pilot made inputs using his controller, but the UA did not respond. He was able to terminate the UA using a 'disarm' function on a laptop hosting the control system, and the two observers ran towards the UA. The UA fell to the ground approximately 320 m from its takeoff location, and about 4 m from an uninvolved person.

Aircraft information

The BQ400 'Raider' is a quadcopter with a takeoff mass of 1.3 kg. It is marketed as a disposable, low-cost quadcopter target, for use in training and testing scenarios.

To act as a 'manual altitude indicator', so the pilot could fly at the height required for the test program, the operator had attached to the UA a rope about 3 m long, with a small metal weight tied at the other end. The combined weight of the rope and weight was 122 g. The operator stated that they are evaluating options for a more 'elegant' solution for future testing. Although novel, the 'manual altitude indicator' had been used without incident on previous flights, and there was no evidence to suggest it was a factor in this accident.

Regulation of UAS operations

UK Regulation (EU) 2019/947, its associated Acceptable Means of Compliance (AMC) and Guidance Material (GM) provides the regulation and policy pertaining to UAS operation.

The CAA has developed guidance document CAP 722 '*Unmanned Aircraft System Operations in UK Airspace'*[1] to assist in ensuring safe and legal UAS operation in both private and commercial activities for a variety of UAS and operational circumstances.

The pilot involved in the accident flight had a valid CAA Flyer ID, and the planned flight path's horizontal distance from residential, commercial, industrial or recreational areas of the was greater than the 150 m required for UAS operation under the A3 Open Category[2].

Conclusion

The operator believes that the cause of the abnormal flight behaviour which preceded the accident was due to a fault with the UA, which was brand new when the accident flight occurred. The root-cause of the technical fault within the UA was not determined at the time this report was published.

To further reduce risks to uninvolved persons operating at nearby business premises, the operator has taken the following Safety Action.

> The operator has started to provide advanced notification to businesses in the vicinity of the test site when UAS test flights are scheduled to take place.

Footnote

1 CAA CAP 722 *'Unmanned Aircraft System Operations in UK Airspace',* available at https://www.caa.co.uk/publication/download/21784 [accessed 26 February 2025].

2 See UK Regulation (EU) 2019/947, rule UAS.OPEN.040(2), available at https://regulatorylibrary.caa.co.uk/2019-947-pdf/PDF.pdf [accessed 26 February 2025].