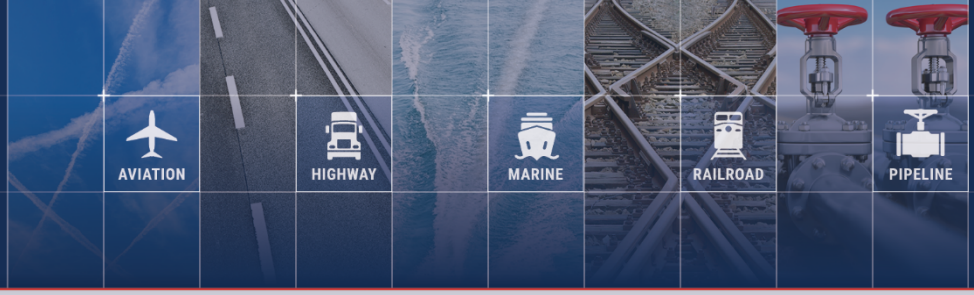

Aviation Investigation Final Report

Location:	Iliamna, Alaska	**Accident Number:**	ANC10LA056
Date & Time:	June 29, 2010, 17:45 Local	**Registration:**	N4596U
Aircraft:	Cessna U206G	**Aircraft Damage:**	Substantial
Defining Event:	Loss of engine power (total)	**Injuries:**	1 Minor, 5 None
Flight Conducted Under:	Part 135: Air taxi & commuter - Non-scheduled - Sightseeing		

Analysis

The float-equipped airplane was in cruise flight on a sightseeing flight when there was a total loss of engine power. After several unsuccessful attempts to restart the engine, the pilot made a forced landing on tundra-covered terrain, and the airplane nosed over. Postaccident disassembly of the engine found that the crankshaft had fractured at the No. 2 journal. Laboratory examination of the crankshaft found "ladder cracking" associated with the journal fracture, which is consistent with a reduced oil flow and overheating of the surface area. At the time of the accident, the engine had 441 hours of operation since major overhaul, which was performed on October 21, 2008.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The total loss of engine power during cruise flight due to a fractured crankshaft.

Findings

Aircraft	Recip engine power section - Failure
Environmental issues	Rough terrain - Contributed to outcome

Factual Information

History of Flight

Enroute-cruise	Loss of engine power (total) (Defining event)
Emergency descent	Off-field or emergency landing
Landing-flare/touchdown	Collision with terr/obj (non-CFIT)

On June 29, 2010, about 1745 Alaska daylight time, a float-equipped Cessna U206G airplane, N4596U, sustained substantial damage to the wings, rudder and fuselage during an emergency off-airport landing, about 16 miles west-southwest of Iliamna, Alaska. The airplane was operated by Rust's Flying Service, Anchorage, Alaska, as a visual flight rules (VFR) revenue sightseeing flight under 14 Code of Federal Regulations, Part 135, when the accident occurred. The commercial pilot and four passengers were not injured; the remaining passenger received minor injuries. The flight was returning to the operator's base at the Lake Hood Seaplane Base, Anchorage. Company flight following procedures were in effect.

During a telephone conversation with the National Transportation Safety Board (NTSB) investigator-in-charge (IIC), a representative for the operator said the pilot reported a complete loss of engine power that precipitated an emergency descent, and off-airport landing. The pilot reportedly told him he saw a rise in the exhaust gas temperature (EGT) prior to the loss of power. The float-equipped airplane landed on tundra-covered ground and nosed over. The pilot reported adding 42 gallons of aviation fuel prior to the return flight to Anchorage.

In a written statement to the FAA dated July 1, the pilot wrote that about 40 minutes into the flight he saw the EGT rise above the normal cruise temperature. He enriched the mixture from 15 gallons per hour (GPH) to 18 GPH, to cool the engine. Shortly thereafter the engine quit completely. After several failed attempts to restart the engine, he focused on landing the airplane.

On August 18, the airplane was examined by the NTSB IIC at an airplane maintenance facility in Wasilla, Alaska. During an attempt to rotate the propeller, it was discovered that the propeller would not rotate, and the rear accessory portion of the engine did not appear to be connected through the crankshaft to the propeller.

