Aviation Investigation Final Report

Location:	Dartmouth, Massachusetts	**Accident Number:**	NYC07FA065
Date & Time:	February 2, 2007, 19:40 Local	**Registration:**	N944CA
Aircraft:	Socata TBM 700	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	3 Fatal
Flight Conducted Under:	Part 91: General aviation - Executive/Corporate		

Analysis

During the flight, the private pilot/operator was most likely seated in the left seat. He obtained his instrument rating about 7 months prior to the accident, and had accumulated approximately 300 hours of flight experience; of which, about 80 hours were in the accident airplane. The commercial pilot/company pilot was most likely seated in the right seat. He had accumulated approximately 1,000 hours of flight experience; of which, about 125 hours were actual instrument experience, and 80 hours were in the accident airplane. The commercial pilot had filed a flight plan to the wrong airport, received a weather briefing for the wrong airport, and therefore was not aware of the NOTAM in effect for an out of service approach lighting system at the destination airport. When the commercial pilot realized his error, he changed the flight plan, but did not request another weather briefing. According to radar information, the airplane flew the instrument landing system runway 5 approach fast, performed a steep missed approach to 1,000 feet, and then disappeared from radar, consistent with a loss of control during the missed approach. No preimpact mechanical malfunctions were identified with the airplane during the investigation. The reported weather at the accident airport included an overcast ceiling at 200 feet, visibility 1 mile in light rain and mist, and wind from 160 degrees at 4 knots. The investigation could not determine which pilot was flying the airplane at the time of the accident.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: Both pilots' failure to maintain aircraft control during a missed approach.

Findings

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

Findings
1. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND
2. (C) AIRCRAFT CONTROL - NOT MAINTAINED - COPILOT/SECOND PILOT

Occurrence #2: IN FLIGHT COLLISION WITH TERRAIN/WATER
Phase of Operation: DESCENT - UNCONTROLLED

Findings
3. TERRAIN CONDITION - GROUND

Factual Information

This report was modified on December 11, 2007.

HISTORY OF FLIGHT

On February 2, 2007, about 1940 eastern standard time, a Socata TBM 700, N944CA, was destroyed when it impacted terrain in Dartmouth, Massachusetts, during a missed approach to New Bedford Regional Airport (EWB), New Bedford, Massachusetts. The certificated commercial pilot, certificated private pilot, and a passenger were fatally injured. Night instrument meteorological conditions prevailed for the flight that departed General Edward Lawrence Logan International Airport (BOS), Boston, Massachusetts, about 1917. An instrument flight rules (IFR) flight plan was filed for the business flight conducted under 14 CFR Part 91.

The airplane was based at Lehigh Valley International Airport (ABE), Allentown, Pennsylvania. The private pilot operated the airplane through his legal practice, and was visiting Massachusetts to meet colleagues. The commercial pilot was employed as a company pilot for the legal practice.

According to data from Lockheed Martin Corporation, the commercial pilot contacted the Williamsport Automated Flight Service Station (AFSS) about 0925 on the day of the accident. He filed an IFR flight plan for a trip from ABE to BOS, with a proposed departure time of 1300. The flight service specialist accepted the flight plan, and provided a standard weather briefing for the flight, which included Notices to Airmen (NOTAM). The airplane subsequently flew uneventfully from ABE to BOS.

The commercial pilot contacted the Williamsport AFSS again about 1600. He filed two IFR flight plans. The first flight plan was from BOS to "Bedford B-E-D," (erroneously, not New Bedford) with a proposed departure time of 1700. The second IFR flight plan was from Lawrence G. Hanscom Airport (BED), Bedford, Massachusetts, to ABE, with a proposed departure time of 2000. The commercial pilot requested a weather briefing for the flight from BOS to BED, and was provided a standard weather briefing, which included NOTAMs for BOS and BED.

The commercial pilot contacted the Williamsport AFSS a third time, about 1710, and advised that he needed to make changes to two IFR flight plans. First, he asked that the destination of his first flight plan be changed from "Bedford" to "New Bedford." The commercial pilot then asked if the flight service specialist knew the three-letter-identifier for New Bedford as the commercial pilot was not near a map or computer at the time. The flight service specialist then provided the correct "EWB" identifier for New Bedford. The commercial pilot also

changed the departure time from 1700 to 1730.

