



# National Transportation Safety Board Aviation Accident Final Report

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<b>Location:</b>	PORTLAND, ME	<b>Accident Number:</b>	NYC95FA210
<b>Date &amp; Time:</b>	09/01/1995, 1115 EDT	<b>Registration:</b>	N6564H
<b>Aircraft:</b>	CESSNA 172M	<b>Aircraft Damage:</b>	Destroyed
<b>Defining Event:</b>		<b>Injuries:</b>	3 Fatal
<b>Flight Conducted Under:</b>	Part 91: General Aviation - Personal		

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## Analysis

After takeoff, while climbing through about 400 ft AGL, the pilot transmitted, '...I just lost.' Some witnesses saw smoke trailing from the airplane as it descended to just above the runway. Still in the air, and nearing the departure end of the runway, the airplane then climbed to about 100 ft, and entered a left turn which was described by witnesses as at least 60 degrees of bank. Some witnesses reported the engine was smooth, while others reported the engine was erratic. While in the turn, the airplane descended, struck the ground nose first, came to rest inverted, and burned. In a test run, the engine produced takeoff power. The pilot had flown 6.5 hours in past 12 months. The pilot received a checkout in the airplane in July 1995. According to the instructor who gave the checkout flight, neither accelerated stalls nor simulated forced landings were done during the checkout.

## Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: an engine malfunction for an undetermined reason, and the pilot's failure to maintain airspeed during a forced landing which resulted in an accelerated stall. A factor was the pilot's lack of recent experience.

## Findings

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Occurrence #1: LOSS OF ENGINE POWER  
Phase of Operation: TAKEOFF - INITIAL CLIMB

### Findings

1. (C) REASON FOR OCCURRENCE UNDETERMINED

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Occurrence #2: FORCED LANDING  
Phase of Operation: EMERGENCY LANDING AFTER TAKEOFF

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Occurrence #3: LOSS OF CONTROL - IN FLIGHT  
Phase of Operation: EMERGENCY LANDING AFTER TAKEOFF

### Findings

2. (C) AIRSPEED - NOT MAINTAINED - PILOT IN COMMAND
3. (F) LACK OF RECENT EXPERIENCE IN TYPE OPERATION - PILOT IN COMMAND
4. STALL/SPIN - INADVERTENT - PILOT IN COMMAND

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

## Factual Information

### HISTORY OF FLIGHT

On September 1, 1995, at 1115 eastern daylight time, a Cessna 172M, N6564H, struck the ground while maneuvering for a forced landing, after takeoff from the Portland International Jetport, Portland, Maine. The airplane was destroyed, and the private pilot and two passengers were fatally injured. Visual meteorological conditions prevailed and no flight plan had been filed for the flight which was conducted under 14 CFR Part 91.

The flight was destined for Chatham, Massachusetts. At 1045, the pilot reported to Portland Clearance Delivery, that she was ready to taxi, and was cleared to taxi to runway 29. At 1048, the pilot requested to return to the ramp due to a red light on the instrument panel. After receiving information about the light, the pilot contacted Portland Clearance Delivery at 1103, and reported that she was ready to taxi to runway 29. She was cleared as requested.

At 1112:33, N6564H was instructed to, "...taxi into position and hold", and at 1113:20, N6564H was cleared for takeoff with a left turn on course approved. These were acknowledged by the pilot.

At 1114:18, and after becoming airborne, the pilot transmitted, "four hotel i just lost" No further transmissions were received from the airplane.

Several witnesses saw the airplane, which they thought was about 400 feet high, begin its descent. One witness reported seeing gray smoke trailing from the airplane, while another witness reported seeing black smoke trailing from the airplane.

Witnesses reported that the airplane leveled off about 5 to 10 feet above the runway, and continued toward the departure end. One witness reported that he could see the flaps extended to about 3/4 as the airplane went by. The airplane was then observed to pull up to about 75 to 100 feet, and enter a left turn. Witnesses described the bank angle as 60 degrees or steeper.

One witness, at the airport entrance described the engine sound as erratic. Two other witnesses in a parking lot, southwest of the accident site, described the engine sound as steady and at high power, or like other airplanes taking off.

Witnesses reported that during the turn, the nose dropped and the airplane contacted the ground. It came to rest on its back, after which a fire developed.

The accident occurred during the hours of daylight, at location 43 degrees, 38 minutes North and 70 degrees, 19 minutes West.

### PERSONNEL INFORMATION

The pilot held a Private Pilot Certificate with airplane single engine land, single engine sea, and instrument airplane ratings. She held an FAA 3rd Class Airman Medical certificate issued on November 15, 1993. According to her pilot log book, her last biennial flight review occurred on October 8, 1994, in a Piper PA-28.

