



National Transportation Safety Board Aviation Accident Final Report

Location:	Advance, IN	Accident Number:	CEN15FA194
Date & Time:	04/03/2015, 1540 EDT	Registration:	N555GD
Aircraft:	S C AEROSTAR S A YAK 52TW	Aircraft Damage:	Destroyed
Defining Event:	Loss of control in flight	Injuries:	1 Fatal
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

Radar data showed the airplane maneuvering in visual meteorological conditions before radar contact was lost. Although the radar data showed the accident flight's ground track, altitude information was not available for the maneuvering portion of the flight for reasons that could not be determined because the airplane's transponder was destroyed. There were no witnesses to the accident. Examination of the accident site indicated a high-air-speed, near-vertical impact with terrain consistent with a loss of airplane control. Although the wreckage was significantly fragmented, no evidence of any preimpact mechanical malfunctions or failures of the airframe or engine were noted that would have precluded normal operation. No medical issues were identified with the pilot that would have contributed to the accident. The reason for the loss of control could not be determined.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's loss of airplane control while maneuvering for reasons that could not be determined because an examination of the airframe and engine did not reveal any preimpact abnormalities.

Findings

Aircraft	Performance/control parameters - Not attained/maintained (Cause)
Personnel issues	Aircraft control - Pilot (Cause)

Factual Information

HISTORY OF FLIGHT

On April 3, 2015, about 1540 eastern daylight time, a S C Aerostar S A Yak-52TW single-engine airplane, N555GD, was destroyed after impacting terrain while maneuvering near Advance, Indiana. The private rated pilot, who was the sole occupant, sustained fatal injuries. The airplane was registered to and operated by a private individual. Visual meteorological conditions prevailed at the time of the accident and a flight plan was not filed for the 14 Code of Federal Regulations Part 91 personal flight. The local flight departed from the Eagle Creek Airpark (EYE), Indianapolis, Indiana, at 1509.

A review of the radar data showed the airplane departed runway 3 at EYE and traveled northwest toward Lebanon, Indiana, about parallel with Interstate 65 at an altitude of about 2,000 feet above ground level (agl). Prior to reaching Lebanon, the airplane made a left turn and then performed a series of turns and maneuvers in the rural area south/southwest of Lebanon. The end of the radar flight track showed the airplane heading in a southerly direction. There were no known witnesses to the accident.

According to friends of the pilot, after the pilot had not reported to work on April 6th, a missing persons report was filed with the local authorities. On April 10th, a friend of the pilot accessed the pilot's hangar and noted the pilot's work vehicle was parked in the hangar, and the airplane was not in the hangar. On April 10th, the Federal Aviation Administration (FAA) issued an Alert Notice (ALNOT) for the missing airplane. The airplane was located about 0830 on April 12th by Civil Air Patrol personnel.

PERSONNEL INFORMATION

The pilot, age 58, held a private pilot certificate, with airplane single-engine land and instrument ratings. The pilot's FAA third-class medical certificate was issued on June 13, 2013, with a limitation of "Must have available glasses for near vision." The pilot's most recent flight review was completed on July 7, 2013, in the accident airplane.

According to a pilot logbook located by family representatives, the pilot had accumulated at least 1,781 total flight hours. The pilot's estimated flight hours in the accident airplane were 500 total hours.

AIRCRAFT INFORMATION

The accident airplane was a 2003 S. C. Aerostar S. A. Yak-52 TW, serial number 0212405. The airplane was powered by a Motostar M14-PDXK radial engine, and a 3-blade, constant-speed MT Propeller. The special airworthiness certificate was issued on February 6, 2013, in the experimental-exhibition category. The airplane was registered to the pilot on May 24, 2005.

The most recent conditional inspection was completed on March 29, 2014, at a total airframe and engine time of 1,029 hours. The airplane was equipped with a Garmin handheld global positioning system (GPS) and a Dynon D-10A Electronic Flight Information System (EFIS).

METEOROLOGICAL INFORMATION

At 1553, the EYE automated weather observation reported the wind from 360 degrees at 14 knots, gusting to 20 knots, 10 miles visibility, sky overcast at 4,600 feet, temperature 12 degrees C, dew point 3 degrees C, and an altimeter setting of 29.84 inches of mercury.

RADAR AND COMMUNICATIONS INFORMATION

No communications between the pilot and air traffic control services were recorded.

Examination of the radar data showed that after departure from EYE, altitude reporting information was available for the accident airplane as it crossed over Interstate 65 and then flew parallel to Interstate 65. As the airplane turned to the south (left) away from Interstate 65, the altitude information disappeared and was no longer available. No altitude information was recorded for the maneuvering phase and remainder of the flight.

The airplane's transponder was destroyed during the accident and was not able to be functionally tested.

WRECKAGE AND IMPACT INFORMATION

The airplane wreckage was located in a harvested cornfield about 1/2 miles southwest of the last radar contact. The wreckage was distributed on a measured magnetic heading of 350 degrees. The main wreckage consisted of the engine, fuselage, wings, and empennage, and was located in a crater about 8 feet in depth. Several fragmented pieces of the airplane were located within a 100-foot diameter of the main wreckage. No evidence of in-flight or post-impact fire was noted.

The airplane wreckage was recovered to a hangar at EYE for further examination. Some damage to the airplane was due to the extraction of the airplane from the impact crater. Examination of the airplane showed the left wing was separated at the wing root. The wing leading edge was crushed forward to aft. The left flap was found in the retracted position. The left main landing gear was separated. The aileron was partially detached from the wing.

