



National Transportation Safety Board Aviation Accident Final Report

Location:	Nantucket, MA	Accident Number:	NYC03FA203
Date & Time:	09/23/2003, 0523 EDT	Registration:	N405BK
Aircraft:	Cessna 402C	Aircraft Damage:	Substantial
Defining Event:		Injuries:	1 Fatal, 1 Serious
Flight Conducted Under:	Part 135: Air Taxi & Commuter - Non-scheduled		

Analysis

The pilot was conducting an instrument landing system approach during night instrument meteorological conditions. The airplane was observed to descend toward the runway threshold to an altitude consistent with the approach decision height. A witness reported that he heard the airplane overhead, and assumed that the pilot had performed a missed approach. He described the engine noise as "cruise power" and did not hear any unusual sounds. Shortly thereafter, he received a call from airport operations stating that an airplane had crashed. The airplane impacted the ground about 1/4 mile to the left of the runway centerline, about 3,500 feet beyond the approach end of the runway. Examination of the airplane did not reveal any pre-impact mechanical malfunctions. A weather observation taken around the time of the accident, included a visibility 1/2 statute mile in fog, and an indefinite ceiling at 100 feet. The witness described the weather at the time of the accident as thick fog, and "pitch black."

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 aircraft control during a missed approach. Factors in this accident were fog and the night light conditions.

Findings

Occurrence #1: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: MISSED APPROACH (IFR)

Findings

1. (F) WEATHER CONDITION - FOG
2. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND
3. (F) LIGHT CONDITION - NIGHT

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: MISSED APPROACH (IFR)

Findings

4. TERRAIN CONDITION - GROUND

Factual Information

HISTORY OF FLIGHT

On September 23, 2003, about 0523 eastern daylight time, a Cessna 402C, N405BK, operated by Island Airlines Inc., as flight 400, was substantially damaged when it impacted terrain, while on approach to the Nantucket Memorial Airport (ACK), Nantucket, Massachusetts. The certificated airline transport pilot was fatally injured, and a passenger was seriously injured. Night instrument meteorological conditions prevailed and an instrument flight rules (IFR) flight plan was filed for the flight that departed the Barnstable Municipal Airport (HYA), Hyannis, Massachusetts. The non-scheduled cargo flight was conducted under 14 CFR Part 135.

According to air traffic control information obtained from the Federal Aviation Administration (FAA), the airplane departed HYA under visual flight rules about 0508. Shortly after takeoff, the pilot requested and received an IFR clearance. At 0516, the airplane was 12 miles from ACK, and was cleared for the ILS Runway 24 approach. At 0520:52, the airplane's radar track was observed at 1,000 feet, with a ground speed of 114 knots, as it descended toward runway 24. At 0522:02, the airplane was observed at an altitude of 300 feet, as it approached the runway threshold. The airplane crossed slightly to the right of the runway centerline, and then made a left turn, about 45 degrees to the runway. The airplane's last radar target was observed at 0522:42, and was consistent with the accident site location. The altitude of the last radar target was not recorded.

According to an airport supervisor, the pilot called on the tower frequency, and asked if the runway lights were on. The airport supervisor confirmed that runway lights were illuminated and radioed the pilot; however, the pilot did not respond. He heard the airplane overhead, and assumed that the pilot had performed a missed approach. He described the engine noise as "cruise power" and did not hear any unusual sounds. Shortly thereafter, he received a call from airport operations stating that an airplane had crashed.

The passenger was employed by Island Airlines as a ticket agent. She held a commercial pilot's license with an instrument rating. During an interview with a Federal Aviation Administration inspector, the passenger described the flight and approach as "normal." She recalled that the weather was IFR and foggy, and the pilot initiated a missed approach; however, she had no further memory of the flight.

The accident occurred during the hours of darkness approximately 41 degrees, 14.9 minutes north latitude, and 70 degrees, 3.9 minutes west longitude.

PERSONNEL INFORMATION

The pilot held an airline transport pilot certificate, with an multi-engine land airplane rating. He also held a commercial pilot certificate with ratings for rotorcraft, and single engine land and sea airplanes.

The pilot reported 14,000 hours of total flight experience on his most recent application for an FAA first class medical certificate, which was issued on April 16, 2003. Island Airlines reported that the pilot had accumulated about 4,000 hours of total flight experience in the same make and model as the accident airplane, which included 106 and 36 hours accumulated during the preceding 30 and 90 days, respectively. The pilot received and passed an airman

competency check on May 6, 2003.

According to company records, the pilot was not scheduled to work on September 20, and 21. On September 22, the pilot reported for duty at 0455, and reported off duty at 1200. He flew for 1.2 hours. On the date of the accident, the pilot reported for duty at 0450.

