Aviation Investigation Final Report

Location:	Washington, District of Columbia	**Accident Number:**	NYC06MA131
Date & Time:	May 30, 2006, 16:45 Local	**Registration:**	N601FH
Aircraft:	Eurocopter EC-135P1	**Aircraft Damage:**	Destroyed
Defining Event:		**Injuries:**	1 Fatal, 3 Serious
Flight Conducted Under:	Part 135: Air taxi & commuter - Non-scheduled - Air Medical (Medical emergency)		

Analysis

The pilot reported that, during his first approach to the hospital helipad, the helicopter "shuffled," and the No. 1 engine rpm increased. The pilot stated that he increased collective pitch, reduced the throttle on the No. 1 engine, and aborted the landing. He noted that the No. 1 engine was no longer controlled by the full authority digital engine control (FADEC) system and that he had to control it manually. The pilot twice overflew the helipad, and, while maneuvering for another approach, he lost control of the helicopter, and it descended and struck a tree and the ground. Examination of the throttles, throttle linkages, engines, control systems, cockpit display system (CDS), and FADEC units revealed no evidence of any preimpact mechanical anomalies.

Postaccident testing of the engines and analysis of data retrieved from the CDS and FADEC units revealed that the accident pilot had inadvertently moved the No. 1 throttle out of its neutral detent, placing the engine in manual mode and out of FADEC control. Although the pilot recognized that the No. 1 engine was no longer controlled by the FADEC, he responded with further manual throttle adjustments and did not perform the published procedure to restore FADEC control to the engine. The data showed that, as the pilot continued to manually control the No. 1 engine, he subsequently moved the No. 2 throttle out of its detent, placing that engine also in manual mode and out of FADEC control. With neither engine under FADEC control, the pilot attempted control of the rotor rpm while controlling both engines manually. This configuration resulted in a high-workload scenario in which it would be particularly challenging for the pilot to control the helicopter during the maneuvering and approach-to-land phases of flight.

The accident helicopter was the only EC-135P1 CDS variant in the operator's fleet. Its engines, its displays, and its procedure for restoring FADEC control differed from the EC-135 variant in which the accident pilot was trained. According to the manufacturer's training guidelines, differences training is recommended before a pilot who is trained on another variant flies the EC-135P1 CDS. However, the investigation revealed that the operator provided the accident pilot only about an hour of formal differences training in the EC-135P1 CDS, and there was no evidence that the training adequately covered that variant's FADEC-restore procedures and other issues pertinent to flight safety. The pilot had accumulated about 914 hours of flight experience in EC-135s, with about 45 hours in the EC-135P1 CDS variant.

The accident was not the first indication to the operator that pilots who were trained in another variant experienced difficulties with the accident helicopter. According to one other pilot and the accident pilot, they each previously experienced events involving loss of FADEC control in the accident helicopter (in November 2005 and March 2006, respectively) but completed successful landings. The operator determined no mechanical explanation for the events and did not report, and was not required to report, them to its Federal Aviation Administration (FAA) principal operations and maintenance inspectors. The other pilot reported that, at the time of his November 2005 event, he was untrained in the EC-135P1 CDS and was completely unfamiliar with the procedure required to restore FADEC control. That pilot reported that, during his event, he oversped the helicopter's engines and the main rotor, and, as a result, the operator removed the helicopter from service, conducted inspections of the engines and main rotor system, and determined that differences training was needed for the EC-135P1 CDS; however, the operator failed to adequately provide such training. Because the FAA had no knowledge of the previous events with the accident helicopter, it had no indication to suspect that the differences training implemented by the operator was deficient.

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be: The operator's inadequate training program and the pilot's failure to maintain control of the helicopter following his inadvertent disabling of the No. 1 and then the No. 2 engine full authority digital engine control system.

