Aviation Investigation Final Report

Location:	San Diego, California	**Accident Number:**	WPR09FA192
Date & Time:	April 11, 2009, 10:54 Local	**Registration:**	N7690P
Aircraft:	Piper PA-24-250	**Aircraft Damage:**	Destroyed
Defining Event:	Loss of control in flight	**Injuries:**	2 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

During the pilot's preflight weather briefing for the cross-country flight, he was informed that while a portion of his anticipated hour-long flight could likely be flown under visual flight rules, instrument meteorological conditions, including multiple cloud layers, could be expected approaching his destination. The destination area was covered by a marine cloud layer, with cloud tops of 5,500 feet. En route, the pilot cruised at 7,000 feet. Initially, all air traffic control (ATC) communications with the pilot were routine. An airport located about 6 miles from the accident site reported a broken sky condition at 2,500 and 3,100 feet, and an overcast sky condition at 4,800 feet. As the pilot entered this area, located about 29 miles north of his destination, he informed the terminal radar approach controller that he was descending from 6,200 to 4,000 feet msl. A radar controller acknowledged the pilot's statement. Two and one-quarter minutes later the radar controller instructed the pilot to descend to 2,600 feet, and "keep your speed up." About 5 seconds later, the pilot responded "two thous." The remainder of the pilot's transmission was either interrupted or not recorded, and there were no further communications with the pilot. A review of the recorded radar data and the wreckage distribution evidence indicated that the airplane broke apart after entering instrument meteorological conditions. The structural failure occurred while the airplane was descending at 6,000 feet per minute and in a clockwise turn. The subsequent examination of the airplane revealed that both wings failed in an upward (positive G) direction, consistent with a pilot-induced structural overload. Thereafter, a portion of the right wing impacted the stabilator's right side, which caused it to separate from the airplane. No evidence of any preexisting structural weakness was found during the examination of the heavily fire-damaged main wreckage.

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 control during an en route cruise descent through multiple cloud layers, resulting in an in-flight breakup.

Findings

Aircraft	(general) - Not attained/maintained
Personnel issues	Spatial disorientation - Pilot
Environmental issues	Clouds - Contributed to outcome
Aircraft	Spar (on wing) - Capability exceeded

Factual Information

History of Flight

Enroute-descent	Loss of control in flight (Defining event)
Uncontrolled descent	Aircraft structural failure
Uncontrolled descent	Collision with terr/obj (non-CFIT)

HISTORY OF FLIGHT

On April 11, 2009, about 1054 Pacific daylight time, a Piper PA-24-250, N7690P, experienced an in-flight breakup during an uncontrolled descent in instrument meteorological condition, in San Diego, California. The airplane was destroyed during the breakup sequence and post impact ground fire. The private pilot owned and operated the airplane, and he and his passenger were killed. The personal flight was performed under an instrument flight rules (IFR) flight plan and under the provisions of 14 Code of Federal Regulations Part 91. The flight to the Brown Field Municipal Airport (SDM) in San Diego originated from the Whiteman Airport, Los Angeles, California, about 1004.

The flight commenced in visual meteorological conditions (VMC). According to the Federal Aviation Administration (FAA), the pilot did not report experiencing any difficulties or abnormal conditions during the flight. While en route, the pilot cruised at 7,000 feet mean sea level (msl). The pilot transitioned from VMC to instrument meteorological conditions (IMC) approaching San Diego. IMC existed in the accident site area.

At 1050:34, when the southbound pilot was approximately 29 miles north of SDM, he informed FAA Southern California Terminal Radar Approach Control (SOCAL) that he was descending from 6,200 to 4,000 feet msl. The radar controller acknowledged the pilot's statement at 1050:45. Two and one-quarter minutes later, about 1053:04, the radar controller instructed the pilot to "descend and maintain two thousand six hundred keep your speed up."

Five seconds later, at 1053:09, the pilot responded "two thous." The remainder of the pilot's transmission was either interrupted or not recorded by SOCAL. There were no further communications with the pilot. The FAA subsequently reported to the National Transportation Safety Board investigator that all previous communications with the accident pilot had been routine.

According to the airplane's Mode C altitude reporting transponder, FAA recorded radar indicates that about 2 seconds before the pilot's last transmission, at 1053:07, the airplane's altitude was 4,200 feet. At 1053:11, the airplane was at 3,800 feet, and at 1053:16, the airplane was at 3,300 feet. The airplane's average descent rate during this 9-second interval was about 6,000 feet per minute, and the southbound airplane's course was changing in a clockwise

direction. By 1053:16, the airplane was on a westerly course, and there were no further recorded radar hits.

