Aviation Investigation Final Report

Location:	Dunkirk, New York	**Accident Number:**	NYC04FA144
Date & Time:	June 22, 2004, 10:50 Local	**Registration:**	N99HW
Aircraft:	Cessna P210N	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot was conducting a cross country instrument flight rules flight. The airplane was deviating around thunderstorm activity, and was cleared to it's destination airport, when radar contact was lost. A witness reported hearing an airplane overhead; however, he could not see the airplane due to haze and clouds. He described the engine noise as "revving in a cycling pattern." Within 10 seconds, he observed an airplane exit the clouds in a nose down spiral, with one wing missing. The airplane impacted Lake Erie nose first and sank. Examination of the right wing main spar revealed fractures consistent with an overstress separation and aft and upward loading. The pilot obtained a weather briefing prior to the flight. At the time of the briefing, there were no current or forecasted thunderstorms around the pilot's destination airport. There were also no convective SIGMETs valid for the area where the accident occurred. Review of weather radar around the time of the accident revealed two very strong thunderstorm cells over the western portion of New York, along Lake Erie, moving northeast. The airplane disappeared from radar, as it transitioned through the northern edge of one of the echoes in reflectivity values near 25 dBZ or very light intensity echoes. The geo-synchronous weather satellite-12 (GOES-12) visible image depicted a large band of clouds extending over Lake Erie, and New York. Several Cumulonimbus clouds were located immediately south of the accident site.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's loss of aircraft control and the subsequent overstress and separation of the wing during an encounter with convection induced turbulence.

Findings

Occurrence #1: IN FLIGHT ENCOUNTER WITH WEATHER
Phase of Operation: DESCENT - NORMAL

Findings
1. (C) WEATHER CONDITION - TURBULENCE,CONVECTION INDUCED

Occurrence #2: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: DESCENT - NORMAL

Findings
2. AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND

Occurrence #3: AIRFRAME/COMPONENT/SYSTEM FAILURE/MALFUNCTION
Phase of Operation: DESCENT - UNCONTROLLED

Findings
3. WING - SEPARATION
4. (C) DESIGN STRESS LIMITS OF AIRCRAFT - EXCEEDED

Occurrence #4: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Findings
5. TERRAIN CONDITION - WATER

Factual Information

HISTORY OF FLIGHT

On June 22, 2004, about 1050 eastern daylight time, a Cessna P210N, N99HW, was destroyed when it impacted Lake Eire, during a cruise descent near Dunkirk, New York. The certificated commercial pilot was fatally injured. Instrument meteorological conditions prevailed and an instrument flight rules (IFR) flight plan had been filed for the flight that departed Bishop International Airport (FNT), Flint, Michigan, destined for Jamestown Airport (JHW), Jamestown, New York. The personal flight was conducted under 14 CFR Part 91.

According to information obtained from the Federal Aviation Administration (FAA), at 0804, the pilot telephoned the Lansing automated flight service station and received an abbreviated weather briefing for a flight to JHW. He also filed an IFR flight plan. During the briefing, the flight service specialist indicated that he did not see any current or forecasted thunderstorms around Jamestown area.

The pilot departed FNT at 0942. At 1028, the airplane was cruising at an altitude of 9,000 feet, and in radio contact with Erie air traffic control (ATC). At 1040, the pilot was informed of an area of weather along his route of flight by an ATC controller, and the pilot asked the controller if he could go around it. The controller advised the pilot that he could vector him around the weather that he was able to see, and gave the pilot the option of going towards the Dunkirk VOR or south towards Erie. The pilot elected to alter his course toward Dunkirk. At 1047, the airplane was cleared to descend to 5,000 feet at the pilot's discretion. At 1048:55, the airplane was cleared to make a right turn, and proceed direct to the Jamestown VOR. The controller added "...that should take you around the eastern side of the weather." Radar data revealed that at 1049:30, the airplane was at an altitude of 7,400 feet, when it began a right turn. The airplane continued in a right turn, and at 1049:53, was at an altitude of 5,600 feet. The airplane's last radar target was observed at 1050:07, about 7 miles west of the Dunkirk VOR, at an altitude of 2,300 feet.

A witness fishing from a boat on Lake Erie, about 3 miles west of Dunkirk Harbor, reported hearing an airplane overhead; however, he could not see the airplane due to haze and clouds. He described the engine noise as "revving in a cycling pattern." Within 10 seconds, he observed an airplane exit the clouds "in a nose down spiral, with one wing missing." The airplane impacted the water nose first and disappeared. The witness then maneuvered his boat over the impact area. He did not observe any debris; however, after about 45 minutes, he observed a fuel slick on the water surface.

New York State Police divers reported that the water depth in the area where the witness observed the airplane was about 55 feet, with an under water visibility of 3 to 5 feet. The

accident site was located about 24 miles north-northwest of JHW. The airplane was recovered from Lake Erie on July 12, 2004.

