Aviation Investigation Final Report

Location:	AFTON, Wyoming	**Accident Number:**	DEN00FA021
Date & Time:	November 28, 1999, 10:05 Local	**Registration:**	N1132A
Aircraft:	Piper PA-18-125	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	2 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The airplane was tied down on the ramp overnight. The pilot did not obtain a weather briefing or file a flight plan, and no airplane services were rendered. Witnesses said there was 'stand up' frost, 1/4 to 1/2 inch thick, on parked airplanes nearby. The temperature was near freezing, the wind was calm, and a heavy fog enveloped the airport when the airplane took off. It impacted terrain 400 yards west of the runway and burned. It was computed the airplane was 115 pounds overweight at takeoff.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: Failure of the pilot to remove frost from the wings prior to takeoff, causing an inadvertent stall/spin on initial climbout. Factors included exceeding the aircraft's certificated gross weight, and fog conditions.

Findings

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

Findings
1. (C) ICE/FROST REMOVAL FROM AIRCRAFT - NOT PERFORMED - PILOT IN COMMAND
2. (F) AIRCRAFT WEIGHT AND BALANCE - EXCEEDED - PILOT IN COMMAND
3. FLIGHT INTO ADVERSE WEATHER - INTENTIONAL - PILOT IN COMMAND
4. (F) WEATHER CONDITION - FOG

5. (C) STALL/SPIN - INADVERTENT - PILOT IN COMMAND

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

Findings
6. TERRAIN CONDITION - OPEN FIELD
7. TERRAIN CONDITION - FROZEN

Factual Information

HISTORY OF FLIGHT

On November 28, 1999, approximately 1005 mountain standard time, a Piper PA-18-125, N1132A, registered to and operated by the pilot, was destroyed when it impacted terrain adjacent to the Afton Municipal Airport, Afton, Wyoming. The commercial pilot and his passenger were fatally injured. Instrument meteorological conditions prevailed, and no flight plan had been filed for the personal cross-country flight being conducted under Title 14 CFR Part 91. The flight was originating at the time of the accident.

The pilot and his passenger were en route home to Nampa, Idaho, after spending the Thanksgiving holidays with the passenger's parents in Oshkosh, Nebraska. According to one local pilot who was doing touch-and-go landings at the airport, it was dark when N1132A landed. The pilot taxied the airplane to a service station next to the airport, located at 1850 S. Washington Street, and refueled. According to the Trailside Store clerk, the pilot paid $24.73 for 18.199 gallons of regular 85 octane unleaded automotive gasoline. The time stamped on the cash receipt was 2037.

The pilot tied down his airplane on the ramp and secured the use of the airport's courtesy car. He and his passenger then checked into the Mountain Inn Motel. The bill was paid using the passenger's credit card.

The next morning approximately 0900, two Aviat test pilots were preflighting an airplane for departure and noticed the pilot and his passenger trying to jump start their airplane's engine. They said that when they departed Afton on a test flight, there was a fog bank to the west of the airport but the runway was clear, and the pilot and his passenger were still trying to start their engine.

There is no record that the pilot obtained a weather briefing or filed a flight plan. At 1038 and again at 1045, a witnesses saw a fire in a field next to the airport. Upon closer examination, one witness discovered it was an airplane. The fire department was notified at 1048.

PERSONNEL INFORMATION

The pilot, age 29, was born on May 5, 1970. He held a commercial pilot certificate with rotorcraft-helicopter and instrument-helicopter ratings, and private pilot privileges with an airplane single-engine land rating. His second class airman medical certificate, dated August 20, 1999, contained no restrictions or limitations.

The pilot's logbook was never located. He was, however, a chief warrant officer (CWO-2) with

"B" Company, 1st Battalion, 183rd Aviation Regiment, Idaho Army National Guard, headquartered at the Boise Air Terminal. According to ANG flight records (DA Form 759-E, attached, see EXHIBITS), he had accrued 659.5 total hours in military helicopters as of May 31, 1999. He was currently flying the AH64 Apache attack helicopter. According to FAA records, when he applied for his most recent medical certification (August 20, 1999), he estimated his total civilian flight time at 1,200 hours, of which 200 hours were acquired within the preceding 6 months. According to the pilot's aircraft insurance application, dated May 1999, he listed his total time as 1,930 hours, of which 240 hours were in the Piper PA-18-125, and 560 hours were in conventional (tail wheel equipped) airplanes. He indicated his last biennial flight review had been accomplished on April 29, 1999.

AIRCRAFT INFORMATION

N1132A (s/n 18-726) was manufactured by the Piper Aircraft Corporation in 1951. It was equipped with a Lycoming O-290-D reciprocating engine (s/n 2245-21), rated at 125 horsepower, and a Sensenich 2-blade, all-metal, fixed pitched propeller (m/n 74DM6-0-52, s/n A40725). The maintenance records reflect the following history:

On April 30, 1997, the engine received a major overhaul. Total time-in-service on the airframe and engine was 1,527.0 hours, and the tachometer was reset to 000:00. At the same time, the airplane was reassembled and rigged after being completely recovered, and new lift struts (satisfying A.D. 93-10-06) were installed. The airplane was re-weighed and the following was recorded:

Empty weight x C.G. = Moment

1,063 pounds x 15.1 = 16.064 inch/pounds

Useful load = 437 pounds

On March 4, 1999, the propeller was stripped, re-pitched from 56 inches to 52 inches, alodined and painted. The last annual inspection was dated June 1, 1999, at a tachometer time of 226.1 hours and a total time-in-service of 1,753.1 hours.