Findings

Occurrence #1: MISCELLANEOUS/OTHER
Phase of Operation: APPROACH - VFR PATTERN - FINAL APPROACH

Findings
1. TURBOSHAFT ENGINE,FREE TURBINE GOVERNOR - DISCONNECTED
2. (C) THROTTLE/POWER CONTROL - INADVERTENT DEACTIVATION - PILOT IN COMMAND

Occurrence #2: LOSS OF CONTROL - IN FLIGHT
Phase of Operation: MANEUVERING - TURN TO LANDING AREA (EMERGENCY)

Findings
3. (C) AIRCRAFT CONTROL - NOT MAINTAINED - PILOT IN COMMAND
4. (C) INADEQUATE TRAINING(EMERGENCY PROCEDURE(S)) - COMPANY/OPERATOR MANAGEMENT

Occurrence #3: IN FLIGHT COLLISION WITH OBJECT
Phase of Operation: DESCENT - UNCONTROLLED

Findings
5. OBJECT - TREE(S)

Factual Information

HISTORY OF FLIGHT

On May 30, 2006, at 1645 eastern daylight time, a Eurocopter EC-135P1, N601FH, operated by CJ Systems, Inc., was substantially damaged when it collided with terrain while maneuvering to land at the Washington Hospital Center Helipad (DC08), Washington, D.C. The certificated airline transport pilot and two medical crewmembers were seriously injured. The critically ill patient on board the helicopter was fatally injured. Visual meteorological conditions prevailed for the flight that originated at Greater Southeast Community Hospital, Washington, D.C. A company flight plan was filed for the medical transport flight conducted under 14 CFR Part 135.

The helicopter came to rest on the golf course at the Armed Forces Retirement Home, approximately 1/2 mile north of the helipad. The elevation at both the crash site and the hospital helipad was approximately 200 feet above mean sea level (msl).

A review of radar data revealed that a target identified as the accident helicopter approached the helipad from the south, and overflew the helipad. The helicopter then completed a teardrop-shaped circuit on the north side of the hospital center, returned, and again over flew the helipad, traveling southbound. After crossing the helipad, a left-hand circuit that roughly resembled a standard airport traffic pattern was flown around the east side of the hospital grounds. The helicopter turned westbound in what approximated a base-leg turn, then the radar target was lost in the area of the crash site. The altitudes recorded from the first over flight of the helipad to the last radar target were between 200 and 300 feet msl.

The pilot was able to recall portions of the flight, and recounted them during an interview with Safety Board investigators. On the day of the accident, he received the flight request, checked the weather, and performed a preflight inspection. He then performed a walk-around inspection with his crew prior to takeoff. The pickup of the patient and the flight to Washington Hospital Center were routine.

The pilot reported that as the helicopter approached the helipad, it "shuffled" and the No. 1 engine rpm increased. The pilot increased collective pitch, and reduced the throttle on the No. 1 engine to control engine and rotor rpm, then aborted the landing. He was able to control the rpm, and did not recall any visual or aural warnings regarding rpm limits. He stated that for the remainder of the flight, the No. 1 engine was operated in manual mode, and the No. 2 engine remained in automatic mode.

As the pilot maneuvered the helicopter over the golf course, the "shuffle" worsened, and the helicopter became uncontrollable. He remembered a building and a tree were in the

helicopter's flight path as it descended. He maneuvered toward the tree, transmitted a "Mayday" call, and alerted his crew prior to impact.

In an interview, the flight medic stated that as the helicopter terminated the first approach, he heard an audio alarm in his headset, and "it felt like the helicopter lost power." The helicopter circled for a second attempt, and as they approached the helipad, the medic again heard the audio alarm in his headset, and the landing was again aborted.

The pilot announced that he was "losing power," and couldn't slow the helicopter. As the helicopter flew around the hospital center, the pilot announced that they would return and attempt to land at the lower helipad.

Once over the golf course, the helicopter began to vibrate. The vibration increased, the nose yawed from side to side, and the helicopter "went into a spin." It descended vertically, struck a tree, then terrain, and rolled over on its side.

The medic repeated several times that it "felt" and "sounded like" the helicopter was losing power. He added, "As long as he wasn't trying to land, he could keep flying. He couldn't slow it down, but we could have stayed up and [continued to fly]."

The flight nurse's description of the flight was similar to the medic's, and she remembered two over flights of the upper helipad, and the pilot stating that they would attempt a landing at the lower helipad. She did not recall hearing an audio alarm in her headset, nor did she recall the pilot announcing a loss of power. As the helicopter approached the golf course, "it slowed, rocked, and started shaking." When asked about the sound of the engines, she said, "There was a lot of sputtering. They didn't sound like they were going fast like they usually did. There was that sputtering noise, then a metallic banging."

Both the flight nurse and the medic stated that they could not view the instruments nor could they see the pilot manipulate the flight controls.

In a telephone interview, a witness stated that he heard the helicopter "sputter" as it approached, and then the sounds of impact, but he did not see the accident.

