



National Transportation Safety Board Aviation Accident Factual Report

Location:	Cave Junction, OR	Accident Number:	SEA04FA031
Date & Time:	01/01/2004, 1835 PST	Registration:	N53505
Aircraft:	Piper PA-44-180	Aircraft Damage:	Substantial
Defining Event:		Injuries:	1 Fatal, 3 Serious
Flight Conducted Under:	Part 91: General Aviation - Personal		

HISTORY OF FLIGHT

On January 1, 2004, at 1832 Pacific standard time, a Piper PA-44-180, N53505, registered to a limited liability corporation, being operated by Auburn Flight Service, Inc., and being flown by two commercial pilots, accompanied by an airline transport rated passenger and a non-rated passenger, sustained substantial damage during an in-flight collision with trees/terrain while attempting an emergency landing at the Illinois Valley airport, Cave Junction, Oregon (3S4) following a partial loss of power in both engines while in cruise. The left seat pilot and both passengers suffered serious injuries and the right seat pilot was fatally injured. Instrument meteorological conditions existed at the accident site and an IFR flight plan had been filed and activated. The aircraft departed Oakland International airport, Oakland, California, at 1612 on the afternoon of the accident and was destined for North Bend, Oregon. The flight, which was personal, was operated under 14 CFR 91.

At 1539:48 the pilot who would occupy the right seat of the aircraft on the return flight from Oakland called Oakland Flight Service via telephone and filed a flight plan from Oakland to North Bend requesting a standard weather briefing for the route of flight. He was advised of the en route weather including "...widespread moderate to heavy rain across the routes, air mass is moist and cool, AIRMETS [Airman's Meteorological information] for icing above uh freezing level to eighteen thousand...."

At 1601:56 the right seat pilot obtained the IFR clearance to North Bend and at 1609:06 he declared the aircraft was ready for taxi. The aircraft was cleared to taxi to runway 27 right and at 1611:26 the flight was cleared for takeoff.

At 1613:09 the right seat pilot contacted Northern California TRACON [Terminal Radar Approach Control] and the aircraft was ultimately cleared direct Point Reyes and to 6,000 feet.

At 1619:05 the right seat pilot contacted Oakland ARTCC [Air Route Traffic Control Center] and the aircraft was cleared to an amended altitude of 8,000 feet and subsequently cleared direct Mendocino.

At 1635:01 the right seat pilot requested a climb to 10,000, which was approved, and shortly thereafter a request for direct North Bend along with a climb to 12,000 was made and approved.

Between 1701:25 and 1709:27 the right seat pilot communicated with Oakland Flight Watch providing a pilot report and requesting the weather for North Bend, which was provided.

At 1714:52 the right seat pilot requested and the aircraft was approved for a climb to 13,000 feet. He subsequently requested and received clearance for a descent back to 12,000.

At 1737:21 the right seat pilot contacted Seattle ARTCC and then requested a climb to 13,000 feet, which was approved. And, at 1754:19 he requested a descent back to 12,000, which was approved.

At 1812:31 the right seat pilot contacted Seattle Flight Watch reporting "...we're about uh forty five minutes away from landing at Newport, like to get current weather at Newport but then we're going to be uh trying to make our way to Seattle uh so kind of like to get uh uh standard briefing on maybe the best route to get us up there to avoid some of this weather...." The Flight Watch Specialist provided weather information and specifically address AIRMETS for "...occasional moderate rime or mixed icing in clouds...." During the course of this communication the right seat pilot indicated the aircraft was about 20 nautical miles due east of Crescent City, California, at 12,000 feet and the outside air temperature was -18 degrees Celsius.

At 1823:56 the right seat pilot advised, "...we need a descent ah right now and we need ah vectors for obstacle clearance..." and the aircraft was cleared to descend to 7,300 feet. Radar data showed the aircraft descending through 11,700 feet at this time.

At 1824:28 the right seat pilot declared an emergency and requested "...vectors to an airport immediately..." indicating that they had engine problems. The Illinois Valley airport was identified as being at the flight's four o'clock position and radar data showed the aircraft beginning a right turn toward the airport.

At 1826:36 the right seat pilot radioed "...I think that the problem we're having is ah induction ice, we've got way too much induction ice to the engines so we've got partial power ah um yeah we're descending at ah we're unable to maintain altitude..." and radar data showed the aircraft descending between 8,800 and 8,600 feet.

