Aviation Investigation Final Report

Location:	WORCESTER, Vermont	**Accident Number:**	NYC99FA199
Date & Time:	August 14, 1999, 13:08 Local	**Registration:**	N24CD
Aircraft:	Cessna P210N	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	3 Fatal
Flight Conducted Under:	Part 91: General aviation - Personal		

Analysis

The pilot received three weather briefings from a flight service station prior to departure. The briefings included forecasts of thunderstorm activity along the planned route of flight, and in the area of the departure airport. The pilot was asked by the weather briefer if the airplane was equipped with weather radar. The pilot stated that he had a stormscope and weather radar. He departed the runway with a 15-20 knot tailwind, did not follow the published instrument departure procedure, and flew south toward mountainous terrain. The wreckage was located about 200 feet from the summit, on the south side of the mountain. Witnesses at the airport and in the vicinity of the accident site report hearing thunder about the time of the accident. Additionally, weather imageries and surface observations confirmed areas of heavy precipitation south of the airport, in the vicinity of the accident site, at the time of the accident. The pilot made four brief transmissions to Air Traffic Control, but was never in radar contact.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The pilot's inadequate in-flight planning/decision, his failure to follow the published instrument departure procedure for the particular runway, and his continued flight into known adverse weather. A factor was thunderstorms.

Findings

Occurrence #1: IN FLIGHT ENCOUNTER WITH WEATHER
Phase of Operation: CLIMB

Findings
1. TERRAIN CONDITION - RISING
2. (C) IN-FLIGHT PLANNING/DECISION - INADEQUATE - PILOT IN COMMAND
3. (F) WEATHER CONDITION - THUNDERSTORM
4. (C) FLIGHT INTO KNOWN ADVERSE WEATHER - CONTINUED - PILOT IN COMMAND
5. (C) IFR PROCEDURE - NOT FOLLOWED - PILOT IN COMMAND

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: CLIMB

Findings
6. TERRAIN CONDITION - MOUNTAINOUS/HILLY

Factual Information

HISTORY OF FLIGHT

On August 14, 1999, at 1308 Eastern Daylight Time, a Cessna P210N, N24CD, was destroyed when it impacted terrain in Worcester, Vermont, after takeoff from Morrisville-Stowe State Airport (MVL), Stowe, Vermont, about 1300. The certificated private pilot and both passengers were fatally injured. Instrument meteorological conditions prevailed for the planned flight to Capital City Airport, Harrisburg, Pennsylvania. An instrument flight rules (IFR) flight plan was filed for the personal flight conducted under 14 CFR Part 91.

The Airport Manager stated:

"On August 14, 1999 at approximately 1:00pm. I witnessed Cessna 210 N24CD depart from the Morrisville-Stowe State Airport. The ceilings were low at the time around 800 to 1000 feet, as I recall. There was some distant thunder to the south and the winds were out of the northwest at 15 to 20 knots. We had fueled the aircraft previously on August 8, when they arrived, with 40 gal. of 100LL. I saw [the family] briefly in the terminal building before they left. They used the facilities and the candy machine and [the pilot] told his wife and child to hurry because they had a void time...I was in the office at the time they departed and was surprised and concerned when I suddenly noticed that they were departing on runway 19 with a 15 to 20 knot tailwind. The airplane took a substantial amount of runway to rotate and then climbed very slowly. I watched the aircraft climb very slowly straight out until they disappeared in the overcast at about 800 to 1000 feet AGL. About 10 minutes later I received a call from Boston Center. They told me they had received one radio call from them, but they never showed up on radar..."

A review of an excerpt from a Federal Aviation Administration (FAA) transcript revealed:

1305:56 (N24CD) center two four charlie climbing

1306:09 (controller) two four charlie delta report reaching uh---six thousand

1306:20 (N24CD) two four charlie did not cop---copy altitude

1307:59 (N24CD) boston center two four charlie delta do you copy

1308:03 (controller) two four charlie delta climb and maintain six thousand report reaching six thousand

1308:07 (N24CD) boston center you're cutting up

1308:17 (controller) nuv two four charlie delta say again please

Air Traffic Control (ATC) did not receive any more transmissions from N24CD. Additionally, ATC never obtained radar contact with the assigned transponder code for N24CD. An emergency locator transmitter signal was received about 1308.

The accident occurred during the hours of daylight; approximately 44 degrees, 25.83 minutes north latitude, and 72 degrees, 36.76 minutes west longitude.

PERSONNEL INFORMATION

The pilot held a private pilot certificate; with ratings for single engine land and instrument airplane.

