



National Transportation Safety Board Aviation Accident Final Report

Location:	Anchorage, AK	Accident Number:	ANC02FA042
Date & Time:	06/01/2002, 1110 AKD	Registration:	N6969H
Aircraft:	Piper PA-18-150	Aircraft Damage:	Substantial
Defining Event:		Injuries:	1 None
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

The pilot of the accident airplane was flying at 600 feet msl crossing a body of water when he noticed a loss of engine rpm. He pulled on the carburetor heat, and switched from the right wing fuel tank to the left wing fuel tank. The engine rpm increased momentarily, and then the engine quit. The pilot turned toward land, and made an emergency landing. During landing the airplane encountered a dirt berm, the left main landing gear collapsed, and the airplane nosed over. The meteorological conditions were, in part: temperature, 9 degrees Celsius; dew point, 7 degrees Celsius, with visible moisture. Under these conditions, a carburetor icing probability chart reflects serious icing at any power setting. During the postaccident examination the fuel selector valve was found with the left wing fuel tank selected. There was no usable fuel found in the left wing tank, and no evidence of any fuel leak was discovered.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's selection of a fuel tank that did not contain a usable quantity of fuel. Factors associated with the accident are the dirt berm, meteorological conditions conducive to carburetor icing, and carburetor ice.

Findings

Occurrence #1: IN FLIGHT ENCOUNTER WITH WEATHER

Phase of Operation: CRUISE - NORMAL

Findings

1. (F) WEATHER CONDITION - CARBURETOR ICING CONDITIONS

Occurrence #2: LOSS OF ENGINE POWER(PARTIAL) - NONMECHANICAL

Phase of Operation: CRUISE - NORMAL

Findings

2. (F) FUEL SYSTEM, CARBURETOR - ICE

3. (C) FUEL TANK SELECTOR POSITION - IMPROPER - PILOT IN COMMAND

Occurrence #3: FORCED LANDING

Phase of Operation: DESCENT - EMERGENCY

Occurrence #4: IN FLIGHT COLLISION WITH TERRAIN/WATER

Phase of Operation: EMERGENCY LANDING

Findings

4. (F) TERRAIN CONDITION - DIRT BANK/RISING EMBANKMENT

Occurrence #5: NOSE OVER

Phase of Operation: EMERGENCY LANDING

Factual Information

HISTORY OF FLIGHT

On June 1, 2002, about 1110 Alaska daylight time, a Piper PA-18-150, N6969H, sustained substantial damage during an emergency landing about one and one-half miles west of Merrill Field, Anchorage, Alaska. The airplane was being operated as a visual flight rules (VFR) personal flight under Title 14, CFR Part 91, when the accident occurred. The solo private pilot was not injured. The accident airplane departed Merrill Field about 1100 en route to Wasilla, Alaska, by way of Goose Bay, Alaska. Visual meteorological conditions prevailed at the time of the accident, and no flight plan was filed.

During an interview with the National Transportation Safety Board (NTSB) investigator-in-charge (IIC) at the accident site on June 1, the pilot said the airplane was at 600 feet msl crossing the channel west of Anchorage when he noticed a decline in engine rpm. He said the airplane was configured for cruise flight and he was mid-channel. He said he applied carburetor heat, and switched from the right wing fuel tank to the left wing fuel tank. He said after he applied carburetor heat, and switched fuel tanks the rpm increased momentarily, and then the engine quit. He said he turned east and headed for the shoreline, and selected an open dirt area adjacent to a fuel storage depot for landing.

The pilot said during the preflight inspection the right fuel tank appeared to be about three-quarters full. He said he could not tell how much fuel was in the left fuel tank, but he believed there was at least a couple of gallons, and that he had "sumped" both fuel tank drains during the inspection. He said there was a magneto problem during the engine run-up, but leaning the mixture cleared up the problem. Due to airport traffic, the ground run for the engine was about 15 minutes from startup to takeoff. The climb-out and transition to cruise flight were normal.

PERSONNEL INFORMATION

The pilot held a private pilot certificate with a FAA rating for single-engine land airplane. The pilot was issued an FAA second class medical certificate on September 22, 2001. According to information received from the pilot, he had accumulated 92.5 total flying hours, 4.8 of which were in the make and model of the accident airplane.

AIRPLANE INFORMATION

The airplane was a Piper PA-18-150 with oversize tires, and a Lycoming O-320-A2B, carbureted engine. The airframe had accumulated 5651 hours total time since new, and the engine had accumulated 1555 hours total since overhaul. The fuel system was unmodified, and had three positions available on the fuel selector; right or left wing main fuel tanks, or "off."

METEOROLOGICAL INFORMATION

The closest official weather observation station is Merrill Field, which is located one and one half miles east of the accident site. At 1053, an Aviation Routine Weather Report (METAR) was reporting in part: wind, 310 degrees (true) at 4 knots; visibility, 10 statute miles in light rain; cloud and sky condition, few at 1,200 feet, 2,200 feet broken, 4,700 feet overcast; temperature, 48 degrees F; dew point, 45 degrees F; altimeter, 29.92 inHg. The pilot reported flying through light rain at the time the airplane lost engine power.

WRECKAGE INFORMATION

During the emergency landing at a fuel storage depot near the port of Anchorage, the airplane impacted near the top of a 4 feet high dirt berm. During the impact the left main landing gear collapsed. The airplane rolled/skidded across the top of the berm, and as it descended the opposite side of the berm, it nosed over. The airplane sustained damage to both wings, the left wing lift-struts, vertical stabilizer, and main landing gear.

