National Transportation Safety Board
Aviation Accident Final Report

Location:	Charlottesville, VA	**Accident Number:**	IAD01FA021
Date & Time:	12/29/2000, 2234 EST	**Registration:**	N323UE
Aircraft:	Jetstream 4101	**Aircraft Damage:**	Substantial
Defining Event:		**Injuries:**	1 Minor, 17 None
Flight Conducted Under:	Part 121: Air Carrier - Scheduled		

Analysis

The twin-engine turbo-prop airplane touched down about 1,900 feet beyond the approach end of the 6,000-foot runway. During the rollout, the pilot reduced power by pulling the power levers aft, to the flight idle stop. He then depressed the latch levers, and pulled the power levers further aft, beyond the flight idle stop, through the beta range, into the reverse range. During the power reduction, the pilot noticed, and responded to a red beta light indication. Guidance from both the manufacturer and the operator prohibited the use of reverse thrust on the ground with a red beta light illuminated. The pilot pushed the power levers forward of the reverse range, and inadvertently continued through the beta range, where aerodynamic braking was optimum. The power levers continued beyond the flight idle gate into flight idle, a positive thrust setting. The airplane continued to the departure end of the runway in a skid, and departed the runway and taxiway in a skidding turn. The airplane dropped over a 60-foot embankment, and came to rest at the bottom. The computed landing distance for the airplane over a 50-foot obstacle was 3,900 feet, with braking and ground idle (beta) only; no reverse thrust applied. Ground-taxi testing after the accident revealed that the airplane could reach groundspeeds upwards of 85 knots with the power levers at idle, and the condition levers in the flight position. Simulator testing, based on FDR data, consistently resulted in runway overruns. Examination of the airplane and component testing revealed no mechanical anomalies. Review of the beta light indicating system revealed that illumination of the red beta light on the ground was not an emergency situation, but only indicated a switch malfunction. In addition, a loss of the reverse capability would have had little effect on computed stopping distance, and none at all in the United States, where performance credit for reverse thrust was not permitted.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The captain's improper application of power after responding to a beta warning light during landing rollout, which resulted in an excessive rollout speed and an inability to stop the airplane before it reached the end of the runway.

Findings

Occurrence #1: OVERRUN
Phase of Operation: LANDING - ROLL

Findings
1. ANNUNCIATOR PANEL LIGHT(S) - ACTIVATED
2. (C) REMEDIAL ACTION - IMPROPER - PILOT IN COMMAND

Factual Information

HISTORY OF FLIGHT

On December 29, 2000, at 2234 eastern standard time, a Jetstream 4101, N323UE, operated by Atlantic Coast Airlines as flight 331, was substantially damaged when it departed the runway after landing at the Charlottesville/Albermarle Airport (CHO), Charlottesville, Virginia. Two flight crewmembers, 1 flight attendant, and 14 passengers were uninjured. One passenger received minor injuries. Visual meteorological conditions prevailed, and an instrument flight rules flight plan was filed for the scheduled passenger flight. The flight originated at the Washington-Dulles International Airport (IAD), Washington, DC, and was conducted under 14 CFR Part 121.

After landing on runway 21, the airplane rolled out to the end, turned left onto the last taxiway, then continued onto a grass apron, and down a 60-foot embankment.

In a telephone interview about 1 hour after the accident, the captain was asked to describe what happened. He stated:

"I couldn't tell you. It was a textbook landing. We landed in the touchdown zone, on speed. I pulled both throttles to idle and got a bad reverser on the right side. I got a red beta light. It's policy not to use reverse when you get the red light.

I got on the wheel brakes harder, and the brakes didn't slow us down. I just decided to do a high-speed turn off onto the taxiway. I didn't get any other bad indications. I didn't get any with the anti-skid, but the plane just wouldn't slow down."

On December 30, 2000, about 1400, the flight crew was interviewed in person. The captain again provided his recollection of events. He said:

"It was a textbook visual approach and landing in VMC conditions. It was on speed, in the touchdown zone, and on centerline, with the throttles at idle. At touchdown, I was on the brakes with light toe pressure; I pulled the finger lift, and got a red attention-getter. I went to the annunciator, and had a red beta. Coming back up over the stop, the red beta went out. I saw the red beta went out, but I never saw the green. I said, 'We have a bad beta'.

I was hard on the brakes. The airplane veered right, and I was on the tiller to steer back to the centerline. We were not slowing down. The [runway lights] were changing, so I knew we were near the end.

