Aviation Investigation Final Report

Location:	Rexburg, Idaho	**Accident Number:**	SEA03FA042
Date & Time:	March 5, 2003, 16:50 Local	**Registration:**	N9257X
Aircraft:	Piper PA-34-220T	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	4 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

At the end of the second leg of a long cross country flight, the pilot cancelled his IFR flight plan about seven miles south of the destination airport. The first leg of the flight was approximately three hours, 40 minutes in length with the pilot reporting unexpected high winds along the route that were slowing his progress. The flight was diverted to an alternate destination for fueling. The second leg was approximately four hours and 50 minutes in length with the pilot reporting to air traffic control toward the end of the flight that the aircraft was picking up mild rime ice on the wings and windshield. The pilot reported to the controller the need to descend due to the ice and "fuel situation." A witness at the airport reported that the pilot radioed his intentions and position over the Unicom frequency that he was entering a left downwind for runway 17. Although the position of that downwind appeared normal, the aircraft stayed on the downwind leg long enough that when it turned from base leg to final approach, it was three to four miles from the end of the runway. The aircraft was then observed to proceed inbound on final approach on a vertical approach path that was significantly lower than what other aircraft normally used when landing on this runway. When the aircraft was just over a mile from the end of the runway, at an estimated altitude of 200 feet above ground level, it suddenly rolled steeply to the right and made a descending turn into the terrain. The pilot, who had been making normal position calls, both prior to and after entering the pattern, did not indicate that he was having any problem with the aircraft. At the time the winds were reported from 210 degrees at 24 knots, with gusts to 36 knots. Post accident inspection of the airframe and engines did not reveal evidence of a mechanical failure or malfunction.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The pilot's failure to maintain aircraft control while on final approach. High and gusting winds were a factor.

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: APPROACH - VFR PATTERN - FINAL APPROACH

Findings
1. (F) WEATHER CONDITION - GUSTS
2. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND
3. FATIGUE (CONDITIONS CONDUCIVE TO PILOT FATIGUE) - PILOT IN COMMAND
4. (F) WEATHER CONDITION - HIGH WIND

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

Findings
5. TERRAIN CONDITION - OPEN FIELD

Factual Information

HISTORY OF FLIGHT

On March 5, 2003, approximately 1650 mountain standard time (MST), a Piper PA-34-220T, N9257X, impacted the terrain while on a visual flight rules final approach to Madison County Airport, Rexburg, Idaho. The commercial pilot and his three passengers received fatal injuries, and the aircraft, which was owned and operated by the pilot, was destroyed. The 14 CFR Part 91 personal pleasure flight, which departed Lamar, Colorado, about 1222, was operating in visual meteorological conditions at the time of the accident. The flight had been on an Instrument Flight Rules (IFR) flight plan, but the pilot had canceled the flight plan at 1634.

On the morning of the flight, prior to his departure from Shreveport, Louisiana, the pilot contacted the FAA's Automated Flight Service Station and received a weather briefing for both legs of the trip he planned to take that day. The first portion of the briefing addressed his planned route from Shreveport to Colorado Springs, Colorado, and the second portion addressed the route from Colorado Springs to Rexburg. The pilot departed Shreveport at 0854 central standard time for the first leg of the flight, but ultimately decided to divert into Lamar, Colorado, which was 100 nautical miles closer to his point of departure. He advised the Denver Center controller that the reason for the diversion was that higher than expected winds were slowing his progress and he "didn't want to take a chance on fuel." FAA records show that the pilot was cleared for an approach at Lamar at 1120 MST, and that he canceled his IFR flight plan at 1120. Although his exact landing time was not determined, he made a telephone call to the Denver Automated Flight Service Station at 1149, ten minutes after canceling his flight plan.

Upon making contact with Flight Service, the pilot confirmed that his IFR flight plan had been canceled, and then refiled the flight plan for the second leg of the trip, with a departure point of Lamar instead of Colorado Springs. During that filing, he stated that he would be departing Lamar about 1200 MST, and that the expected time en route would be three hours and thirty minutes. He also advised the briefer that he had five hours of fuel on board, based upon a true airspeed of 175 knots. Prior to departure, the aircraft fuel system was " topped off" by adding 103.8 gallons of low lead aviation fuel.

Several witnesses observed the aircraft prior to the accident. One witness located on the airport, and monitoring the Unicom frequency, reported that the pilot radioed his position with the intention of entering a left downwind for runway 17. Although the position of that downwind appeared normal, the aircraft stayed on the downwind leg long enough that when it turned from base leg to final approach, it was three to four miles from the end of the runway. It was then seen to proceed inbound on final approach on a vertical approach path that was significantly lower than what other aircraft normally used when landing on this runway. When

the aircraft was just over a mile from the end of the runway, at an estimated altitude of 200 feet above the ground, it suddenly rolled steeply to the right and made a descending turn into the terrain. The pilot, who had been making normal position calls, both prior to and after entering the pattern, did not indicate that he was having any problem with the aircraft.

