



National Transportation Safety Board Aviation Accident Final Report

Location:	MONROE, WA	Accident Number:	SEA98LA068
Date & Time:	05/01/1998, 1500 PDT	Registration:	N5157W
Aircraft:	Piper PA-28-160	Aircraft Damage:	Substantial
Defining Event:		Injuries:	2 None

Flight Conducted Under: Part 91: General Aviation - Instructional

Analysis

After the instructor simulated an engine failure by pulling out the mixture control until the engine shut down, the student attempted to maneuver for a landing at a paved private airstrip. Just after turning a close-in final, with the mixture still pulled out almost to the full-lean position, the student raised the aircraft's nose, and the propeller stopped turning. The instructor then returned the mixture control to the full rich position and instructed the student to engage the starter. After two unsuccessful attempts to get the engine to start, the student landed the aircraft in an area where the terrain had been torn up by construction workers. Just after touchdown, the aircraft impacted rough/uneven terrain and sustained substantial damage.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: Fuel starvation due to the flight instructor's improper in-flight decision to simulate an engine failure by pulling the mixture control toward the lean position until the engine shut down, and his failure to return the mixture to the rich position until after the aircraft had reached a low altitude and the propeller had stopped turning. Factors include the rough/uneven terrain within the construction area in which the aircraft was landed.

Findings

Occurrence #1: LOSS OF ENGINE POWER(TOTAL) - NONMECHANICAL
Phase of Operation: APPROACH - VFR PATTERN - FINAL APPROACH

Findings

1. (C) IN-FLIGHT PLANNING/DECISION - IMPROPER - PILOT IN COMMAND(CFI)
2. (C) REMEDIAL ACTION - DELAYED - PILOT IN COMMAND(CFI)
3. (C) FLUID,FUEL - STARVATION

Occurrence #2: ON GROUND/WATER ENCOUNTER WITH TERRAIN/WATER
Phase of Operation: EMERGENCY LANDING

Findings

4. (F) TERRAIN CONDITION - CONSTRUCTION AREA
5. (F) TERRAIN CONDITION - ROUGH/UNEVEN

Factual Information

On May 1, 1998, approximately 1500 Pacific daylight time, a Piper PA-28-160, N5157W, collided with rough terrain during a forced landing off the approach end of FirstAir Field, Monroe, Washington. The certified flight instructor and the student pilot were not injured, but the aircraft, which was owned by the student, sustained substantial damage. The 14 CFR Part 91 instructional flight, which departed Harvey Field, Snohomish, Washington, about 30 minutes earlier, was being operated in visual meteorological conditions. No flight plan had been filed, and there was no report of an ELT activation.

According to the instructor, while approximately 4,000 feet AGL, he pulled out the mixture control until the engine stopped firing in order to simulate an engine failure in flight. Then as the student maneuvered toward FirstAir Field, the instructor occasionally "cleared" the engine by returning the mixture to the full rich position. After turning onto a close-in final approach, with the mixture still pulled nearly all the way out, the student raised the nose of the aircraft a few degrees, and the propeller stopped turning. The instructor then returned the mixture control to the full rich position, and told the student to engage the starter. According to the instructor, the student attempted twice to get the propeller to rotate using the starter, but there were "no results." When the engine did not start, the instructor pushed the nose down to prevent a stall, and the student completed a landing in an area where the terrain had been torn up by construction crews. Just after touchdown, the aircraft collided with the rough/uneven terrain created by the construction.

In a post-accident interview, the instructor said that in the past he had always used the throttle to simulate an engine failure (instead of the mixture), and was not sure why he had used the mixture this time instead.

A post-accident inspection of the engine revealed no anomalies, and using the battery that was in the aircraft at the time of the accident, the engine was successfully started on the first attempt and run to 1,500 rpm. A higher rpm run was not attempted because of the vibrations generated by the bent propeller.

Pilot Information

Certificate:	Flight Instructor; Commercial	Age:	26, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Right
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	Airplane Multi-engine; Airplane Single-engine; Instrument Airplane	Toxicology Performed:	No
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim.	Last FAA Medical Exam:	06/24/1997
Occupational Pilot:		Last Flight Review or Equivalent:	
Flight Time:	653 hours (Total, all aircraft), 17 hours (Total, this make and model), 539 hours (Pilot In Command, all aircraft), 185 hours (Last 90 days, all aircraft), 58 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	Registration:	N5157W
Model/Series:	PA-28-160 PA-28-160	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	28-188
Landing Gear Type:	Tricycle	Seats:	4
Date/Type of Last Inspection:	10/22/1997, Annual	Certified Max Gross Wt.:	2200 lbs
Time Since Last Inspection:		Engines:	1 Reciprocating
Airframe Total Time:	2253 Hours	Engine Manufacturer:	Lycoming
ELT:	Installed, not activated	Engine Model/Series:	O-320-B2B
Registered Owner:	KEITH S. SUDAC	Rated Power:	160 hp
Operator:	KEITH S. SUDAC	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	, 0 ft msl	Distance from Accident Site:	0 Nautical Miles
Observation Time:	0000	Direction from Accident Site:	0°
Lowest Cloud Condition:	Clear / 0 ft agl	Visibility	20 Miles
Lowest Ceiling:	None / 0 ft agl	Visibility (RVR):	0 ft
Wind Speed/Gusts:	10 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	270°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:		Temperature/Dew Point:	24° C
Precipitation and Obscuration:			
Departure Point:	SNOHOMISH, WA (S43)	Type of Flight Plan Filed:	None
Destination:	MONROE, WA (O9S)	Type of Clearance:	None
Departure Time:	1430 PDT	Type of Airspace:	Class G

Airport Information

Airport:	FIRSTAIR FIELD (WA38)	Runway Surface Type:	Asphalt
Airport Elevation:	50 ft	Runway Surface Condition:	Dry
Runway Used:	25	IFR Approach:	None
Runway Length/Width:	2092 ft / 34 ft	VFR Approach/Landing:	Forced Landing; Simulated Forced Landing

Wreckage and Impact Information

Crew Injuries:	2 None	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 None	Latitude, Longitude:	

Administrative Information

Investigator In Charge (IIC):	ORRIN K ANDERSON	Report Date:	07/12/2000
Additional Participating Persons:	DEBORAH COX		
Publish Date:			
Investigation Docket:	NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at pubinq@ntsb.gov , or at 800-877-6799. Dockets released after this date are available at http://dms.nts.gov/pubdms/ .		

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](#).