The maintenance records indicated the airplane did have a supplemental type certificate (STC) for the use of use automotive gasoline.

METEOROLOGICAL INFORMATION

Afton Municipal Airport does not have a weather observer, nor is it equipped with any sort of automated weather observation and recording apparatus. The nearest automated weather observation system (AWOS-3) is at Jackson Hole Airport, Jackson, Wyoming, located 54 miles north of Afton (attached, see EXHIBITS).

Witnesses said thick fog enveloped the airport before and after the accident, and airplanes parked outside on the ramp were covered with heavy frost. N1132A had been tied down on the ramp overnight. Ground frost was reported by police and CFR (crash/fire/rescue) personnel when they arrived at the accident site. Visibility varied from 50 feet to 1/4-mile. The temperature was near freezing, and the wind was calm. One witness said that when he discovered the burning airplane, the visibility was between 1/4 and 1/2-mile with "moisture in the fog." He also stated that he had put an airplane that had remained outside overnight into a heated hanger to melt off the frost, and he estimated the "stand up frost" to be between 1/4 and 1/2 thick on the wings.

AERODROME INFORMATION

Afton Municipal Airport (AFO), elevation 6,201 feet msl, is located 1 mile south of the town of Afton. It has one runway, 16-34, 5,220 ft. x 75 ft., asphalt. It is the home of Aviat Aircraft, Inc., manufacturers of the Husky and Pitts line of airplanes.

WRECKAGE AND IMPACT INFORMATION

Based on wind conditions, witness reports, and wreckage examination, the airplane took off on runway 34 and shortly thereafter impacted a flat field approximately 400 yards west of the runway. A faint ground scar, 28 feet, 6 inches in length and aligned on a magnetic heading of 345 degrees, terminated at a crater. The crater was 3 feet long and 2 feet wide. The airplane was 17 feet beyond the crater. Magnetic alignments of the forward and aft cabin sections were 240 and 220 degrees, respectively. The flaps were retracted, and the elevator jackscrew indicated an approximately neutral setting. The passenger's watch had stopped at 1005.

All major structural components remained attached. Flight control continuity was established. The engine remained attached to the firewall mounts, and the propeller remained attached to the crankshaft. The crankshaft rotated freely by hand. The propeller spinner was crushed aft in torsion. Both propeller blades were bent aft somewhat, there was some gouging along the leading edges, and there were 90 degree chordwise scratches on the cambered surfaces.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy (A99-11) was performed on the pilot by Dr. Philip L. Dutt. Additionally, a toxicological screen was performed by FAA's Civil Aeromedical Institute (CAMI). According to CAMI's report (#9900296001), no carbon monoxide, hydrogen cyanide, ethanol (alcohol), or drugs were detected in blood samples.

TESTS AND RESEARCH

A weight and balance was computed for N1132A at the time of the takeoff and accident. Whereas the airplane was within c.g. (center of gravity) limits, it was computed to be 115 pounds over its certificated maximum gross weight (attached, see EXHIBITS).

ADDITIONAL INFORMATION

In addition to the Federal Aviation Administration, Textron-Lycoming was designated a party to this investigation. The New Piper Aircraft Corporation was invited, but was unable to attend.

The wreckage was released to the insurance company representative on December 5, 1999.

Pilot Information

Certificate:	Commercial; Private	**Age:**	29,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Front
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
Instrument Rating(s):	Helicopter	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	August 20, 1999
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	1200 hours (Total, all aircraft), 100 hours (Last 90 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N1132A
Model/Series:	PA-18-125 PA-18-125	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	18-726
Landing Gear Type:	Tailwheel	**Seats:**	2
Date/Type of Last Inspection:	June 1, 1999 Annual	**Certified Max Gross Wt.:**	1500 lbs
Time Since Last Inspection:	73 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	1826 Hrs	**Engine Manufacturer:**	Lycoming
ELT:		**Engine Model/Series:**	O-290-D
Registered Owner:	TROY A. BAUM	**Rated Power:**	125 Horsepower
Operator:		**Operating Certificate(s) Held:**	None
Operator Does Business As:		**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Not reported
Observation Facility, Elevation:		**Distance from Accident Site:**	
Observation Time:		**Direction from Accident Site:**	
Lowest Cloud Condition:	Unknown	**Visibility**	0.25 miles
Lowest Ceiling:	100 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	0°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:		**Temperature/Dew Point:**	1°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	(AFO)	**Type of Flight Plan Filed:**	None
Destination:	NAMPA (S67)	**Type of Clearance:**	None
Departure Time:	10:05 Local	**Type of Airspace:**	Class G

Airport Information

Airport:	AFTON MUNICIPAL AFO	**Runway Surface Type:**	Asphalt
Airport Elevation:	6201 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	34	**IFR Approach:**	
Runway Length/Width:	5220 ft / 75 ft	**VFR Approach/Landing:**	

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	1 Fatal	**Aircraft Fire:**	Unknown
Ground Injuries:	N/A	**Aircraft Explosion:**	Unknown
Total Injuries:	2 Fatal	**Latitude, Longitude:**	42.720764,-110.920967(est)

Administrative Information

Investigator In Charge (IIC):	Scott, Arnold
Additional Participating Persons:	OWEN R JONES; CASPER , WY
Original Publish Date:	November 2, 2000
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=47811