Aviation Investigation Final Report

Location:	CIRCLE, Alaska	**Accident Number:**	ANC97FA026
Date & Time:	February 7, 1997, 10:00 Local	**Registration:**	N121BB
Aircraft:	Piper PA-18	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot departed a remote airstrip with 10, five gallon gasoline cans of fuel. The pilot intended to transport the fuel to a remote trapping cabin. The airplane also contained full fuel (36 gallons) in the airplane fuel tanks, 50 pounds of traps and snares, and 35 pounds of survival equipment. The total (gross) weight of the airplane was estimated to be 1865 lbs; its maximum certificated gross weight was 1750 lbs. None of the cargo items were secured in the rear of the airplane. The airplane did not reach the intended destination, and was reported overdue. It was located 9 days later, about 300 yards southeast of the departure runway, in a steep, nose down attitude. When the airplane was located, all of the cargo items were found piled down and around the pilot.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: inadequate preflight by the pilot; and his subsequent loss of aircraft control, during the initial climb after takeoff. Factors relating to the accident were: the pilot failed to ensure that the cargo was properly secured, and he allowed the aircraft's weight and balance limitations to be exceeded.

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: TAKEOFF - INITIAL CLIMB

Findings
1. (C) AIRCRAFT PREFLIGHT - INADEQUATE - PILOT IN COMMAND
2. (F) AIRCRAFT WEIGHT AND BALANCE - EXCEEDED - PILOT IN COMMAND
3. (F) CARGO/BAGGAGE - NOT SECURED
4. (F) LOADING OF CARGO - IMPROPER - PILOT IN COMMAND
5. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Factual Information

HISTORY OF FLIGHT

On February 7, 1997, about 1000 Alaska standard time, a ski equipped Piper PA-18, N121BB, collided with terrain at Circle, Alaska. The airplane was being operated as a visual flight rules (VFR) cross-country personal flight when the accident occurred. The airplane, registered to and operated by the pilot, was destroyed. The certificated private pilot, the sole occupant, received fatal injuries. Visual meteorological conditions prevailed.

On February 14, 1997, at 1957, friends and family of the pilot reported to the Federal Aviation Administration (FAA) the pilot was overdue on a flight from Circle City Airport that originated on February 7, 1997. The purpose of the flight was to deliver gasoline cans of fuel to a trapping cabin located in the Crescent River/Charley River area of the Yukon-Charley Rivers National Preserve. Fellow trappers and pilots indicated they became concerned about the flight when the accident airplane did not return to Circle by February 10, 1997. They had been searching for 2 days prior to reporting the flight overdue. The fuel cans were not located at the intended destination, and no evidence that an airplane had landed was observed.

On February 16, 1997, the airplane wreckage was observed by an airplane operating from the Circle City Airport. The wreckage was located about 300 yards southeast of the departure end of runway 15 at Circle, in an area of spruce trees. The fuel cans, each containing gasoline, intended for the trapping cabin, were located in the airplane wreckage.

The accident occurred during the hours of daylight at latitude 65 degrees, 49.265 minutes north, and longitude 144 degrees, 04.392 minutes west.

CREW INFORMATION

The pilot held a private pilot certificate with an airplane single-engine land rating. The most recent third-class medical certificate was issued to the pilot on April 5, 1995, and contained no limitations.

The pilot's aeronautical experience listed on page 3 of this report, was obtained from a review of the airmen FAA records on file in the Airman and Medical Records Center located in Oklahoma City. On the pilot's application for medical certificate, dated April 5, 1995, the pilot indicated his total aeronautical experience consisted of 2,100 hours, of which 50 were accrued in the previous 6 months.

The pilot recorded recency of experience and biennial flight review information in his pilot logbook, but he did not record any total time. The pilot's spouse estimated his total

aeronautical experience consisted of about 3,000 hours.

AIRCRAFT INFORMATION

The airplane had accumulated a total time in service of 5,397 hours. Examination of the maintenance records revealed that the most recent annual inspection was accomplished on July 15, 1996, 128.87 hours before the accident.

The engine had accrued a total time in service of 2,305.9 hours. The maintenance records note that a major overhaul was accomplished on August 1, 1993, 610.8 hours of operation before the accident. An annual inspection was accomplished on the date specified above for the airframe.

The airplane was last fueled at the Yukon Trading Post, Circle, Alaska, on February 6, 1997, with the addition of 12 gallons of 100LL octane aviation fuel, which filled the airplane's fuel tanks.