At 1827:54 the last radar target from the aircraft was received showing the aircraft descending through 7,000 feet (refer to Attachment RD-I and Chart I) and immediately thereafter Seattle ARTCC advised the aircraft they were attempting to get the (Illinois Valley) airport lights on.

The last radio transmission received from the flight was at 1829:29 indicating 4,800 feet altitude (refer to Attachments RT-1 through RT-11 and statements ATC-1).

The only known witness to the accident, a pilot who was a resident living at the Illinois Valley airport reported that he was inside his residence when he heard the aircraft and described it as a "low power setting." He went outdoors and observed the aircraft proceeding south. He indicated that he thought the aircraft was going to land long and that it banked and then disappeared over trees and he then heard an impact. He also reported that the runway lights were on (refer to Statements JCSO-1 and FSDO-1).

The left seat (flying) pilot reported that his first indication of a problem was a manifold pressure and airspeed bleed off. He applied (full ON) carburetor heat, checked the mixtures rich, turned the auxiliary fuel pumps on, tried cross-feeding the engines, and opened the cowl flaps. He indicated that during the descent, cycling of the throttles changed the amount of power and he never completely lost power in either of the engines (refer to Statements PS-1 and PI-1).

PERSONNEL INFORMATION

Left Seat Pilot:

The left seat pilot held a commercial pilot certificate with airplane single/multi-engine and instrument ratings. He also held a current flight instructor's certificate for airplane single/multi-engine and instrument training. His most recent medical examination was conducted on October 9, 2003, and he was issued a first class medical with no restrictions/waivers. According to records provided by the Federal Aviation Administration (FAA) and the Operator, he reported an approximate total 390 hours of flight experience of which 285 hours were as pilot-in-command. He also reported a total of 52 hours in the PA-44 of which 21 hours were as pilot-in-command.

Right Seat Pilot:

The right seat pilot held a commercial pilot certificate with airplane single/multi-engine and instrument ratings. His most recent medical examination was conducted on June 18, 2003, and he was issued a first class medical with the restrictions that he "must wear lenses for distant - possess glasses for near vision." According to records provided by the FAA and the Operator, he reported an approximate total 440 hours of flight experience of which 283 hours were as pilot-in-command. He also reported a total of 55 hours in the PA-44.

Passenger rated pilot:

The passenger rated pilot, who occupied the right rear seat, held an airline transport pilot certificate with instrument ratings and airplane multi-engine ratings. She also held commercial privileges in airplane single-engine land. Additionally, she held a current flight instructor's certificate for airplane single/multi-engine and instrument training as well as an

advanced ground instructor's certificate. Her most recent medical examination was conducted on October 10, 2003, and she was issued a first class medical with no restrictions/waivers. According to records provided by the FAA and the Operator, she reported an approximate total 2,681 hours of flight experience of which 2,581 hours were as pilot-in-command. Her flight experience in the PA-44 was not reported. She had served as a flight instructor to both the left and right seat pilots during their flight training.

AIRCRAFT INFORMATION

N53505, a piper PA-44-180, was equipped with two Lycoming carbureted O-360-A1H6 engines. The aircraft was not pressurized nor did it have supplemental oxygen on board. According to records from the fueling facility at Oakland airport, 32 gallons of fuel were added prior to the departure of the accident flight. The left seat pilot reported that this topped off the aircraft providing 110 gallons of fuel, or approximately 4.5 hours of flight.

Each engine was provided an air supply by means of an air intake line which feeds an induction air box equipped with a manual valve and controlled by a carburetor heat selector lever on the engine control pedestal. Placing the carburetor heat in the UP [OFF] position closes the valve and allows filtered air to flow to the carburetor throat. Placing the carburetor heat in the DOWN [ON] position opens the valve blocking filtered air and allows unfiltered bypass air to flow to the carburetor throat (refer to Attachment POH-1). The unfiltered air is passed through a heat exchanger at the number 4 cylinder exhaust manifold. The heat exchanger transfers energy to the unfiltered air raising its temperature prior to the air entering the carburetor throat.

The aircraft is not certified for flight in known icing conditions and, aside from carburetor heat and pitot heat, has no anti/de-ice systems (refer to Attachment POH-2). The Pilot Operating Handbook contains emergency procedures, which discuss carburetor icing stating in part "Carburetor heat should be full on when carburetor ice is encountered" (refer to Attachments POH-3 and 4). The aircraft was not equipped with the optional carburetor ice detection system.

