



National Transportation Safety Board Aviation Incident Final Report

Location:	Teterboro, NJ	Incident Number:	NYC051A055
Date & Time:	03/08/2005, 2150 EST	Registration:	N703TS
Aircraft:	British Aerospace BAE-125-700A	Aircraft Damage:	Minor
Defining Event:		Injuries:	4 None
Flight Conducted Under:	Part 91: General Aviation - Personal		

Analysis

Prior to the day of the incident, the pilot and copilot had not flown together. In addition, the copilot spoke broken English. The copilot obtained the current ATIS information about 150 miles from the airport. Although the ATIS information reported thin slush on all surfaces, the captain had not asked about runway conditions, and the copilot did not relay the information regarding runway conditions. The flightcrew continued the approach in moderate to severe turbulence, and performed pre-landing checks. Due to the turbulence, the flightcrew missed several radio transmissions, including the aircraft ahead them that reported a go-around, and later reported good braking action. The incident airplane turned onto final approach for runway 01; a 7,000-foot-long, 150-foot-wide, asphalt runway. During the final approach, the landing gear was down and flaps were in the 25-degree extended position. Air Traffic Control (ATC) relayed the good braking action report to the incident flightcrew, based upon the previous arrival aircraft. However, the previous arrival aircraft was equipped with thrust reversers, and the incident airplane was not. ATC also provided two wind checks to the incident airplane while on final approach. The wind checks were reported as 340 degrees at 15 knots, and 340 degrees at 20 knots, respectively. The pilot reported that due to the wind, he flew the final approach without full flaps, at Vref plus 20 (139 knots), and slowed to 134 knots over the runway threshold. According to the Aeronautical Information Manual Pilot/Controller Glossary, a contaminated runway, "is considered contaminated whenever standing water, ice, snow, slush, frost in any form, heavy rubber or other substances are present." Review of an "Effect of Slippery Runway on Landing Distance" chart, available in the FAA approved airplane flight manual, revealed that the "equivalent scheduled landing distance available," for the contaminated 7,000-foot-long runway, was approximately 3,200 feet. Review of a takeoff and landing data (TOLD) card retrieved from the cockpit revealed that a landing weight of 20,000 pounds, with full flaps extended, at 119 knots, required 4,240 feet of runway for landing. That data assumed a dry runway.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this incident to be: The pilot in command's inadequate in-flight planning, which resulted in an overrun landing on

a contaminated runway. Factors were inadequate crew coordination, gusty winds, and a slush covered runway.

Findings

Occurrence #1: OVERRUN

Phase of Operation: LANDING

Findings

1. (F) WEATHER CONDITION - GUSTS
2. (C) IN-FLIGHT PLANNING/DECISION - INADEQUATE - PILOT IN COMMAND
3. (F) TERRAIN CONDITION - SLUSH COVERED
4. (F) CREW/GROUP COORDINATION - INADEQUATE - FLIGHTCREW

Occurrence #2: ON GROUND/WATER ENCOUNTER WITH TERRAIN/WATER

Phase of Operation: LANDING

Findings

5. TERRAIN CONDITION - GROUND

Factual Information

On March 8, 2005, at 2150 eastern standard time, a British Aerospace BAE-125-700A (Hawker 700), N703TS, sustained minor damage during an overrun, while landing at Teterboro Airport (TEB), Teterboro, New Jersey. The two certificated airline transport pilots and two passengers were not injured. Night visual meteorological conditions prevailed for the flight that departed Port Columbus International Airport (CMH), Columbus, Ohio. An instrument flight rules flight plan was filed for the personal flight conducted under 14 CFR Part 91.

The airplane was manufactured in 1978, and was not equipped with thrust reversers. The pilot reported that prior to the day of the accident, he and the copilot had not flown together. The pilot further stated that the copilot spoke broken English.

A notice to airmen (NOTAM) was issued at 1900 for Teterboro Airport, and valid for the remainder of the day. The NOTAM stated that runway 1/19 was liquid deiced 75 feet wide, and sanded/solid deiced 20 feet wide. The runway contained patchy wet snow and patchy thin ice.

Prior to departure, the pilot received a weather briefing about 1900 via a commercial weather service. The pilot retrieved the NOTAMs for TEB, but the NOTAM that was issued at 1900 was not included. The pilot further stated that the incident flight was delayed about 45 minutes due to a discrepancy with the auxiliary power unit, and it was possible that the pilot obtained the weather briefing prior to the NOTAM being issued.

According to the pilot's written statement, the departure was uneventful and the copilot obtained the most recent automated terminal information system (ATIS) information about 150 miles from TEB. The cockpit voice recorder (CVR) recorded approximately 33 minutes of data prior to the incident. Review of the CVR revealed that the copilot obtained the current ATIS information, and relayed some of the information to the pilot. However, the copilot did not relay information about the runway conditions to the pilot, nor did the pilot ask about the runway conditions. The ATIS information "Uniform" was in effect at 2051, and received by the copilot. The ATIS reported the wind from 320 degrees at 21 knots, gusting to 28 knots; visibility 10 miles, blowing snow; broken ceiling at 11,000 feet; temperature -7 degrees C; dew point -16 degrees C; altimeter 29.38 inches Hg; thin slush on all surfaces; low level wind shear advisories in effect; braking action advisories in effect; Deicing procedures in effect.