A weight and balance data sheet for the accident airplane, dated May 16, 1991, listed the airplane's empty weight as 1,074.1 pounds, with a center of gravity of 12.29 inches, and a useful load of 675.9 pounds. The maximum gross weight of the airplane is 1,750 pounds.

METEOROLOGICAL INFORMATION

Circle, Alaska, does not have a weather reporting station. The closest official weather observation station is Fort Yukon, Alaska, which is located 53 nautical miles north-northwest of the accident site. On February 7, 1997, at 0955, an aviation routine weather report (METAR) was reporting, in part: Wind, calm; visibility, 10 statute miles; sky condition and ceiling, 300 feet overcast; temperature, -12 degrees C; dew point temperature, -13 degrees C; altimeter, 29.76 inHg; remarks, automated observation without a precipitation discriminator.

The area weather forecast for the northern half of Alaska, issued from Fairbanks, Alaska, on February 6, 1997, at 2346, was reporting, in part: Upper Yukon Valley, forecast valid until February 7, 1997, at 1200. AIRMET for mountain obscuration. Fort Yukon and northwest, mountains obscured in clouds and precipitation, improving. ...Southeast of Fort Yukon; 4,000 feet scattered, 8,000 feet broken, 12,000 feet broken, tops of clouds, 15,000 feet; temporary, separate layers to 25,000 feet. Temporary, 4,000 feet broken in light snow. Outlook, valid from February 7, 1997, at 1200, to February 8, 1997, at 0600.

Residents of Circle reported areas of patchy low fog along nearby hills, but the area around the airport was clear.

COMMUNICATIONS

There is no record of communications from the accident airplane. No emergency transmitter

locator (ELT) signal was received from the airplane.

AERODROME AND GROUND FACILITIES

The Circle City Airport is equipped with a single gravel surfaced runway on a 150/330 degree magnetic orientation. Runway 15 is 3,000 feet long by 60 feet wide, at an elevation of 610 feet msl.

WRECKAGE AND IMPACT INFORMATION

The National Transportation Safety Board investigator-in-charge (IIC) examined the airplane wreckage at the accident site on February 18, 1997. The airplane collided with snow covered terrain in an area of small spruce trees about 300 yards southeast of the departure end of runway 15. The airplane was observed in a nose down attitude. The longitudinal axis of the cockpit, and the chordline of the wings, were oriented in a slightly inverted attitude, about 120 degrees from the horizon.

The fuselage, from the nose of the airplane to just aft of the rear window, was canted to the left, about 20 degrees from vertical. The tail of the airplane, aft of the rear window, was bent to the left about 25 degrees from its normal longitudinal axis. As a result, the entire fuselage was bent to the left about 45 degrees, with the outboard end of the left stabilizer resting above the trailing edge of the left aileron. The longitudinal axis of the airplane, from the tail to the nose, was oriented on a 180 degree magnetic heading.

All of the airplane's major components were found at the main wreckage area. The leading edge of the left wing exhibited an aft, flat, spanwise crushing signature, from the inboard attach point to about the outboard end of the left flap assembly. From the lift strut attach point to about the mid-chordline of the wing tip, the leading edge of the left wing was crushed aft at a 45 degree angle. The leading edge of the right wing, just inboard from the wing tip bow, displayed a semi-circular indentation and aft crushing over a small mound of snow and small spruce trees. Both wing lift struts remained attached to their respective wing and fuselage attach points.

The fuselage area, to the left of the front seat, was bent outward in a slight curve, and crushed into the snow. The instrument panel exhibited slight "U" shaped deformation toward the front of the airplane, and was also crushed into the snow. The front control stick was separated just above the forward edge of the front seat frame. The rear control stick was not installed.

The empennage was undamaged. The left landing gear ski assembly was pivoted upward at the tip, buried in the snow, and lying horizontal.

The flight control surfaces remained connected to their respective attach points. The flaps appeared retracted. The elevator trim tab jackscrew was found extended by 10 threads According to the airplane manufacturer, the extended trim tab jackscrew corresponded to a 1.5

degree elevator leading edge up, (a slight nose down) setting. The continuity of the flight control cables was established to the cabin/cockpit area.

The propeller assembly was broken from the engine crankshaft. Both propeller blades exhibited aft bending, chordwise scratching, "S" bending, and torsional twisting. One blade exhibited aft and inward curling, about 3 inches inboard from the tip. The second blade exhibited aft and trailing edge curling, about 12 inches inboard from the tip. The spinner was crushed aft and flat against the propeller.