Her pilot log book revealed the following times:

Total Time	992 hours	Pilot-In-Command	880 hours
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Additionally, according to the pilot's log book, she had flown 24.3 hours in the preceding 3 years. In the preceding year, she had flown 6.5 hours which included a 1.5 hour checkout on

July 10, 1995. Her last logged flight prior to the accident occurred on July 19, 1995.

According to her flight instructor, the checkout did not include forced landings or accelerated stalls.

In her application to the flying club, she reported her total time in a Cessna 172 as 800 hours.

#### AIRCRAFT INFORMATION

The airplane, a 1975 Cessna 172M, had been modified with the installation of a Lycoming O-360-A4M engine. On August 25, 1995, the airplane was modified with the installation of a standby vacuum pump. This included the installation of a red warning light on the instrument panel to warn of low vacuum, and occurred concurrently with an annual inspection.

The airplane was last serviced on August 30, 1995, with 33.1 gallons of 100 low lead aviation grade gasoline.

#### WRECKAGE AND IMPACT INFORMATION

The airplane wreckage was examined at the Portland International Jetport from September 1, 1995, to September 3, 1995.

Initial ground contact occurred 274 feet beyond the 200 foot overrun, on the departure end of runway 29, and 252 feet southwest of the left edge of runway 29. A series of multiple ground scars on a heading of 220 degrees, for 77 feet led to the airplane which was inverted, and heading 360 degrees.

The center section, including the cockpit and passenger cabin was destroyed by fire. Cabin seats were laying loose in the burned area, and the seat rails were not identified. The fuel selector was not identified. The primer was found locked, and loose in the burned area with the knob missing.

The empennage remained attached by control cables. The elevator trim was found extended .06 inches beyond its maximum limit of 1.88 inches.

The wing spar was bent in the center section, with both wings bent forward. The left aileron pushrod was fractured, and the aileron interconnect cable near the flap aileron junction in the left wing had failed with frayed ends, similar to a tension overload. The wing flap jack screw was found in the fully extended position. The left flap was destroyed, and the right flap was partially extended.

The firewall was burned, and there were soot accumulations on the engine. The fuel sump drain was crushed. The fuel line leading to the sump drain was fractured.

The blades of the propeller were bent rearward. Chord wise scratches were found on the front face of both blades.

Valve train continuity was verified, and compression was found in all cylinders. The engine oil filter was clean, and spark was obtained from all leads, of both magnetos.

The mount for the carburetor was fractured. The finger screen was clean. The accelerator pump was operative. The bowl was drained of a mixture of water and foam. No fuel was found in the carburetor and there was no smell of fuel. The carburetor was equipped with a single piece venturi which was in place.

## MEDICAL AND PATHOLOGICAL INFORMATION

Autopsies were conducted on the pilot and right front seat passenger on September 3, 1995, by Dr. Henry Ryan, Chief Medical examiner for the State of Maine. An autopsy was conducted on the rear seated passenger on September 2, 1995, by Dr. Antonio Boschetti, Medical Examiner, State of Massachusetts.

Toxicological testing on the pilot, which was conducted by the FAA Civil Aeromedical Institute in Oklahoma City, Oklahoma, was negative for drugs and alcohol.

## TESTS AND RESEARCH

The following items were examined in the NTSB Metallurgical Laboratory in Washington, DC:

Left Aileron Push Rod separation...."	Finding:	"...bending overstress
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Fuel Line to Main Sump separation with no evidence	Finding:	"...typical of an overstress of a preexisting crack."
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The engine was placed in a test cell at Textron Lycoming on September 22, 1995, and developed takeoff power. A 1/4 inch hole was then drilled in the number 4 intake tube to simulate a hole found in the original intake tube. Again, the engine developed takeoff power. At the completion of the engine test run, the carburetor was disassembled. No evidence of a sticking float or contamination was found inside. The main jet was clear.

## ADDITIONAL DATA/INFORMATION

### Emergency Procedures

The following is from the Cessna 172M OWNER'S MANUAL, Section III, EMERGENCY PROCEDURES, Engine Failure, Engine Failure After Take-Off, Page 3-1:

Prompt lowering of the nose to maintain airspeed and establish a glide attitude is the first response to an engine failure after take-off. In most cases, the landing should be planned straight ahead with only small changes in direction to avoid obstructions. Altitude and airspeed are seldom sufficient to execute a 180 degree gliding turn necessary to return to the runway....

### Stall Speeds

Using the airspeeds supplied in the Cessna 172M OWNER'S MANUAL, the stall speed increased by a factor of about 1.4 when the airplane was put into a 60 degree bank.

According to AERODYNAMICS FOR NAVAL AVIATORS, Chapter 2, Airplane Performance, Page 176-178, Maneuvering Performance, a chart on page 176 revealed that induced drag increased by 100 percent in 45 degree bank, and 300 percent in a 60 degree bank.