The accident occurred during the hours of daylight, and was located approximately 42 degrees, 28.6 minutes north latitude, and 79 degrees, 25.4 minutes west longitude.

PERSONNEL INFORMATION

The pilot held a commercial pilot's certificate with an airplane single engine land, and instrument rating. The pilot's logbook was not located; however, he reported 505 hours of total flight experience on his most recent application for an FAA second class medical certificate, which was issued on October 10, 2003. According to insurance company records for the pilot's most recent aircraft insurance policy, which began on December 31, 2003, the pilot reported 510 hours of total flight experience, which included at least 10 hours in the Cessna P210, and 300 hours in other 210 series airplanes.

AIRCRAFT INFORMATION

The pilot purchased the airplane on January 21, 2004. According to maintenance records, the airplane's most recent annual inspection was performed on December 28, 2003. At that time, the airplane had been operated for about 1,252 total hours. The airplane was equipped with a Teledyne Continental Motors TSIO-520 series engine. The engine was rebuilt on September 14, 2002, and installed in the accident airplane on November 9, 2002. As of May 12, 2004, the engine and airplane had been operated for about 60 and 1,305 total hours; respectively.

According to the maintenance records, a BF Goodrich Series II Model WX-500 storm scope was installed on the airplane on March 16, 2004. The unit was interfaced with a Garmin GNS-530 NAV/COM/GPS unit that was also installed at that time.

METEOROLOGICAL INFORMATION

A weather observation taken at an airport located about 7 miles east of the accident, at 1053, reported: wind from 230 degrees at 7 knots, visibility 6 miles in mist, ceiling 1,500 feet overcast, temperature 19 degrees C, dew point 18 degrees C, altimeter 29.75 in/hg.

A weather observation taken at JHW, at 1059, reported: wind from 230 degrees at 6 knots, visibility 3 miles in light rain and mist, ceiling 500 feet overcast, temperature 17 degrees C, dew point 16 degrees C, altimeter 29.80 in/hg.

Review of a National Weather Service (NWS) surface analysis chart for the time period surrounding the accident revealed a low pressure system to the north of the accident site, over Quebec, Canada. A cold front extended from the low, southwestward across western Lake Ontario into eastern Lake Erie, to the west of the accident site, and into Ohio. A warm front extended southeastward from the low into New York and New Jersey, to the east of the

accident site.

Several convective significant meteorological advisories (SIGMETs) were current for the eastern United States with the closest advisory surrounding the period of the accident over portions of southeastern New York and northern New Jersey for a line of embedded thunderstorms. However, none of the advisories extended over the accident site.

The closest terminal aerodrome forecast (TAF) to the accident site was issued for JHW. The forecast was issued specifically for the airport, and covered a radius of 5 miles. The forecast was valid for a 24 hour period, beginning at 0800. In summary, the forecast called for visual flight rules to marginal visual flight rules due to rain showers and mist, with broken to overcast ceilings.

Review of weather radar around the time of the accident revealed two cells over the western portion of New York along Lake Erie, moving northeast. Reflectivity maximums reached in the range of 45 dBZ or VIP Level 4 "very strong" intensity. The airplane disappeared from radar, as it transitioned through the northern edge of one of the echoes in reflectivity values near 25 dBZ or very light intensity echoes.

The geosynchronous weather satellite-12 (GOES-12) visible image for 1045 depicted a large band of clouds extending over Lake Erie, and New York. Several Cumulonimbus clouds were located immediately south of the accident site.

WRECKAGE AND IMPACT INFORMATION

The majority of the airplane was recovered and transported to a storage facility in Freemont, Ohio; where it was examined by a Safety Board investigator on July 20, 2004.

The airplane was significantly fragmented. A majority of the upper fuselage was missing. The right wing separated just outboard of the right wing spar fitting assembly, and was not recovered. The fitting assembly was removed and retained for further examination. The left wing remained attached to the carry thru spar assembly; however, the wingtip was missing. The inboard two-thirds of the left wing leading edge was crushed aft. The left aileron cables remained attached, and were intact to the wing root.

The empennage was separated from the remainder of the fuselage. The left rudder and horizontal stabilizer were not observed. The left elevator had separated at the elevator torque tube attachment. The forward spar of the left horizontal stabilizer was bent down and aft. The right elevator remained partially attached to the right horizontal stabilizer. The outboard portion of the right horizontal stabilizer was bent up. The elevator torque tube remained attached to the right elevator, and was bent down. The lower elevator cable had separated from the assembly arm. The elevator cable was intact from the aft tail cone to a length consistent with the forward cabin area. The rudder remained attached to the vertical stabilizer, which was separated from the fuselage. The left rudder cable and a portion of the attachment

were separated from the rudder bell crank assembly. The right rudder cable separated at the rudder bell crank assembly. The rudder cable was intact from the tail cone to a length consistent with the forward cabin area.

