



Aviation Investigation Factual Report

Location:	Pineville, Louisiana	Accident Number:	CEN18FA030
Date & Time:	November 10, 2017, 11:20 Local	Registration:	N2363B
Aircraft:	Temco GC 1B	Aircraft Damage:	Substantial
Defining Event:	Fuel starvation	Injuries:	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

On November 10, 2017, about 1120 central standard time, a Temco GC 1B airplane, N2363B, was substantially damaged when it impacted trees and terrain while maneuvering north of Pineville Municipal Airport (2L0), Pineville, Louisiana. The airline transport pilot was fatally injured. The personal flight was conducted under the provisions of Title 14 *Code of Federal Regulations* Part 91. Visual meteorological conditions prevailed and no Federal Aviation Administration (FAA) flight plan was filed for the flight. The cross-country flight departed Lake Water Wheel Airport (XS99), Shepherd, Texas, about 1000.

According to a friend of the pilot, the pilot had purchased the airplane in the spring of 2017. The pilot was an airframe and powerplant mechanic with an inspection authorization and had traveled between Texas and New York several times before the accident to conduct maintenance on the airplane. The pilot was relocating the airplane to New York, where he lived, on the day of the accident.

There were no fuel receipts available for the time before the accident. One witness observed the pilot and the previous owner carrying 5-gallon containers of fuel to the accident airplane; however, investigators were unable to determine how much fuel was on board at the time of departure from XS99.

According to an employee with the fixed base operator at 2L0, the pilot called on the airport UNICOM frequency and asked for verification that the landing gear were down and locked. The airplane was observed to fly from south to north over the airport and at the north end of the airport, the airplane pitched up and turned to the right. The employee confirmed, over the UNICOM frequency, that the landing gear appeared to be down, but the pilot did not respond.

Another witness saw the airplane start to climb and initiate a right turn between 250 and 300 ft above ground level. As the airplane turned, the tail of the airplane "wobbled," then the nose of the airplane pitched down, and the airplane descended below the tree line. The witness heard a loss of engine power just before the wobble and observed exaggerated rudder movements after the loss of power.

Pilot Information

Certificate:	Airline transport; Flight engineer	Age:	59, Male
Airplane Rating(s):	Single-engine land; Single-engine sea; Multi-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Lap only
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 1 With waivers/limitations	Last FAA Medical Exam:	July 9, 2016
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	July 21, 2016
Flight Time:	(Estimated) 2103.1 hours (Total, all aircraft), 13.5 hours (Total, this make and model), 3.2 hours (Last 90 days, all aircraft), 1.6 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

The pilot held type certificates for the Boeing 727 and the North American Sabreliner.

At the time of his medical certificate application, the pilot estimated his total flight time as 5,000 hours; 15 hours of which were logged in the previous 6 months. The certificate contained the limitation "Must wear corrective lenses for near and distant vision."

The pilot's family provided a scanned copy of several pages from the pilot's flight logbook; with entries dated between August 8, 2015, and October 26, 2017. A review of the logbook indicated that the pilot had logged no less than 2,102.2 hours. In 2015 the pilot had logged 12.5 hours in the make and model of the accident airplane. He did not have any logged flight time, in the make and model of the accident airplane, within the 6 months before the accident.

Aircraft and Owner/Operator Information

Aircraft Make:	Temco	Registration:	N2363B
Model/Series:	GC 1B	Aircraft Category:	Airplane
Year of Manufacture:	1948	Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	3663
Landing Gear Type:	Retractable - Tailwheel	Seats:	2
Date/Type of Last Inspection:	September 3, 2017 Annual	Certified Max Gross Wt.:	1570 lbs
Time Since Last Inspection:	2 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	1526.08 Hrs	Engine Manufacturer:	Lycoming
ELT:	C91A installed, activated, did not aid in locating accident	Engine Model/Series:	IO-360-A1A
Registered Owner:	On file	Rated Power:	200 Horsepower
Operator:	On file	Operating Certificate(s) Held:	None

The airplane was manufactured and issued the original airworthiness certificate in 1948 under the *Civil Air Regulations* Part 4a. Neither a Pilot Operating Handbook nor an Airplane Flight Manual were required; and therefore, performance-specific data such as fuel consumption was not available. In addition, the FAA major repair and alteration records available for the airplane indicated the airplane had been modified multiple times to include a powerplant change and landing gear changes.