On November 9, the airplane's engine was disassembled at an airplane maintenance facility in Palmer, Alaska. In attendance with the IIC were representatives from the FAA, and the engine manufacturer. During the disassembly it was discovered that the engine's crankshaft had fractured, and separated at the number 2 journal.

The crankshaft was shipped to the NTSB material laboratory, Washington, D.C., for examination. The laboratory engineer found "ladder cracking," indicative of oil starvation,

associated with the journal fracture. The NTSB material laboratory report is contained in the public docket for this report.

Engine History

Prior to October 21, 2008 the accident airplane's engine, serial number 286450-R was overhauled by Aero Recip, Anchorage, Alaska. The overhauled engine was sold to Mulchatna Air, Dillingham, Alaska, and installed in one of their airplanes. During the first flight, the engine lost oil pressure, the pilot landed, and the engine oil filter was checked for metal particles. Finding metal in the filter, the owner requested the engine be replaced by Aero Recip, which it was. During a telephone conversation with the NTSB IIC, the owner of Mulchatna Air said a couple days after returning the engine, he received a telephone call from Aero Recip, stating they could not find anything wrong with the engine, and they were returning it to service.

According to the engine's log book, on June 24, 2009, the engine was removed from the airplane due to possible metal contamination. The engine was partially disassembled by Aero Recip, and inspected. No contamination was found, so the engine was reassembled, and test run three times. After each run the oil filter was examined, with no notable contaminates or ferrous metal found. Aero Recip returned the engine to service.

On July 7, 2009 the engine was installed in the accident airplane. At the time of the accident, the engine had 441 hours of operation since the October 21, 2008 major overhaul.

Pilot Information

Certificate:	Airline transport; Flight instructor	**Age:**	56,Male
Airplane Rating(s):	Single-engine land; Single-engine sea; Multi-engine land; Multi-engine sea	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	Airplane multi-engine; Airplane single-engine; Instrument airplane	**Toxicology Performed:**	No
Medical Certification:	Class 1 With waivers/limitations	**Last FAA Medical Exam:**	March 8, 2010
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	May 24, 2010
Flight Time:	19900 hours (Total, all aircraft), 3000 hours (Total, this make and model), 80 hours (Last 90 days, all aircraft), 80 hours (Last 30 days, all aircraft), 7 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N4596U
Model/Series:	U206G	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	U20604990
Landing Gear Type:	Float	**Seats:**	6
Date/Type of Last Inspection:	June 3, 2010 100 hour	**Certified Max Gross Wt.:**	3800 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	15612 Hrs at time of accident	**Engine Manufacturer:**	CONT MOTOR
ELT:	C126 installed, not activated	**Engine Model/Series:**	IO 520 SERIES
Registered Owner:	RUSTAIR INC	**Rated Power:**	300 Horsepower
Operator:	RUSTS FLYING SERVICE INC	**Operating Certificate(s) Held:**	On-demand air taxi (135)
Operator Does Business As:	Rusts Flying Service	**Operator Designator Code:**	ERHA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	ILI,192 ft msl	**Distance from Accident Site:**	16 Nautical Miles
Observation Time:	17:53 Local	**Direction from Accident Site:**	60°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	Overcast / 3300 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	10 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	100°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.79 inches Hg	**Temperature/Dew Point:**	12°C / 7°C
Precipitation and Obscuration:			
Departure Point:	King Salmon, AK (AKN)	**Type of Flight Plan Filed:**	Company VFR
Destination:	Anchorage, AK (PALH)	**Type of Clearance:**	None
Departure Time:	16:45 Local	**Type of Airspace:**	

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Minor, 4 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Minor, 5 None	**Latitude, Longitude:**	59.648334,-155.419998

Administrative Information

Investigator In Charge (IIC):	Lewis, Lawrence
Additional Participating Persons:	John Alley; FAA FSDO-03; Anchorage, AK
Original Publish Date:	January 17, 2012
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=76484

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.