During the approach to the airport, the pilot instructed the copilot to select 15 degrees of flap extension, about 30 miles from the airport. After a landing check was completed and the landing gear was extended, the pilot instructed the copilot to select 25 degrees of flap extension. At that time, the airplane was on a right downwind leg for runway 1; a 7,000-foot-long, 150-foot-wide, asphalt runway.

The pilot's written statement referred to the turbulence as moderate during the approach; however, during a telephone interview, the pilot stated that it was the worst turbulence of his 34-year flying career. Radio communications were "very impaired" due to the turbulence, and the flightcrew missed several transmissions from air traffic control (ATC).

The pilot continued the approach, and requested a wind check from ATC. According to the pilot's written statement, ATC replied "wind 320 degrees at 27 gusting to 38." Due to the wind, the pilot did not select full flap extension on final approach, and flew the final approach at Vref (119 knots) plus 20 knots to compensate for the wind. The pilot further stated that the airspeed was slowed to Vref plus 15 knots over the runway threshold. A touchdown was made "at or no

farther than 25 feet northeast of the touchdown zone," at Vref plus 10 knots, and the pilot instructed the copilot to extend full flaps.

The pilot then selected the airbrake to "Dump," and felt the airplane slowing as if the spoilers were working correctly. He was focused on runway alignment and did not divert his attention to look down at the airbrake lever. The pilot further stated that the airbrake lever could not be positioned to "Dump" unless the full flap extension was already selected. The pilot also felt the anti-skid braking system working correctly. However, about the midpoint of the runway, he felt like the airplane encountered a tailwind or ice on the runway, as it did not continue to decelerate. The airplane traveled off the end of the runway at approximately 30 knots.

After the overrun, the pilot started to "clean up" the airplane by retracting the flaps and moving the airbrake toward closed. The first officer interrupted him and suggested an evacuation.

The copilot's written statement was consistent with the pilot's statement. However, the statements differed as the copilot reported that the airplane touched down "Vref plus 15 knots, at or no farther than 125 feet northeast of the touchdown zone."

The pilot later heard that a Gulfstream G-III, on approach ahead of the incident airplane, had performed a go-around due to turbulence. The pilot was not aware of the Gulfstream G-III go-around during his approach.

Review of the ATC communications revealed that the flightcrew was provided two wind checks during final approach. The wind checks were reported as from 340 degrees at 15 knots, and then 340 degrees at 20 knots. A Challenger flightcrew reported the braking action as "fair to good" about 20 minutes before the incident. Just prior to the incident, the Gulfstream G-III flightcrew reported the braking action as "good, but not quite as good at the end." The Challenger and Gulfstream were equipped with thrust reversers. The "good" braking action reported by the Gulfstream G-III flightcrew was relayed to the incident flightcrew by ATC.

Review of the CVR revealed that the flightcrew missed the transmission of the Gulfstream III flightcrew performing their second go-around. The incident flightcrew also missed the initial "good" braking action report by the Gulfstream III flightcrew, but they subsequently received the relayed report from ATC. In addition, a sound consistent with the incident airplane's touchdown was recorded, and a sound consistent with runway overrun was recorded approximately 20 seconds later.

Review of radar data revealed that the last radar target was recorded at 2150:23. The target indicated that the incident airplane was at an altitude of 100 feet, about 500 feet prior to the runway threshold. The groundspeed recorded was 138 knots, which revealed a true airspeed of approximately 157 knots (Vref plus 38 knots) based on the last wind check.

According to the Aeronautical Information Manual Pilot/Controller Glossary, a contaminated runway, "is considered contaminated whenever standing water, ice, snow, slush, frost in any form, heavy rubber or other substances are present."

Review of an "Effect of Slippery Runway on Landing Distance" chart, available in the FAA approved airplane flight manual, revealed that the "equivalent scheduled landing distance available," for the contaminated 7,000-foot-long runway, was approximately 3,200 feet.

Review of a takeoff and landing data (TOLD) card retrieved from the cockpit revealed that a landing weight of 20,000 pounds, with full flaps extended, at 119 knots, required 4,240 feet of runway for landing. That data assumed a dry runway.

According to the Aeronautical Information Manual, Section 4-3-9; Runway Friction Reports And Advisories:

"...MU (friction) values range from 0 to 100 where zero is the lowest friction value and 100 is the maximum friction value obtainable. For frozen contaminants on runway surfaces, a MU value of 40 or less is the level where the aircraft braking performance starts to deteriorate and directional control begins to be less responsive. The lower the MU value, the less effective braking performance becomes and the more difficult directional control becomes...."

