Aviation Investigation Final Report

Location:	Spanish Fork, Utah	**Accident Number:**	SEA07FA124
Date & Time:	May 7, 2007, 11:46 Local	**Registration:**	N7343P
Aircraft:	Cessna P210N	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The private pilot was on an instrument flight rules cross-country flight in visual meteorological conditions. According to witnesses near the accident site, the airplane was at a low altitude and trailing smoke. They described the airplane flying in a downwind and base type pattern to an open area where the airplane crashed. The witnesses reported the airplane impacted terrain while in a steep left-hand turn, and was fully engulfed by fire after impact. Shortly before crashing, the pilot reported that he had engine problems, and the airplane was on fire. Examination of the wreckage revealed a black, oil-like substance along the leading edge of the right stabilizer. In addition, heavy dark soot and oil deposits were on the bottom of the engine, starting below the number six cylinder in the area of the waste gate controller, and extending to the rear of the engine near the accessory case. The turbo charger waste gate is actuated by oil pressure supplied by an inlet oil supply hose and an oil return hose. Examination of the two Aeroquip metal-braided nonfire shielded hoses revealed that both were covered in a dark soot and an oil like substance. In addition, both oil lines appeared thermally damaged. The waste gate actuator inlet line was pressure tested, and a leak was noted between the hose collar and the B-nut on the actuator side of the hose. The oil return line was pressure tested, and multiple leaks were noted along a 14-inch section of the hose. The steel braided outer cover of the hose was removed, and the inside rubber hose was found deteriorated and oil soaked. A review of the maintenance log book records disclosed no specific entry related to the installation of nonfire shielded Aeroequip hoses. A representative from the engine manufacturer stated the steel braided Aeroequip hoses found on the accident airplane were not supplied by the engine manufacturer. Given the condition of the turbo charger oil lines and fittings, it is probable that a high pressure oil leak sprayed oil onto the hot engine and started an in-flight fire.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:
An engine oil line leak and subsequent engine compartment fire while in cruise flight.

Findings

Occurrence #1: FIRE
Phase of Operation: CRUISE

Findings
1. (C) LUBRICATING SYSTEM,OIL LINE - LEAK
2. (C) ENGINE COMPARTMENT - FIRE

Occurrence #2: FORCED LANDING
Phase of Operation: DESCENT - EMERGENCY

Occurrence #3: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - EMERGENCY

Findings
3. TERRAIN CONDITION - OPEN FIELD

Factual Information

HISTORY OF FLIGHT

On May 7, 2007, about 1146 mountain daylight time (MDT), N7343P a Cessna P210N, was substantially damaged when it collided with terrain during an emergency approach and landing in Spanish Fork Canyon, approximately 7 nautical miles southeast of Spanish Fork, Utah. The airplane was owned by Webster Associates, LLC, of Seattle, Washington, and operated by the pilot as an instrument flight rules (IFR) cross-country flight under the provisions of Title 14 Code of Federal Regulations Part 91. The private pilot, who was sole occupant of the airplane, was killed in the accident. Visual meteorological conditions prevailed and an IFR flight plan was in effect for the flight that originated from Price, Utah (PUC), at 1132 MDT, with a planned destination of Twin Falls, Idaho (TWF).

At 1140:14 the pilot contacted Salt Lake City Air Route Traffic Control Center (ARTCC), and advised the specialist (controller) that the airplane had a rough running engine and later reported that there was a fire. Approximately 5 minutes later the pilot stated that he had to land.

Multiple witnesses reported seeing the airplane flying northwest bound through the canyon at a low altitude and trailing smoke. Witnesses described the airplane flying in a pattern to a left downwind and base to the pasture. The witnesses reported that the airplane impacted terrain while in a steep left-hand turn in the canyon near the northwest end of an open pasture.

Witnesses reported that the airplane was fully engulfed by fire shortly after impacting terrain.

PERSONNEL INFORMATION

The pilot, age 56, held a private pilot certificate for single engine land and an instrument rating. The pilot's most recent Federal Aviation Administration (FAA) third-class airman medical certificate was issued on January 8, 2008. The certificate stipulated that the pilot must "have available glasses for near vision."

The pilot's most recent FAA Application for Airman Medical Certificate, listed 930 hours total flight time and 88 hours total flight time in the 6 months preceding the medical application.

AIRCRAFT INFORMATION

The single engine pressurized Cessna P210N, serial number P21000006, was manufactured in 1978, and was certified as a normal category airplane. The six-place airplane was equipped with a Continental TSIO-520 engine rated at 310 horsepower.

Review of maintenance records for the airplane revealed that the most recent annual inspection for the engine, airframe and propeller was completed on April 17, 2007. The tachometer time at inspection was 2,123.3 hours, approximately 2,732 hours total time; the engine's total time since overhaul at the annual inspection was 1,324.1 hours.

Review of the logbook records disclosed no open maintenance discrepancies.

COMMUNICATIONS

At 1130, shortly after a visual flight rules (VFR) departure from Price, Utah, the pilot was issued an in-flight IFR clearance to Twin Falls, Idaho. At 1132, the airplane was radar identified, by Salt Lake Center, 12 miles northwest of the Price VOR at 12,700 feet and climbing.

At 1140:14, the pilot radioed center stating, "… I've got a uh got a problem seven three four three papa I have an engine problem." Approximately 2 minutes later the pilot stated he was navigating toward Provo, Utah. The Provo Municipal airport is located approximately 15 miles north-northwest of the accident location.

At 1142:58 the pilot stated, "…I'm losing my engine here."

