National Transportation Safety Board
Washington, DC 20594

Brief of Incident

Adopted 06/22/2011

ERA11IA006

File No. 28451 | 10/01/2010 | Teterboro, NJ | Aircraft Reg No. N923CL | Time (Local): 13:34 EDT

Make/Model:	Gulfstream Aerospace / G-IV
Engine Make/Model:	Rolls-royc / TAY 611SER
Aircraft Damage:	Minor
Number of Engines:	2
Operating Certificate(s):	None
Type of Flight Operation:	Executive/Corporate
Reg. Flight Conducted Under:	Part 91: General Aviation

	Fatal	Serious	Minor/None
Crew	0	0	3
Pass	0	0	8

Last Depart. Point:	Toronto
Destination:	Same as Accident/Incident Location
Airport Proximity:	On Airport/Airstrip
Airport Name:	Teterboro Airport
Runway Identification:	06
Runway Length/Width (Ft):	6013 / 150
Runway Surface:	Asphalt
Runway Surface Condition:	Wet

Condition of Light:	Day
Weather Info Src:	Weather Observation Facility
Basic Weather:	Instrument Conditions
Lowest Ceiling:	600 Ft. AGL, Broken
Visibility:	3.00 SM
Wind Dir/Speed:	360 / 012 Kts
Temperature (°C):	17
Precip/Obscuration:	Light - Rain; No Obscuration

Pilot-in-Command Age: 39

Certificate(s)/Rating(s)

Airline Transport; Flight Instructor; Commercial; Multi-engine Land; Single-engine Land

Instrument Ratings

Airplane

Flight Time (Hours)

Total All Aircraft:	7100
Last 90 Days:	76
Total Make/Model:	759
Total Instrument Time:	UnK/Nr

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HISTORY OF FLIGHT

On October 1, 2010, at 1337 eastern daylight time, a Gulfstream Aerospace G-IV, N923CL, operated by Avenue Capital Management II and managed by General Aviation Flying Service Inc., d.b.a Meridian Air Charter Inc, incurred minor damage during a landing overrun on runway 6 at Teterboro Airport (TEB), Teterboro, New Jersey. The two certificated airline transport pilots, one flight attendant, and seven passengers were not injured. The corporate flight was conducted under the provision of 14 Code of Federal Regulations Part 91. Instrument meteorological conditions prevailed and an instrument flight rules flight plan was filed for the flight that departed from Lester B. Pearson International Airport (CYYZ), Toronto, Canada, about 1204.

According to written statements, the pilot-in-command (PIC) was the pilot flying and the copilot was the pilot monitoring. As the flight approached TEB, the pilots received the current automated terminal information system (ATIS) data, which indicated the winds were from 360 degrees at 6 knots, gusting to 15 knots. The pilots programmed the flight management system with the current winds and temperature, which provided a reference speed (ref) of 136 knots. The approach was briefed and the pilots elected to add 10 knots to the ref speed due to the wind conditions. The flight descended on a localizer approach for

runway 6, a 6,013 foot long, 150-foot-wide, grooved asphalt runway. While descending through 700 feet mean sea level (msl), the copilot obtained a wind check from the control tower, which indicated the winds were from 010 degrees at 15 knots, gusting to 25 knots. About 500 feet msl, the flight experienced some buffeting and slowed to 136 knots. The autothrottles were then deactivated by the PIC and he manually controlled the throttles while the airspeed varied between ref plus 5 knots and ref plus 15 knots.

The PIC further stated that, in the landing flare, the copilot announced the speed was ref plus 10 knots, and the PIC reduced the throttles to idle power. At ref speed, just prior to touchdown, a gust of wind caused the airplane to "float up" approximately 15 feet above the ground, before descending back down to the runway. The PIC further stated that at no point did either pilot believe there was not adequate runway remaining to continue the landing. The airplane touched down at 120 knots and the copilot stated that a crew advisory system (CAS) message generated for ground spoiler deployment. Thrust reversers then deployed and braking began immediately, with activation of the anti-skid system. At that point the airplane was decelerating through 80 knots and the pilots still felt the airplane would stop on the remaining runway; however, the airplane departed the end of the runway at 40 to 50 knots. The airplane traveled about 100 feet into an engineered materials arresting system (EMAS), located immediately beyond the runway, and came to rest.

