Aviation Investigation Final Report

Location:	ANCHORAGE, Alaska	**Accident Number:**	ANC00LA102
Date & Time:	August 16, 2000, 17:52 Local	**Registration:**	N88283
Aircraft:	Piper J-3	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 Minor
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The airplane's engine lost power shortly after takeoff. The pilot said that just before the loss of power, he had closed the fuel valve to the center fuel tank, and opened the fuel valve to the right fuel tank. The airplane is not equipped with a starter motor, and the pilot was unable to restart the engine prior to colliding with a parked car. Postaccident inspection discovered no preaccident mechanical anomalies with the airplane. The airplane was not equipped with the required quick drain valve in the center fuel tank. The quick drain valve was required by a supplemental type certificate associated with the installation of wing-mounted fuel tanks, and an FAA airworthiness directive, for the purpose of ensuring that all water or other contaminants could be removed from the center fuel tank. Prior to the flight, the pilot related he had drained a small amount of water from the center tank by using the fuel line gascolator. The NTSB IIC, the FAA inspector, and the pilot, determined that two cups of undrainable fluid remain in the center fuel tank when the gascolator is used to drain the center tank. The center tank cap was not fitted with a seal, or 'O'-ring. During the two weeks prior to the accident, the airplane was exposed to heavy rain.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The loss of engine power due to water contamination of the fuel system, the airplane's lack of the required center fuel tank quick drain, and the pilot's inadequate preflight.

Findings

Occurrence #1: LOSS OF ENGINE POWER(TOTAL) - NONMECHANICAL
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings
1. (C) FUEL SYSTEM,DRAIN - IMPROPER
2. (C) FUEL SYSTEM,RESERVOIR/HEADER TANK - CONTAMINATION,WATER
3. (C) AIRCRAFT PREFLIGHT - INADEQUATE - PILOT IN COMMAND

Occurrence #2: ON GROUND/WATER COLLISION WITH OBJECT
Phase of Operation: EMERGENCY LANDING AFTER TAKEOFF

Findings
4. OBJECT - VEHICLE

Factual Information

On August 16, 2000, about 1752 Alaska daylight time, a Piper J-3 airplane, N88283, sustained substantial damage when it collided with a parked vehicle during an emergency landing after takeoff from the Merrill Field Airport, Anchorage, Alaska. The solo private pilot received minor injuries. The flight was conducted under 14 CFR Part 91, as a local personal flight. Visual meteorological conditions prevailed at the time of the accident, and no flight plan was filed.

The pilot told an NTSB investigator at the scene that about one minute after takeoff, about 500 feet agl, the engine lost total power. He reversed direction to return to the airport, declared an emergency, and attempted to land on a street. After landing, the airplane collided with a parked vehicle at an automobile dealership. The airplane sustained substantial damage to both wings and the fuselage.

Postaccident inspection of the carburetor, ignition system, induction and exhaust systems, and fuel supply systems, discovered no preaccident mechanical anomalies.

The pilot stated in his NTSB Pilot/Operator Report, and during several interviews, that prior to his departure, he put 6 gallons of fuel in the right tank, and visually checked 8 gallons in the nose, and 5 gallons in the left wing. During his departure from Merrill Field, while about 500 feet agl, he said he closed the fuel valve to the forward fuel tank, and opened the fuel valve to the right wing tank. He stated that 45 seconds after this action, the engine lost power, and the propeller stopped rotating. The pilot indicated that he then opened the left fuel tank valve, and closed the right valve, but the engine did not restart. The airplane is not equipped with a starter motor. The pilot stated that after the accident, at the request of rescue personnel, he ensured the three fuel valves were shutoff to stop any fuel leakage.

Within 30 minutes of the accident, an NTSB investigator and an FAA inspector, arrived on scene. The FAA inspector told the NTSB IIC, and wrote in a statement, that he looked into the front tank, and it appeared empty of fuel. A photograph taken at the scene shows the float-operated fuel quantity indicator in the zero fuel position. The carburetor bowl remained intact, and had fuel in it at the scene.

Postaccident inspection revealed the center fuel tank did not have a quick drain valve. FAA Airworthiness Directive (AD) 85-06-04, effective May 4, 1985, requires the installation of a quick drain valve in the center (fuselage) fuel tank. The purpose of the AD is, "To prevent engine stoppage or malfunction due to the accumulation of water or other contaminants in the fuel system...). The airplane was modified with the addition of two, wing-mounted fuel tanks, authorized by Supplemental Type Certificate (STC) SA562GL, on September 14, 1994. An addendum to the installation instructions, dated November 21, 1997, requires the installation of a drain valve in the center fuel tank, when the center fuel tank is used in conjunction with the

wing tanks. This addendum was not accomplished.

The pilot stated that the center tank fuel was normally drained during preflight by using the gascolator fuel line drain. He said he had drained a small amount of water from the center tank prior to the accident flight, and had stopped draining when all evidence of water had ceased. The fuel supply outlet from the center tank is located in the center-bottom of the tank, below the level of the gascolator. The airplane attitude on the ground is about 7 degrees nose up. The NTSB IIC, the FAA inspector, and the owner, determined that when the gascolator is used to drain the center tank, there are two cups of undrainable fluid remaining in the center tank in the normal taxi attitude.

In the two-week period prior to the accident, the airplane had been parked outside and exposed to rainfall. The center fuel tank cap was not equipped with a seal, or an "O"-ring.

During postaccident testing, it was observed by the NTSB IIC, the FAA inspector, and the owner, that all three-fuel valves worked properly, and when in the closed position, none of the valves leaked when pressurized air was applied to the fuel lines.

Pilot Information

Certificate:	Private	**Age:**	47,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Front
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	No
Medical Certification:	Class 3 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	April 14, 2000
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	1442 hours (Total, all aircraft), 1107 hours (Total, this make and model), 1442 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N88283
Model/Series:	J-3 J-3	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	15901
Landing Gear Type:	Tailwheel	**Seats:**	2
Date/Type of Last Inspection:	July 5, 2000 Annual	**Certified Max Gross Wt.:**	1220 lbs
Time Since Last Inspection:	1 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	4793 Hrs	**Engine Manufacturer:**	Continental
ELT:	Installed	**Engine Model/Series:**	C-90-12F
Registered Owner:	ROLF BILET	**Rated Power:**	90 Horsepower
Operator:		**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:	MRI ,136 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	17:53 Local	**Direction from Accident Site:**	240°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	7 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	280°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	21°C / 7°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	(MRI)	**Type of Flight Plan Filed:**	None
Destination:		**Type of Clearance:**	None
Departure Time:	17:45 Local	**Type of Airspace:**	Class D;FAR 93

Airport Information

Airport:	MERRILL FIELD MRI	**Runway Surface Type:**	
Airport Elevation:	137 ft msl	**Runway Surface Condition:**	
Runway Used:	6	**IFR Approach:**	None
Runway Length/Width:	4000 ft / 100 ft	**VFR Approach/Landing:**	Forced landing

Wreckage and Impact Information

Crew Injuries:	1 Minor	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Minor	**Latitude, Longitude:**	61.220432,-149.849121(est)

Administrative Information

Investigator In Charge (IIC):	Thomas, Matthew
Additional Participating Persons:	JACK DEVLIN(FAA FSDO); ANCHORAGE , AK
Original Publish Date:	July 2, 2001
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=50981