Other witnesses in the vicinity of the airport reported seeing the aircraft approach the runway "low" and with a "severe crab angle." Each of the witnesses commented on the high wind condition at the time and indicated that the plane made a right turn and descended to the ground.

PERSONNEL INFORMATION

At the time of the accident, the pilot held a private pilot certificate for single-engine land and sea aircraft, and a commercial certificate for multi-engine land aircraft and instrument airplane operations. A review of the pilot's flight logbook indicated a total flight time of approximately 800 hours. The first entry noted in the logbook for the accident aircraft was in November 2001. Since this time, the pilot had accumulated approximately 177 hours in this aircraft. A total of approximately 450 hours had been accumulated in multi-engine aircraft.

On September 27, 2002, the pilot's flight logbook indicated entries for successfully completing the required training of 14 CFR Part 61.31(g), and it was determined that he was proficient in the operation and systems of a pressurized aircraft. The pilot also on this day, satisfactorily completed training requirements outlined in Advisory Circular 61.91H, paragraph 7a, for the Pilot Proficiency Award Program, and satisfactorily completed the Instrument Proficiency Check requirements of 14 CFR Part 61.57(d).

AIRCRAFT INFORMATION

Aircraft records indicated that the pilot purchased this aircraft in May 2000. A review of maintenance records indicated that the aircraft had been signed off for an annual inspection on April 1, 2002, at a total airframe time of 1039.1 hours. Approximately 163 hours had been accumulated on the aircraft since the last annual inspection. The engine logbooks indicated that both engines also had a total time since new of 1039.1 hours at the time of the annual inspection.

METEOROLOGICAL INFORMATION

At 1653, the surface weather observation at the Rexburg Airport was reporting a wind from 210 degrees at 24 knots, with gusts to 36 knots. The temperature was 37 degrees F and the dew point was 21 degrees F. Visibility was 10 miles with few clouds at 4,200 feet and scattered clouds at 8,000 feet. The altimeter setting was 29.56" Hg.

COMMUNICATIONS

Air traffic control communications and radar data provided by the Federal Aviation Administration Salt Lake City, Utah, Air Route Traffic Control Center, indicated that the flight had been cleared to proceed direct to Lorrn Intersection at 1613 and was cleared to descend. At 1616, the pilot reported to air traffic that the aircraft was picking up mild rime ice on the wings and windshield. At 1627 the controller instructed the pilot to cross Lorrn Intersection at or above 8,000 feet and that they were cleared for the GPS runway 35 approach to Rexburg. The pilot responded to the controller inquiring if there was a possibility of getting down to 9,000 feet due to the mixed ice and "fuel situation." Further communications with the pilot and controller indicated that the pilot misunderstood the controller about the altitude clearance. The controller then instructed the pilot to report Lorrn Intersection inbound on the approach.

At 1629, radar data indicated that the flight was descending out of 10,300 feet and tracking in a westerly direction toward Lorrn Intersection. In the vicinity of Lorrn Intersection, at 1634 and 8,300 feet, the pilot reported to air traffic that he wanted to cancel the IFR flight plan and proceed direct to Rexburg. The controller verified the IFR cancellation and instructed the pilot to squawk VFR. There were no further communications with air traffic control after this time.

Lorrn Intersection is located on the 16 degree radial from the Idaho Falls, Idaho, VOR, 14.7 Distance Measuring Equipment (DME) miles, on the 132 degree radial from the Dubois VOR, 25.7 DME miles, and 7 nautical miles southwest of Rexburg Airport.

WRECKAGE AND IMPACT INFORMATION

The wreckage was located in an open level field used for crops. The accident site coordinates were obtained via a hand held GPS unit. The coordinates were N 43 degrees 50.938 latitude, W 111 degrees 48.416 longitude. The elevation at the accident site via the GPS was 4,930 feet. The airport that was located approximately 140 degrees magnetic and one mile from the accident site is 4,858 feet. The ground was hard packed/frozen. Above-ground irrigation sprinklers ran in rows perpendicular to the wreckage distribution path. The aircraft collided with three of the sprinkler runs that were spaced about 25 feet apart.

The wreckage distribution path was measured from the initial ground disturbance to the resting place of the main wreckage. The magnetic heading was 360 degrees. Within the first ground disturbance a fragment of the right wing green lens cover was located along with paint chips. The ground disturbance had the appearance of being "sliced." The remainder of the ground disturbance continued throughout the rest of the path as mainly "sliding over the surface" signatures which was reported as hard and frozen at the time of the accident.

Approximately 26 feet from the initial point, another shallow ground impact crater was noted. Within this approximate three foot in length disturbance a propeller hub was embedded in the ground. P/N P5095227-0 McCauley propeller was noted.