I did a high-speed taxi off the side to avoid all the metal off the end. We got about 90 degrees [through the turn], but we couldn't make it, and went down over the embankment. We egressed, counted everybody, and waited for someone to realize what was happening."

The captain was asked what the computed approach speed was for the flight, and the range of speeds for minimum weight to maximum allowable gross weight. He was also asked what the computed accelerate/stop and landing distances were for the flight. The captain said he could not recall the answers to any of the questions. However, he explained that tabular charts determined all distances and speeds. The charts converted all parameters (wind speed and direction, runway condition, etc.) to a weight value, and these values were added to the total aircraft weight. When the total weight value was below the maximum allowable for the proposed flight, the flight was completed, and the charts provided takeoff, approach, and

landing speeds.

The captain was asked if he felt he could explain the accident. He stated:

"I really don't know. When we were on the brakes, it just didn't seem to be slowing down like a normal Jetstream. We were hard on the brakes, but the brakes just didn't seem to be slowing us down."

When interviewed, the first officer explained that it was the responsibility of the pilot-not-flying (PNF) to determine the landing weight of the airplane, based on the tabular data, and choose the card that provided the correct approach and landing speeds. He stated:

"It was a VFR approach to runway 21. I made the 1,000-foot call, and the 500-foot call. I called [speeds] plus 15, plus 10, REF, and we touched down on centerline. I didn't see the red beta light, but the captain said, 'We have a bad beta, we're not gonna use reverse, we're gonna use the brakes.'

I called 70 knots, and moved the condition levers to taxi. I looked out and could see the end of the runway was getting closer. When we were in the final turn, I applied some brake pressure because we were a little fast."

When asked whose responsibility it was to move the condition levers from the flight position (100 percent rpm), to the taxi position (72 percent rpm), the first officer explained that the pilot flying the airplane controls the power levers, and the pilot not flying (PNF) moves the condition levers.

The accident occurred during the hours of darkness, at 38 degrees, 08 minutes north latitude, and 078 degrees, 27 minutes west longitude.

PILOT INFORMATION

The captain held an airline transport pilot certificate with ratings for airplane multi-engine land. The captain's most recent first-class medical certificate was issued September 6, 2000.

The captain reported 4,050 hours of flight experience, all of which were in multi-engine airplanes. He reported 1,425 hours of experience in the Jetstream 4100, 400 hours of which were as captain. The captain also reported he had 45 hours of flight experience in the 30 days prior to the accident.

The first officer held an airline transport pilot certificate with ratings for airplane single engine land, multi-engine land, and instrument airplane. The first officer's most recent first-class medical certificate was issued November 7, 2000.

The first officer reported 4,818 hours of flight experience, 950 hours of which were in multi-engine airplanes. He reported 68 hours of flight experience in the Jetstream 4100, 32 hours of which were in the 30 days prior to the accident. He reported 4 hours of experience in the 24 hours prior to the accident.

AIRCRAFT INFORMATION

The airplane was a 1995 Jetstream Aircraft Limited Model 4101, and was registered in the transport category. It was powered by two Allied Signal TPE-331 turbo-shaft engines.

The airplane had accrued 14,456 hours of total flight time. It was on a continuous airworthiness inspection program, and its most recent inspection was completed on December

29, 2000.

METEOROLOGICAL INFORMATION

The weather reported at Charlottesville included calm winds with a broken cloud layer at 12,000 feet. The temperature was 24 degrees Fahrenheit and the dewpoint was 15 degrees Fahrenheit.

AERODROME INFORMATION

The Charlottesville-Albermarle Airport was at a field elevation of 639 feet mean sea level (msl), and had a single grooved runway. Runway 03/21 was 6,001 feet long and 150 feet wide.

Six perpendicular taxiways, designated A thru F, connected the runway to the parallel taxiway, designated north/south.

The runway surface, which was inspected approximately 4 hours after the accident, was clean and dry.

FLIGHT RECORDERS

On January 4, 2001, data from the airplane's Flight Data Recorder (FDR) was retrieved and graphed by a Safety Board recorder specialist. According to the specialist's factual report:

"For the accident landing, the increased activity in the vertical acceleration FDR data, at approximately 11,307.55 seconds, indicated initial touchdown occurred. At the time of this initial touchdown, the magnetic heading was approximately 210°, the indicated airspeed was approximately 98.5 knots, the pitch attitude was 2.58° nose up, and the roll attitude was 1.25° right wing down.

