

Aviation Investigation Final Report

Location:	Ruston, Louisiana	Incident Number:	FTW01IA062
Date & Time:	February 7, 2001, 15:00 Local	Registration:	N980SP
Aircraft:	Cessna 172S	Aircraft Damage:	Minor
Defining Event:		Injuries:	2 None
Flight Conducted Under:	Part 91: General aviation - Instructional		

Analysis

The flight instructor and the student pilot were practicing power-off stalls in the local practice area. In preparation for a power-off stall maneuver, the student pilot performed "the flow checklist (fuel valve on both, mixture rich), and had reduced power in order to slow [the] speed." Shortly after this procedure, the engine lost power. The engine failed to restart, and the flight instructor executed a forced landing to a field, and the airplane impacted a fence. During a post-incident engine run, the engine repeatedly lost total power after the throttle was reduced to idle. The engine manufacturer representative adjusted the mixture control wheel, located on the fuel injector unit, "eight turns toward the lean setting." The engine was restarted, and when the throttle was reduced to the idle position, the engine continued to run. Inspection of the operator's fleet revealed that the idle mixture controls of several other airplanes of the same make and model were also out of adjustment.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this incident to be: the loss of engine power while manuevering as a result of an incorrect mixture control adjustment. A contributing factor was the lack of suitable terrain for the ensuing forced landing.

Findings

Occurrence #1: LOSS OF ENGINE POWER(TOTAL) - NONMECHANICAL Phase of Operation: MANEUVERING

Findings
1. (C) MIXTURE CONTROL - INCORRECT

Occurrence #2: FORCED LANDING Phase of Operation: DESCENT - EMERGENCY

Occurrence #3: ON GROUND/WATER COLLISION WITH OBJECT Phase of Operation: LANDING - ROLL

Findings

2. OBJECT - FENCE

3. (F) TERRAIN CONDITION - NONE SUITABLE

Factual Information

On February 7, 2001, approximately 1500 central standard time, a Cessna 172S single-engine airplane, N980SP, registered to and operated by Louisiana Technical University, Ruston, Louisiana, sustained minor damage during a forced landing following a loss of engine power while maneuvering near Ruston, Louisiana. The certified flight instructor (CFI) and the student pilot were not injured. Visual meteorological conditions prevailed and a company visual flight rules (VFR) flight plan was filed for the 14 Code of Federal Regulations Part 91 instructional flight. The flight originated from the Ruston Regional Airport, Ruston, Louisiana.

According to the CFI's statement, he and the student pilot were practicing power-off stalls in the local practice area. At 2,200 feet msl, the student pilot performed a "flow checklist (fuel valve on both, mixture rich), and had reduced power in order to slow [the] speed," to set up the airplane for a power-off stall maneuver. Shortly after these procedures were completed, the CFI noticed that the propeller was "slowing to a stop." Subsequently, the engine lost power, and the CFI performed engine restart procedures in accordance with the Cessna Aircraft Pilot Operating Handbook (POH). The engine failed to restart, and the CFI executed a forced landing to a field. During the landing roll, the airplane impacted a fence and came to rest upright near a tree line.

On February 8, 2001, representatives from the FAA, Textron Lycoming, Cessna Aircraft Company, and the operator examined the airframe and the Lycoming IO-360-L2A engine (serial number L-28217-51A). Fuel samples were taken from the aircraft, and no evidence of contamination was found. The fuel injector inlet screen was clean, and there were no visible fuel stains around the injector, nozzles, lines, or fittings. The 4 lower spark plugs were removed, they had a black coloration, and according to the engine manufacturer representative, "the electrodes indicated a long service life."

