



National Transportation Safety Board Aviation Accident Final Report

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| Location: | Tamaqua, Pennsylvania | Accident Number: | ERA20FA013 |
| Date & Time: | October 18, 2019, 15:42 Local | Registration: | N830DK |
| Aircraft: | Sportine Aviacija LAK17B | Aircraft Damage: | Substantial |
| Defining Event: | Aerodynamic stall/spin | Injuries: | 1 Fatal |
| Flight Conducted Under: | Part 91: General aviation - Personal | | |

Analysis

The pilot of the front electric sustainer (FES) engine-equipped glider departed on a cross-country “out-and-return” flight. Another glider pilot, who was completing the same route, stated that the accident pilot reported via radio just before the accident that he was climbing in a “weak thermal.” A witness on the ground reported that he saw the glider about 1/2 mile away heading straight down to the ground. The glider impacted terrain in a near-vertical, nose-down attitude; the forward cockpit was crushed. Examination revealed no evidence of preimpact mechanical malfunctions or anomalies that would have precluded normal operation.

Data downloaded from the onboard collision avoidance system revealed that, during the final approximate 15 minutes of flight, the glider's altitude gradually decreased from about 2,300 ft to about 1,400 ft, and, during this time, the glider completed several 360° turns consistent with attempting to climb in thermal lift. The final data points indicated that the glider completed a left 180° turn followed by a right 360° turn before the data ended in the vicinity of the accident site. The data did not record speed, bank angle, or pitch attitude parameters.

Whether or to what extent the pilot had used the electric motor during the flight could not be determined. Based on the available information, it is likely that the pilot exceeded the glider's critical angle of attack while climbing in thermal lift, which resulted in an aerodynamic stall/spin and impact with terrain.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The pilot's exceedance of the glider's critical angle of attack while climbing in thermal lift, which resulted in an aerodynamic stall/spin.

Findings

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| Personnel issues | Aircraft control - Pilot |
| Aircraft | Airspeed - Not attained/maintained |
| Aircraft | Angle of attack - Not attained/maintained |

Factual Information

HISTORY OF FLIGHT

On October 18, 2019, about 1542 eastern daylight time, a Sportine Aviacija LAK-17B motor glider, N830DK, was substantially damaged when it was involved in an accident near Tamaqua, Pennsylvania. The commercial pilot was fatally injured. The glider was operated as a Title 14 *Code of Federal Regulations* Part 91 personal flight.

A witness, who was also a glider pilot, stated that the accident pilot was among a group of three glider pilots that departed on an intended cross-country flight from 1N7 to Burnt Cabins, Pennsylvania, returning to 1N7. The witness stated that he departed 1N7 around 0930, and the accident glider took off around 0945. He further stated that it was not common to fly together, but they would maintain radio contact throughout the day and help each other with geographical points and finding thermals for lift. He stated that, about 1400, the accident pilot radioed and said that he was at Burnt Cabins and turning around to return to 1N7. About 1515, the accident pilot reported that he was climbing in a weak thermal near Tamaqua, Pennsylvania. That was the last communication he heard from the accident pilot.

Another witness stated that he was working outside when he looked up and saw "an airplane" about 1/2 mile away heading straight down. He stopped and watched "the airplane" for a few seconds before it disappeared behind trees.

Data obtained from an onboard PowerFLARM collision avoidance system began about 0943 shortly before takeoff from 1N7. The pilot proceeded west-southwest along ridgelines until arriving at Burnt Cabins, about 143 nautical miles (nm) straight-line distance from 1N7. The pilot then reversed course and proceeded north-northeast back to 1N7 along roughly the same route. Recorded altitudes throughout the flight varied between about 1,200 ft and 4,000 ft, consistent with the pilot utilizing both orographic (ridge) and thermal lift. During the final approximate 15 minutes of flight, about 50 nm from 1N7, the glider's altitude gradually decreased from about 2,300 ft to about 1,400 ft, and, during this time, the glider completed several 360° turns consistent with attempting to climb in thermal lift. Rather than continuing along his previous track, the pilot turned north-northwest along a ridge and continued to circle several more times. The final data points indicated that the glider completed a left 180° turn followed by a right 360° turn before the data ended about 1538 in the vicinity of the accident site. The PowerFLARM data did not record speed, bank angle, or pitch attitude parameters.

PERSONNEL INFORMATION

The pilot held a commercial pilot certificate with ratings for airplane single-engine land and glider. His most recent Federal Aviation Administration (FAA) third-class medical certificate was issued on October 4, 2010. He reported 300 hours of total flight experience at that time. His logbooks were not recovered.

AIRCRAFT INFORMATION

The single-seat motorized glider was issued an FAA airworthiness certificate in the experimental-exhibition category on June 8, 2015. It was equipped with a Front Electric Sustainer (FES) system, which was electrically driven by two lithium battery packs. The maximum distance the FES system could be used was about 62 miles. Whether or to what extent the pilot used the FES during the accident flight could not be determined.

The maintenance logbooks were not recovered.

METEOROLOGICAL INFORMATION

The 1539, recorded weather at Jake Arner Memorial Airport (22N), Lehighton, Pennsylvania, located 8 miles southeast of the accident site, included wind from 280° at 9 knots; 10 statute miles visibility; clear sky; temperature 14°C; dew point 2°C; altimeter 29.93 inches of mercury.