A second witness said she watched the helicopter over fly the golf course at low altitude, "up and down, kind of out of control. It seemed like they were struggling to maintain altitude." The helicopter flew out of view toward the hospital, and several minutes later, it returned over the golf course, and the sounds of impact were heard.

PERSONNEL INFORMATION

The pilot held an airline transport pilot certificate with a rating for airplane multi-engine land, and rotorcraft helicopter. His most recent Federal Aviation Administration (FAA) second-class medical certificate was issued on November 8, 2005. A review of company training records

revealed that the pilot had accumulated 15,613 total hours of flight experience, 12,413 hours of which were in helicopters, and 914 hours of which were in make and model. His most recent FAR Part 135 competency check was completed December 22, 2005, in the EC-135T1 helicopter, which was equipped with different engines and a different cockpit display than the EC-135P1 accident helicopter.

When questioned in a follow-up interview with the Safety Board about his training in the EC-135 helicopter, the pilot said that all of his training was conducted in Turbomeca engine-equipped helicopters, and that he received no formal training in the EC-135P1 Cockpit Display System (CDS) Pratt and Whitney engine-equipped accident helicopter.

Examination of the accident pilot's training records revealed that on December 27, 2005, he received 1 hour of "differences training" in N601FH. During that single hour of training, the pilot completed 30 minutes of "instrument" flight that included two Instrument Landing System approaches. The pilot did not specifically recall the flight, but was surprised at the notes because "N601FH was a VFR-only aircraft."

The pilot reported that he received classroom instruction on the -P1 CDS model, but stated that he had "never" seen an EC-135P1 CDS training manual.

AIRCRAFT INFORMATION

A review of the flight manual and maintenance records revealed the accident helicopter was maintained according to a manufacturer's inspection program, and the most recent 50-hour inspection was completed May 19, 2006, at 2,977 aircraft hours. The helicopter had accrued 2,995 total flight hours at the time of the accident. The helicopter was not equipped or certified for IFR flight.

The engines were equipped with Full Authority Digital Engine Controls (FADECs).

The throttles were mounted on the collective. The forward throttle was for the No. 1 (left) engine, and the aft throttle was for the No. 2 (right) engine. For the throttles to be in the neutral position, a white line and the letter "N" on each throttle had to be aligned with a white arrow on the collective. There was a noticeable detent when the throttle was rolled across the neutral position, which matched the painted positions that were mid-way between the full open and minimum idle positions. Normal flight was conducted with the throttles in the neutral position, allowing the FADECs to control the engines. The FADECs provided several functions, which included the scheduling of fuel and maintaining engine operation within predetermined limits.

METEOROLOGICAL INFORMATION

At 1652, the weather recorded at the Ronald Reagan/Washington National Airport, 5 miles south of the accident site, included a broken ceiling at 6,000 feet and 8,500 feet with 7 miles

visibility. The wind was from 120 degrees at 9 knots. The temperature was 89 degrees Fahrenheit, and the dewpoint was 68 degrees Fahrenheit. The altimeter setting was 30.03 inches of mercury.

WRECKAGE AND IMPACT INFORMATION

The helicopter was examined on May 30, 2006, and all major components were accounted for at the scene. Prior to examination, emergency personnel and pilots who responded to the scene manipulated flight controls, switches, and components to reduce the risk of fire.

The helicopter came to rest next to a tree that exhibited deep cuts and slash marks along its trunk from ground level to about 20 feet above the ground. Several branches were broken, and several displayed clean, angular cuts. Pieces of cut and broken branches were scattered around the wreckage.

The fuselage rested on its left side, and the cockpit and cabin areas were largely intact. The pilot's windscreen and chin bubble were broken. The tailboom was attached, but twisted 90 degrees and rested upright. The tailrotor driveshaft and control cables were broken at the tailboom attach point. The cables and the driveshaft displayed fractures consistent with overload. The horizontal stabilizer, vertical fin, and fenestron were all intact.

Examination of the helicopter revealed the No. 1 engine throttle (forward) in the neutral position. The No. 2 engine throttle (rear) was found displaced from the neutral position towards the idle cut-off position.

All four main rotor blades displayed spanwise fractures at the root, about 1 foot outboard of their respective hubs, but remained attached. The blades were fractured, bent, and torn along their spans, with the tips disintegrated on all but the yellow blade. Blade tip fragments, tip weights, and their associated plastic spacers were scattered about the crash site.

