

DUASXX10

Posted on 20.08.2023 by Steve Forward

Category: [Drone](#)

Report Title Probable Battery Disconnection

Initial Report

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The UAS was being used in an police operation over an abandoned building near a public car park and train station. During hover over the building, the aircraft's motors stopped and the aircraft fell vertically with no prior warning to the remote pilot. The aircraft struck the roof of the building and the battery separated.

Recorded data indicated that the battery probably disconnected in flight. This could have been caused by the battery not having been fully latched prior to take-off, or the latching mechanism or battery being worn from repeated use, resulting in an in-flight disconnection. The operator has taken safety action to remind their pilots of the importance of pre-flight checks and checking airframe and battery condition at their base.

The recorded data indicates that the most likely cause was a loss of battery power to the aircraft which instantly cut off the motors and the link to the controller. The battery state of charge was 77% at the time and there had been no warnings related to the battery. Both the operator and the aircraft manufacturer concluded that the most likely cause was the battery becoming disconnected. The damage to the battery was consistent with it having separated when the aircraft struck the roof of the building, and this detachment was more likely if it was already loose. The operator believed that the pre-flight checks were probably rushed and that the body worn camera image showed the battery not fully engaged (see photo). The aircraft manufacturer could not confirm whether it was fully engaged, but it is possible that it was not. It is also possible that the battery was engaged at that time, but that the latching mechanism or battery were slightly worn from use which led to an in-flight disconnection. There was no indication that the battery was swollen or had exceeded the temperature limit. There are no sensors on the battery locking mechanism to detect and warn the pilot that a battery is not fully latched. For this type of UAS it is important that it is flown in a manner to reduce the risk to uninvolved third parties if it were to fall vertically, and in this case the aircraft was being flown over a large, abandoned building which reduced that risk.



The operator has shared the learning from this accident with all its UAS pilots and reminded them of their responsibility to turn on their body worn camera before they carry out the UAS pre-flight checks so that the checks are captured, and of their responsibility to take time on the UAS checks that are completed at a local air base to ensure the aircraft is fit for use. They also planned to reinforce the briefing of observers, and to carry out routine checks of the batteries.

Comment

You may remember that in Drone/UAS FEEDBACK Edition 7 batteries disconnecting in flight on this type of Drone was something of a theme. Well, in the interim this and the following AAIB report cover what seems to have been the same subject. So, we thought we would emphasise the topic again in this issue. We note that in this occurrence the pilot only had one hour of flight time in the last 90 days and a total of 7 hours of experience. CHIRP's view is that operators should maintain

their currency with a minimum of 2 hours in 90 days. Ensuring the battery is locked into place is something that comes from practice, particularly if it is as part of a rapid despatch requirement that the emergency services are often required to perform. Another idea if it isn't already there in the pre-flight checks, is that the pilot runs a finger over the join between the battery and the airframe just after it has been fitted. If the battery is not flush with airframe, any gap will be felt immediately, even if it is more difficult to ascertain visually.