His most recent FAA third class medical certificate was issued on October 8, 1998. At that time, he reported a total flight experience of 600 hours.

The pilot's logbook was not recovered. Using FAA records, maintenance records, and a flight instructor's estimate, the pilot's total flight experience at the time of the accident was estimated to be approximately 840 hours. About 40-80 of those hours were in actual instrument meteorological conditions.

AIRCRAFT INFORMATION

The airplane's last annual inspection was performed on March 29, 1999.

According to the airport manager, the airplane departed with full fuel, three occupants, baggage, and a dog. A Cessna P210N manual contained maximum rate of climb information. According to the information; at 4,000 pounds, at sea level, at a temperature of 20 degrees Celsius, the airplane would climb at 910 feet per minute.

METEOROLOGICAL INFORMATION

The pilot obtained three weather briefings from the Burlington Flight Service Station via telephone. He received a full briefing at 0724, and two updated briefings at 1131 and 1235. During the full briefing, the briefer stated: "...well ah thunderstorms ah possible on your route um well pretty much anytime particularly over southern portion of your route ah right now..."

During the first updated briefing, the briefer asked if the pilot's airplane was equipped with a stormscope or weather radar. The pilot stated that he had both.

During the second updated briefing, the briefer stated: "uh well there's almost a whole line ah stretching oh it looks like ah down in the ah binghamton elmira area right up through ah central

ah or northcentral vermont to maine right now...." The briefer again asked if the pilot had a stormscope. The pilot stated that he did.

In addition to the airport manager's recollection of distant thunder to the south of MVL, a detective for the Vermont State Police stated that a severe weather warning was in effect, for thunderstorms, at the time and place of the accident. He added that several witnesses reported hearing thunder about 1308.

NEXRAD radar imageries were provided by the National Weather Service. According to the imageries, medium to strong intensity echo returns were present to the south of MVL, in the vicinity of the accident site, at 1246, 1300, and 1319.

MVL was approximately 8 miles north (020 degrees) of the accident site. The reported weather at MVL, at 1254, was: wind calm; visibility 3 miles, mist; sky condition broken 2,000, broken 4,900; temperature 70 degrees Fahrenheit (F); dewpoint 66 degrees F; altimeter 29.82 inches Hg.

Edward F. Knapp State Airport (MPV), Montpelier, Vermont was located approximately 15 miles south of the accident site. The reported weather at MPV, at 1251 was: wind 310 degrees at 9 knots; visibility 1.25 miles, heavy rain and mist; sky condition scattered 300, overcast 1,300; temperature 66 degrees F; dewpoint 66 degrees F; altimeter 29.85 inches Hg.

AIDS TO NAVIGATION

According to a FAA Inspector, the current Jeppesen Airway Manual contained the correct departure procedure for Runway 19 at MVL. It stated: "...Rwy 19, climbing right turn direct JRV NDB and climb in hold (northeast, left turns, 230 [degrees] inbound) to 3500' before proceeding on course."

A Jeppesen Airway Manual was found at the accident site. However, witness statements and ATC information indicated that the pilot did not fly the published departure procedure for Runway 19, nor was he required to.

The FAA Inspector added that after the accident, someone at the FAA noticed that the text departure procedure for Runway 19 at MVL was not listed in the National Ocean Service (NOS) U.S. Terminal Procedures. The FAA then added the procedure to the publication. The Inspector was advised that no NOS U.S. Terminal Publications were found at the accident site, only the Jeppesen Airway Manual.

A former flight instructor stated that the pilot was instrument proficient, but may not have been proficient at departure procedures and mountainous operations.

AERODROME INFORMATION

Morrisville-Stowe State Airport was located in valley at a field elevation of 732 feet above mean sea level. Mount Worcester was approximately 8 miles to the south. Mount Mansfield was approximately 8 miles to the west. Lower terrain was present to the north and east of the airport. The airport was served by Runway 1/19.

WRECKAGE AND IMPACT INFORMATION

The wreckage was examined at the accident site on August 16, 1999, and although a large portion was consumed by fire, all major components of the airplane were accounted for at the scene. It was oriented to a 190-degree heading, approximately 3,200 feet above mean-sea-level, on Mount Worcester. The wreckage was about 200 feet from the summit, on the south side of the mountain. There were several tree scars near the wreckage, oriented to a southerly heading. Some of the branches were cut clean, at an approximate 45-degree angle. The wreckage and surrounding area were charred.