Approximately 2.2 seconds later, the "Air-Ground Nose discrete" changed from "flight" to "ground" (at 11,309.77 seconds). Less than a second later, at 11,309.88 seconds, the pitch attitude had decreased to -2.11 degrees nose down. One second after the Air-Ground Nose discrete changed from "flight" to "ground", the Air-Ground Left Main discrete changed from "flight" to "ground" (at 11,310.77 seconds) and then one second later, the Air-Ground Right Main discrete also changed from "flight" to "ground" (at 11,311.77 seconds).

Approximately 12.8 seconds [later], at 11,324.55 seconds, with an indicated airspeed of 69.5 knots, the left and right spoiler discretes changed from "stow" to "deploy" and then 5 seconds later, with an indicated airspeed of 57.2 knots, the left and right spoiler discretes changed back to "stow" (at 11,329.55 seconds), where it remained for the rest of the recorded FDR data.

Approximately 21.2 seconds later, at 11,350.77 seconds, the Air-Ground Nose discrete changed from "ground" to "flight" where it remained for the rest of the recorded FDR data. One second later, at 11,351.77, the Air-Ground Left Main discrete changed from "ground" to "flight" and then 3 seconds later, at 11,353.77, changed back to "ground" where it remained for the rest of the FDR data. Similarly, one second after the Air-Ground Left Main discrete had changed back to "flight", the Air-Ground Right Main discrete changed from "ground" to "flight" (at 11,352.77 seconds), where it remained for the rest of the FDR data. Approximately 29 seconds later, at 11,382 seconds, the recorded FDR data ended."

Examination of the FDR data revealed that about 13 seconds after touchdown, and approximately 70 knots, engine power decreased and the spoilers deployed. Five seconds later, engine power increased and the spoilers stowed.

A review of the FDR data from the two landings previous to the accident flight revealed that engine rpm stabilized around 72 percent, and engine torque stabilized around 6 percent, during the landing roll.

A review of the accident landing revealed that engine rpm remained between 80 and 100 percent, and engine torque values were between 22 and 30 percent, until the airplane went over the embankment.

WRECKAGE INFORMATION

The airplane was examined on December 30, 2000, and all major components were accounted for at the scene. A set of three skid marks, which corresponded with the positions of the airplane's landing gear, began about 2,500 feet prior to the departure end of the landing runway.

The skid marks angled slightly to the right side of the runway, then arced 90 degrees to the left, and onto taxiway alpha, at the very end of the runway. The skid marks continued about 400 feet on taxiway alpha, and then departed the pavement into the grass, at the intersection of alpha and the parallel taxiway, where they continued over the embankment and down to the wreckage.

The airplane came to rest upright, and faced downhill on a 47-degree slope, about 120 degrees magnetic. The airplane rested on its nose at the bottom of the slope where the terrain leveled off. The drop from the landing surface to the bottom of the embankment measured approximately 60 feet.

The nose gear was separated from the airframe and was on the ground, connected only by a cable.

The right main landing gear was twisted and collapsed, and the right wing rested on the ground. All five propeller blades on the right engine displayed twisting, bending, leading edge gouging, and chordwise scratching.

The left main landing gear was down and locked, and supported the left wing. The left propeller appeared undamaged. The inboard tire on the left main landing gear was shaved flat, and exhibited a hole approximately 2 inches in diameter.

Both wings and the wing box structure were displaced aft as a single unit. The fuselage structure was not twisted or wrinkled.

According to the cabin attendant, the main cabin door, the aft cabin door, the two over-wing exits, and the emergency exit lighting had all operated effectively.

TESTS AND RESEARCH

At the request of the flight crew, several components from the airplane's braking and anti-skid systems were functionally tested. The crew also requested that the flight idle time delay baulk relay, which prevents inadvertent movement of the power levers aft of the flight idle position in flight, and the right beta switch be tested.

The anti-skid control box, four wheel-position transducers, and the inboard and outboard anti-skid control valves were operational and tested within maintenance inspections limits.

All wheel brake assemblies were pressurized and found operational, with no leaks noted. The brake pistons retracted, and running clearance was within maintenance inspection limits.

The flight idle time delay baulk relay switch was bench tested with no defects noted.

The right beta switch was tested, and operated within the operational test parameters. However, the technician stated that the switch would not be returned to service due to occasional intermittent operation.

In addition, the propeller pitch control, right-hand weight on wheels switch, right engine fuel control, and right engine governor control unit were all functionally tested and found operational.

Both the captain and the first officer stated that, other than the red beta light indication, there were no mechanical deficiencies with the airplane.