Measurement of the flap actuator jackscrew, corresponded with retracted flap setting.

The fuel selector handle was observed selected to the right fuel tank. An auxiliary fuel tank was observed in the baggage compartment. All fuel tanks were breeched. The airframe fuel filter was disassembled, and the screen was absent of debris.

The engine was separated from the airframe. The top portion of cylinders 1, 3, and 5 contained a curved slash mark, consistent with a propeller blade strike. The engine was rotated through an accessory drive, and thumb compression was attained on all cylinders. The left magneto was partially separated from it's mount. The magneto was removed and produced a spark on all towers when rotated by hand. The right magneto was not located. The vacuum pump, which remained attached to the engine was removed and disassembled. The drive coupling and vanes were intact, and the rotor was cracked. The turbo charger was separated. Rotational scoring was observed on the housing, abeam the turbine blades. The top spark plugs were removed. Their electrodes were wet and corroded.

The throttle body and fuel control unit were not recovered. The engine driven fuel pump coupling remained intact and the fuel pump rotated freely. The fuel manifold valve screen was absent of debris.

The propeller hub was fractured and all three propeller blades were separated. Two blades were bent back about 40 degrees, and one blade was bent back about 15 degrees. All three blades contained leading edge damage, however, one blade contained significant leading edge gouges and chordwise scratches.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on the pilot, on June 23, 2004, by the Onondaga County Medical Examiners Office, Syracuse, New York.

Toxicological testing was conducted by the FAA Toxicology Accident Research Laboratory, Oklahoma City, Oklahoma.

TESTS AND RESEARCH

The retained portion of the right wing main spar was forwarded to the Safety Board's Materials Laboratory, Washington, DC. According to the metallurgist’s factual report, the right wing main spar was fractured through multiple pieces adjacent to the attachment brackets. Visual examinations of the fractures found rough granular matte gray surfaces with shear lip formations consistent with overstress separation. No indications of preexisting cracking were

observed in any of the fractured spar components. In addition, deformation associated with the fractures suggested aft and upward loading at the time of separation.

ADDITIONAL INFORMATION

Re-Fueling

According to receipts, prior to takeoff, the airplane was "topped off" with 29 gallons of aviation gasoline.

Emergency Locator Transmitter (ELT)

The airplane was equipped with a Dorne and Margolin ELT model 6.1, with a battery expiration date of April 2004. There were no known reports of an active ELT signal after the accident.

Wreckage Release

The airplane wreckage was released on July 20, 2004, to a representative of the owner's insurance company.

Pilot Information

Certificate:	Commercial	**Age:**	61,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 2 Valid Medical--w/ waivers/lim	**Last FAA Medical Exam:**	October 10, 2003
Occupational Pilot:		**Last Flight Review or Equivalent:**	
Flight Time:	505 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N99HW
Model/Series:	P210N	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	P21000487
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	December 28, 2003 Annual	**Certified Max Gross Wt.:**	3800 lbs
Time Since Last Inspection:		**Engines:**	1 Reciprocating
Airframe Total Time:	1252 Hrs as of last inspection	**Engine Manufacturer:**	Continental
ELT:	Installed, not activated	**Engine Model/Series:**	TSIO-520
Registered Owner:	Stone House Aviation Inc.	**Rated Power:**	310 Horsepower
Operator:		**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	DKK,693 ft msl	**Distance from Accident Site:**	7 Nautical Miles
Observation Time:	10:53 Local	**Direction from Accident Site:**	80°
Lowest Cloud Condition:		**Visibility**	6 miles
Lowest Ceiling:	Overcast / 1500 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	7 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	230°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.75 inches Hg	**Temperature/Dew Point:**	19°C / 18°C
Precipitation and Obscuration:	Light - None - Rain		
Departure Point:	Flint, MI (FNT)	**Type of Flight Plan Filed:**	IFR
Destination:	Jameston, NY (JHW)	**Type of Clearance:**	IFR
Departure Time:	09:42 Local	**Type of Airspace:**	Class E

Airport Information

Airport:	Jamestown JHW	**Runway Surface Type:**	
Airport Elevation:	693 ft msl	**Runway Surface Condition:**	Unknown
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	42.476387,-79.423889

Administrative Information

Investigator In Charge (IIC):	Schiada, Luke
Additional Participating Persons:	Guido F Hassig; FAA Rochester FSDO; Rochester, NY Tom Teplik; Cessna Aircraft Company; Wichita, KS Scott Boyle; Teledyne Continental Motors; Mobile, AL
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Last Revision Date:	
Investigation Class:	Class
Note:	
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