For the second flight plan, the commercial pilot changed the departure point from BED to EWB, for the return flight to ABE. The flight service specialist then stated that he would change the flight plans. The commercial pilot thanked the specialist and ended the telephone call. The commercial pilot did not request a weather briefing for the flight to EWB.

While at BOS, the airplane was fueled, and then departed for EWB. According to radar and voice data provided by the Federal Aviation Administration (FAA), the flight proceeded toward the instrument landing system (ILS) approach for runway 5 at EWB.

At 1935, the flight intercepted the localizer course, about 3 miles prior to the NEFOR intersection. At that time the airplane's radar target indicated an altitude of 1,900 feet and a groundspeed of 180 knots. The flight was handed off from Providence Approach Control to New Bedford Tower, and subsequently cleared to land.

At 1936, the flight crossed NEFOR. At that time, the airplane's radar target indicated an altitude of 1,400 feet and a groundspeed of 200 knots. The EWB tower controller advised the flight that two preceding aircraft landed about 10 to 15 minutes prior, and "broke out" about 300 feet, which was acknowledged.

At 1937, the flight was approximately 1 mile from the runway 5 threshold at EWB. At that time, the airplane's radar target indicated an altitude of 300 feet and a groundspeed of 160 knots.

About 15 seconds later, the airplane's radar target indicated a left climbing turn to 1,000 feet, at a ground speed of 140 knots. The radar target was subsequently lost. During that time, one of the pilots reported a missed approach to EWB tower. No further transmissions were received from the accident airplane after the radar target was lost. The investigation could not determine which pilot was flying the airplane at the time of the accident.

The accident occurred during the hours of night; located about 41 degrees, 40.06 minutes north latitude, and 70 degrees, 58.57 minutes west longitude.

PERSONNEL INFORMATION

The commercial pilot, age 23, held a commercial pilot certificate, with ratings for airplane single engine land, airplane multiengine land, and instrument airplane. He also held a flight instructor certificate, with ratings for airplane single engine land and instrument airplane. The commercial pilot reported 1,700 hours of total flight experience on the application for his most recent FAA first class medical certificate, issued January 8, 2007.

The commercial pilot completed formal training for the make and model accident airplane in July 2006, at SIMCOM, Pan Am International Flight Academy.

The commercial pilot's logbook was recovered; however, the last entry was dated September 29, 2006. There was no record of all of his flight time between the last entry and the day of the accident. According to the logbook, as of the last entry, the commercial pilot had accumulated a total flight experience of approximately 1,037 hours; of which, about 113 hours were in multiengine airplanes, and 924 hours in single engine airplanes. The commercial pilot also recorded about 125 hours in actual instrument meteorological conditions, 91 hours in night conditions, and 65 hours in the accident airplane.

The private pilot, age 53, held a private pilot certificate, with a rating for airplane single engine land. He obtained his private pilot certificate in November 2005. The private pilot also obtained an instrument rating on July 24, 2006, and reported 300 hours of total flight experience on his most recent FAA third class medical certificate, issued on December 14, 2006. The private pilot's logbook was not recovered. According to a witness who spoke to the private pilot about 1 week prior to the accident, the private pilot reported 80 hours of flight experience in the accident airplane.

There was no record that the private pilot completed a formal training course for the make and model accident airplane.

According to a flight instructor that had flown with both pilots, during the month prior to the accident, the private pilot flew from the left seat, with the commercial pilot in the right seat. The flight instructor described the commercial pilot as a fantastic instrument pilot.

The flight instructor added that the private pilot flew during a 6-year period, about 10 years prior to the accident. He did not have a pilot license at the time, but flew about 600 to 700 hours as a student pilot receiving instruction, primarily in multiengine airplanes. The private pilot subsequently misplaced his logbook containing a record of that flight time. The private pilot did not count that time when applying for his private pilot or medical certificates. The flight instructor estimated that the private pilot had accumulated about 400 to 450 hours of flight experience since the lapse in flying. The flight instructor described the private pilot as a low experience instrument pilot, who occasionally became distracted or fixated on one instrument.

