National Transportation Safety Board
Aviation Accident Final Report

Location:	ANCHORAGE, AK	**Accident Number:**	ANC95LA052
Date & Time:	05/03/1995, 2115 AKD	**Registration:**	N8312Z
Aircraft:	CESSNA 205	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	4 None
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

A CERTIFICATED COMMERCIAL/CFI PILOT WAS RECEIVING AN AIRPLANE CHECKOUT FROM THE OWNER/PILOT PRIOR TO RENTING THE AIRPLANE. THE OWNER REDUCED THE ENGINE POWER TO IDLE TO SIMULATE AN ENGINE FAILURE AND FORCED LANDING. THE AREA CONSISTED OF OPEN AREAS OF SOFT TUNDRA MUSKEG AND TALL SPRUCE TREES. THE PILOT MANEUVERED THE AIRPLANE TOWARD A PROSPECTIVE LANDING AREA AND DESCENDED TO ABOUT 300 TO 500 FEET AGL. THE PILOT INITIATED A GO-AROUND AND ADVANCED THE THROTTLE TO BEGIN A CLIMB, BUT THE ENGINE DID NOT RESPOND. EMERGENCY PROCEDURES BY BOTH PILOTS DID NOT RESTORE ENGINE POWER. THE AIRPLANE CONTINUED TO DESCEND AND COLLIDED WITH TREES. A POSTACCIDENT EXAMINATION OF ENGINE REVEALED THAT THE ENGINE DRIVEN FUEL PUMP HAD FAILED.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: A FAILURE OF THE ENGINE DRIVEN FUEL PUMP. FACTORS IN THE ACCIDENT WERE THE PILOTS' INADEQUATE IN-FLIGHT PLANNING AND UNSUITABLE TERRAIN IN THE AREA OF THE FORCED LANDING.

Findings

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

Findings
1. EMERGENCY PROCEDURE - SIMULATED - PILOT PASSENGER
2. (F) IN-FLIGHT PLANNING/DECISION - INADEQUATE - PILOT IN COMMAND
3. GO-AROUND - INITIATED - PILOT IN COMMAND
4. (C) FUEL SYSTEM,PUMP - SEIZED

Occurrence #2: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: MANEUVERING

Findings
5. (F) TERRAIN CONDITION - NONE SUITABLE
6. OBJECT - TREE(S)

Factual Information

On May 3, 1995, about 2115 hours Alaska daylight time, a wheel equipped Cessna 205, N8312Z, collided with trees during a simulated forced landing, about 10 miles north of Anchorage, Alaska. The airplane was being operated as a visual flight rules (VFR) local area flight when the accident occurred. The airplane, owned and operated by the second pilot, was destroyed. The certificated commercial pilot (first pilot), the second pilot, and two passengers were not injured. Visual meteorological conditions prevailed. The flight originated at Merrill Field, Anchorage, Alaska, about 2100 hours.

The first pilot reported that he was receiving a check-out in the aircraft from the second pilot prior to renting the airplane. After a series of aerial maneuvers, the second pilot reduced the throttle to idle for a simulated engine failure. The terrain consisted of open areas of soft tundra muskeg, surrounded by tall spruce trees. The first pilot maneuvered the airplane toward a clearing and about 300 to 500 feet above the ground, advanced the throttle to full power. The engine did not respond with sufficient power to begin a climb. The second pilot began performing emergency checklist items while the first pilot continued to fly. The airplane struck several trees and came to rest about 1 1/2 miles south of the Goose Bay airstrip.

A Federal Aviation Administration (FAA) airworthiness inspector, Anchorage Flight Standards District Office (FSDO), examined the airplane at the accident site. He reported that the left wing was torn off the airplane and the aircraft received damage to the right wing and fuselage. After recovery and removal from the airframe, the airplane's engine was examined at T and B Aircraft, Anchorage, Alaska. A mechanic noted that the mechanical fuel pump shaft was frozen and the drive shaft coupling was fractured.

The engine had accrued a total time of 4,094.34 hours of operation. It had accrued 2,594.34 hours since a major overhaul on April 6, 1973. The engine manufacturer's recommended time between overhaul (TBO) is 1,500 hours. An annual inspection was performed on June 28, 1994, 74 hours prior to the accident. The fuel pump was last overhauled on June 30, 1988. The fuel pump's total time in service is unknown. There is no recommended TBO criteria for the fuel pump.

The engine driven fuel pump was submitted to the National Transportation Safety Board's, Materials Laboratory Division for examination. The examination revealed rotational smearing and scoring on the internal face of the pump thrust plate. Scoring was noted on the internal surface of the pump housing, adjacent to the mating surface end of the 2 internal pump vanes. The vanes rest in 2 slots at the end of the rotating shaft and slide laterally within the slot. One vane was frozen within its shaft slot. A small particle of metal was found wedged between the edge of the immobile pump vane and its adjacent shaft slot surface. Additional flakes of metal were smeared over the top surface of the immobile vane, adjacent to the mating surface of the thrust plate. The examination of the shaft coupling revealed that the pressure side of each drive spline tooth was indented and plastically deformed.

Pilot Information

Certificate:	Flight Instructor; Commercial	**Age:**	34, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	Glider	**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:**	04/17/1995
Occupational Pilot:		**Last Flight Review or Equivalent:**	
Flight Time:	1900 hours (Total, all aircraft), 1730 hours (Pilot In Command, all aircraft), 50 hours (Last 90 days, all aircraft), 15 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	CESSNA	**Registration:**	N8312Z
Model/Series:	205 205	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Normal	**Serial Number:**	2050312
Landing Gear Type:	Tricycle	**Seats:**	6
Date/Type of Last Inspection:	06/28/1994, 100 Hour	**Certified Max Gross Wt.:**	3000 lbs
Time Since Last Inspection:	74 Hours	**Engines:**	1 Reciprocating
Airframe Total Time:	4220 Hours	**Engine Manufacturer:**	CONTINENTAL
ELT:	Installed, activated, aided in locating accident	**Engine Model/Series:**	IO-470-S
Registered Owner:	WILLIAM H. MERRILL JR.	**Rated Power:**	260 hp
Operator:	WILLIAM H. MERRILL JR.	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	**Condition of Light:**	Dusk
Observation Facility, Elevation:	, 0 ft msl	**Distance from Accident Site:**	0 Nautical Miles
Observation Time:	0000	**Direction from Accident Site:**	0°
Lowest Cloud Condition:	Unknown / 0 ft agl	**Visibility**	90 Miles
Lowest Ceiling:	Overcast / 5000 ft agl	**Visibility (RVR):**	0 ft
Wind Speed/Gusts:	8 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	60°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29 inches Hg	**Temperature/Dew Point:**	16°C
Precipitation and Obscuration:			
Departure Point:	(MRI)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	VFR
Departure Time:	2100 ADT	**Type of Airspace:**	Class C

Wreckage and Impact Information

Crew Injuries:	1 None	**Aircraft Damage:**	Destroyed
Passenger Injuries:	3 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	4 None	**Latitude, Longitude:**	

Administrative Information

Investigator In Charge (IIC):	SCOTT R ERICKSON	**Report Date:**	11/08/1995
Additional Participating Persons:	DAVE CAMPBELL; ANCHORAGE, AK		
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.ntsb.gov/pubdms/.		