Examination of the wreckage resumed June 1, 2006, at Tipton Airfield, Ft. Meade, Maryland. Control continuity was established from the cyclic and collective controls to the rotor head. Tail rotor control continuity was established from the anti-torque pedals to the cable breaks in the tailboom, and then from the breaks to the fenestron.

The main transmission was intact and secure in its mounts. Continuity was established through the transmission to all of its accessories. The magnetic chip detectors were absent of debris.

The No. 1 and No. 2 flight control hydraulic systems were tested individually. Each system was pressurized by motoring its respective hydraulic pump. Both lateral servos and collective servo were actuated through their full ranges with no anomalies noted. The actuators were moved individually, and then all three were moved simultaneously through their full ranges with no anomalies noted. There was corresponding movement in the collective and cyclic controls

to the rotor hub. In addition, the hydraulic filters were removed, and the filters, along with the housings, were absent of debris.

The engines appeared intact and undamaged. They were removed, and shipped to Pratt and Whitney Canada for further examination, along with the FADEC units.

TESTS AND RESEARCH

The engines were reexamined at the Pratt and Whitney engine factory, Longuille, Canada, on July 12, 2006. Download and interrogation of the engine FADECs revealed no anomalies affecting normal operation. The faults recorded were characteristic of engine sudden stoppage with the engines producing power at the time of impact. Examination of the data revealed that the No. 1 engine was at 76 percent Ng at impact, consistent with a ground idle power setting. The No. 2 engine was at 53 percent Ng, which was below ground idle.

The engines were each placed in a test cell, and manual starts were performed on each. Both engines started immediately, and ran continuously without interruption at all power settings using the matched FADECs from the accident helicopter, with no faults noted.

Each engine was then run through an entire functional test sequence using the auto-start feature. Each engine started immediately and ran continuously without interruption with no faults noted.

Cockpit Display System

The CDS was examined at the Honeywell/Grimes facility, under the supervision of the FAA. According to Honeywell/Grimes, the non-volatile memory recorded the data displayed during the last minute of flight. According to the EC-135 flight manual, warning lights were displayed in order of illumination until they were acknowledged, at which point they fell into a predetermined priority order:

For the No. 1 engine, the top light illuminated was ENG MANUAL, followed by HYD PRESS, BUSTIE OPN, ENG OIL P, FADEC FAIL and TWIST GRIP.

For the No. 2 engine, the top light illuminated was ENG MANUAL, followed by TWIST GRIP, HYD PRESS, ENG OIL P, and FADEC FAIL.

FADEC FAIL indicated a loss of automatic acceleration and deceleration control on the engine. ENG OIL P indicated a loss of engine oil pressure. BUSTIE OPN indicated that the electrical systems were separated and the high load bus was disconnected. FUEL PRESS indicated a loss of engine fuel pressure, and HYD PRESS indicated a loss of hydraulic pressure.

ENGINE MANUAL and TWIST GRIP are described in detail under "Manual Engine Control" in the "ADDITIONAL INFORMATION" section of this report.

The helicopter was reexamined in Clayton, Delaware, on July 20, 2006. Examination of the twist-grip throttles confirmed control continuity from each throttle to the engine deck.

The No. 1 engine twist grip could not be rotated due to impact-damaged interference with its associated cable and linkages, so the No. 2 engine twist grip was tested first. The No. 2 engine twist grip cables and linkages were free from impact damage interference and no modification was needed to test the system. Breakaway force was measured in accordance with the airframe maintenance manual for EC-135 helicopters equipped with Pratt and Whitney engines. The target value range was between 11.24 and 18 lbs. When measured, 13.5 lbs. of breakaway force was required to rotate the throttle to the decrease side, and 17 lbs. of breakaway force was required to the increase side. The process was repeated several times and produced the same results.

The No. 1 engine twist grip cabling and linkages could not be freed, so the throttle cable was cut, in order to determine a breakaway value on the twist grip. The measured breakaway force on the No. 1 engine twist grip was 6.5 lbs. on the decrease side, and 5 lbs. on the increase side, with a discernable neutral detent.

To obtain a comparison value between the two twist grips, the breakaway force check on the No. 2 twist grip was also performed with the mechanical linkage disconnected. It measured 4.5 lbs. of breakaway force to the decrease side, and 4 lbs. breakaway force to the increase side, with a discernable neutral detent.

Performance Planning

According to weight and balance information provided by the operator, the helicopter weighed 5,776 lbs. at the time of the accident.