At 1143:37 the pilot stated, "I've got fire" followed by (at 1145:55) "I've got to land it." This was the pilot's last radio transmission.

WRECKAGE AND IMPACT INFORMATION

The wreckage was located near the perimeter of an open pasture in the confines of Spanish Fork Canyon, that was at an elevation of about 4,884 feet mean sea level (MSL).

The wreckage debris field encompassed an area approximately 200 feet in length (from northwest to southeast). The first identified point of contact was a ground scar on the northeast end of the debris field. Numerous small pieces of airframe structure and system components were scattered from the initial impact point to the main wreckage. A majority of the wreckage was located at the southeast end of the debris field.

The main wreckage consisted of the remains of the engine assembly, fuselage, pieces of the wing assembly (left and right), and empennage. Extensive fire, impact damage and fragmentation were noted to the entire airframe assembly. The cockpit and associated equipment and instrumentation were destroyed by fire and impact. The empennage was located adjacent to the fuselage. The vertical stabilizer and rudder were intact. Extensive damage was noted to the left side horizontal stabilizer and elevator. The right side stabilizer and elevator were intact and remained attached to the empennage assembly. Black oil-like substance was noted to the leading edge of the right stabilizer. The landing gear and flaps were in the up position. The speed brakes were in the stowed position.

The engine assembly separated from the airplane and was located inverted at the end of the airplanes energy path, approximately 40 feet from the main burn area. The cylinders, crankcase and overhead components were intact and no evidence of an uncontained engine failure was noted. The spark plugs were removed and the center electrodes showed normal operating signatures when compared to the Champion aviation check a plug chart. The cylinders were borescoped and no foreign objects, debris, fluids, or mechanical damage was noted. During the rotation of the crankshaft, each of the six cylinders exhibited thumb compression. The ignition harness and both magnetos sustained impact damage, but a blue spark was established on all leads during the manual rotation of the magneto drive shafts. Heavy dark soot and oil deposits were visually observed on the bottom of the engine, starting inboard of the number six cylinder and extending aft to the accessory section. Oil deposits were also observed on the turbo charger waste gate actuator oil inlet hose. Additional examination of the waste gate oil inlet hose at the b-nut revealed that 4.5 threads were engaged and the b-nut was finger loose. The sooting and oil deposits on the bottom of the engine were prominent on the port side of the crankcase. The deposits were inboard and aft of the waste gate assembly.

All major aircraft components and flight controls were identified at the crash site. Examination of the components revealed no evidence of a pre impact flight control anomaly.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy on the pilot was performed under the direction of the State of Utah Department of Health on May 8, 2007. According to the autopsy report, the cause of death was "Multiple blunt force injuries." The autopsy report indicated that a thin layer of carbon was noted on the surface of the larynx, inferior to the vocal chords.

Forensic toxicology was performed on specimens from the pilot by the FAA Bioaeronautical Sciences Research Laboratory, Oklahoma City, Oklahoma. The toxicology reports stated no ethanol, carbon monoxide, cyanide or listed drugs (to include drugs of abuse) were detected.

ADDITIONAL INFORMATION

The turbo charger waste gate is actuated by oil pressure supplied by an inlet oil supply hose and an oil return hose. Examination of the two Aeroquip metal-braided non fire shielded hoses revealed that both were covered in a dark soot and oil like substance. In addition both oil hoses visually appeared thermally damaged. The waste gate actuator inlet hose was pressure tested and a leak was noted between the hose collar and the b-nut on the actuator side of the hose. The oil return hose was pressure tested and multiple leaks were noted along a 14 inch section of the hose. The steel braided outer cover of the hose was removed and the inside rubber hose was found to be deteriorated and oil soaked.

A review of the maintenance log book records disclosed no specific entry related to the

installation of non fire shielded Aeroequip hoses. A representative from the engine manufacturer stated the steel braided Aeroequip hoses found on the accident airplane were not supplied by the engine manufacturer.

Pilot Information

Certificate:	Private	**Age:**	56,Male
Airplane Rating(s):	Single-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 3 With waivers/limitations	**Last FAA Medical Exam:**	January 1, 2007
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	930 hours (Total, all aircraft), 88 hours (Last 90 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N7343P
Model/Series:	P210N	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	P21000006
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	April 1, 2007 Annual	**Certified Max Gross Wt.:**	4000 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	2732 Hrs as of last inspection	**Engine Manufacturer:**	Continental
ELT:	Installed, not activated	**Engine Model/Series:**	TSIO-520
Registered Owner:	Webster Associates LLC	**Rated Power:**	310 Horsepower
Operator:	Craig L. Webster	**Operating Certificate(s) Held:**	None

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:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:		**Temperature/Dew Point:**	
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	PRICE, UT (PUC)	**Type of Flight Plan Filed:**	IFR
Destination:	TWIN FALLS, ID (TWF)	**Type of Clearance:**	IFR
Departure Time:	11:32 Local	**Type of Airspace:**	

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	Both in-flight and on-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	On-ground
Total Injuries:	1 Fatal	**Latitude, Longitude:**	40.045833,-111.546112

Administrative Information

Investigator In Charge (IIC):	Hogenson, Dennis
Additional Participating Persons:	Walter Alexander; Federal Aviation Administration; Salt Lake City , UT Rick Stednitz; Federal Aviation Administration; Salt Lake City , UT Emile Lohman; Cessna Aircraft Company; Wichita, KS Jason Lukasik; Continental Motors; Mobile, AL
Original Publish Date:	May 28, 2008
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=65715