Approximately 51 feet from the initial point, all six-propeller blades were located separated from their respective hubs and in close proximity to each other. This area was also the

beginning of the collision with the sprinkler pipes. From this point to the main wreckage, the path was littered with articles of clothing, cowling fragments and miscellaneous items.

The main wreckage was located 229 feet from the initial impact point. The fuselage was positioned inverted and pointing in a westerly direction.

The outboard 10 feet of the right wing had separated, outboard of the right engine, and was located within ten feet of the main wreckage. The entire length of the aileron remained attached at all three hinges. The leading edge tip of the wing displayed a 45-degree aft crush. The wing tip cap was located about mid point in the wreckage distribution path. The inboard section of the right wing, inboard of the engine was severely damaged with only electrical wiring and control cables holding the engine and nacelle in place. The flap remained in place but was bent. The right engine remained partially attached to the wing structure and was also positioned inverted.

The empennage remained in place with the structure broken about the aft seats/baggage compartment. The county Sheriff reported that rescue personnel did some cutting of the structure in this area to extricate the victims. The tail surfaces all remained attached to include elevator, rudder, and trim tabs. There was minor damage noted to the surfaces except for the top of the vertical/rudder which was bent over at the tip where it was resting on the ground.

The left wing remained in place with the structure (spar) broken about two feet outboard of the wing root. Both aileron and flap remained attached at their respective hinges. The wing tip displayed a minor 45 degree aft crush.

Both main landing gear were in the extended position and remained in place. The nose gear position could not be determined as the entire nose section was crushed aft. Due to the debris found along the distribution path, it appeared that some of the baggage was in the nose section. Rescue personnel moved other baggage out of the fuselage area. The total weight of the baggage was estimated to weigh about 100 pounds.

The county Sheriff reported that the first responders to the accident site reported a smell of fuel around the wreckage.

Control continuity was noted from the left wing to the cockpit area. The outboard right wing section control cables were attached at the outboard aileron attach point. The cables at the separation point were frayed at the ends. The control cables to the empennage remained attached at the aft end and were intact forward to the cockpit area. The cockpit was severely compromised with aft crushing.

The propeller blades were numbered at the accident site as found (see wreckage diagram). Serial numbers on each blade were noted and verified via the maintenance logbooks to determine which blades were installed on which engines.

The left engine propeller blades were numbered as 1, 2 and 6. Propeller blade number 1, s/n: OK497, displayed chordwise scratches on the blade back with leading edge gouges the length of the blade. Minor "S" bending was noted. Propeller blade number 2, s/n: OK490, displayed chordwise scratches on the blade back along the outboard 12 inches. Severe leading and trailing edge gouges were noted as well as severe "S" bending. Propeller blade number 6, s/n: OK496, displayed chordwise scratches the entire length of the blade back. Severe gouging at the blade tip and along the length, 20 inches inboard from the tip, as well as severe aft and "S" bending were noted.

The right engine propeller blades were numbered 3, 4, and 5. Propeller blade number 3, s/n: OI020, displayed chordwise scratches the entire length of the blade back. Minor leading edge gouges were noted along the entire length of the blade with more serious gouges at the tip. The blade was bent aft and displayed "S" bending. Propeller blade number 4, s/n: OI012, displayed minor chordwise scratches which were more severe the outer seven inches of the tip. About 17 inches from the tip some moderate scratching was noted with more chordwise scratches on the blade face. Minor "S" bending starting about 10 inches from the tip was noted. Propeller blade number 5, s/n: OI013, displayed minor scratches diagonal to the chord the entire length of the blade. Minor leading edge and some trailing edge gouges were noted with minor "S" bending.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on the pilot by Western Pathology Associates, Madison County. The pilot's cause of death was reported as blunt force trauma to the whole body.

Toxicological samples were submitted to the Federal Aviation Administration Civil Aeromedical Institute for analysis. The results of the analysis were negative for carbon monoxide, cyanide and ethanol in blood and urine. Samples tested positive for 20.74 (ug/ml, ug/g) Acetaminophen detected in urine, and 129.9 (ug/ml, ug/g) Salicylate detected in urine.

ADDITIONAL INFORMATION

On April 4, 2003, investigators from the National Transportation Safety Board, Teledyne Continental Motors and The New Piper Aircraft examined the engines located at Air Transport, Phoenix, Arizona.

Initial inspection of the left engine, s/n: 320271, noted that the crankshaft flange was sheared off, the crankshaft would not rotate, the fuel pump had been broken off, the oil cooler was deformed around the number 2 cylinder, and the alternator was destroyed by impact forces.

Both left and right side magnetos were removed from their mountings. Both magnetos impulse couplings were rotated by hand and a spark was produced from each tower. The ignition harness leads had been damaged. The top spark plugs were removed and noted that

the electrodes displayed normal operating signatures.