The right wing was separated at the wing root. The wing leading edge was crushed forward to aft. The right flap was found in the retracted position. The right main landing gear was separated. The aileron was partially detached from the wing.

The fuselage was crushed and destroyed. The instrument panel and instruments were destroyed and no information from the cockpit instruments was available. The forward and aft seats and seat frames were crushed, and the canopy was destroyed.

The empennage was fragmented and destroyed. The left elevator was separated from its respective horizontal stabilizer, and the trim tab remained attached. The right elevator remained partially attached to the horizontal stabilizer. The left and right horizontal stabilizer leading edges were crushed forward to aft. The rudder was separated from the vertical stabilizer. The vertical stabilizer was crushed forward to aft. Evidence of a foreign object debris protector was observed inside the empennage section.

Flight control continuity was not established due to the fragmentation and damage to the airplane and its major components. All observed fracture surfaces of control cables and linkage were consistent with overload failure.

The engine was separated from the fuselage and fractured into three main sections. The engine and fractured sections were covered in earthen debris. Five engine cylinders were observed and four engine cylinders were absent from the recovered wreckage. Seven engine pistons were observed and two engine pistons were absent from the recovered wreckage. The engine could not be functionally tested due to damage.

The wooden propeller was found splinted into several sections in the debris field. Portions of

three individual propeller blades were located.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on the pilot by the Central Indiana Forensic Associates, LLC, at the authorization of the Boone County Coroner's Office. The listed cause of death was multiple blunt force injuries as a result of an accident.

The FAA's Bioaeronautical Sciences Research Laboratory (CAMI), Oklahoma City, Oklahoma, performed toxicological testing on specimens from the pilot. The tests were negative for all screened drugs. Testing for carbon monoxide and cyanide were not performed. The report indicated 160 mg/dL ethanol in the liver, 41 mg/dL in the heart, and 28 mg/dL in the blood. N-Propranolol was detected in the blood.

Given the advanced stage of decomposition of the specimens, the ethanol found was likely from sources other than ingestion.

TESTS AND RESEARCH

The Garmin GPSMAP, Dynon D-10A EFIS, and the pilot's mobile phone were sent to the NTSB Vehicle Recorder's Laboratory in Washington, DC, for examination and data download. Exterior examination of the Garmin GPS revealed significant damage. The memory chip was removed and downloaded using laboratory equipment. The data was successfully recovered using forensic software. The accident flight was not identified in the 65 recorded sessions from June 1, 2014, to March 22, 2015. Ten flights were recorded in the calendar year. No additional pertinent information could be extracted from the device.

The Dynon D-10A was capable of storing data in the non-volatile memory (NVM). Exterior examination of the Dynon revealed significant damage. The memory chip was removed and downloaded using laboratory equipment. A thorough analysis of the imaged data showed that no data was recorded to the device and no further work was performed.

The pilot's mobile phone, an Apple iPhone 6+, was capable of storing data in the NVM. The extent of damage sustained by the iPhone precluded normal recovery procedures and additional attempts using surrogate units were unsuccessful in obtaining data. No data pertinent to the accident were recovered.

History of Flight

Maneuvering	Loss of control in flight (Defining event) Collision with terr/obj (non-CFIT)
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Pilot Information

Certificate:	Private	Age:	58
Airplane Rating(s):	Single-engine Land	Seat Occupied:	Front
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 3 With Waivers/Limitations	Last Medical Exam:	06/13/2013
Occupational Pilot:	No	Last Flight Review or Equivalent:	07/07/2013
Flight Time:	(Estimated) 1781 hours (Total, all aircraft), 500 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	S C AEROSTAR S A	Registration:	N555GD
Model/Series:	YAK 52TW	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	Yes
Airworthiness Certificate:	Experimental	Serial Number:	0212405
Landing Gear Type:	Retractable - Tricycle	Seats:	2
Date/Type of Last Inspection:	03/29/2014, Conditional	Certified Max Gross Wt.:	2899 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	1029 Hours	Engine Manufacturer:	MOTORSTAR
ELT:	C91 installed, not activated	Engine Model/Series:	M14-PDXK
Registered Owner:	FOY GLENN	Rated Power:	400 hp
Operator:	FOY GLENN	Air Carrier Operating Certificate:	None

Meteorological Information and Flight Plan

Observation Facility, Elevation:	KEYE, 823 ft msl	Observation Time:	1553 EDT
Distance from Accident Site:	16 Nautical Miles	Condition of Light:	Day
Direction from Accident Site:	133°	Conditions at Accident Site:	Visual Conditions
Lowest Cloud Condition:	Clear	Temperature/Dew Point:	12°C / 3°C
Lowest Ceiling:	Overcast / 4600 ft agl	Visibility:	10 Miles
Wind Speed/Gusts, Direction:	14 knots/ 20 knots, 360°	Visibility (RVR):	
Altimeter Setting:	29.84 inches Hg	Visibility (RVV):	
Precipitation and Obscuration:	No Precipitation		
Departure Point:	INDIANAPOLIS, IN (EYE)	Type of Flight Plan Filed:	None
Destination:	INDIANAPOLIS, IN (EYE)	Type of Clearance:	None
Departure Time:	1509 EDT	Type of Airspace:	Unknown

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Fatal		

Administrative Information

Investigator In Charge (IIC):	Aaron M Sauer	Adopted Date:	01/14/2016
Additional Participating Persons:	Leslie Thompson; Federal Aviation Administration; Indianapolis, IN		
Publish Date:	01/14/2016		
Note:	The NTSB traveled to the scene of this accident.		
Investigation Docket:	http://dms.nts.gov/pubdms/search/dockList.cfm?mKey=91011		

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.

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