According to the weight and balance document located in the wreckage and dated January 8, 2003, the airplane could hold 215.7 lbs or 35.95 gallons of fuel, with the most aft center of gravity loading. The datasheet for the engine provided a fuel consumption range of 8.5 to 11 gallons per hour. If the fuel tanks were full, the airplane had a range between 3 and 4 hours depending on the fuel/air mixture settings controlled by a pilot in flight.

Fuel System

The airplane was equipped with an aftermarket auxiliary fuel tank system; one tank in each wing. The fuel lines ran from each respective fuel tank inboard to the fuel selector valve. The airplane was equipped with a two-part main tank. The main tank fed through 1 ¼ inch tubing into a header tank and then to the fuel selector valve. The routing then continued to the gascolator, to the fuel pump, and then toward the engine.

Each auxiliary tank was equipped with a copper vent line that ran through the length of the fuel tank. One end of the copper vent line was mechanically occluded. The fuel tank cap on the left auxiliary fuel tank was a vented cap. The vent on the outside of the cap was occluded with dirt. The fuel tank cap on the right auxiliary fuel tank was not a vented cap. Neither auxiliary tank was equipped with a fuel pickup line inside of the tank, and the fuel lines were mounted about ½ to ¾ inch up from the bottom of the tank.

According to major repair and alteration records and the maintenance records for the airplane, auxiliary fuel tanks were installed in January of 2008 under supplemental type certificate (STC) No. SA255SO. The airplane had flown 4.42 hours since the auxiliary fuel tanks were installed in the airplane.

According to a conversation with the holder for the STC, Merlyn Products, Inc., the airplane's previous owner had contacted the company in 2003 and stated that he had two auxiliary fuel tanks that did not have STC paperwork and he wanted to purchase the paperwork to indicate that they were approved for use in his airplane. Merlyn Products did not provide him this paperwork as the fuel tanks were not manufactured by Merlyn Products, Inc. One other company manufactured a single-tank auxiliary fuel tank for the Temco; this tank was mounted in the center fuselage of the airplane. Investigators were not able to determine where the fuel tanks were manufactured.

Investigators were unable to reach the previous owner or mechanic regarding the installation of the auxiliary tanks. Investigators were not able to determine if there were any fuel flow issues, known by the previous owner, once the new tanks were installed.

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	KAEX, 80 ft msl	Distance from Accident Site:	6 Nautical Miles
Observation Time:	10:53 Local	Direction from Accident Site:	261°
Lowest Cloud Condition:	Clear	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	9 knots / None	Turbulence Type Forecast/Actual:	None / None
Wind Direction:	90°	Turbulence Severity Forecast/Actual:	N/A / N/A
Altimeter Setting:	30.28 inches Hg	Temperature/Dew Point:	17°C / 4°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Shepherd, TX (XS99)	Type of Flight Plan Filed:	None
Destination:	Pineville, LA (2L0)	Type of Clearance:	None
Departure Time:	10:00 Local	Type of Airspace:	Class G

Airport Information

Airport:	Pineville Municipal Airport 2L0	Runway Surface Type:	
Airport Elevation:	100 ft msl	Runway Surface Condition:	Vegetation
Runway Used:		IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	Forced landing

2L0, is a public, non-towered airport (Class G) located 2 miles north of Pineville, Louisiana, at a surveyed elevation of 100 ft. The airport has one open runway 18/36 (3,000 ft by 75 ft, asphalt). There is a lake and water runway at the departure end of runway 18. Densely forested terrain is located off the departure end of runway 36. It is noted that the runway 18/36 safety

areas are nonstandard.

Wreckage and Impact Information

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:	31.351943,-92.43972

The accident site was located in heavily forested terrain about 0.4 mile northeast of the departure end of runway 36. The accident site was at an elevation of 125 ft mean sea level and the main wreckage came to rest inverted on a heading of 60°.

The main wreckage included the inboard sections of the left and right wings, the fuselage, the left elevator, the horizontal stabilizer, the rudder, the vertical stabilizer, and the engine and propeller assembly. The engine and fuselage forward of the seats separated from the aft section of the fuselage and came to rest inverted behind the empennage. The outboard section of the left wing was found about 140 ft from the main wreckage. The top portion of a tree directly above this piece of the left wing was impact damaged and separated. The outboard section of the right wing, sections of canopy, the right elevator, ailerons, flaps, sections of cowling, and a section of the throttle were found in trees and on the ground between the outboard section of the left wing and the main wreckage. All major components of the airplane were located.