Interpolation of performance charts revealed, given the atmospheric conditions, the dual-engine maximum allowable gross weight for the helicopter to hover both in and out of ground effect, was 5,996 lbs.

The single-engine maximum allowable gross weight to hover in ground effect was 5,269 pounds, and to hover out of ground effect was 4,828 lbs.

At 5,776 lbs., the minimum single-engine approach airspeed was 65 knots, and the minimum airspeed on approach at 50 feet above ground level for a run-on landing was 40 knots.

ADDITIONAL INFORMATION

Pilot Accounts of Other Occurrences in the Accident Helicopter

A pilot formerly employed by the operator, contacted the Safety Board to recount an event he

experienced in the accident helicopter on November 27, 2005, while on a repositioning flight to The Washington Hospital Center. He was interviewed by telephone, and he provided a written statement.

According to the pilot, he picked up N601FH as a replacement aircraft. The helicopter was an "earlier model" EC-135P1 CDS, unlike the EC-135T1 that he would typically fly. It had an earlier cockpit display system, unlike the "glass instrumentation" that he was accustomed to in his "regular aircraft." The pilot stated that he had limited experience in N601FH, approximately 1.5 hours prior to the event.

While on final approach to the lower pad at the Washington Hospital Center, he lowered the collective and inadvertently rolled the No. 1 throttle out of its detent. He visually confirmed the throttle was out of position, and noticed a "manual throttle" caution advisory on the CDS. He also heard a change in engine sound, felt a slight yaw in the aircraft, and immediately returned the throttle to the detent.

He noted that FADEC operation was not restored, that "Manual Throttle" was still indicated on the CDS, and by increasing the throttle to return it to the detent, the engine over sped. He aborted the landing to the lower helipad, "because I was completely absorbed with the engine problem." He added, "Remember, I had never flown this Model EC-135 before, and did not know that the only way to restore FADEC operation was to reach up to the overhead panel, and reset the No. 1 FADEC engine switch, which was in a guarded cover."

The pilot further stated that he aggravated the problem by inadvertently "grabbing" both throttles and attempting to control the engine or engines. As the helicopter rounded the south side of the hospital complex, the pilot heard the rotor overspeed warning, noted that rotor rpm had climbed to 120 percent, and that both FADEC FAIL lights were illuminated on the CDS. For the next 30 to 45 seconds, the pilot concentrated solely on controlling rotor rpm and completed a landing to the lower helipad. The helicopter was then taken out of service, and both engines as well as the main rotor system, were removed for inspection.

According to the pilot, after this event, his employer determined that "differences training" was required for this aircraft, and incorporated it into the training program.

The pilot went on to say that after the event, he educated himself on the -P1 system. He learned that given the helicopter's weight, and the atmospheric conditions at the time, a safe landing could have been easily completed with the No. 1 throttle out of the detent. The pilot further stated that had he encountered the same event with high gross weight, high temperature, and high density altitude, that he could not have released the collective to toggle the guarded FADEC switch, and that a safe landing was unlikely.

The pilot added that the friction on the throttle detents on N601FH was "very light" which made the throttles "easy to roll out of the detent."

In a follow-up interview, the accident pilot recounted a similar event that occurred in March 2006, but he could not recall the exact date. He was flying N601FH, and landing at the Washington Hospital Center, when the No. 1 engine increased speed as he initiated the approach. The pilot aborted the landing, performed a go-around, and used manual throttle to control rpm and affect a safe landing. He did not attempt to reset the FADEC.

Once on the ground, he reported the event to maintenance. The pilot remembered that the FADEC FAIL segment was illuminated, but could not remember what, if any, other lights were illuminated prior to engine shutdown. The technician later reported to the pilot that the fault "could not be duplicated" and the helicopter was placed back in service.

Manual Engine Control

According to the EC-135P1 CDS flight manual, if either throttle were rolled out of the neutral position, two lights would illuminate on the cockpit display system. They were the ENG MANUAL (engine manual), and the TWIST GRIP light. The ENG MANUAL light indicated that the FADEC no longer controlled that engine, and movements of the collective up or down would not automatically result in engine power changes. The TWIST GRIP light indicated that the throttle was not in the neutral position, but was unaffected by whether the engine was in manual or under FADEC control. The flight manual carried the following warning about operating the engines in manual mode:

"OPERATE THE TWIST GRIP WITH GREAT CARE AND AVOID QUICK TWIST GRIP ROTATIONS."