The right wing sustained impact damage to the leading edge. The flap was separated about mid-span, crushed, and deflected upward. The aileron was intact, and deflected upward. The right wing spar separated approximately 1 foot from the wing root. A right wingtip fuel tank was discovered in the vicinity of the wing, it was crushed and charred.

The left wing was resting on a tree. It was intact, charred, and twisted. The flap was observed separated from the wing, and the aileron was deflected upward. The leading edge was crushed.

The empennage was observed folded, charred, and twisted. The vertical and horizontal stabilizers were separated from the empennage. The right horizontal stabilizer was buckled and charred, and the left horizontal stabilizer was crushed, buckled, and charred. The rudder was destroyed.

The cockpit, and a large section of fuselage, were completely destroyed by fire. Only four flight instruments were recovered.

Due to impact and fire damage, flight control continuity could not established, and the crankshaft of the engine could not be rotated. A jackscrew measurement corresponded to a retracted flap position. The only trim that was not destroyed was the elevator trim, which was observed to be in a nose down trim setting.

The top spark plugs were removed and observed to be clean, and light brown to gray in color. Oil was present on the number one, number three, and number five spark plugs. The fuel pump was observed to be fire damaged; however, the coupling was intact. The fuel control unit filter was clean. The fuel injection manifold screen was charred, but absent of debris. One of the three propeller blades exhibited "s-bending".

Several days after the on-site examination, a detective from the Vermont State Police

discovered a section of the tailcone on the other side (north) of the mountain. The tailcone was approximately 20 feet from the summit. According to the detective, the tailcone was crushed, and corresponding tree scars were observed. The detective believed that the airplane initially struck trees on the north side of the mountain, and momentum carried it to the south side, to where it came to rest.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on the pilot by the Vermont State Department of Health Office of Chief Medical Examiner, on August 16, 1999.

Toxicological testing was conducted at the FAA toxicology Accident Research Laboratory, Oklahoma City, Oklahoma, on September 10, 1999.

ADDITIONAL INFORMATION

The wreckage was released on August 17, 1999, and a copy of the release form was left at the Stowe Police Department, Stowe, Vermont.

Pilot Information

Certificate:	Private	**Age:**	43,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 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	October 8, 1998
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	840 hours (Total, all aircraft), 700 hours (Total, this make and model), 780 hours (Pilot In Command, all aircraft), 140 hours (Last 90 days, all aircraft), 45 hours (Last 30 days, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	**Registration:**	N24CD
Model/Series:	P210N P210N	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	P21000798
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	March 29, 1999 Annual	**Certified Max Gross Wt.:**	4000 lbs
Time Since Last Inspection:	173 Hrs	**Engines:**	1 Reciprocating
Airframe Total Time:	2429 Hrs	**Engine Manufacturer:**	Continental
ELT:	Installed, activated, aided in locating accident	**Engine Model/Series:**	TSIO-520
Registered Owner:	LIMA AVIATION INC	**Rated Power:**	310 Horsepower
Operator:	DENNIS L. LEHMAN	**Operating Certificate(s) Held:**	None
Operator Does Business As:		**Operator Designator Code:**	

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	MPV ,1165 ft msl	**Distance from Accident Site:**	15 Nautical Miles
Observation Time:	12:51 Local	**Direction from Accident Site:**	180°
Lowest Cloud Condition:	Scattered / 300 ft AGL	**Visibility**	1.25 miles
Lowest Ceiling:	Overcast / 1300 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	9 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	310°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29 inches Hg	**Temperature/Dew Point:**	19°C / 19°C
Precipitation and Obscuration:	Heavy - Showers - Rain		
Departure Point:	STOWE , VT (MVL)	**Type of Flight Plan Filed:**	IFR
Destination:	HARRISBURG , PA (CXY)	**Type of Clearance:**	IFR
Departure Time:	12:52 Local	**Type of Airspace:**	Class E

Airport Information

Airport:	MORRISVILLE-STOWE STATE MVL	**Runway Surface Type:**	Asphalt
Airport Elevation:	732 ft msl	**Runway Surface Condition:**	Dry
Runway Used:	19	**IFR Approach:**	None
Runway Length/Width:	3701 ft / 75 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	2 Fatal	**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	On-ground
Total Injuries:	3 Fatal	**Latitude, Longitude:**	

Administrative Information

Investigator In Charge (IIC):	Gretz, Robert
Additional Participating Persons:	DONALD L LEVESQUE; PORTLAND , ME GEORGE HOLLINGSWORTH; RESTON , VA BUCK WELCH; WICHITA , KS
Original Publish Date:	June 7, 2000
Last Revision Date:	
Investigation Class:	Class
Note:	
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=47108