Under the supervision of the FAA inspectors, an engine test run was performed. The engine ran for approximately 8 minutes at 1,500 RPM, then, after reducing the throttle to the hard stop idle position, the engine experienced a total loss of engine power. As the engine lost power, black smoke exited the exhaust pipe. The engine was restarted, and black smoke exited the exhaust pipe. The engine again increased to 1,500 RPM, the throttle was reduced to hard stop idle position, and the engine again lost power. The engine manufacturer representative adjusted the mixture control wheel, located on the fuel injector unit, "eight turns toward the lean setting." The engine was restarted, and when the throttle was reduced to hard stop idle position, the engine was restarted, and when the throttle was reduced to hard stop idle position, the engine was restarted, and when the throttle was reduced to hard stop idle position, the engine continued to operate.

As a result of this incident, the flight school checked their C-172 fleet and found several aircraft idle mixture controls out of adjustment. The required mixture adjustments, in accordance with the applicable Lycoming Service Instruction, were completed, and the aircraft

were returned to service. Additionally, the flight school began requiring each pilot-in-command to perform pre-takeoff and post flight idle mixture leaning checks and record the RPM indications on every flight. During the pre-takeoff check, if the RPM fluctuation is out of the prescribed limit, the flight is to be rejected. Also, the flight school modified the emergency engine restart procedures based on time and altitude permitting.

Certificate:	Commercial; Flight instructor	Age:	22,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Right
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	Airplane single-engine	Toxicology Performed:	No
Medical Certification:	Class 1 Valid Medicalw/ waivers/lim	Last FAA Medical Exam:	October 12, 2000
Occupational Pilot:	UNK	Last Flight Review or Equivalent:	January 25, 2001
Flight Time:	264 hours (Total, all aircraft), 10 hours (Total, this make and model), 173 hours (Pilot In Command, all aircraft), 63 hours (Last 90 days, all aircraft), 35 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

Pilot Information

Student pilot Information

Certificate:	Student	Age:	19,Male
Airplane Rating(s):	None	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	None	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 1 Valid Medicalw/ waivers/lim	Last FAA Medical Exam:	September 7, 2000
Occupational Pilot:	UNK	Last Flight Review or Equivalent:	
Flight Time:	25 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	Registration:	N980SP
Model/Series:	172S	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	172S8182
Landing Gear Type:	Tricycle	Seats:	4
Date/Type of Last Inspection:	September 20, 2000 100 hour	Certified Max Gross Wt.:	2558 lbs
Time Since Last Inspection:	90 Hrs	Engines:	1 Reciprocating
Airframe Total Time:	341 Hrs at time of accident	Engine Manufacturer:	Lycoming
ELT:	Installed, activated, did not aid in locating accident	Engine Model/Series:	IO-360-L2A
Registered Owner:	Louisiana Technical University	Rated Power:	180 Horsepower
Operator:		Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	MLU,79 ft msl	Distance from Accident Site:	25 Nautical Miles
Observation Time:	14:50 Local	Direction from Accident Site:	90°
Lowest Cloud Condition:	Scattered / 4600 ft AGL	Visibility	10 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	10 knots / None	Turbulence Type Forecast/Actual:	/
Wind Direction:	160°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.07 inches Hg	Temperature/Dew Point:	22°C / 11°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Ruston, LA (RSN)	Type of Flight Plan Filed:	Company VFR
Destination:		Type of Clearance:	None
Departure Time:	15:00 Local	Type of Airspace:	Class G

Wreckage and Impact Information

Crew Injuries:	2 None	Aircraft Damage:	Minor
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 None	Latitude, Longitude:	32.530868,-92.629745(est)

Administrative Information

Investigator In Charge (IIC):	Lemishko, Alexander
Additional Participating Persons:	James Coppitt; FAA FSDO; Baton Rouge, LA
Original Publish Date:	July 30, 2001
Last Revision Date:	
Investigation Class:	<u>Class</u>
Note:	The NTSB traveled to the scene of this incident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=51750

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The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, "accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person" (Title 49 *Code of Federal Regulations* section 831.4). Assignment of fault or legal liability is not relevant to the NTSB's statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 *United States Code* section 1154(b)). A factual report that may be admissible under 49 *United States Code* section 1154(b) is available <u>here</u>.