The flight manual also noted that if a throttle were rolled out of the neutral position, the following sequence would be necessary to restore FADEC control of the engine. First the engine mode selector switch, located on the overhead panel, must be moved to MANUAL, then NORM, even with the throttle still out of the neutral position. In that case, the ENG MANUAL light would extinguish; however, the TWIST GRIP light would remain illuminated with the engine under FADEC control.

Further, during such a condition, the throttle could be rotated with no change in FADEC status, as long as the throttle was not rolled across the neutral position. Once the throttle was returned to the neutral position, the TWIST GRIP light would extinguish; however, if the throttle were rotated from the neutral position again, in either direction, the engine would revert to manual control, and the process would have to be repeated.

According to the helicopter manufacturer, with one engine in manual mode, and the other under FADEC control, a reduction in power on the manual engine would result in a power increase on the engine under FADEC control, up to the predetermined limits. If power was increased on the engine in manual mode, then the power could increase to the engine fuel control limits, and there would be a corresponding decrease in power on the engine under FADEC control.

In the follow-up interview, the accident pilot was questioned about the procedure to return the engine to the control of the FADEC. He reported that the throttle had to be in the neutral position, and the mode selector switch reset for the FADEC to regain control of the engine. He reported that if a throttle were out of the neutral position, and the mode switch was reset, the return to FADEC control would not take place until the throttle had also been returned to the neutral position.

A survey of aircraft serial numbers revealed that the accident helicopter, N601FH, was the only -P1 CDS model in the operator's fleet.

Pilot Information

Certificate:	Airline transport; Commercial	**Age:**	58,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
Instrument Rating(s):	Airplane; Helicopter	**Second Pilot Present:**	No
Instructor Rating(s):		**Toxicology Performed:**	No
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	November 1, 2005
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	December 1, 2005
Flight Time:	15613 hours (Total, all aircraft), 914 hours (Total, this make and model), 65 hours (Last 90 days, all aircraft), 22 hours (Last 30 days, all aircraft), 1 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Eurocopter	**Registration:**	N601FH
Model/Series:	EC-135P1	**Aircraft Category:**	Helicopter
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	0069
Landing Gear Type:	Skid	**Seats:**	4
Date/Type of Last Inspection:	May 1, 2006 AAIP	**Certified Max Gross Wt.:**	6250 lbs
Time Since Last Inspection:		**Engines:**	2 Turbo shaft
Airframe Total Time:	2995 Hrs at time of accident	**Engine Manufacturer:**	Pratt & Whitney Canada
ELT:	Installed, not activated	**Engine Model/Series:**	PW206B
Registered Owner:	MedStar	**Rated Power:**	612 Horsepower
Operator:		**Operating Certificate(s) Held:**	On-demand air taxi (135)
Operator Does Business As:		**Operator Designator Code:**	BAQA

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	DCA,15 ft msl	**Distance from Accident Site:**	5 Nautical Miles
Observation Time:	16:52 Local	**Direction from Accident Site:**	180°
Lowest Cloud Condition:		**Visibility**	7 miles
Lowest Ceiling:	Broken / 6000 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	9 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	120°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.03 inches Hg	**Temperature/Dew Point:**	32°C / 20°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Washington, DC	**Type of Flight Plan Filed:**	Company VFR
Destination:	Washington, DC (DC08)	**Type of Clearance:**	VFR
Departure Time:	16:38 Local	**Type of Airspace:**	

Airport Information

Airport:	WHC DC08	**Runway Surface Type:**	
Airport Elevation:	177 ft msl	**Runway Surface Condition:**	
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	Forced landing;Go around;Straight-in

Wreckage and Impact Information

Crew Injuries:	3 Serious	**Aircraft Damage:**	Destroyed
Passenger Injuries:	1 Fatal	**Aircraft Fire:**	None
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal, 3 Serious	**Latitude, Longitude:**	38.934444,-77.007774

Administrative Information

Investigator In Charge (IIC):	Rayner, Brian
Additional Participating Persons:	Eric West; FAA/AAI-100 ; Washington, DC James Blakely; CJ Systems Aviation Group; West Mifflin, PA Lindsay Cunningham; American Eurocopter; Grand Prairie, TX Tom Berthe; Pratt and Whitney Canada; Longuille, Canada
Original Publish Date:	February 11, 2008
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=63798