The aircraft underwent a 100-hour inspection on December 17/18, 2003, and had a total of 1246.7 hours of flight time at that time. The aircraft Hobbs meter was observed to read 828.8 hours following the accident and the airframe log noted that to arrive at true aircraft total time 468.0 hours should be added to the current Hobbs reading.

METEOROLOGICAL AND ENVIRONMENTAL INFORMATION

Search and rescue personnel reported heavy snow falling upon their arrival at the accident site

the evening of the accident (refer to Statement JCSO-1).

The general meteorological conditions in the vicinity of the accident site included cloud bases forming about 2,750 feet above mean sea level (MSL) and extending up to 9,000 feet at a relative humidity level of 75%. Cloud layers continued above 9,000 feet with mixed rime and clear icing conditions existing from 3,000 feet MSL up to 9,000 feet MSL (refer to Attachment M-1). The temperature and dew point at 12,000 feet MSL for Medford, Oregon, at 1600 local was -20 and -25 degrees Celsius respectively. Medford is located 68 nautical miles east-northeast of Cave Junction. Diagram 1 is a carburetor icing probability chart.

Dark night environmental conditions were determined based on the latitude/longitude, date and time of the accident and the altitude of the aircraft at 1823:54 (refer to Attachment E-1).

COMMUNICATIONS

Refer to Attachments RT-1 through RT-11, which provide a record of the radio communications between N53505 and the associated FAA facilities from departure at Oakland until loss of radio contact near the accident site.

AERODROME INFORMATION

The Illinois Valley airport (3S4) was equipped with a bi-directional, asphalt runway measuring 5,200 feet in length by 75 feet in width and was 1,394 feet MSL. The magnetic bearing of the centerline was oriented 360/180 degrees magnetic (refer to Attachment AMR-I). The runway was equipped with low intensity runway lights (LIRL), which were activated by keying the local common traffic advisory frequency (CTAF), 122.8 megahertz. No instrument approach procedure was in place for the airport.

WRECKAGE AND IMPACT INFORMATION

The aircraft impacted several conifer trees located approximately 1,000 feet beyond and bearing 153 degrees magnetic from the threshold of runway 36 (refer to graphic image 1) in an area along the northern edge of a flooding stream known as "Rough and Ready Creek." The aircraft, exclusive of the right wing section outboard of the right engine nacelle, came to rest inverted along the west side of Highway 199 at a location approximately 1,200 feet from and bearing 147 degrees magnetic from the threshold of runway 36 (refer to graphic image 2). The latitude and longitude of the accident was determined by a global positioning system and was 42 degrees 05.647 minutes north and 123 degrees 40.925 minutes west respectively (refer to

graphic images 3 and 4). The elevation of the accident site was approximately 1,410 feet above mean sea level (refer to graphic image 5 and Chart II).

The right wing outboard section was located on the ground in the vicinity of, and slightly east of the impacted trees. The leading edge section displayed several major impact impressions (refer to graphic image 6). The larger of the two was closest to the point where the wing separated at the engine nacelle and the angle between the vertical axis of this impact impression and the aircraft's vertical axis was approximately 27 degrees (right wing up). The smaller impression located about two feet further outboard from the primary impression displayed an angle between its vertical axis and the aircraft's vertical axis of approximately 38 degrees (right wing down). Refer to graphic image 7.

The aircraft was re-examined at the facilities of Specialty Aircraft, Redmond, Oregon. Both main landing gear were found to be in the extended position and the gear selector in the cockpit was also in the down position. Both propellers had separated from their respective engine drive shafts. One blade of each propeller displayed aft tip bending and each propeller's opposing blade was relatively straight displaying several light leading edge impact impressions (refer to graphic images 8 and 9). The carburetor heat controls for both engines were observed in the full "ON" position (refer to graphic image 10). The manual carburetor heat valve for the left engine was found captured in the fully open (hot) position and the valve for the right engine was found in an intermediate position. Both engines were partially disassembled and examined and no mechanical malfunction was noted for either. There was no evidence of pre-impact flight or engine control disconnect.

MEDICAL AND PATHOLOGICAL INFORMATION

James N. Olson, M.D., Deputy State Medical Examiner conducted post-mortem examination of the right seat pilot, at the facilities of Hull and Hull Funeral Home, Grants Pass, Oregon, on January 6, 2004, (case number A-2-04).