The airplane was inspected on-site by the NTSB IIC. The airplane was on its back, and emergency workers had placed a rubber fuel containment dam under the right wing fuel filler cap, to capture fuel leaking from the right wing tank. The left wing fuel tank was not leaking. The left wing fuel sight gauge showed no signs of fuel in the left wing tank. The left wing was removed from the airplane during the recovery operation, and no evidence of fuel was found in the left wing tank. During the removal of the right wing, about nine gallons of fuel were removed. The left main wing tank was selected on the fuel selector valve.

The engine appeared to be intact, and the propeller showed no chord-wise scratching, or leading edge gouging. One blade of the two-bladed propeller was bent rearward.

ADDITIONAL INFORMATION

The airplane was taken to a maintenance hangar at Merrill Field for further examination and testing. The propeller was replaced, and a fuel supply was connected to the engine. The engine was started and run through various power settings without faltering.

The pilot described the weather conditions as 1,000 to 1,500 feet overcast; temperature, mid to high 40's; visibility, greater than 3 miles in light rain showers. He also stated his first indication of a problem was the loss of engine rpm. To counter the loss of engine rpm the pilot said he applied carburetor heat, and switched from the right wing fuel tank to the left wing fuel tank.

According to the FAA's, Aviation Weather for Pilots and Flight Operations Personnel, Advisory Circular 00-6A, the amount of water vapor in the air is measured by either relative humidity, or the dew point temperature. Relative humidity expresses the actual water vapor present at a given temperature. One hundred percent relative humidity means the air is saturated. For air that is less than one hundred percent saturated, the dew point is the temperature to which the air must cool to become one hundred percent saturated.

According to the FAA's, INDUCTION ICING - PILOT PRECAUTIONS AND PROCEDURES, Advisory Circular 60-9, 7. INDICATIONS OF INDUCTION ICING, reads, in part: "The possibility of induction icing should always be considered when the temperature is between 32 and 70 degrees F with a relative humidity greater than 50 percent, or when the temperature is below freezing with visible moisture in the air. The effect of induction icing is a gradual, progressive decline in power delivered by the engine. With a fixed pitch propeller this is evidenced by a loss in engine rpm and"

According to a carburetor icing probability chart, the atmospheric conditions at the time of the accident reflected the probability of serious icing at any power setting (see attached chart).

The Piper PA-18 Operators Manual does not have a specific emergency procedures section. It does have Section VII, which explains the fuel system. Section VII reads, in part: "In the two

tank system, it is recommended that the left tank be considered the main tank and that fuel be used from the right tank first on long flights, saving the left tank until last." Under 'OPERATING INSTRUCTIONS', specifically 'WARM UP AND GROUND CHECK' the manual reads, in part: "Carburetor heat should be checked during warm up to make sure the heat control operation is satisfactory and to clear out the engine if any ice has formed. It should also be checked in flight occasionally when outside air temperatures are between 20 and 70 degrees F to see if icing is occurring in the carburetor."

Pilot Information

Certificate:	Private	Age:	18, Male
Airplane Rating(s):	Single-engine Land	Seat Occupied:	Front
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	None	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 2 Valid Medical--w/ waivers/lim.	Last FAA Medical Exam:	09/22/2001
Occupational Pilot:		Last Flight Review or Equivalent:	
Flight Time:	93 hours (Total, all aircraft), 5 hours (Total, this make and model), 37 hours (Pilot In Command, all aircraft), 38 hours (Last 90 days, all aircraft), 16 hours (Last 30 days, all aircraft), 3 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	Registration:	N6969H
Model/Series:	PA-18-150	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	18-7409061
Landing Gear Type:	Tailwheel	Seats:	2
Date/Type of Last Inspection:	11/02/2001, Annual	Certified Max Gross Wt.:	1750 lbs
Time Since Last Inspection:	92 Hours	Engines:	1 Reciprocating
Airframe Total Time:	5559 Hours as of last inspection	Engine Manufacturer:	Lycoming
ELT:	Installed, not activated	Engine Model/Series:	O-320-A2B
Registered Owner:	Ward Simonis	Rated Power:	150 hp
Operator:	Benjamin M Wilkinson	Operating Certificate(s) Held:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	MRI, 137 ft msl	Distance from Accident Site:	2 Nautical Miles
Observation Time:	1053 ADT	Direction from Accident Site:	60°
Lowest Cloud Condition:	Few / 1200 ft agl	Visibility	10 Miles
Lowest Ceiling:	Broken / 2200 ft agl	Visibility (RVR):	
Wind Speed/Gusts:	4 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	310°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.92 inches Hg	Temperature/Dew Point:	9°C / 7°C
Precipitation and Obscuration:			
Departure Point:	Anchorage, AK (PAMR)	Type of Flight Plan Filed:	None
Destination:	Wasilla, AK (Z40)	Type of Clearance:	VFR
Departure Time:	1100 ADT	Type of Airspace:	Class E

Wreckage and Impact Information

Crew Injuries:	1 None	Aircraft Damage:	Substantial
Passenger Injuries:	N/A	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 None	Latitude, Longitude:	61.214444, -149.846111

Administrative Information

Investigator In Charge (IIC): Lawrence R Lewis **Report Date:** 01/16/2003

Additional Participating Persons: Fred E Handy; Federal Aviation Administration; 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.nts.gov/pubdms/>.

The National Transportation Safety Board (NTSB), established in 1967, is an independent federal agency mandated by Congress through the Independent Safety Board Act of 1974 to investigate transportation accidents, determine the probable causes of the accidents, issue safety recommendations, study transportation safety issues, and evaluate the safety effectiveness of government agencies involved in transportation. The NTSB makes public its actions and decisions through accident reports, safety studies, special investigation reports, safety recommendations, and statistical reviews.

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](#).