A friction reading was taken at 22:01, about 11 minutes after the accident. The reading was taken from 500 feet beyond the approach end of runway 1, to 500 feet prior to the departure end of runway 1. The average MU value for the first one-third segment of the runway was 35. The average MU value for the second one-third segment of runway was 42, and the average MU value for the remaining one-third segment of runway was 41. The overall average MU value for the runway was 40.

The airplane came to rest approximately 230 feet beyond the departure end of runway 1. The spoilers were found in the extended position, and the flaps were found in the retracted position. Minor damage was observed on the landing gear. No damage was observed on the flaps, consistent with them being raised prior to the overrun.

The recorded weather at TEB, at 2151, was: wind from 320 degrees at 12 knots, gusting to 28 knots, with a peak wind at 320 degrees at 38 knots; visibility 10 miles; broken ceiling at 11,000 feet; temperature 19 degrees F; dew point 3 degrees F; altimeter 29.38 inches Hg.

Pilot Information

Certificate:	Airline Transport	Age:	50, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Left
Other Aircraft Rating(s):	Helicopter	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 1 With Waivers/Limitations	Last Medical Exam:	12/01/2004
Occupational Pilot:		Last Flight Review or Equivalent:	12/01/2004
Flight Time:	9000 hours (Total, all aircraft), 350 hours (Total, this make and model), 5000 hours (Pilot In Command, all aircraft), 350 hours (Last 90 days, all aircraft), 100 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft)		

Co-Pilot Information

Certificate:	Airline Transport	Age:	57, Male
Airplane Rating(s):	Multi-engine Land; Single-engine Land	Seat Occupied:	Right
Other Aircraft Rating(s):	Helicopter	Restraint Used:	Seatbelt, Shoulder harness
Instrument Rating(s):	Airplane	Second Pilot Present:	Yes
Instructor Rating(s):	None	Toxicology Performed:	No
Medical Certification:	Class 2 With Waivers/Limitations	Last Medical Exam:	01/01/2004
Occupational Pilot:		Last Flight Review or Equivalent:	
Flight Time:	11352 hours (Total, all aircraft), 1350 hours (Total, this make and model), 10252 hours (Pilot In Command, all aircraft), 16 hours (Last 90 days, all aircraft), 0 hours (Last 30 days, all aircraft), 5 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Manufacturer:	British Aerospace	Registration:	N703TS
Model/Series:	BAE-125-700A	Aircraft Category:	Airplane
Year of Manufacture:		Amateur Built:	No
Airworthiness Certificate:	Normal	Serial Number:	257031
Landing Gear Type:	Retractable - Tricycle	Seats:	11
Date/Type of Last Inspection:	02/01/2005, Continuous Airworthiness	Certified Max Gross Wt.:	25000 lbs
Time Since Last Inspection:	10 Hours	Engines:	2 Turbo Fan
Airframe Total Time:	9380 Hours	Engine Manufacturer:	Garrett
ELT:	Installed, not activated	Engine Model/Series:	TFE731-3R-1h
Registered Owner:	Hawker 700 Holding Co. Llc.	Rated Power:	3700 lbs
Operator:	Joel Neuman	Air Carrier Operating Certificate:	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	Condition of Light:	Night
Observation Facility, Elevation:	TEB, 9 ft msl	Observation Time:	2151 EST
Distance from Accident Site:	0 Nautical Miles	Direction from Accident Site:	0°
Lowest Cloud Condition:		Temperature/Dew Point:	-7° C / -16° C
Lowest Ceiling:	Broken / 11000 ft agl	Visibility	10 Miles
Wind Speed/Gusts, Direction:	12 knots/ 28 knots, 320°	Visibility (RVR):	
Altimeter Setting:	29.38 inches Hg	Visibility (RVV):	
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Columbus, OH (CMH)	Type of Flight Plan Filed:	IFR
Destination:	Teterboro, NJ (TEB)	Type of Clearance:	IFR
Departure Time:	2100 EST	Type of Airspace:	

Airport Information

Airport:	Teterboro Airport (TEB)	Runway Surface Type:	Asphalt
Airport Elevation:	9 ft	Runway Surface Condition:	Ice
Runway Used:	1	IFR Approach:	None
Runway Length/Width:	7000 ft / 150 ft	VFR Approach/Landing:	Full Stop; Traffic Pattern

Wreckage and Impact Information

Crew Injuries:	2 None	Aircraft Damage:	Minor
Passenger Injuries:	2 None	Aircraft Fire:	None
Ground Injuries:	N/A	Aircraft Explosion:	None
Total Injuries:	4 None	Latitude, Longitude:	40.850000, -74.060833

Administrative Information

Investigator In Charge (IIC):	Robert J Gretz	Adopted Date:	03/28/2006
Additional Participating Persons:	Charles A Emering; FAA FSDO-25; Teterboro, NJ		
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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