The FAA's Toxicology Accident and Research Laboratory, Oklahoma City, Oklahoma conducted toxicological evaluation of samples from the right seat pilot. All findings were reported as negative (refer to attached TOX report).

ADDITIONAL INFORMATION

An FAA Inspector conducted on-site examination on January 2, 2004. The wreckage was then moved to the facilities of Specialty Aircraft, at Redmond, Oregon, where the investigative team conducted a second examination on February 18, 2004. The wreckage was verbally released to Mr. Brad Hernke, representative for USAIGE, which held the insurance on the aircraft.

Written wreckage release was accomplished on July 19, 2004, and was documented on NTSB form 6120.15 (attached).

Pilot Information

Certificate:	Flight Instructor; Commercial	Age:	23, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt, Shoulder harness
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 1 Valid Medical--no waivers/lim.	Last FAA Medical Exam:	10/09/2003
Occupational Pilot:		Last Flight Review or Equivalent:	09/27/2003
Flight Time:	390 hours (Total, all aircraft), 52 hours (Total, this make and model), 285 hours (Pilot In Command, all aircraft)		

Co-Pilot Information

Certificate:	Commercial	Age:	27, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Right
Other Aircraft Rating(s):	None	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	
Medical Certification:	Class 1 Valid Medical--w/ waivers/lim.	Last FAA Medical Exam:	06/18/2003
Occupational Pilot:		Last Flight Review or Equivalent:	10/01/2002
Flight Time:	440 hours (Total, all aircraft), 55 hours (Total, this make and model), 283 hours (Pilot In Command, all aircraft)		

Co-Pilot Information

Certificate:	Commercial	Age:	27, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Right
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 1 Valid Medical--w/ waivers/lim.	Last FAA Medical Exam:	06/18/2003
Occupational Pilot:		Last Flight Review or Equivalent:	10/01/2002
Flight Time:	440 hours (Total, all aircraft), 55 hours (Total, this make and model), 283 hours (Pilot In Command, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	Registration:	N53505
Model/Series:	PA-44-180	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	44-96126
Landing Gear Type:	Retractable - Tricycle	Seats:	4
Date/Type of Last Inspection:	12/18/2003, 100 Hour	Certified Max Gross Wt.:	3800 lbs
Time Since Last Inspection:	50.1 Hours	Engines:	2 Reciprocating
Airframe Total Time:	1296.8 Hours at time of accident	Engine Manufacturer:	Lycoming
ELT:	Installed, not activated	Engine Model/Series:	LO-360-A1H6
Registered Owner:	Piper Project II, LLC.	Rated Power:	180 hp
Operator:	Auburn Flight Service, Inc.	Operating Certificate(s) Held:	On-demand Air Taxi (135)
Operator Does Business As:		Operator Designator Code:	GICA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument Conditions	Condition of Light:	Night/Dark
Observation Facility, Elevation:	CEC, 57 ft msl	Distance from Accident Site:	31 Nautical Miles
Observation Time:	1856 PST	Direction from Accident Site:	213°
Lowest Cloud Condition:	Scattered / 2700 ft agl	Visibility	10 Miles
Lowest Ceiling:	Broken / 3400 ft agl	Visibility (RVR):	
Wind Speed/Gusts:	9 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	280°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.91 inches Hg	Temperature/Dew Point:	6°C / 3°C
Precipitation and Obscuration:			
Departure Point:	Oakland, CA (OAK)	Type of Flight Plan Filed:	IFR
Destination:	North Bend, OR (OTH)	Type of Clearance:	IFR
Departure Time:	1612 PST	Type of Airspace:	Class G

Airport Information

Airport:	Illinois Valley (3S4)	Runway Surface Type:	Asphalt
Airport Elevation:	1394 ft	Runway Surface Condition:	Unknown
Runway Used:	36	IFR Approach:	None
Runway Length/Width:	5200 ft / 75 ft	VFR Approach/Landing:	Forced Landing

Wreckage and Impact Information

Crew Injuries:	1 Fatal, 1 Serious	Aircraft Damage:	Substantial
Passenger Injuries:	2 Serious	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Fatal, 3 Serious	Latitude, Longitude:	42.094167, -123.682222

Administrative Information

Investigator In Charge (IIC):	Steven A McCreary
Additional Participating Persons:	Marcus Carr; FAA FSDO; Hillsboro, OR Charles Little; The New Piper Aircraft, Inc.; Chino Hills, CA Mark Platt; Textron Lycoming; Van Nuys, CA
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/ .