AIRCRAFT INFORMATION

The airplane was maintained under an approved airworthiness inspection program. The airplane had been operated for about 50 hours since its most recent inspection, which was performed on September 2, 2003. At the time of the accident, the airplane had accumulated about 9,800 total airframe hours.

The left engine was rebuilt by Teledyne Continental Motors, Mobile, Alabama, on September 29, 2001, and installed on the accident airplane on November 19, 2001. At the time of the accident, the left engine had accumulated about 1,430 hours since installation.

The right engine was rebuilt by Teledyne Continental Motors, Mobile, Alabama, on November 12, 2001, and installed on the accident airplane on December 11, 2001. At the time of the accident, the right engine had accumulated about 1,370 hours since installation.

According to an FAA inspector, the airplane was loaded with about 650 pounds of newspapers, which were placed in-between the passenger seats.

METEOROLOGICAL INFORMATION

A weather observation taken at ACK, at 0529, reported: Winds from 130 degrees at 10 knots, visibility 1/2 statute mile in fog, indefinite ceiling at 100 feet, temperature and dew point 61 degrees F, altimeter 30.04 in/hg. The airport supervisor described the weather at the time of the accident as thick fog, and "pitch black."

AERODROME INFORMATION

The Nantucket Memorial Airport was located at an elevation of 48 feet msl. Runway 24 was 6,303 feet-long, 150 feet-wide, and constructed of asphalt. In addition, runway 24, was equipped a simplified short approach lighting system with runway alignment indicator lights.

Review of the approach diagram for the ILS Runway 24 approach revealed a decision height of 248 feet msl, and an approach minimum of 1/2 mile visibility.

The published missed approach procedure included an initial climb to 700 feet, and then a climbing right turn to 2,500 feet.

A post accident FAA flight inspection of the runway 24 instrument landing system did not reveal any equipment or signal malfunctions.

WRECKAGE INFORMATION

The airplane impacted the ground about 1/4 mile to the left of the runway centerline, about 3,500 feet beyond the approach end of the runway. A debris path oriented on a 196 degree heading, began at a berm, and continued approximately 275 feet to the main wreckage. Approximately 3 feet of the airplane's left wing tip was located on the berm. In addition, 2 to 3 inch diameter trees, located near the berm, were cut at 45-degree angles, and contained black

paint on the cut surfaces. The tops of the trees were cut at equal heights.

All major portions of the airframe were accounted for at the accident site. The left wing, left engine, and the right wing outboard of the engine nacelle, were located approximately 125 feet from the initial impact point. The area leading to and around the wings was charred. The left wing was destroyed by impact and fire damage. The right wing was partially consumed by fire, forward of the inboard flap area. The aileron was charred and the wing tip was bent up about 45 degrees.

The main wreckage came to rest upright on a 200 degree heading. There was no evidence of fire damage associated with the main wreckage. The left side of the airplane, forward of the empennage was absent, exposing the interior of the cabin. The inboard portion of the right wing remained attached to the airframe. The nose section, which contained the nose gear was located about 225 feet along the debris path. The remainder of the forward cockpit area was crushed to a point just forward of the wing leading edges. The horizontal stabilizer was intact, except for the left elevator counter weight, which was located near the beginning of the debris path. The horizontal stabilizer was inverted and remained attached to the empennage by elevator trim cables. The rudder was intact and remained connected to the airframe.

Flight control continuity was confirmed from the forward cockpit area, through the aft cabin bulkhead to the rudder control surface. Due to impact damage the flight control cables to the elevator and aileron were not intact. Examination of the flap motor sprocket chain corresponded with a 0 degree flap setting. All landing gear were observed in a retracted position.

Both engines were separated from their respective attach points. The left engine was located about 125 feet along the debris path. The left propeller was found approximately 111 feet along the debris path. The right engine, with propeller attached, was located approximately 36 feet from, and on a 100 degree heading from the main wreckage.

The left engine sustained fire damaged and about 1/3 of the crankshaft flange was missing. The crankshaft was rotated via an accessory drive. Compression was attained on all cylinders and valve train continuity was confirmed to all valves, except the number 6 exhaust valve, which sustained impact damage to its pushrod. The top spark plugs were removed. Their electrodes were intact and gray in color. The right magneto was separated from the engine and the left magneto remained attached. Both magnetos produced spark on all towers when rotated by hand. Fuel was found in the engine driven fuel pump. The fuel pump drive coupling remained intact and the fuel pump rotated freely. The left propeller sustained significant impact damaged. One blade had separated from the hub and was not located. The remaining two blades contained chordwise scratches and leading edge damage. The oil filter was removed and absent of metallic contamination.