Additionally, the manual stated:

...Since the induced drag predominates at low speeds, steep turns at low speeds can produce significant increases in thrust or power required to maintain altitude. Thus, steep turns must be avoided after takeoff, during approach, and especially during a critical power situation from failure or malfunction of a powerplant. The greatly increased induced drag is just as important-if not more important-as the increased stall speed in

turning flight. It is important also that any turn be well coordinated to prevent the increased drag attendant to a slideslip.

### Wreckage Release

The aircraft wreckage was released to Mr. Bernard Coogan, the insurance adjustor for Airco, St. Louis, Missouri, on September 3, 1995.

### Pilot Information

<b>Certificate:</b>	Private	<b>Age:</b>	56, Female
<b>Airplane Rating(s):</b>	Single-engine Land; Single-engine Sea	<b>Seat Occupied:</b>	Left
<b>Other Aircraft Rating(s):</b>	None	<b>Restraint Used:</b>	
<b>Instrument Rating(s):</b>	Airplane	<b>Second Pilot Present:</b>	No
<b>Instructor Rating(s):</b>	None	<b>Toxicology Performed:</b>	Yes
<b>Medical Certification:</b>	Class 3 Valid Medical--w/ waivers/lim.	<b>Last FAA Medical Exam:</b>	11/15/1993
<b>Occupational Pilot:</b>		<b>Last Flight Review or Equivalent:</b>	
<b>Flight Time:</b>	992 hours (Total, all aircraft), 800 hours (Total, this make and model), 880 hours (Pilot In Command, all aircraft), 5 hours (Last 90 days, all aircraft)		

### Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	CESSNA	<b>Registration:</b>	N6564H
<b>Model/Series:</b>	172M 172M	<b>Aircraft Category:</b>	Airplane
<b>Year of Manufacture:</b>		<b>Amateur Built:</b>	No
<b>Airworthiness Certificate:</b>	Normal; Utility	<b>Serial Number:</b>	17265489
<b>Landing Gear Type:</b>	Tricycle	<b>Seats:</b>	4
<b>Date/Type of Last Inspection:</b>	08/25/1995, Annual	<b>Certified Max Gross Wt.:</b>	2550 lbs
<b>Time Since Last Inspection:</b>	9 Hours	<b>Engines:</b>	1 Reciprocating
<b>Airframe Total Time:</b>	4840 Hours	<b>Engine Manufacturer:</b>	LYCOMING
<b>ELT:</b>	Installed, activated, did not aid in locating accident	<b>Engine Model/Series:</b>	O-360-A4M
<b>Registered Owner:</b>	BALD EAGLE FLYING CLUB	<b>Rated Power:</b>	180 hp
<b>Operator:</b>	BALD EAGLE FLYING CLUB	<b>Operating Certificate(s) Held:</b>	None

## Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Day
Observation Facility, Elevation:	PWM, 74 ft msl	Distance from Accident Site:	1 Nautical Miles
Observation Time:	1131 EDT	Direction from Accident Site:	90°
Lowest Cloud Condition:	Scattered / 9500 ft agl	Visibility	10 Miles
Lowest Ceiling:	None / 0 ft agl	Visibility (RVR):	0 ft
Wind Speed/Gusts:	9 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	310°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29 inches Hg	Temperature/Dew Point:	28° C / 16° C
Precipitation and Obscuration:			
Departure Point:	(PWM)	Type of Flight Plan Filed:	None
Destination:	CHATHAM, MA (CQX)	Type of Clearance:	None
Departure Time:	1114 EDT	Type of Airspace:	Class C

## Airport Information

Airport:	PORTLAND INTL JETPORT (PWM)	Runway Surface Type:	Asphalt
Airport Elevation:	74 ft	Runway Surface Condition:	Dry
Runway Used:	29	IFR Approach:	None
Runway Length/Width:	8600 ft / 150 ft	VFR Approach/Landing:	Forced Landing

## 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:	None
Total Injuries:	3 Fatal	Latitude, Longitude:	

## Administrative Information

Investigator In Charge (IIC):	ROBERT L HANCOCK	Report Date:	06/07/1996
Additional Participating Persons:	GLENN GIBBONS; PORTLAND, ME JAMES BROWN; WILLIAMSPORT, PA EMILE LOHMAN; WICHITA, KS RANDY JENSON; EVERETT, WA		
Publish Date:			
Investigation Docket:	NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at <a href="mailto:pubinquiry@ntsb.gov">pubinquiry@ntsb.gov</a> , or at 800-877-6799. Dockets released after this date are available at <a href="http://dms.nts.gov/pubdms/">http://dms.nts.gov/pubdms/</a> .		

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The Independent Safety Board Act, as codified at 49 U.S.C. Section 1154(b), precludes the admission into evidence or use of any part of an NTSB report related to an incident or accident in a civil action for damages resulting from a matter mentioned in the report. A factual report that may be admissible under 49 U.S.C. § 1154(b) is available [here](#).