



National Transportation Safety Board Aviation Accident Final Report

Location:	Santa Fe, NM	Accident Number:	FTW02LA079
Date & Time:	02/08/2002, 1030 MST	Registration:	N75616
Aircraft:	Cessna 172N	Aircraft Damage:	Substantial
Defining Event:		Injuries:	2 None

Flight Conducted Under: Part 91: General Aviation - Instructional

Analysis

After reaching the intended cruise altitude during an instructional cross-country flight, the flight instructor noticed the airplane was not accelerating to the desired cruise speed. Within one or two minutes, after adjusting the mixture and applying carburetor heat, the engine began to operate rough. The student pilot turned the airplane back toward the departure airport. As the flight proceeded, the engine roughness and power loss amplified. Approximately 9 miles southeast of the airport, the flight instructor elected to execute a precautionary landing to a dirt road. During the precautionary landing, the airplane touched down on the nose landing gear, and after impacting a ditch, the nose gear separated. The airplane then nosed over and came to rest inverted. During an examination of the engine, the single-drive dual magneto's lower timing inspection port was removed and approximately 2 cups of engine oil drained from the magneto. It was determined that the magneto driveshaft oil seal had failed allowing engine oil to enter the magneto. At the time of the accident, the engine had accumulated 2,030 hours since major overhaul.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: the loss of engine power as result of the failure of the dual magneto. A contributing factor was the lack of suitable terrain for the precautionary landing.

Findings

Occurrence #1: LOSS OF ENGINE POWER(PARTIAL) - MECH FAILURE/MALF
Phase of Operation: CRUISE

Findings

1. (C) IGNITION SYSTEM,MAGNETO - FAILURE

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

Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: LANDING - ROLL

Findings

2. TERRAIN CONDITION - DITCH
3. (F) TERRAIN CONDITION - NONE SUITABLE

Occurrence #4: NOSE OVER
Phase of Operation: LANDING - ROLL

Factual Information

On February 8, 2002, approximately 1030 mountain standard time, a Cessna 172N single-engine airplane, N75616, was substantially damaged during a precautionary landing to a road following a loss of engine power near Santa Fe, New Mexico. The flight instructor and student pilot were not injured. The airplane was registered to and operated by Zia Aviation, Santa Fe. Visual meteorological conditions prevailed, and a flight plan was not filed for the 14 Code of Federal Regulations Part 91 instructional flight. The cross-country flight departed Santa Fe Municipal Airport, Santa Fe, at 1010.

In the Pilot/Operator Aircraft Accident Report (NTSB Form 6120.1/2), the flight instructor reported that he and the student pilot performed a preflight inspection and an engine run-up prior to departure. No anomalies were noted with the engine during the inspection and run-up. During the takeoff roll, the student and instructor noticed a "slight [engine] roughness," the instructor "enriched the mixture," and the engine roughness ceased. After climbing approximately 300 to 500 feet per minute, the student leveled the airplane at 9,500 feet msl for cruise flight. The instructor reported that he noticed the airplane was not accelerating to the desired cruise speed. Within one or two minutes, after adjusting the mixture and applying carburetor heat, the engine began to operate rough. The student pilot turned the airplane back toward Santa Fe with the intention to return to the airport. As the flight proceeded, the engine roughness and power loss amplified. Approximately 9 miles southeast of the airport, after realizing the airport could not be reached, the flight instructor elected to execute a precautionary landing to a dirt road. During the precautionary landing, the airplane touched down on the nose landing gear, and after impact with a ditch, the nose gear separated. The airplane then slid 50 to 100 feet, nosed over, and came to rest inverted.

According to the FAA inspector, who responded to the accident site, both wings and the firewall were substantially damaged. The aircraft was recovered to a hangar for further examination. On February 11, 2002, the flight instructor, who was also a certified mechanic and maintained the airplane, and the FAA inspector examined the Lycoming O-320-H2AD (serial number L5684-76) engine. During an ignition timing check, the engine crankshaft was rotated by hand; however, "the apparent spark from each of the 8 leads was not what would be expected from this system." The Continental/Bendix D-3000 single-drive dual magneto's lower timing inspection port was removed and approximately 2 cups of engine oil drained from the magneto. It was determined that the magneto driveshaft oil seal had failed allowing engine oil to enter the magneto.

A review of the maintenance records revealed that the last annual inspection was completed on May 11, 2001, at 1,515.89 hours since major overhaul. At the time of the accident, the engine had accumulated 2,030 hours since major overhaul.

Pilot Information

Certificate:	Flight Instructor; Commercial	Age:	55, Male
Airplane Rating(s):	Single-engine Land	Seat Occupied:	Right
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	Airplane Single-engine	Toxicology Performed:	No
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim.	Last FAA Medical Exam:	09/11/2001
Occupational Pilot:		Last Flight Review or Equivalent:	08/30/2001
Flight Time:	2040 hours (Total, all aircraft), 953 hours (Total, this make and model), 1713 hours (Pilot In Command, all aircraft), 129 hours (Last 90 days, all aircraft), 32 hours (Last 30 days, all aircraft), 2 hours (Last 24 hours, all aircraft)		

Student Pilot Information

Certificate:	Student	Age:	48, Male
Airplane Rating(s):	None	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	None	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 3 Valid Medical--w/ waivers/lim.	Last FAA Medical Exam:	07/11/2001
Occupational Pilot:		Last Flight Review or Equivalent:	
Flight Time:	48 hours (Total, all aircraft), 48 hours (Total, this make and model), 2 hours (Pilot In Command, all aircraft), 15 hours (Last 90 days, all aircraft), 1 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	Registration:	N75616
Model/Series:	172N	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	17267852
Landing Gear Type:	Tricycle	Seats:	4
Date/Type of Last Inspection:	12/21/2001, 100 Hour	Certified Max Gross Wt.:	2300 lbs
Time Since Last Inspection:	61 Hours	Engines:	1 Reciprocating
Airframe Total Time:	7397 Hours as of last inspection	Engine Manufacturer:	Lycoming
ELT:	Installed, not activated	Engine Model/Series:	O-320-H2AD
Registered Owner:	Zia Aviation	Rated Power:	150 hp
Operator:	Zia Aviation	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:		Distance from Accident Site:	
Observation Time:		Direction from Accident Site:	
Lowest Cloud Condition:	Clear	Visibility	10 Miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	12 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	270°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:		Temperature/Dew Point:	-1°C
Precipitation and Obscuration:			
Departure Point:	Santa Fe, NM (SAF)	Type of Flight Plan Filed:	None
Destination:	Santa Fe, NM (SAF)	Type of Clearance:	None
Departure Time:	1010 MST	Type of Airspace:	Class E

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:	35.469167, -106.000000

Administrative Information

Investigator In Charge (IIC): Georgia Snyder **Report Date:** 04/01/2003

Additional Participating Persons: Brian J Iorg; FAA FSDO; Albuquerque, NM

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/>.

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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](#).