The engine was canted to the right about 30 degrees at the fuselage firewall, and came to rest upside down. It sustained impact to the front and left front portion of the engine. The front portion of the engine case was fractured. Snow was compacted into the front cowling openings and packed around the front engine cylinders. The carburetor bowl and air cleaner assembly was broken away from the engine. Snow was packed in and around the air filter assembly. The upper portion of the carburetor, containing the butterfly, remained attached to the engine. The butterfly was observed in the full open position. The left side cylinder exhaust tubes exhibited bending and folding of the metal. The sharp edges of the folds were not cracked or broken along the radius of the folds.

Removal of the bottom spark plugs revealed minor massive electrode ovaling. The plugs exhibited a dry, gray appearance. The number 2 bottom plug exhibited minor lead accumulations near the base of the insulator.

MEDICAL AND PATHOLOGICAL INFORMATION

A postmortem examination of the pilot was conducted under the authority of the Alaska State Medical Examiner, 5700 E. Tudor, Anchorage, Alaska, on February 21, 1997.

ADDITIONAL INFORMATION

An Alaska State Trooper was notified when the accident airplane was located at Circle. He traveled to the accident site on February 16, 1997, and reported observing the airplane in a near vertical position. One seat was installed for the pilot and the contents of the airplane were contained in the rear of the airplane, including an extended baggage area. No cargo tie-down straps or means of securing the cargo was noted by the trooper.

The contents of the airplane were found lying on the back of the pilot. The contents included: 9, five gallon plastic cans of gasoline, 1, metal five gallon can of gasoline, and about 50 pounds of traps and snares. In addition, the airplane contained an ax, rifle, two sleeping bags, an engine cover, a camp stove, hand tools, and a pack containing personal survival gear. The trooper estimated the additional items weighed about 35 pounds. Two of the plastic gasoline containers were ruptured. The trooper photographed the accident scene and returned on February 17, 1997, to remove the pilot from the airplane.

On February 18, 1997, when the NTSB IIC arrived at the accident scene, two ruptured plastic gasoline containers and an empty metal gasoline container were located. No other containers remained at the scene.

The airplane's weight and balance condition was calculated utilizing the following data: Empty weight, 1,074.1 pounds; engine oil, 15 pounds; pilot, 175 pounds; 36 gallons of aviation fuel in the wing tanks, 216 pounds; cargo items including 10, five gallon cans of gasoline, 300 pounds; traps, 50 pounds; survival equipment, 35 pounds. The total weight of the airplane was about 1,865.1 pounds. Calculation of the airplane's center of gravity, centering the cargo items in the back seat area, resulted in an estimated center of gravity at 18.24 inches.

WRECKAGE RELEASE

The Safety Board did not take custody of the wreckage. No parts or components were retained by the Safety Board.

Pilot Information

Certificate:	Private	**Age:**	41,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:**	Yes
Medical Certification:	Class 3 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	April 5, 1995
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	
Flight Time:	3000 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N121BB
Model/Series:	PA-18 PA-18	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	18-7908
Landing Gear Type:	Ski	**Seats:**	2
Date/Type of Last Inspection:	July 15, 1996 Annual	**Certified Max Gross Wt.:**	1750 lbs
Time Since Last Inspection:	129 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	5398 Hrs	**Engine Manufacturer:**	Lycoming
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	O-320-A2B
Registered Owner:	JAMES C. TOMSICH	**Rated Power:**	150 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:		**Distance from Accident Site:**	
Observation Time:		**Direction from Accident Site:**	
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	0°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:		**Temperature/Dew Point:**	-15°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:		**Type of Flight Plan Filed:**	None
Destination:	CRESENT CREEK , AK	**Type of Clearance:**	None
Departure Time:	10:00 Local	**Type of Airspace:**	Class G

Airport Information

Airport:	CIRCLE CITY CRC	**Runway Surface Type:**	Gravel
Airport Elevation:	610 ft msl	**Runway Surface Condition:**	Snow
Runway Used:	15	**IFR Approach:**	None
Runway Length/Width:	3000 ft / 60 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	65.790077,-144.19989(est)

Administrative Information

Investigator In Charge (IIC):	Erickson, Scott
Additional Participating Persons:	WILLIAM EDWARDS; FAIRBANKS , AK JEFFREY POSCHWATTA; KENT , WA KRIS WETHERELL; FEDERAL WAY , WA
Original Publish Date:	May 29, 1998
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=2930

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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.