Flight control cables were traced from the cockpit to the ailerons, elevator, and rudder. All observed separations points exhibited signatures consistent with impact damage and overload separation. The elevator trim tab was found in a neutral position. The pitch trim motor was operational when electric power was applied to it.

The main landing gear were found retracted. Material consistent with wood splinters were found in the right-side jack pad and a pine branch was found in the right wheel well. The landing gear selector handle was found in its up position and its control shaft was continuous from the selector to the hydraulic pump assembly. The hydraulic pump and its solenoid were operational when electric power was applied to the solenoid.

Cockpit mixture and propeller governor controls were manipulated by hand and their respective engine linkage moved accordingly. The liberated throttle control was placed back into its cockpit location and pressed into its forward position and the engine throttle linkage moved forward. The engine throttle linkage was moved rearward and the cockpit throttle control moved out of its forward position. The engine driven fuel pump line to the fuel servo was broken off at the pump. A liquid consistent with the smell of aviation gasoline exited the line when it was moved.

The outboard section of one propeller blade was bent rearward and the other blade was not bent. The blades did not exhibit any leading-edge nicks or chordwise abrasions.

The fuel selector was found positioned on the main tank. Detents on the fuel selector valve were firm and an audible click could be heard at each detent. The electric fuel pump fuel line was torn and a liquid consistent with the smell of aviation gasoline exited the line when electric power was applied to the electric fuel pump. Both auxiliary fuel tanks were impact damaged and separated from each wing. Investigators were unable to establish how much fuel was in each tank at the time of impact. The main fuel tank was not compromised and was empty. No contaminants were noted in the fuel lines or fuel screens that would have occluded fuel flow.

First responders reported that a small amount fuel leaked or dripped from the airplane when they arrived on scene; however, it is unknown how much fuel was on board at the time of the accident. No mechanical anomalies were noted with the airframe or flight controls that would have precluded normal operation.

Engine Examination

The engine No. 4 cylinder was impact damaged on the exhaust valve side of the cylinder. The top bank of spark plugs, p-leads, fuel pump, vacuum pump, propeller, and valve covers were removed to facilitate the examination. A mud dobber nest was observed on the inboard portion of the propeller flange. The spark plug points exhibited darker, sooty deposits consistent with a rich(er) mixture. The p-lead from the right magneto on the No. 4 cylinder was impact damaged and separated at the upper spark plug. The p-leads from the left magneto on the No. 1 and 3 cylinders were impact-damaged and separated.

The engine was rotated through by hand at the propeller flange. Valve movement, and drive train continuity was observed at the accessory case and on all four cylinders. Air movement was documented tactilely at the spark plug orifice on all four cylinders. Both magnetos were removed from the engine for further examination. Three of the four left magneto leads exhibited a spark when the unit was actuated by hand. The fourth lead was impact damaged at the cap and could not be functionally tested. The cap was removed, and the unit was rotated by hand; spark was observed at the point of the impact damaged lead. All four leads on the right magneto exhibited a spark when the unit was actuated by hand.

The spline on the vacuum pump was unremarkable. When actuated by hand, the unit rotated without resistance and suction and compression were obtained. No mechanical anomalies were noted with the engine that would have precluded normal operation.

Flight recorders

The accident airplane was equipped with a JPI EDM-700 engine data monitoring device and a Garmin GPSMap 696. Both devices contained data; however, neither device contained data pertinent to the accident flight.

Medical and Pathological Information

The Louisiana Forensic Center, LLC., Youngsville, Louisiana, performed the autopsy on the pilot on November 10, 2017, as authorized by the Rapides Parish Coroner's office. The autopsy concluded that the cause of death was "blunt force injuries to head," and the report listed the specific injuries.

The FAA Bioaeronautical Sciences Research Laboratory, Oklahoma City, Oklahoma, performed toxicological tests on specimens that were collected during the autopsy. The results were negative for all tests conducted.

Administrative Information

Investigator In Charge (IIC): Rodi, Jennifer

Additional Participating Persons: Paul E Marks; Federal Aviation Administration; Baton Rouge, LA
John Butler; Lycoming Engines; PA

Report Date: April 10, 2019

Last Revision Date:

Investigation Class: [Class](#)

Note: The NTSB traveled to the scene of this accident.

Investigation Docket: <https://data.ntsb.gov/Docket?ProjectID=96313>

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