During a subsequent telephone interview, the PIC remarked that a "Ref +15" callout by the copilot, at 50 feet above the runway, would be an immediate cause for a go-around.

The copilot's statement was consistent with the PIC's. The copilot added that the airplane touched down about halfway down the runway and although the spoilers didn't initially deploy, the CAS light extinguished before he could manually deploy the spoilers. The copilot didn't think the airplane might not stop on the runway until 400 to 500 feet before the end of the runway, when maximum braking and anti-skid were operating.

According to a Federal Aviation Administration (FAA) inspector, review of airport surveillance video indicated that the airplane touched down on runway 6 near the intersection of taxiway "L," which was about 2,250 feet before the departure end of runway 6.

PILOT INFORMATION

The PIC, age 39, held an airline transport pilot certificate, with a rating for airplane multiengine land. He also held a type rating for the Gulfstream IV. The PIC reported a total flight experience of 7,100 hours on his most recent FAA first-class medical certificate, which was issued on July 30, 2010. Of the total flight experience, the PIC had accumulated 759 hours in the Gulfstream IV. He flew 76 hours and 46 hours during the 90-day and 30-day periods preceding the accident, respectively. He also reported flying 9 hours during the 24-hour period prior to the accident.

The copilot, age 40, held an airline transport pilot certificate, with a rating for airplane multiengine land. He also held a type rating for the Gulfstream IV. The copilot reported a total flight experience of 4,500 hours on his most recent FAA first-class medical certificate, which was issued on July 2, 2010. Of the total flight experience, the copilot had accumulated 724 hours in the Gulfstream IV. He flew 62 hours and 46 hours during the 90-day and 30-day periods preceding the accident, respectively. He also reported flying 9 hours during the 24-hour period prior to the accident.

AIRCRAFT INFORMATION

The 16-seat airplane, serial number 1471, was manufactured in 2001. It was powered by two Rolls-Royce TAY 611-8 engines, each capable of generating 13,850 pounds of thrust. The airplane was also used by the operator for on-demand air taxi under the provisions of 14 CFR Part 135, and it was maintained under a continuous airworthiness program. The airplane's most recent inspection was completed August 15, 2010. At that time, the airplane had accumulated 2,391 total hours of operation.
Following the incident, the management company checked the brake wear and anti-skid system under the supervision of their FAA principle maintenance

inspector, and no discrepancies were noted, nor did the pilots report any.

METEOROLOGICAL INFORMATION

The weather reported at TEB, at 1334, was: wind from 360 degrees at 12 knots, gusting to 19 knots; visibility 3 miles in light rain; broken ceiling at 600 feet, broken ceiling at 2,200 feet, and overcast ceiling at 4,000 feet; temperature 17 degrees Celsius (C); dew point 14 degrees C; altimeter 29.62 inches of mercury.

FLIGHT RECORDERS

The airplane was equipped with a cockpit voice recorder (CVR) and a digital flight data recorder (DFDR), which were forwarded to the NTSB Vehicle Recorders Laboratory, Washington, DC for data download.

Cockpit Voice Recorder

Review of the CVR recording revealed that the copilot remarked that the airspeed was "Ref + 10" as the airplane descended through 1,000 feet. The copilot then announced the airspeed as "Ref + 5" and "Ref" about 30 seconds and 45 seconds later, respectively. After requesting and receiving a wind check from air traffic control (ATC), the copilot noted the airspeed as "Ref +5," followed by "Ref +12" 4 seconds later. As the airplane descended through 200 feet, the copilot remarked that the airspeed was "Ref + 15," and he remarked again that the airspeed was "Ref + 15" as the airplane descended through 40 feet. There was no discussion or mention of a go-around on the recording.

