



National Transportation Safety Board Aviation Accident Final Report

Location:	Groton, CT	Accident Number:	NYC06FA137
Date & Time:	06/02/2006, 1440 EDT	Registration:	N182K
Aircraft:	Gates Learjet 35A	Aircraft Damage:	Destroyed
Defining Event:		Injuries:	2 Fatal, 3 Minor
Flight Conducted Under:	Part 135: Air Taxi & Commuter - Non-scheduled		

Analysis

The crew briefed the Instrument Landing System approach, including the missed approach procedures. Weather at the time included a 100-foot broken cloud layer, and at the airport, 2 miles visibility. The approach was flown over water, and at the accident location, there was dense fog. Two smaller airplanes had successfully completed the approach prior to the accident airplane. The captain flew the approach and the first officer made 100-foot callouts during the final descent, until 200 feet above the decision height. At that point, the captain asked the first officer if he saw anything. The first officer reported "ground contact," then noted "decision height." The captain immediately reported "I got the lights" which the first officer confirmed. The captain reduced the power to flight idle. Approximately 4 seconds later, the captain attempted to increase power. However, the engines did not have time to respond before the airplane descended into the water and impacted a series of approach light stanchions, commencing about 2,000 feet from the runway. Neither crew member continued to call out altitudes after seeing the approach lights, and the captain descended the airplane below the decision height before having the requisite descent criteria. The absence of ground references could have been conducive to a featureless terrain illusion in which the captain would have believed that the airplane was at a higher altitude than it actually was. There were no mechanical anomalies which would have precluded normal airplane operation.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The crew's failure to properly monitor the airplane's altitude, which resulted in the captain's inadvertent descent of the airplane into water. Contributing to the accident were the foggy weather conditions, and the captain's decision to descend below the decision height without sufficient visual cues.

Findings

Occurrence #1: IN FLIGHT COLLISION WITH TERRAIN/WATER

Phase of Operation: APPROACH - FAF/OUTER MARKER TO THRESHOLD (IFR)

Findings

1. ALTITUDE - NOT MAINTAINED - FLIGHTCREW
2. (C) DIVERTED ATTENTION - FLIGHTCREW
3. VISUAL ILLUSION - PILOT IN COMMAND
4. (F) WEATHER CONDITION - FOG
5. (F) IFR PROCEDURE - NOT FOLLOWED - PILOT IN COMMAND
6. TERRAIN CONDITION - WATER

Factual Information

"THIS CASE WAS MODIFIED DECEMBER 17, 2007."

HISTORY OF FLIGHT

On June 2, 2006, at 1440 eastern daylight time, a Gates Learjet 35A, N182K, operated by International Jet Charter, Inc. (IJC), was destroyed when it impacted water and light stanchions while approaching Groton-New London Airport (GON), Groton, Connecticut. The two certificated airline transport pilots were fatally injured, and three passengers incurred minor injuries. Instrument meteorological conditions prevailed. The airplane was operating on an instrument flight rules flight plan between Atlantic City International Airport (ACY), Egg Harbor Township, New Jersey, and Groton. The non-scheduled (on-demand) passenger charter flight was conducted under 14 CFR Part 135.

According to one of the passengers, the airplane initially left Norfolk International Airport (ORF), Norfolk, Virginia, with five passengers onboard. The airplane then flew to Atlantic City International Airport and deplaned two of the passengers before departing for Groton.

Approaching Groton, the passenger looked out his window and saw sailboats about 300 feet below. The airplane continued its descent, until the passenger felt it "thrust up," followed by an impact, and "the jet tumbled across the water" before coming to rest upside down.

Another passenger stated that there was nothing unusual about the accident flight except that it was a little bumpier than usual. The passenger could not see outside because of his seat position. Suddenly, it became "very rocky," the airplane hit the water "real hard," and water quickly entered the upside-down cabin.

A witness fishing from a nearby sandbar, could barely see the approach light stanchions in the water because of the fog. (Light stanchions were located along the approach path, in the water, at 200-foot intervals, beginning 2,400 feet from runway 5.) He heard "several" airplanes land, then heard one "coming in that was much louder than the others." He looked up, saw that the airplane was very low, and "a part of the plane hit one of the light [stanchions]." The front of the airplane then hit a second stanchion, "causing the plane to flip hard" and impact a third stanchion. The witness and two friends then proceeded by boat to the wreckage to assist the occupants.