Tests were conducted in both the Jetstream 4101 airplane, and the Jetstream 4101 flight simulator. The purpose of the tests was to duplicate the power control positions, flight control positions, and speeds from the accident flight as represented by the FDR data, and observe the effect on the performance, handling, and braking of the airplane.

Tests in the airplane were conducted on February 20, 2002. The fleet manager of turbo-props for Atlantic Coast Airlines flew the airplane from Dulles International Airport to the Charlottesville-Albermarle airport to conduct the tests. He flew the first approach and landing to determine the approximate touchdown point on the runway. According to the fleet manager's report:

"The first approach was flown straight in following approximately the same course as that flown by the accident aircraft. The aircraft was flown using the VASI for vertical guidance until such time as it was necessary to flare the aircraft for landing. The aircraft touched down approximately parallel to the 4000 foot remaining marker. Normal deceleration using reverse and a very light application of braking just prior to initiating the turn off the runway at approximately 40 knots was more than adequate to allow the aircraft to comfortably stop by the second to the last intersection."

After a second approach and landing were completed with similar results, a high-speed taxi test was conducted. According to the fleet manager's report:

"[The purpose was] to determine the approximate speed the aircraft would achieve on the ground roll with the condition levers at the full forward or flight position and the power levers at the flight idle position, which is just ahead of the gate. Secondly to determine the same with the condition levers at the full aft or taxi position.

This was accomplished by performing a high-speed taxi from a standing start using the Static Takeoff Profile from the Atlantic Coast Airlines J41 Flight Standards Manual. It consists of holding the brakes and advancing the power levers to a setting of approximately 30-40 percent torque before brake release. After brake release the power is advanced to 100 percent torque or the limiting temperature. The aircraft was allowed to accelerate to approximately 70 knots with the power at 100 percent before the power levers were brought back against the flight-idle gate.

The aircraft continued to accelerate to a speed of approximately 81 knots before it stabilized. When the condition levers were brought back to the full aft or taxi position the aircraft started to accelerate once again. It was still accelerating through 85 knots when the high-speed taxi was discontinued."

On February 27, 2002, flight tests were performed in the Jetstream 41 simulator in Dulles, Virginia, under Safety Board supervision. The flight test was conducted with the supervisor of flight standards for the J41 and the director of safety for Atlantic Coast Airlines, and the Air Line Pilots Association (ALPA) representative.

The simulator was programmed to approximate the environmental conditions and the airplane's configuration on the night of the accident.

Several approaches and landings were flown to a runway 6,000 feet long, with various combinations of braking and propeller thrust utilized to determine stopping distance required.

The first approach and landing was flown, and the landing was performed with maximum braking and full reverse thrust applied. Touchdown was approximately 1,000 feet beyond the approach end of the runway, and the airplane stopped approximately 3,000 feet beyond the approach end.

The second landing utilized light to normal braking, with the propellers set in the beta range. No reverse thrust was used. Touchdown was about 1,500 feet beyond the approach end of the runway and the airplane stopped about 5,000 feet beyond the approach end.

The third landing utilized maximum braking, with the propellers in the beta range. No reverse thrust was used. Touchdown was about 1,500 feet beyond the approach end of the runway and the airplane stopped 3,000 feet beyond the approach end.

Then, six practice approaches were flown to approximate the conditions, speeds, power settings and equipment utilization depicted by the FDR during the accident flight.

Each approach and landing provided a closer approximation to the accident flight than the one before. Each touchdown was between 1,500 feet and 1,700 feet beyond the approach end, and each landing roll resulted in a runway overrun.

The seventh approach and landing most closely resembled the accident approach and landing depicted by the FDR. Touchdown was 1,700 feet beyond the approach end of the runway. The airplane stopped 6,500 feet beyond the approach end of the runway, 500 feet beyond the departure end of the runway.

ALPA engineers determined that the accident airplane touched down at a point 1,900 feet beyond the approach end of the runway. A Safety Board performance engineer reviewed their findings and concurred with the report.

According to British Aerospace, at 19,600 pounds and a no-wind condition, the airplane required 3,900 feet to land over a 50-foot obstacle. The stopping distance on the ground would be 2,340 feet. The stopping distance was determined with brakes applied and the power levers in the ground idle position.

