



Aviation Investigation Final Report

Location:	LOWELL, Idaho	Accident Number:	SEA93LA120
Date & Time:	May 23, 1993, 11:15 Local	Registration:	N4080Y
Aircraft:	CESSNA 185A	Aircraft Damage:	Substantial
Defining Event:		Injuries:	1 None
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

WHILE FLYING AT 8000 FEET MSL A PARTIAL POWER LOSS DEVELOPED. WHEN THE PILOT OBSERVED OIL ON THE LEFT WING STRUT HE CHOSE TO EXECUTE A PRECAUTIONARY LANDING IN A FIELD TO PREVENT ENGINE SEIZURE. DURING THE LANDING ROLL, IN SOFT TERRAIN, THE AIRCRAFT NOSED OVER. POST CRASH EXAMINATION REVEALED THE NUMBER TWO CYLINDER EXHAUST ROCKER ARM BROKEN IN HALF. METALLURGICAL EXAMINATION REVEALED THAT THE ROCKER ARM SEPARATED IN FATIGUE. THE ROCKER ARM(S), WHICH WERE NOT UNDER AN APPROVED STC, HAD BEEN INSTALLED APPROXIMATELY 11 HOURS PREVIOUS TO THE ACCIDENT.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: FATIGUE OF THE ROCKER ARM AND UNSUITABLE TERRAIN WHICH WAS ENCOUNTERED DURING THE PRECAUTIONARY LANDING.

Findings

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

Findings

1. (C) ENGINE ASSEMBLY,ROCKER ARM/TAPPET - FATIGUE

Occurrence #2: NOSE OVER
Phase of Operation: LANDING - ROLL

Findings

2. PRECAUTIONARY LANDING - PERFORMED - PILOT IN COMMAND
3. (C) UNSUITABLE TERRAIN OR TAKEOFF/LANDING/TAXI AREA - ENCOUNTERED - PILOT IN COMMAND

Factual Information

On May 23, 1993, at approximately 1115 hours Pacific daylight time (PDT), a Cessna C-185A, N4080Y, registered to and operated by Clarence R. Forbes, and being flown by Howard S. Hash, a certificated commercial pilot, was substantially damaged when the aircraft nosed over during a precautionary landing in a boggy field following an emergency descent due to a partial loss of power. The landing took place on the Idaho side of Lolo Pass at the Idaho/Montana border and approximately 50 nautical miles northeast of Lowell, Idaho. The pilot was uninjured. Visual meteorological conditions prevailed and no flight plan had been filed. The flight, which was personal in nature, was to have been operated in accordance with the requirements set forth in 14CFR91 and departed from Stevensville, Montana, earlier in the morning intending to return to the same airport.

The pilot reported in a telephonic interview with the investigator, that he was cruising at 8000 feet above mean sea level (MSL) when a partial power loss occurred. He stated that he was familiar with the terrain and, upon seeing oil on the left wing strut, became concerned that the engine might seize. He then executed a precautionary landing in a meadow. The pilot reported that the meadow was boggy and the aircraft nosed over during the rollout.

Post crash examination of the engine by the pilot revealed a hole in the number two cylinder rocker box cover (refer to photograph 1). Post crash disassembly of the engine revealed that the number two cylinder exhaust rocker arm was broken in half through the center pivot bearing area (refer to photograph 2).

The rocker arm halves and rocker box cover were shipped to the Safety Board's Materials Laboratory for metallurgical examination. The examination revealed three areas of fatigue progression on the surfaces of the rocker arm halves, two of which originated in the drilled oiling hole (refer to attached Metallurgist's Factual Report).

The number two cylinder exhaust rocker arm, one of 12 such rocker arms, was provided by Clyde G. Ritter, for installation on N4080Y. The rocker arms were installed approximately 11 hours previous to the accident, during a major overhaul of the engine. A new camshaft provided by Mr. Ritter was installed at the same time, however, the Supplemental type Certificate for the camshaft (STC# SE5784NM) was not applicable for any IO-470 series engines. Additionally, no STC has been issued for the rocker arms. N4080Y did not have an experimental certification at the time of the accident.

Pilot Information

Certificate:	Commercial	Age:	51, Male
Airplane Rating(s):	Single-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 2 Expired	Last FAA Medical Exam:	June 5, 1986
Occupational Pilot:	UNK	Last Flight Review or Equivalent:	
Flight Time:	6000 hours (Total, all aircraft), 3000 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	CESSNA	Registration:	N4080Y
Model/Series:	185A 185A	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	
Airworthiness Certificate:	Normal	Serial Number:	1850280
Landing Gear Type:	Tailwheel	Seats:	4
Date/Type of Last Inspection:	May 15, 1993 Annual	Certified Max Gross Wt.:	3200 lbs
Time Since Last Inspection:	11 Hrs	Engines:	1 Reciprocating
Airframe Total Time:		Engine Manufacturer:	CONTINENTAL
ELT:	Installed, not activated	Engine Model/Series:	IO-470F
Registered Owner:	FORBES, CLARENCE R.	Rated Power:	260 Horsepower
Operator:	FORBES, CLARENCE, R.	Operating Certificate(s) Held:	None
Operator Does Business As:		Operator Designator Code:	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Day
Observation Facility, Elevation:	MSO ,3201 ft msl	Distance from Accident Site:	27 Nautical Miles
Observation Time:	10:51 Local	Direction from Accident Site:	67°
Lowest Cloud Condition:	Scattered / 7000 ft AGL	Visibility	15 miles
Lowest Ceiling:	None	Visibility (RVR):	
Wind Speed/Gusts:	8 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	50°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30 inches Hg	Temperature/Dew Point:	16°C / 3°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	STEVENSVILLE , MT (32S)	Type of Flight Plan Filed:	None
Destination:	(32S)	Type of Clearance:	None
Departure Time:	10:00 Local	Type of Airspace:	Class G

Airport Information

Airport:		Runway Surface Type:	
Airport Elevation:		Runway Surface Condition:	
Runway Used:	0	IFR Approach:	None
Runway Length/Width:		VFR Approach/Landing:	Precautionary landing

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:		Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 None	Latitude, Longitude:	46.079906,-115.860298(est)

Administrative Information

Investigator In Charge (IIC):	Mccreary, Steven
Additional Participating Persons:	DAVE AVEY; RENTON , WA
Original Publish Date:	August 1, 1994
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.nts.gov/Docket?ProjectID=41712

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

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 [here](#).