AIRCRAFT INFORMATION

The airplane was manufactured in 2001. The airplane's most recent annual inspection was completed on July 7, 2006. At that time, the airplane had accumulated 478.8 total hours of operation.

The airplane was equipped with an engine monitoring system, which periodically recorded data during different phases of flight. According to the last record, captured during the cruise portion of the accident flight, the airplane had accumulated 647.38 hours of operation.

Review of a pilot's information manual for the same make and model as the accident airplane

revealed that the published approach speed with the flap in the landing configuration was 80 knots. Further review of the manual revealed that the flap operating range was from 60 knots to 122 knots. The flaps could be selected to three positions: UP (0 degrees extension); TO (10 degrees extension), and LDG (34 degrees extension).

METEOROLOGICAL INFORMATION

The reported weather at EWB, at 1939, was: wind from 160 degrees at 4 knots; visibility 1 mile in light rain and mist; overcast ceiling at 200 feet; temperature 33degrees Fahrenheit (F); dew point 34 degrees F; altimeter 29.58 inches Hg.

AIRPORT INFORMATION

Runway 5 at EWB was 4,997 feet long, 150 feet wide, and consisted of asphalt. The runway was equipped with a medium intensity approach lighting system with runway alignment indicator lights (MALSR), which was out of service, and a NOTAM was in effect at the time of the accident. The runway was also equipped with high intensity runway lighting (HIRL), which was operating at the time of the accident.

The instrument landing system approach for runway 5 at EWB had a decision altitude of 274 feet mean sea level (msl), 200 feet above ground level (agl), with a visibility requirement of 1/2 mile. The outer marker was NEFOR, which was 3.9 nautical miles from the runway threshold. The crossing height at NEFOR was 1,339 feet msl.

The missed approach procedure was a climb to 700 feet, then a climbing left turn to 1,700 feet, direct to NEFOR and hold.

WRECKAGE AND IMPACT INFORMATION

The wreckage was located in a wooded area about 1 mile west of EWB, and was examined on February 3 and 4, 2007. All major components of the airplane were accounted for at the site. A debris path was observed, which originated with severed trees at descending heights, on an approximate 260-degree magnetic heading for about 30 feet to an impact crater. The main wreckage was located about 30 feet beyond the impact crater, and the debris path terminated at the right wing, located just beyond the main wreckage. The main wreckage was resting on its right side, and oriented about 100 degrees magnetic. The horizontal stabilizer had separated from the main wreckage, and was located to the right of it. The cockpit area had also separated from the main wreckage, and was resting to the left of it. The left wing, the left main landing gear, and the nose landing gear were located near the impact crater. The propeller was located near the left wing, and the engine was located near the cockpit.

The left wing separated near the wing root, outboard of its attachment point, and the left aileron remained attached to the wing. The left flap had separated from the left wing, and was resting near it. The left aileron control cables were fragmented and the cable ends were

broomstrawed, consistent with overstress. The right wing also separated near the wing root, and outboard of its attachment point. The right main landing gear remained in the right wing. The right aileron and right flap separated from the wing, and were located nearby. The right aileron control cables were also fragmented and the cable ends were broomstrawed, consistent with overstress. Each wing contained three flap actuators. One flap actuator was recovered from the left wing, and two flap actuators were recovered from the right wing. Measurements of all recovered actuators corresponded to an approximate 20-degree flap extended position.

The horizontal stabilizer had sheared off its attach points. The left elevator remained attached, and the right elevator had separated, and came to rest near the horizontal stabilizer. The left elevator trim tab was deflected upward and locked, consistent with impact damage, and the right elevator trim tab was approximately neutral. Flight control continuity was confirmed from the cockpit area to the rudder. Flight control continuity for the elevator was confirmed from the cockpit area to the point of horizontal stabilizer separation.