ADDITIONAL INFORMATION

According to the Atlantic Coast Airlines J-41 FLIGHT STANDARDS MANUAL, LANDING, Crew Coordination after landing, Left Seat Landing:

i. Upon touchdown after gently lowering nose wheel to the ground:

ii. The captain should steer the aircraft with the rudder pedals, select reverse and ensure the green spoiler light is illuminated.

iii. At 70 KIAS the First Officer should call "Seventy Knots"

iv. When the First Officer calls "Seventy Knots", the Captain should release the control wheel and steer with the tiller. The First Officer should retain the control column.

v. When reverse thrust is no longer required, the Captain will move the power levers out of reverse and call "Condition levers taxi".

vi. When the Captain calls for "Condition levers taxi", the First Officer will move the condition levers to the TAXI position.

According to the Atlantic Coast Airlines J-41 FLIGHT STANDARDS MANUAL, Chapter 10, Aircraft Systems:

Visual warning and advisory annunciators are installed in the Central Annuncialtor Panel (CAP). Color coded captions or lights are used to give warning, caution, and advisory information. The annunciations are identified as follows:

a. [Red] Warning, system malfunction or flight condition which will require immediate corrective action.

According to the CAP Red Captions Chart in the J-41 manual, the red beta light illuminates when, "Propeller in BETA mode in flight (400 psi at Beta switch)"

According to the Atlantic Coast Airlines J-41 FLIGHT STANDARDS MANUAL, all emergency and abnormal procedures were contained in the Quick Reference Handbook (QRH). The QRH outlined responses to emergencies in a directive and decision-tree format. The emergency procedure for High Beta Pressure In-Flight was:

Condition: [Beta] (red) cap illuminated

1. Assign PF/PNF duties

Are engine indications normal and does propeller respond to adjustments of the power lever?

YES - Engine and propeller behavior normally.

1. Monitor engine indications and continue the flight using normal procedures.

End

A review of the QRH revealed there was no emergency or abnormal procedure outlined for a red beta cap illuminated on the ground.

However, according to the Atlantic Coast Airlines J-41 FLIGHT STANDARDS MANUAL, Aircraft Systems, Power Management:

"10. The POWER lever is not permitted to be moved into the REVERSE range, unless both [L BETA] and [R BETA] captions come on."

According to the manufacturer's operator's manual (MOM), Vol 4, page 6-2-16, 17:

"It is not permitted to move the POWER lever into the REVERSE range unless both CAP L BETA and R BETA (green) captions come on. The only condition under which asymmetric REVERSE power is permitted is when an engine is shutdown."

As a result of this investigation, British Aerospace published an All Operator Message, reference # 01/001J. According to the Message:

"The cockpit beta lights respond to the sharp rise in beta pressure as the power levers are brought back into the ground range. Whether they are red or green is determined by the landing gear AOG switches, in conjunction with power lever position, since it is only while airborne or during the takeoff that high beta pressure is an unwanted condition requiring pilot response.

In order to guard against an unexpected asymmetric condition, the MOM recommends that with both engines operative, reverse should not be selected unless both green beta lights are illuminated. The majority of aerodynamic braking of the Jetstream 41 is obtained from the selection of ground idle, with only a small amount being added by continuing into reverse pitch. Loss of the reverse facility therefore has little effect on scheduled stopping distance, and none at all in the US where performance credit for reverse thrust is not permitted.

Ground idle braking, however, does constitute an important element of stopping performance, hence the landing procedure drills specified in the [aircraft flight manual]. It is therefore essential for it not to be compromised by any delay in its selection after touchdown.

It is strongly recommended that all flight crews be advised that the illumination of a red beta light after landing merely indicates a switching malfunction. It does not represent a hazardous condition, and normal braking facilities are not affected. It is vital that normal procedures, particularly the timely selection and retention of ground idle, be executed."

Also as a result of this investigation, Atlantic Coast Airlines modified its pilot training program for the J41, and published changes to the J41 flight standards manual. Some of the changes in Chapter 7, Procedures and Profiles, under the Landing procedure included:

"6. Begin slowing the aircraft by selecting ground idle.

Note: Ground idle is the power lever position that is immediately behind the flight idle gate. In order to obtain ground idle, the latch levers must be lifted and the power levers moved aft of the flight idle gate.

7. Moving the POWER levers further aft of ground idle will deploy the spoilers. This can be verified by checking the illumination of the green spoiler light. Reverse and brakes can be used as necessary for additional stopping performance.

CAUTION: If spoilers do not deploy, landing distance will be increased by 8 percent.

8. The crew should consider runway length and surface conditions, traffic spacing and ATC instructions for the safest and most expeditious means for slowing the aircraft and exiting the active runway.