WRECKAGE AND IMPACT INFORMATION

The glider was located on the side of a ridgeline at an elevation about 1,100 ft mean sea level. The wreckage was inverted and oriented on a 210° magnetic heading. Damage to the trees that surrounded the accident site was consistent with the glider in a 75° nose-down attitude. The wings remained attached to the fuselage. The leading edges of both wings exhibited tree limb impressions along the length of the wings. The cockpit, canopy, and nose were crushed by impact forces. The instrument panel was destroyed. The five-point harness remained intact and was cut by rescue personnel. The single landing gear was retracted. The flaps remained attached to the wings and were retracted. The ailerons were fractured off both wings. The empennage separated from the fuselage. The rudder and elevator remained attached at their attachment points. Flight control continuity was established to all flight controls through broken torque tubes and cables. The torque tubes fractures were consistent with overstress separations as a result of impact forces. The electric motor was fractured off the motor mounts. The propeller blades were destroyed, and the motor would not rotate due to impact damage. The two battery packs remained mounted in the battery bracket behind the pilot's seat. The battery posts were fractured off.

MEDICAL AND PATHOLOGICAL INFORMATION

Toxicology testing performed by the laboratory at FAA Forensic Sciences Laboratory stated the results were negative for drugs and alcohol.

An autopsy was performed on the pilot by the office of Schuylkill County Coroner's Office, located New Philadelphia, Pennsylvania. The report listed the cause of death as multiple traumatic injuries.

History of Flight

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| Maneuvering | Aerodynamic stall/spin (Defining event) |
| Uncontrolled descent | Collision with terr/obj (non-CFIT) |

Pilot Information

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| Certificate: | Commercial | Age: | 65, Male |
| Airplane Rating(s): | Single-engine land | Seat Occupied: | Single |
| Other Aircraft Rating(s): | Glider | Restraint Used: | 5-point |
| Instrument Rating(s): | None | Second Pilot Present: | No |
| Instructor Rating(s): | None | Toxicology Performed: | Yes |
| Medical Certification: | Class 3 None | Last FAA Medical Exam: | October 4, 2010 |
| Occupational Pilot: | No | Last Flight Review or Equivalent: | |
| Flight Time: | 300 hours (Total, all aircraft) | | |

Aircraft and Owner/Operator Information

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| Aircraft Make: | Sportine Aviacija | Registration: | N830DK |
| Model/Series: | LAK17B FES | Aircraft Category: | Glider |
| Year of Manufacture: | 2015 | Amateur Built: | |
| Airworthiness Certificate: | Normal; Experimental (Special) | Serial Number: | 232 |
| Landing Gear Type: | Retractable - | Seats: | 1 |
| Date/Type of Last Inspection: | | Certified Max Gross Wt.: | 1360 lbs |
| Time Since Last Inspection: | | Engines: | 1 Electric |
| Airframe Total Time: | | Engine Manufacturer: | Sportine aviacija ir Ko |
| ELT: | Not installed | Engine Model/Series: | FES-LAK-M100 |
| Registered Owner: | | Rated Power: | 23 |
| Operator: | On file | Operating Certificate(s) Held: | None |

Meteorological Information and Flight Plan

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| Conditions at Accident Site: | Visual (VMC) | Condition of Light: | Day |
| Observation Facility, Elevation: | 22N, 1939 ft msl | Distance from Accident Site: | 8 Nautical Miles |
| Observation Time: | 19:39 Local | Direction from Accident Site: | 113° |
| Lowest Cloud Condition: | Clear | Visibility | 10 miles |
| Lowest Ceiling: | None | Visibility (RVR): | |
| Wind Speed/Gusts: | 9 knots / | Turbulence Type Forecast/Actual: | None / None |
| Wind Direction: | 280° | Turbulence Severity Forecast/Actual: | N/A / N/A |
| Altimeter Setting: | 29.93 inches Hg | Temperature/Dew Point: | 14° C / 2° C |
| Precipitation and Obscuration: | No Obscuration; No Precipitation | | |
| Departure Point: | Blairstown, NJ (1N7) | Type of Flight Plan Filed: | None |
| Destination: | Blairstown, NJ (1N7) | Type of Clearance: | None |
| Departure Time: | 09:45 Local | Type of Airspace: | |

Wreckage and Impact Information

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| Crew Injuries: | 1 Fatal | Aircraft Damage: | Substantial |
| Passenger Injuries: | | Aircraft Fire: | None |
| Ground Injuries: | N/A | Aircraft Explosion: | None |
| Total Injuries: | 1 Fatal | Latitude, Longitude: | 40.743331,-76.018333 |

Administrative Information

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| Investigator In Charge (IIC): | Boggs, Daniel | | |
| Additional Participating Persons: | Vince Yerace; FAA; Harrisburg, PA Erik Mann; Aero Club; Belle Harbor, NH | | |
| Original Publish Date: | February 16, 2022 | Investigation Class: | 3 |
| Note: | The NTSB traveled to the scene of this accident. | | |
| Investigation Docket: | https://data.nts.gov/Docket?ProjectID=100438 | | |

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).