All four propeller blades exhibited s-bending, and one blade was sheared at the tip. The engine was disassembled for inspection. Rotational scoring was noted on the gas generator and turbine rotors. Examination of the cockpit revealed that the landing gear switch was in the down position; however, the switch lever had separated consistent with impact damage. Both altimeter setting windows displayed "29.58," and the radar altimeter bug was positioned to 280 feet. The flap indicator needle was mid-range between the takeoff and landing setting. The rudder trim needle indicated "center," and the elevator trim needle was missing.

MEDICAL AND PATHOLOGICAL INFORMATION

Autopsies were performed on the pilots by the Commonwealth of Massachusetts, Office of the Chief Medical Examiner, Boston, Massachusetts.

Toxicological testing was conducted on the pilots at the FAA Toxicology Accident Research Laboratory, Oklahoma City, Oklahoma.

TESTS AND RESEARCH

A handheld global positioning system (GPS) unit was recovered from the wreckage and forwarded to the Safety Board's Vehicle Laboratory, Washington, D.C. Due to damage sustained in the accident, no data could be extracted from the unit.

On February 3, 2007, the FAA conducted a flight inspection of the ILS runway 5 approach at EWB. Review of the Flight Inspection Report revealed that the facility operation was found to be satisfactory.

Pilot Information

Certificate:	Commercial; Flight instructor	**Age:**	23,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	Airplane single-engine; Instrument airplane	**Toxicology Performed:**	Yes
Medical Certification:	Class 1 With waivers/limitations	**Last FAA Medical Exam:**	January 1, 2007
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	July 1, 2006
Flight Time:	1037 hours (Total, all aircraft), 65 hours (Total, this make and model)		

Other flight crew Information

Certificate:	Private	**Age:**	53,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	Yes
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 3 Without waivers/limitations	**Last FAA Medical Exam:**	December 1, 2006
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	300 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Socata	**Registration:**	N944CA
Model/Series:	TBM 700	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	206
Landing Gear Type:	Retractable - Tricycle	**Seats:**	6
Date/Type of Last Inspection:	July 1, 2006 Annual	**Certified Max Gross Wt.:**	6579 lbs
Time Since Last Inspection:	168 Hrs	**Engines:**	1 Turbo prop
Airframe Total Time:	479 Hrs as of last inspection	**Engine Manufacturer:**	Pratt & Whitney
ELT:	Installed, activated, did not aid in locating accident	**Engine Model/Series:**	PT6A-64
Registered Owner:	PK Leasing Llc.	**Rated Power:**	700 Horsepower
Operator:	Peter J Karoly	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Night
Observation Facility, Elevation:	EWB,80 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	19:39 Local	**Direction from Accident Site:**	90°
Lowest Cloud Condition:		**Visibility**	1 miles
Lowest Ceiling:	Overcast / 200 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	4 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	160°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.57 inches Hg	**Temperature/Dew Point:**	1°C / 1°C
Precipitation and Obscuration:	N/A - None - Mist		
Departure Point:	Boston, MA (BOS)	**Type of Flight Plan Filed:**	IFR
Destination:	New Bedford, MA (EWB)	**Type of Clearance:**	IFR
Departure Time:	19:17 Local	**Type of Airspace:**	

Airport Information

Airport:	New Bedford Regional Airport EWB	**Runway Surface Type:**	Asphalt
Airport Elevation:	80 ft msl	**Runway Surface Condition:**	Wet
Runway Used:	05	**IFR Approach:**	ILS
Runway Length/Width:	4997 ft / 150 ft	**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	2 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:	1 Fatal	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	3 Fatal	**Latitude, Longitude:**	41.56052,-71.000289(est)

Administrative Information

Investigator In Charge (IIC):	Gretz, Robert
Additional Participating Persons:	Joe B Taylor; FAA/FSDO; Boston, MA Richard Bunker; Massachusetts Aeronautics Commision; Boston, MA Thomas A Berthe; Pratt & Whitney; Burlington, VT Wayne Miller; EADS Socata; Pembroke Pines, FL
Original Publish Date:	December 20, 2007
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=65234