

TG-3A sailplane, N73494, spun in at the East Colfax Airport, Watkins, Colorado, on July 31, 1955. Frederick W. Ruble, Jr., the pilot was badly injured and the sailplane was completely wrecked. The pilot died one week later from the injuries received in the accident.

History of the Flight

At 1:00 p.m., the pilot took off by means of auto pulley tow for a local flight. At an altitude of approximately 200 feet, the tow cable was released and the glider, continuing in the nose high altitude, stalled and entered a spin to the right. The glider was essentially in a vertical spinning attitude once the wing had dropped and it completed almost a full turn in the spin before striking the ground. Injuries to the pilot were: both ankles broken, broken leg, fractured pelvis, concussion and fractured skull, a long cut on the neck and internal injuries.

Investigation

The TG-3, owned by Mr. Ruble, had just been recovered and was in good mechanical condition. Modifications made during the overhaul were: installation of twin bubble canopies in place of the standard canopy, immobilization of the inboard sections of the ailerons and spill plates or splats on the wing tips. The aerodynamic characteristics of the ship had been altered, as a result of these changes, to the point where, according to the pilot, there was no stall warning and lateral control at minimum airspeed was greatly reduced. The ship had not been relicensed at the time of the flight and the CAA had restricted the pilot to test hopping it by airplane tow only while under the direct supervision of a CAA representative in order that they might observe the effects of the modifications. The pilot had made a number of flights previous to the accident in violation of these instructions by the CAA. Shoulder harness was installed. The pilot held instructor and commercial glider plus private power pilot ratings with 380 hours of glider time and over 1000 hours in power. The tow was good and there was no malfunction of the tow car or the towline at any time. The climb was extremely steep but with no oscillations or "porpoising" apparent to the tow driver. The elevation of the airport is 5,328 feet and the temperature was 90.6 degrees. Thermal activity was mild, the wind was light and variable and cloud base was at 16,000 feet. The weather was not considered to be a factor except that the altitude

COLORADO FATALITY

and the temperature at the time of the flight resulted in the towing speed of 50 MPH true (25 MPH indicated on the towcar speedometer) being very close to the stalling speed of the sailplane.

Analysis

It appears to be a reasonable assumption that the release of the tow line was inadvertent and that it caught the pilot completely by surprise. The ship, according to observers, continued in the climb until it stalled and spun. If the pilot had accepted the fact that he was free of the towline and that there was to be no resumption of the tow, the first reaction would have been to get the nose down.

The sudden release of the towline must have been due to one of three causes. One, many pilots have the habit of flying winch and auto tows with one hand on the release knob for a quick pull in case anything goes wrong. Occasionally a less experienced pilot will pull the release without realizing it, but a pilot of Ruble's experience, however, would not be likely to do this. Two, if a sailplane oscillates or porpoises violently enough on tow, the line may become unloaded enough to allow the chute to open and drag the line aft and out of the hook. The facts do not support this theory. Tow car driver and observers reported no apparent oscillations. Third, the hook may have cammed itself open due to the load imposed by the steep climb. In the writer's experience this has happened on TG-3 type aircraft. When the contact surfaces of the hook become sufficiently worn, a load such as that created by the TG-3 in a maximum up-elevator climb will cause the hook to open unexpectedly. The facts tend to substantiate number three as the cause of the inadvertent release of the towline.

To be released unexpectedly from tow at less than 200 feet does not, however, automatically mean a spin. The pilot must be prepared for such emergencies at all times and it is apparent the pilot was either not prepared for a possible release, or, failed to recognize the fact.

The weight of the modified TG-3, its known lack of stall warning, the aileron modifications, the high alti-

tude of the field and the temperature of 90.6° F, all made the auto pulley type tow operation extremely marginal. This combination of factors inevitably results in a spin when the tow suddenly ceases. The spin entry was rapid, complete and positive. There was no chance to avoid a crash even if the pilot had immediately started a recovery procedure.

The increased aileron deflection required to maintain lateral control can be considered to be a factor in initiating the spin. The downward deflection of an aileron does two things: the effective angle of attack is increased and drag is created. When a wing is close to the stall or partially stalled, a spin is the result.

The Apparent Cause

The pilot, while attempting an auto-pulley launching under marginal conditions, suffered an inadvertent release of the tow cable at a low altitude, thus creating a situation for which he was apparently not prepared and over which he had no control.

Comment

To take off in a steep climb with minimum airspeed at a high altitude on a hot day in a ship with marginal lateral control and no stall warning, is to stack the chances against a successful operation to an abnormally high degree. If something goes wrong as it did in this case, serious trouble is the natural result. This crash is not basically a case of "bad luck" or unforeseen mechanical failure. It had its beginning when the pilot failed to allow a safe operating margin for testing a modified aircraft. A secondary cause may be considered to have had its beginning when the pilot decided to improve the performance of the ship by cleaning it up to the point where the built-in safety factor of a good stall warning and good aileron control over the usable speed range were removed. It should then have been flown only with special care, avoiding flight conditions in which it was deficient.

The injuries to the pilot were unusually severe in that bubble canopies were installed. Even though the shoulder harness and safety belt performed their functions and held the pilot in position, the proximity of

(Continued on Page 26)