Air traffic control information received from the Federal Aviation Administration (FAA) revealed that as the airplane approached Groton, it briefly entered holding while awaiting the landing of two smaller airplanes ahead of it. The crew was then cleared for the instrument landing system (ILS) runway 5 approach. About 600 feet msl, radar service was terminated, and the crew switched radio frequencies from the approach controller to the tower controller.

A review of cockpit voice recorder (CVR) information revealed that, approximately 30 minutes prior to the accident, the crew completed the approach checklist, including a brief of the ILS runway 5 approach, along with the missed approach procedures. The crew also listened to the Automatic Terminal Information Service (ATIS) broadcast information Foxtrot several times, which included 2 miles visibility and a broken ceiling of 100 feet.

After holding briefly, and descending in holding, the first officer completed the before landing checklist to the point of holding flaps twenty. The airplane was cleared for the approach, and the first officer switched over to tower frequency. Awaiting glideslope capture, the first officer

asked the tower controller if the ceiling had changed, who responded "ah negative, it's still pretty foggy out that way."

The crew completed the before landing checklist, and the captain asked the first officer to ask the tower controller if the runway lights were "turned up all the way" which they were. Just after that, as the airplane was descending, the first officer started calling out the altitudes, beginning with "seven hundred above," down to "three hundred," "speed's good," and "two hundred." The captain then asked, "see anything," and the first officer responded, "got some ground contact." Four seconds later, the first officer stated, "decision height." The captain responded, "I got lights" about the same time the first officer stated, "got the, got the lights." One second later, there was a tone, similar to an autopilot/yaw dampener disconnect. One second after that, the first officer said, "continue," then, "you still on the ah" and the captain responded with, "whoa." The recording ended 1 second later.

The accident occurred during daylight hours, in the vicinity of 41 degrees, 19.24 minutes north latitude, 72 degrees, 03.14 minutes west longitude.

AIRCRAFT INFORMATION

The airplane was owned by Robertson Asset Management Company, Virginia Beach, Virginia. According to a written "Aircraft Agreement," IJC was responsible for the "operational control" of the airplane. In addition, IJC was responsible for ensuring the airplane was "operated and maintained in accordance with FAR Part 135 for on-demand charters."

COMPANY INFORMATION

IJC operated five airplanes and managed one. According to the company president, and as confirmed by an FAA records search, IJC, which was founded in the early 1990's, had no previous accidents.

PERSONNEL INFORMATION

The captain held an airline transport pilot certificate with Learjet, G-159, and CA-212 type ratings. He also held a flight instructor certificate for airplane single and multi-engine airplane, and instrument airplane. On his latest Federal Aviation Administration (FAA) first class medical certificate application, dated December 12, 2005, the captain indicated 17,509 hours of flight time. Estimated flight time at the time of the accident was 18,750 hours total time, with 7,500 hours in type and 1,050 hours of instrument time. According to company training records, the captain's latest FAR Part 135 competency check was completed on February 4, 2006.

The first officer held an airline transport pilot certificate with a Learjet type rating. He also held a flight instructor certificate for single and multi-engine airplane, and instrument airplane. On his latest Federal Aviation Administration (FAA) first class medical certificate application, dated April 12, 2005, the pilot indicated 3,255 hours of flight time. Estimated flight time at the time of the accident was 3,275 hours of flight time, with 750 hours of instrument time. According to company training records, the first officer's latest FAR Part 135 competency check was completed on September 28, 2005. The first officer was also a retired FAA air traffic controller.

The crew were employees of IJC, and the passengers, who were onboard for a casino charter, were not affiliated with Robertson Asset Management Company.

AIRPORT INFORMATION

Groton-New London Airport runway 5 was 5,000 feet long and 150 feet wide. The runway was equipped with High Intensity Runway lights (HIRL), a Medium Intensity Approach Lighting System with Runway Alignment Indicator Lights (MALSR), and a 4-light Precision Approach Path Indicator (PAPI).

The inbound course for the ILS runway 5 approach was 048 degrees magnetic, the decision altitude was 207 feet msl, and the decision height was 200 feet agl. Glideslope angle was 3 degrees.

METEOROLOGICAL INFORMATION

Weather, recorded at the airport at 1356, included winds from 190 degrees true at 7 knots, 2 statute miles visibility in mist, a broken cloud layer at 600 feet, temperature 68 degrees Fahrenheit (F), dew point 64 degrees F, altimeter setting 29.86 inches of mercury.

Weather, recorded at the airport at 1456, included winds from 170 degrees true at 8 knots, 2 statute miles visibility in mist, a broken cloud layer at 100 feet, temperature 66 degrees F, dew point 63 degrees F, altimeter setting 29.84 inHg.

