

0320 AEROS Ultra-light VEHICLE FLIGHT OCCURRENCE INVESTIGATION REPORT

Executive Summary

On March 20, 2010 the accident ultra-light vehicle's operator, in order to experience personal pleasure of flying, transported at 0400, personal owned ultra-light vehicle (powered hang glider) from residence to an open field located at south bank of Dajia River at Shengang, Taichung County and assembled the powered hang glider on site. Around at 08:00, the glider operator took off alone from the open field, the altitude after take-off was a little bit higher than high-voltage tower. The operator felt the vehicle kept shaking and started to become nervous, and landed in a hurry. Because the nearby Dajia River bed was bumpy and not suitable for landing, the operator was flying towards north-west (the ocean) along the Dajia River to find an appropriate landing field. Above the wetlands located at the estuary of Dajia River he was trying to land, and at 08:40, crashed at the wetlands at the estuary of Dajia River, which was 13.9KM from the take-off location. The operator had a broken bone of the right leg, being unable to walk. After rescued by the local fire fighters, he was sent to a nearby hospital. The vehicle had substantial damage, no fire on site, though.

The operator claimed that it was his first solo flight.

Analysis and Conclusions

Checking from the accident debris it was found that the engine speed meter stayed at 6,200rpm and propeller blades were broken from the roots; which showed that the engine was powered on when the occurrence took place. The operator also declared that the engine was functioning well before the occurrence. Therefore the cause of the occurrence was not related to the thrust system. The structure of the nose wheel was broken with the rest of the structure intact showing that the vehicle was crashing to the ground with head-down position. The operator also declared that before collision the craft's head was downward and he could not pull up the glider. According to the manufacturer's description of the characteristics of the wings, when the wings (model: Stranger) lose speed, the head will go downward to increase the air speed and to avoid loss of speed. Therefore the vehicle might have lost speed during landing with head downward. As the altitude was low during landing,

there was not enough altitude to increase speed; then the vehicle lost speed and crashed. The operator as a beginner of an ultra-light craft could not correctly maneuver the vehicle and his landing skill, so it might have been of improper operation that caused the vehicle losing speed. Because the operator could not describe in details the landing process (wind speed, wind direction, speed, altitude, operations and so on), and there were no objective records, either. Therefore the probable cause to the occurrence can only exclude the power factor but no other causes can be determined.

The operator of the ultra-light vehicle was a beginner, who not only did not know that the vehicle requires inspections but also the flight routing was not within legal air field. He had no license and did not belong to any ultra-light vehicle activity associations. As there was no technical log book for the vehicle, the operator used similar parts for replacement when maintaining the vehicle; which indicated that he was lacking of the correct concept for ultra-light crafts. The operator took digital films to learn flying and did not join any ultra-light craft activity associations to learn flying from certified instructors. With a few hours of flying experiences, not familiar with flying techniques he took the risk performing solo flying. All the above descriptions showed that the operator was lacking of the flight safety concept to correctly operate an ultra-light vehicle. Starting from 2004 CAA which has organized annually workshops for the regulations and flight safety of ultra-light vehicles all over Taiwan, and those workshops were promoted by the Ultra-light Vehicle Activity Associations. However, the operator has never participated in any of these workshops. To join the Ultra-light Vehicle Activity Associations is a must for the public to become a legal ultra-light vehicle's operator, and it is also the main channel to learn how to correctly operate an ultra-light vehicle. CAA carries out management of ultra-light vehicles, regulation workshops and flight safety promotion through the Ultra-light Activity Associations. Thus far (Jun 2010) there is no official statistic of numbers of the ultra-light vehicles and records of their owners, but only some inaccurate statistics provided by the associations in the past. Though CAA have had been under control of vehicles with certified license, operator license and data of association members, the other ultra-light vehicles' operators who are not in the system would not have any channels to learn properly how to operate any ultra-light vehicles, if they have not yet joined any activity associations.

Safety Recommendations

To Civil Aeronautics Administration, CAA

As the occurrence operator did not join the Ultra-light Vehicle Activity Associations, he was obviously lacking of the correct concept and operating skills as how to operate ultra-light vehicles. According to Civil Aviation Act Article 99-2: 'Owners and operators of ultra-light vehicles shall join an activity association as members and comply with the guideline provided by the activity association before starting activities.' Therefore ASC recommend authorities to reinforce the promotion of the regulations stated in Civil Aviation Act Article 99-2, to study how to have census data of national ultra-light vehicles and their owners/operators, and to establish an active communication channel to encourage the general public who has interests in ultra-light vehicles to join activity associations to improve the correct operation, maintenance and flight safety concept related to ultra-light vehicles thereby to decrease the number of the similar occurrences. (ASC-ASR-10-10-005)