Flight Data Recorder

Review of the data downloaded from the DFDR revealed that the airplane descended through 1,000 feet above ground level (agl) at 1334:55, at a calibrated airspeed (CAS) of approximately 160 knots, and the autopilot was disconnected at 1334:57. The autothrottles were disconnected at 1335:46, when the airplane was at 645 feet agl. The airplane descended through 500 feet agl at 1336:08, at a CAS of approximately 140 knots, and the airspeed subsequently increased about 20 knots, returning to 160 knots, where it remained until the airplane descended through 50 feet agl, at 1339:36, to ground level at 1336:43.

The left main landing gear weight-on-wheels switch went from air to ground at 1336:51, back to air, then back to ground at 1336:52, back to air, then back to ground a third time at 1136:57. The right main landing gear weight-on-wheels switch went from air to ground at 1336:51, and remained in the ground position. The CAS at 1336:51 was approximately 150 knots. The ground spoilers deployed at 1336:58, the thrust reversers deployed at 1336:59, and the brake pressure increased at 1337:01.

WRECKAGE INFORMATION

An FAA inspector reported that the airplane came to rest about 100 feet into the 400-foot-long EMAS. The inspector observed damage to the airplane's nosegear landing light and damage consistent with foreign object damage to both engines.

AIR TRAFFIC CONTROL

Review of ATC recordings revealed that the flight crew contacted New York terminal radar approach control (TRACON) about 1320 and advised that they had ATIS information Uniform at TEB. The weather information contained in Uniform included wind from 360 degrees at 6 knots, gusting to 16 knots, visibility 2 miles in light rain and mist, and a broken ceiling at 800 feet.

The New York TRACON controller cleared the flight for the localizer runway 6 approach to TEB at 1332 and transferred communication to the TEB tower at 1333. The flight crew acknowledged both the clearance and transfer to TEB tower. When the flight crew contacted TEB tower at 1333, the tower controller reported the current wind from 360 degrees at 8 knots, which the flight crew acknowledged. About 1 minute later, the flight crew requested a wind check, to which the controller replied wind from 010 degrees at 15 knots, gusting to 20 knots. About 45 seconds later, the controller called for emergency vehicles to assist the airplane.

At 1331, ATIS information Victor was current, which included wind from 360 degrees at 14 knots, gusting to 19 knots, visibility 3 miles in light rain, and ceiling 800 feet broken.

At 1334, ATIS information Whisky was current, which included wind from 010 degrees at 12 knots, gusting to 19 knots, visibility 3 miles in light rain, and ceiling 600 feet broken.

Review of an FAA "LOC RWY 6" terminal information procedure chart revealed the minimum descent altitude for the approach was 440 feet, and the circling altitude was 760 feet, with 1 mile visibility.

ADDITIONAL INFORMATION

Landing Distance

According to a representative from the airplane manufacturer, at an estimated landing weight of 53,800 pounds, the airplane (operating under Part 91) required a landing distance of 2,820 feet on a dry runway, or 3,600 feet on a wet runway, without wind factored. Runway 1 at TEB was 7,000 feet long but did not have an instrument approach due to the proximity of Newark Liberty International Airport (EWR) airspace (EWR is 10 miles southwest of TEB and has runways in excess of 10,000 feet). The approach to runway 6 did have a circling approach to runway 1; however, at the time of the incident, the ceiling was below the circling approach minimums.

72-hour History

During subsequent separate telephone interviews, the pilots similarly described their 72 hour history prior to the event. On September 28, they departed TEB for England about 2000. They arrived the following morning and were on an approximate 36-hour rest period at the hotel until the evening of September 30, when they departed for CYYZ. They landed in CYYZ about 0300 local time on October 1, rested in a hotel for 4 to 5 hours, and departed on the incident flight about 1200. Both pilots indicated that they normally slept about 8 hours per night and that they slept for 4 to 5 hours in their hotel prior to the incident flight.

PROBABLE CAUSE(S)

The National Transportation Safety Board determines the probable cause(s) of this incident as follows.

The pilot-in-command's failure to attain the proper touchdown point while landing with a gusting crosswind and failure to initiate a go-around, which resulted in a landing more than halfway down the runway and a subsequent runway overrun. Contributing to the incident was the failure of either pilot to call for a go-around when the airplane was at Vref plus 15 at 50 feet above the runway or once they had floated well beyond the touchdown zone of the runway.