



Safety recommendation no. 553

Date of the publication	17.06.2019
Number of the final report	2390
Safety deficit	<p>About one minute after take-off at the University of Zurich (UZH) Irchel, the M2 V9 drone automatically triggered the flight termination system (FTS) and initiated an emergency descent with a parachute. After ejecting the parachute, the connecting rope broke and the drone hit the forest floor without deceleration and was destroyed.</p> <p>After the emergency parachute was deployed, the acoustic warning signal was not heard by people not far from the crash site, which meant that the purpose of warning third parties on the ground was not fulfilled.</p> <p>As the investigation showed, the value of the drone's impact energy was significantly higher than the value of 80 J used in practice to date, regardless of its load.</p>
Safety recommendation	The Federal Office of Civil Aviation (FOCA) should take appropriate measures to ensure that the emergency parachute is capable of withstanding the possible load.
Addressees	BAZL Bundesamt für Zivilluftfahrt
Stage of the implementation	<p>By letter dated 19 September 2019, the FOCA provided the following information:</p> <p>"The FOCA agrees in principle with Safety Recommendation No. 553. The original attachment of the parachute represents a 'single failure'. A chafing through of the rope, as occurred here, therefore leads to the separation of aircraft and parachute. This was overlooked both by the manufacturer (Matternet) and by the FOCA in the design review. Matternet then developed a Service Bulletin (SB), which includes an abrasion protection and a redundant second rope for the parachute. This was evaluated by STEH [Design and Production] and found to be sufficient. The Service Bulletin was applied by an order. In the meantime the SB has been installed in all Matternet aircraft. Operational changes, regular maintenance measures and a new design review are also part of the order."</p> <p>On the basis of the measures taken, the STSB considers the present safety recommendation to have been implemented.</p>
Investigation report concerning the safety recommendation	<p><u>Zwischenbericht</u> <u>Schlussbericht</u> <u>Final report</u> <u>Vorbericht</u></p>