Two ground-based witnesses reported hearing the accident. The first witness stated that he heard the sound of an airplane diving. The airplane's engine was at a high rpm, and its sound became louder without any variation in power. The sound lasted 5 or 6 seconds. At the time, there was about a 3,000-foot broken ceiling, with unrestricted visibility below the clouds. There was no precipitation.

The second witness, who was located about 1/2-mile from the impact site, reported he heard a high pitched sound, like that of an incoming missile. The sound was very loud. Its intensity increased until it terminated with a boom. Seconds thereafter, the witness observed a fireball on a nearby hill. Pieces of irregular shaped wreckage were noted "floating" down near the site of the fireball. At the time the weather was overcast, and it had been misting.

PERSONNEL INFORMATION

The pilot, age 51, held a private pilot certificate with airplane single engine and instrument ratings. The pilot's last aviation medical certificate was issued in the third class, in July 2008. The certificate bore the restriction that the pilot have available glasses for near vision.

On July 29, 2008, the pilot completed an aviation insurance application for the accident airplane. On the application, the pilot indicated that his total flight time was 820 hours. The pilot reported that he had flown 20 hours during the preceding 90 days. Also, his total flight time in the accident model of airplane was 370 hours.

A certified flight instructor (CFI) reported to the Safety Board investigator that on August 2, 2008, he had flown in the pilot's airplane for the purpose of giving him a flight review. The pilot successfully completed the review. On December 27, 2008, the CFI also flew with the pilot. On this date, the pilot practiced instrument flying, which included performing three instrument approaches (two VOR and one ILS).

AIRCRAFT INFORMATION

The airplane was maintained on an annual inspection basis. Acquaintances of the pilot reported to the Safety Board investigator that the pilot had, on occasion, performed maintenance on his airplane. An FAA certificated mechanic reported that he believed some of the maintenance the pilot performed had not been supervised by a licensed mechanic, as required by federal regulations.

The 48-year-old accident airplane had been modified from its original Piper Aircraft Corporation type design certificate. Upgraded avionics and accessories had been installed since the airplane's date of manufacture in 1961. Some of the modifications included installation of a 3-blade propeller, engine exhausts, one piece windshield, Lopresti speed

enhancement devices, wingtips, and avionics including a multifunction instrument display, engine performance analyzer, and an autopilot.

Family members reported that the airplane had received an "owner-assisted" annual inspection a few weeks prior to the accident.

METEOROLOGICAL INFORMATION

At 0827, the pilot telephoned the Prescott Automated Flight Service Station (AFSS) and received a weather briefing for his flight to San Diego. The pilot told the AFSS briefer that he was planning to fly under VFR to the Brown Field. The cruise altitude was 5,500 feet msl, and the flight's duration was 1 hour.

The briefer inquired if the pilot could fly under IMC. The pilot responded "yes I could."

Thereafter, the briefer told the pilot that he did not believe the pilot would need to fly under IFR. However, there was a "marine layer" present.

In pertinent part, the briefer told the pilot that at Whiteman, there were few clouds at 3,000 feet above ground level (agl). An advisory existed for mountain obscuration. Over the Los Angeles basin area there were scattered clouds based around 2,000 to 5,000 feet mean sea level (msl). Inland, the ceiling was overcast, but occasionally a broken condition existed. Scattered cirrus clouds existed aloft. To the south, scattered, broken, and overcast clouds existed with bases from 2,000 to 5,000 feet msl. At the Brown Field, the weather was 2,700 feet scattered, ceiling 4,100 feet overcast, with 10 miles visibility. The briefer stated to the pilot "...looks like you still might need to go IFR, looks like you might be right in the clouds at your altitude." Also, 10 miles northeast of the San Diego Lindbergh airport, broken clouds existed with bases at 4,000 feet, and with cloud tops at 5,500 feet msl.

In the San Diego area, no forecast or pilot reports existed for convective weather conditions or icing.

The closest aviation weather observation station to the accident site was located at the Miramar Marine Corps Air Station, about 5.7 miles west-southwest (244 degrees) from the accident site. At 1055, Miramar (elevation 478 feet msl) reported a broken sky condition at 2,500 and 3,100 feet, and an overcast sky condition at 4,800 feet agl. The wind was from 210 degrees at 5 knots, and the visibility was 10 miles. The temperature and dew point were 13 and 9 degrees Celsius, respectively.

At 1108, Miramar reported a special weather observation. In part, the ceiling was 200 feet broken, 3,000 feet overcast, and 5,000 feet overcast (agl). The visibility was 7 miles.