ATIS information was noted several times on the CVR recording, and included winds from 200 degrees true at 7 knots, visibility 2 miles in mist, and 100 feet broken.

A witness, who was on a skiff near the accident site, stated that he heard a "few planes come in for landing" at the airport, and was thinking that it was "awful foggy for them to be flying." Visibility on the water was "limited to about 15 feet because of the dense fog."

According to 911 recordings, people on a nearby shoreline could hear survivors shouting for help, but could not see the airplane due to the fog.

WRECKAGE AND IMPACT INFORMATION

The wreckage path began in shallow water, on the approach course, about 2,050 feet from the approach end of runway 5. Approximately 2,000 feet from the runway, a light stanchion, made of wood and anchored by four telephone poles, was damaged on its left side (relative to the approach path), just above the waterline. Tidal changes varied the height above the waterline. A second stanchion, located about 1,800 feet from the runway, had the two left side telephone poles cut off about 1 foot above the waterline. A third stanchion, about 1,600 feet from the runway, was toppled, with the wreckage located next to it. The main wreckage was upside down, and the wings were separated from the fuselage.

On June 3, 2006, the airplane was recovered and moved to a secure state dock. An examination revealed no mechanical anomalies. All flight control surfaces were accounted for, and flight control continuity was confirmed from the ailerons, rudder, and elevators to the cockpit. The flap interconnect cable was missing. The left spoiler actuator was missing, and the right spoiler actuator was attached, and in the down and locked position. The landing gear was confirmed down.

There was no evidence of engine distress, and all of the fan blades from both engine fans exhibited a gradual bending of their leading edges, opposite the direction of rotation.

MEDICAL AND PATHOLOGICAL INFORMATION

Autopsies were conducted on the pilots at the State of Connecticut, Office of the Chief Medical

Examiner, Farmington, Connecticut. Tissue, blood and urine samples were subsequently forwarded for toxicological testing to the FAA Forensic Toxicology Research Team, Oklahoma City, Oklahoma.

Toxicological testing of the captain indicated 202 ng/mL of cocaine in the urine, and 445 ng/mL of benzoylecgonine in the urine. No cocaine was detected in the blood. Following discussions between the National Transportation Safety Board investigator and the Research Team director, the laboratory retested the blood specimen, along with bile, kidney and liver, and no cocaine was detected in any of those specimens.

According to the Research Team director, "since cocaine and benzoylecgonine were found in [the captain's] urine specimen using more than one analytical test, cocaine use can not be ruled out. However, identifying cocaine in a urine specimen at 202 ng/mL, but having no benzoylecgonine (cocaine metabolite) in a matching blood/tissue specimen, is not consistent with cocaine use."

A urine sample was also subsequently tested by the State of Connecticut. That sample was negative for cocaine and cocaethylene.

Also, during the course of the investigation, no anecdotal evidence was found to support the use of cocaine.

On his most recent application for his FAA medical certificate, the captain's vision in each eye separately and in both eyes together was noted as: distant vision - 20/100 corrected to 20/20, near vision - 20/60 corrected to 20/25, and intermediate vision - 20/40. According to an employee of IJC, the captain's wife noted that he typically wore contact lenses, and used "cheater" glasses for near vision. She also reported that he generally wore sunglasses over his contact lenses as necessary and did not use photochromatic sunglasses. The autopsy report did not note any evidence of either the presence or the absence of corrective lenses; however, an empty contact lens case was found in the captain's luggage.

TESTS AND RESEARCH

Two N1 Digital Electronic Engine Controls (DEECs) were recovered, and forwarded to Honeywell Aerospace for engine parameter readout under FAA supervision.

According to the Honeywell report, engine data from the last 60 seconds of the accident flight revealed that both engines were operating at a "typical approach power setting," approximately 60 to 65 percent N1 speed and 80 to 90 percent N2 speed during the approach. About 6 seconds before the end of the data stream, the power levers were commanded back from an approach power setting to a flight idle power setting. The power levers reached idle stop about 2 seconds later and remained there for approximately 2 seconds before being advanced about 1 second prior to the end of the data.

ADDITIONAL INFORMATION

Illusions

According to the Aeronautical Information Manual (AIM), section 8-1-5, paragraph 3(d), "Featureless terrain illusion. An absence of ground features, as when landing over water...can create the illusion that the aircraft is at a higher altitude than it actually is. The pilot who does not recognize this illusion will fly a lower approach."