The right engine was not fire damaged. The crankshaft was rotated via an accessory drive. Compression and valve train continuity was confirmed on all cylinders. The top spark plugs were removed. Their electrodes were intact and gray in color. Both magnetos remained attached to the engine. The magnetos produced spark on all towers when rotated. Fuel was found in the engine driven fuel pump. The fuel pump drive coupling remained intact and the fuel pump rotated freely. All three blades from the right engine exhibited chordwise scratches and leading edge damage. The oil filter was removed, and absent of metallic contamination.

Both engine main fuel screens were absent of debris.

Examination of the airplane's vacuum system revealed that the left engine vacuum pump was separated from the engine and the drive coupling was not located. Internal examination of the left vacuum pump revealed that the vanes were intact and the rotor was cracked. The right engine vacuum pump remained attached to the engine and its drive coupling was intact. Internal examination of the right vacuum pump revealed that the vanes and rotor were not damaged. The pilot's side attitude indicator gyro was examined. The rotor and gyro housing contained rotational scoring.

MEDICAL AND PATHOLOGICAL INFORMATION

An autopsy was performed on the pilot, on September 24, 2003, by the Office of the Chief Medical Examiner, Boston, Massachusetts.

The toxicological testing report from the FAA Toxicology Accident Research Laboratory, Oklahoma City, Oklahoma, was negative for drugs and alcohol for the pilot.

ADDITIONAL INFORMATION

Astronomical Data

According to data obtained from the U.S. Naval Observatory for the accident site area, civil twilight and sunrise occurred at 0601, and 0628, respectively.

Wreckage Release

The airplane wreckage was released on September 29, 2003, to a representative of the owners insurance company.

Pilot Information

Certificate:	Airline Transport; Commercial	Age:	59, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	Helicopter	Restraint Used:	
Instrument Rating(s):	Airplane	Second Pilot Present:	No
Instructor Rating(s):	None	Toxicology Performed:	Yes
Medical Certification:	Class 1 Valid Medical--w/ waivers/lim.	Last FAA Medical Exam:	04/16/2003
Occupational Pilot:		Last Flight Review or Equivalent:	05/06/2003
Flight Time:	14000 hours (Total, all aircraft), 4000 hours (Total, this make and model), 14000 hours (Pilot In Command, all aircraft), 106 hours (Last 90 days, all aircraft), 36 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Cessna	Registration:	N405BK
Model/Series:	402C	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	402C-0459
Landing Gear Type:	Retractable - Tricycle	Seats:	10
Date/Type of Last Inspection:	09/02/2003, AAIP	Certified Max Gross Wt.:	6850 lbs
Time Since Last Inspection:	50 Hours	Engines:	2 Reciprocating
Airframe Total Time:	9795 Hours at time of accident	Engine Manufacturer:	Continental
ELT:	Installed, activated, did not aid in locating accident	Engine Model/Series:	TSIO-520-VB
Registered Owner:	B & K Leasing, Inc.	Rated Power:	325 hp
Operator:	ISLAND AIRLINES INC	Operating Certificate(s) Held:	On-demand Air Taxi (135)
Operator Does Business As:		Operator Designator Code:	GULC

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument Conditions	Condition of Light:	Night
Observation Facility, Elevation:	ACK, 48 ft msl	Distance from Accident Site:	
Observation Time:	0529 EDT	Direction from Accident Site:	
Lowest Cloud Condition:		Visibility	0.5 Miles
Lowest Ceiling:	Indefinite (V V) / 100 ft agl	Visibility (RVR):	
Wind Speed/Gusts:	10 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	130°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	30.04 inches Hg	Temperature/Dew Point:	16° C / 16° C
Precipitation and Obscuration:			
Departure Point:	Hyannis, MA (HYA)	Type of Flight Plan Filed:	IFR
Destination:	Nantucket, MA (ACK)	Type of Clearance:	IFR
Departure Time:	0507 EDT	Type of Airspace:	Class E

Airport Information

Airport:	Nantucket Memorial (ACK)	Runway Surface Type:	Asphalt
Airport Elevation:	48 ft	Runway Surface Condition:	Dry
Runway Used:	24	IFR Approach:	ILS
Runway Length/Width:	6303 ft / 150 ft	VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	Aircraft Damage:	Substantial
Passenger Injuries:	1 Serious	Aircraft Fire:	On-Ground
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	1 Fatal, 1 Serious	Latitude, Longitude:	41.248333, -70.064722

Administrative Information

Investigator In Charge (IIC):	Luke Schiada	Report Date:	02/24/2005
Additional Participating Persons:	Ronald J Williams; Bost Flight Standards District Office; Lexington, MA Greg W Schmidt; Cessna Aircraft Company; Wichita, KS John Kent; Continental Motors; Seagoville, TX Richard I Bunker; Mass Aeronautics Commission; Boston, MA		
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 pubinquiry@ntsb.gov , or at 800-877-6799. Dockets released after this date are available at http://dms.nts.gov/pubdms/ .		

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