WRECKAGE AND IMPACT INFORMATION

Airplane wreckage was located on a hillside about 5.5 miles east-northeast of the Miramar Marine Corps Air Station. The accident site was about 900 feet north-northwest (329 degrees, magnetic) from the airplane's last recorded position on radar. The site was located on an estimated 30-degree downsloping hillside at elevations between 1,000 and 850 feet msl.

The magnetic bearing and distance between the initial point of impact (IPI) crater and the main wreckage (cockpit) was about 167 degrees and 50 feet. The majority of the fragmented wreckage was found scattered over a 150-foot-wide by 530-foot-long southeasterly path. All of the flight control surfaces were found in the wreckage area.

The separated outer wing sections were not damaged by fire, and they were found near the highest elevations on the hillside, between 100 and 300 feet north of the IPI crater. The engine and main wreckage were located to the south, near the lowest elevations.

The inboard wing spans, the vertical stabilizer with attached rudder, and the left stabilator were found attached to the fuselage and were fire-damaged. The instrument panel was fragmented and destroyed by fire, along with the cockpit and cabin which were consumed.

None of the components located hundreds of feet away from the main wreckage were burned. The Safety Board investigator's wreckage examination revealed that the airplane's wing spars were bent and fractured in an upward direction.

The right stabilator was found separated from the empennage, and its airframe attachment structure was observed bent in an aft direction. The leading edge of the stabilator was also crushed in an aft direction, and it bore witness marks that were consistent with the deformation pattern from a separated right wing skin component.

The engine was found separated from its firewall attachment, and its case was broken open. A visual examination of its exterior surfaces, cylinders, and internal components did not disclose evidence of any preimpact anomalies.

Two of the three propeller blades were found in the IPI crater, and the third blade was found several yards away. Two of the blades exhibited tip curl, gouges, and scratches in a chordwise direction.

MEDICAL AND PATHOLOGICAL INFORMATION

On April 13, 2009, an autopsy was performed on the pilot by the County of San Diego, Office of the Medical Examiner. The autopsy findings indicated the pilot died from "multiple blunt force injuries."

Forensic toxicology was performed on specimens from the pilot. The FAA's Civil Aerospace Medical Institute's (CAMI's) Bioaeronautical Sciences Research Laboratory, Oklahoma City, Oklahoma, reported that no ethanol, carbon monoxide, cyanide, or any screened drugs were

detected.

ADDITIONAL INFORMATION

Family members and acquaintances of the pilot reported to the Safety Board investigator that the pilot's wife was ill. The purpose of the flight was for the pilot to fly his wife to southern California where she could receive treatment at a nearby facility. The pilot was familiar with the route of flight, having flown it on several occasions.

Pilot Information

Certificate:	Private	**Age:**	51,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Unknown
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:**	July 7, 2008
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	August 2, 2009
Flight Time:	(Estimated) 820 hours (Total, all aircraft), 370 hours (Total, this make and model), 20 hours (Last 90 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Piper	**Registration:**	N7690P
Model/Series:	PA-24-250	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	24-2900
Landing Gear Type:	Retractable - Tricycle	**Seats:**	4
Date/Type of Last Inspection:	March 1, 2009 Annual	**Certified Max Gross Wt.:**	2800 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:		**Engine Manufacturer:**	LYCOMING
ELT:	Not installed	**Engine Model/Series:**	O-540 SERIES
Registered Owner:	On file	**Rated Power:**	250 Horsepower
Operator:	On file	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	NKX,478 ft msl	**Distance from Accident Site:**	5 Nautical Miles
Observation Time:	10:55 Local	**Direction from Accident Site:**	245°
Lowest Cloud Condition:		**Visibility**	10 miles
Lowest Ceiling:	Broken / 2500 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	5 knots / None	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	210°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30 inches Hg	**Temperature/Dew Point:**	13°C / 9°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Los Angeles, CA (WHP)	**Type of Flight Plan Filed:**	IFR
Destination:	San Diego, CA (SDM)	**Type of Clearance:**	IFR
Departure Time:	10:04 Local	**Type of Airspace:**	

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	1 Fatal	**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Fatal	**Latitude, Longitude:**	32.88639,-117.047225

Administrative Information

Investigator In Charge (IIC):	Pollack, Wayne
Additional Participating Persons:	Steve Nelson; Federal Aviation Administration; San Diego, CA George Hollingsworth; Piper Aircraft Company; Vero Beach, FL Peter Trono; National Air Traffic Controllers Association; Palmdale, CA
Original Publish Date:	April 22, 2010
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=73637