Descent Below Decision Height

Instrument flight rules landing criteria, under 14 CFR Part 91.175 (c), does not allow descent below a decision height (DH) unless "one of the following visual references for the intended runway is distinctly visible and identifiable to the pilot: (i), The approach light system, except that the pilot may not descend below 100 feet above the touchdown zone elevation using the approach as a reference unless the red terminating bars or the red side row bars are also distinctly visible and identifiable."

Pilot Monitoring

IJC Standard Operating Procedures incorporated "pilot flying" and "pilot not flying" duties. In 2003, the FAA revised Advisory Circular 120-71A, Standard Operating Procedures for Flight Deck Members, to recommend the usage of a "pilot monitoring" concept instead of "pilot not flying" duties.

Pilot Information

Certificate:	Airline Transport; Flight Instructor	Age:	59, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	Airplane Multi-engine; Airplane Single-engine; Instrument Airplane	Toxicology Performed:	Yes
Medical Certification:	Class 1	Last FAA Medical Exam:	12/01/2005
Occupational Pilot:		Last Flight Review or Equivalent:	09/01/2005
Flight Time:	18750 hours (Total, all aircraft), 7500 hours (Total, this make and model), 91 hours (Last 90 days, all aircraft)		

Co-Pilot Information

Certificate:	Airline Transport; Flight Instructor	Age:	55, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Right
Other Aircraft Rating(s):	None	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	Airplane Multi-engine; Airplane Single-engine	Toxicology Performed:	Yes
Medical Certification:	Class 1	Last FAA Medical Exam:	04/01/2006
Occupational Pilot:		Last Flight Review or Equivalent:	
Flight Time:	3275 hours (Total, all aircraft), 289 hours (Total, this make and model)		

Aircraft and Owner/Operator Information

Aircraft Make:	Gates Learjet	Registration:	N182K
Model/Series:	35A	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	239
Landing Gear Type:	Retractable - Tricycle	Seats:	7
Date/Type of Last Inspection:	06/01/2006, AAIP	Certified Max Gross Wt.:	18300 lbs
Time Since Last Inspection:	12 Hours	Engines:	2 Turbo Fan
Airframe Total Time:	11704 Hours at time of accident	Engine Manufacturer:	Honeywell
ELT:	Installed, not activated	Engine Model/Series:	TFE731-2-2B
Registered Owner:	Robertson Asset Management	Rated Power:	3500 lbs
Operator:	International Jet Charter, Inc.	Operating Certificate(s) Held:	On-demand Air Taxi (135)
Operator Does Business As:		Operator Designator Code:	IJ9M

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument Conditions	Condition of Light:	Day
Observation Facility, Elevation:	GON, 5 ft msl	Distance from Accident Site:	1 Nautical Miles
Observation Time:	1456 EDT	Direction from Accident Site:	50°
Lowest Cloud Condition:		Visibility	2 Miles
Lowest Ceiling:	Broken / 100 ft agl	Visibility (RVR):	
Wind Speed/Gusts:	8 knots /	Turbulence Type Forecast/Actual:	/
Wind Direction:	170°	Turbulence Severity Forecast/Actual:	/
Altimeter Setting:	29.84 inches Hg	Temperature/Dew Point:	19° C / 17° C
Precipitation and Obscuration:	Heavy - In the Vicinity - Fog		
Departure Point:	Atlantic City (ACY)	Type of Flight Plan Filed:	IFR
Destination:	Groton, CT (GON)	Type of Clearance:	IFR
Departure Time:	1347 EDT	Type of Airspace:	

Airport Information

Airport:	Groton (GON)	Runway Surface Type:	Asphalt
Airport Elevation:	5 ft	Runway Surface Condition:	Dry
Runway Used:	05	IFR Approach:	ILS
Runway Length/Width:	5000 ft / 150 ft	VFR Approach/Landing:	None

Wreckage and Impact Information

Crew Injuries:	2 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:	3 Minor	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	2 Fatal, 3 Minor	Latitude, Longitude:	41.320556, -72.052222

Administrative Information

Investigator In Charge (IIC):	Paul R Cox	Report Date:	12/20/2007
Additional Participating Persons:	Norman J Molitor; FAA/FSDO; Windsor Locks, CT Ralph Witzke; Bombardier Learjet; Wichita, KS Michael Cummins; Honeywell; Phoenix, AZ Richard Gutterman; International Jet Charter; Norfolk, VA		
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 pubinq@ntsb.gov , or at 800-877-6799. Dockets released after this date are available at http://dms.nts.gov/pubdms/ .		

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