WARNING: If minimum landing roll is desired, it is essential to select ground idle as soon as possible after touchdown. Failure to select ground idle results in residual propeller thrust that significantly compromises braking performance and causes landing distances to exceed those demonstrated by the manufacturer.

WARNING: The illumination of the red beta light after landing merely indicates a switch malfunction. It does not represent a hazardous condition, and normal braking facilities are not affected. It is vital that timely selection and retention of ground idle be selected under these conditions if design stopping performance is desired."

The airplane was released to the director of safety for Atlantic Coast Airlines on December 30, 2000.

Pilot Information

Certificate:	Airline Transport	**Age:**	38, Male
Airplane Rating(s):	Multi-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):	None	**Toxicology Performed:**	No
Medical Certification:	Class 1 Valid Medical--no waivers/lim.	**Last FAA Medical Exam:**	09/06/2000
Occupational Pilot:		**Last Flight Review or Equivalent:**	06/10/2000
Flight Time:	4050 hours (Total, all aircraft), 1425 hours (Total, this make and model), 1900 hours (Pilot In Command, all aircraft), 120 hours (Last 90 days, all aircraft), 45 hours (Last 30 days, all aircraft), 4 hours (Last 24 hours, all aircraft)		

Co-Pilot Information

Certificate:	Airline Transport	**Age:**	44, 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; Instrument Airplane	**Toxicology Performed:**	No
Medical Certification:	Class 1 Valid Medical--w/ waivers/lim.	**Last FAA Medical Exam:**	11/07/2000
Occupational Pilot:		**Last Flight Review or Equivalent:**	
Flight Time:	4818 hours (Total, all aircraft), 68 hours (Total, this make and model), 4500 hours (Pilot In Command, all aircraft), 68 hours (Last 90 days, all aircraft), 32 hours (Last 30 days, all aircraft), 4 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Jetstream	**Registration:**	N323UE
Model/Series:	4101	**Aircraft Category:**	Airplane
Year of Manufacture:		**Amateur Built:**	No
Airworthiness Certificate:	Transport	**Serial Number:**	41059
Landing Gear Type:	Retractable - Tricycle	**Seats:**	31
Date/Type of Last Inspection:	12/11/2000, Continuous Airworthiness	**Certified Max Gross Wt.:**	24110 lbs
Time Since Last Inspection:	104.2 Hours	**Engines:**	2 Turbo Prop
Airframe Total Time:	14456 Hours at time of accident	**Engine Manufacturer:**	Garrett
ELT:	Installed, not activated	**Engine Model/Series:**	TPE33114GR807
Registered Owner:	Atlantic Coast Airlines	**Rated Power:**	1500 hp
Operator:	Atlantic Coast Airlines	**Operating Certificate(s) Held:**	Flag carrier (121)
Operator Does Business As:	United Express	**Operator Designator Code:**	VTZA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual Conditions	**Condition of Light:**	Night/Dark
Observation Facility, Elevation:	CHO, 639 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	1053 EST	**Direction from Accident Site:**	30°
Lowest Cloud Condition:		**Visibility**	10 Miles
Lowest Ceiling:	Broken / 12000 ft agl	**Visibility (RVR):**	
Wind Speed/Gusts:	Calm /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	Variable	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	29.84 inches Hg	**Temperature/Dew Point:**	-4°C / -9°C
Precipitation and Obscuration:			
Departure Point:	Washington, DC (IAD)	**Type of Flight Plan Filed:**	IFR
Destination:	Charlottesville, VA (CHO)	**Type of Clearance:**	IFR
Departure Time:	2200 EST	**Type of Airspace:**	Class D

Airport Information

Airport:	Charlottesville-Albermarle (CHO)	**Runway Surface Type:**	Asphalt
Airport Elevation:	639 ft	**Runway Surface Condition:**	Dry
Runway Used:	21	**IFR Approach:**	None
Runway Length/Width:	6001 ft / 150 ft	**VFR Approach/Landing:**	Full Stop; Straight-in

Wreckage and Impact Information

Crew Injuries:	3 None	**Aircraft Damage:**	Substantial
Passenger Injuries:	1 Minor, 14 None	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Minor, 17 None	**Latitude, Longitude:**	38.133333, -78.450000

Administrative Information

Investigator In Charge (IIC):	Brian C Rayner	**Report Date:**	08/26/2002
Additional Participating Persons:	Paul K Pitts; FAA; Richmond, VA Joseph A Hexter; Atlantic Coast Airlines dba United Express; Dulles, VA Mark W Reed; Air Line Pilots Association; Leesburg, 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.ntsb.gov/pubdms/.		