The fuel pump had been broken off from its mounting by impact forces and was destroyed. No fuel was noted in the unit.

The fuel manifold valve was removed and visually inspected. The screen was clean and the valve body was dry of fuel. The diaphragm was found wet with fuel and pliable.

All injector lines were intact and free of obstructions. All six fuel nozzles were free of obstructions.

The oil sump was removed and oil was present throughout the interior. The oil pickup screen was clean and free of obstructions. The oil filter was found broken off from its mount and crushed. The interior crankcase was visually examined after removing the oil sump. The interior and all interior parts were wet with oil.

All six connecting rods were intact. All internal accessory gears were intact and wet with oil. All twelve valve lifters were intact and wet with oil. All lifter heads were smooth and free of pitting.

All six cylinders to include the valves, springs, rocker arms and pushrods were intact.

The turbocharger was intact and the compressor impeller rotated easily by hand. The turbine turned when the impeller was turned.

Initial inspection of the right engine, s/n: 319277, noted that a large hole was present in the forward portion of the oil sump and was displaced inward. The fuel pump was broken from its mount and destroyed. Cylinder number 5 displayed severe impact damage and both rockers were broken off the cylinder head. The valves and springs remained intact. Both pushrods, housings and lifters had separated from the engine. The oil cooler was deformed around the number 2 cylinder. The alternator was destroyed and the right magneto broken from its mounting.

Both left and right side magnetos impulse couplings were rotated by hand and both produced a spark from each tower. Impact forces damaged most of the ignition harness leads. All six top spark plugs were removed and inspected. Plugs #1, 5 and 6 exhibited lean operating signatures while plugs #2, 3, and 4 exhibited normal operating signatures.

All six fuel injector lines were intact and no obstructions were noted. All six fuel nozzles were free of obstructions.

The oil pickup tube screen was free of obstruction. The oil filter assembly was broken from the engine by impact damage. The interior of the crankcase was examined after the removal of the oil sump. The interior was wet with oil.

The crankshaft was intact but could not be rotated. All six connecting rods were intact, and all accessory gears were intact and wet with oil. All valve lifters for cylinders 1-4 and 6 were intact. The lifters for cylinder #5 was not present.

All cylinders except for #5 were intact to include all valves, springs, rocker arms, retainers and pushrods. The head of cylinder #5 displayed severe impact damage.

The turbocharger unit was intact and the compressor rotated easily by hand. The turbine turned when the impeller was turned.

The wreckage was released to the owners representative shortly after April 4, 2003.

Pilot Information

Certificate:	Commercial	**Age:**	45,Male
Airplane Rating(s):	Single-engine land; Single-engine sea; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	March 8, 2001
Occupational Pilot:	UNK	**Last Flight Review or Equivalent:**	September 27, 2002
Flight Time:	800 hours (Total, all aircraft), 711 hours (Pilot In Command, all aircraft), 62 hours (Last 90 days, all aircraft), 41 hours (Last 30 days, all aircraft), 8 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N9257X
Model/Series:	PA-34-220T	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	3447002
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	April 1, 2002 Annual	**Certified Max Gross Wt.:**	4750 lbs
Time Since Last Inspection:	163 Hrs	**Engines:**	2 Reciprocating
Airframe Total Time:	1200 Hrs at time of accident	**Engine Manufacturer:**	Continental
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	TSIO-360-KB
Registered Owner:	Thomas Cecola	**Rated Power:**	220
Operator:		**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	KRXE,4858 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	16:53 Local	**Direction from Accident Site:**	160°
Lowest Cloud Condition:	Few / 4200 ft AGL	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	24 knots / 36 knots	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	210°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.55 inches Hg	**Temperature/Dew Point:**	3°C / -6°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Lamar, CO (LAA)	**Type of Flight Plan Filed:**	IFR
Destination:	Rexburg, ID (RXE)	**Type of Clearance:**	None
Departure Time:	12:22 Local	**Type of Airspace:**	Class G

Airport Information

Airport:	Madison County RXE	**Runway Surface Type:**	Asphalt
Airport Elevation:	4858 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	17	**IFR Approach:**	None
Runway Length/Width:	4200 ft / 75 ft	**VFR Approach/Landing:**	Traffic pattern

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	3 Fatal	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	4 Fatal	**Latitude, Longitude:**	43.848888,-111.806945

Administrative Information

Investigator In Charge (IIC):	Anderson, Orrin
Additional Participating Persons:	Lewis C Olson; FAA-FSDO; Salt Lake City, UT Charles Little; The New Piper Aircraft; Chino Hills, CA Mike Grimes; Teledyne Continental Motors; Lancaster, CA
Original Publish Date:	June 2, 2004
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=56582