Aviation Investigation Final Report

Location:	Atlanta, Georgia	**Accident Number:**	ERA13GA046
Date & Time:	November 3, 2012, 22:45 Local	**Registration:**	N368PD
Aircraft:	Hughes OH-6A	**Aircraft Damage:**	Substantial
Defining Event:	Low altitude operation/event	**Injuries:**	2 Fatal
Flight Conducted Under:	Public aircraft		

Analysis

The night, public flight was being operated to support ground-based police personnel in locating a missing child. Witnesses reported observing the helicopter at a very low altitude with the search light on maneuvering near the intersection of two city streets. Witness statements indicated that, as the helicopter neared the intersection, the landing gear skids collided with wires at the top a 42-foot power pole. The helicopter then flipped over and crashed into the street. Recorded radar data were consistent with the witness statements. An examination of the airframe did not reveal evidence of malfunctions or failures that would have precluded normal operation. Rotational scoring found on the internal engine components indicates that the engine had power at impact. No distress calls were received from the flight crew before the crash. Most of the pilot's peers described him as "meticulous," "capable," and "competent"; however, one pilot stated that the accident pilot had a tendency to "fly low."

Probable Cause and Findings

The National Transportation Safety Board determines the probable cause(s) of this accident to be:

The pilot's failure to maintain sufficient altitude during maneuvering flight, which resulted in his failure to see and avoid a power pole and wires.

Findings

Aircraft	Altitude - Not attained/maintained
Personnel issues	Decision making/judgment - Pilot
Environmental issues	Wire - Awareness of condition
Organizational issues	Adequacy of safety program - Operator

Factual Information

History of Flight

Maneuvering-low-alt flying	Low altitude operation/event (Defining event)
Maneuvering-low-alt flying	Collision with terr/obj (non-CFIT)

HISTORY OF FLIGHT

On November 3, 2012, about 2245 eastern daylight time, a Hughes OH-6A, N368PD, was substantially damaged following a collision with power lines and terrain while maneuvering at Atlanta, Georgia. The commercial pilot and a pilot-rated tactical flight officer (TFO) were fatally injured. The helicopter was registered to and operated by the Atlanta Police Department (APD) as a public use flight. Night, visual meteorological conditions prevailed and no flight plan was filed. The flight originated at Hartsfield Jackson Atlanta International Airport (ATL) at 2224.

The purpose of the flight was to support ground-based police personnel in locating a missing child. The search area was about 6 to 7 nautical miles northwest of ATL. The pilot was flying in the right cockpit seat and the TFO was in the left cockpit seat. A review of recorded APD voice communications revealed that the TFO made a "three minutes out" call, a "two minutes out" call, and then he reported that the flight was "26" (on station). There were no distress calls received from the flight crew prior to the accident.

The helicopter was observed on radar, maneuvering, immediately prior to the accident. The radar data revealed that the helicopter traveled southbound, across Interstate 20, at about 1,300 feet above mean sea level (msl). The helicopter was then observed in a left turn of about 270 degrees, to a westerly heading. The last three recorded radar returns showed the helicopter at 1,200 feet msl (about 200 feet above ground level). The last recorded radar return was about 0.17 nm east of the accident site.

The accident occurred within the city limits of Atlanta and several people witnessed the accident.

An APD officer was in her personal vehicle, adjacent to the accident site, when she observed the helicopter traveling in a northwesterly direction. She observed that it was a police helicopter and the searchlight was on and pointed down. The helicopter disappeared from her view and she heard noises, like "sparking" sounds. She looked up and the searchlight had disappeared. She heard two loud explosions and saw the helicopter on the ground, engulfed in flames. When she initially observed the helicopter in flight, the engine was running it was traveling straight and not descending. The helicopter was not spinning or twisting, and seemed normal in appearance to her. She observed no smoke or anything unusual prior to the crash.

Another APD officer was in his personal vehicle at the same intersection at the time of the accident. He observed an object "explode" in his peripheral vision and noticed that a transformer had exploded and something was on fire. A few seconds later the helicopter fell into the street and exploded.

One witness was sitting on a wall with friends when he observed the helicopter traveling toward the local mass transit station, "very low." He said to his friends, "That helicopter is flying too [expletive] low!" The helicopter then hit a "transformer or something" and "nose-dived" into the street and exploded. He stated that the engine sounded normal before the crash and he could hear the rotor blades. He reported that the helicopter was "down low like it was chasing something" and the helicopter's searchlight was on.

Another witness was in the parking lot of a gas station, adjacent to the accident site. She saw the helicopter and said, "Why is that helicopter flying so low?" She observed the helicopter at the same altitude and did not see it climbing or descending. She observed that the bottom of helicopter "caught the wires and it just flipped over into the street and blew up." Just prior to striking the wires, the helicopter was not climbing or descending, and it was not spinning. She stated that the helicopter made a "sputtering" sound, but she did not know what one was supposed to sound like.

Another witness was on the balcony of her apartment with a friend when she observed the helicopter at a very low altitude. She stated that the helicopter made two complete circles and during the third circle, the helicopter hit the wires and exploded. The helicopter was at the same altitude during all three circles. The helicopter's searchlight was on and pointed down just prior to the accident.

Several witnesses were interviewed by APD personnel at a local precinct after the accident. The interviews were recorded on video and copies were provided to the NTSB Investigator-in-Charge (IIC). The IIC recorded observations of the video contents (Video Reviews) and those reviews are contained in the public docket for this accident investigation.

PERSONNEL INFORMATION

The pilot held a commercial pilot certificate with a rating for rotorcraft-helicopter. He reported a total flight experience of 2,900 hours, including 70 hours during the last six months, on his second class medical certificate application, dated September 27, 2012. His last annual flight review/unit check ride occurred on March 6, 2012, in a MD Helicopters 369E.

A review of the pilot's logbook revealed about 2,933 hours total time, all in helicopters. He also recorded about 2,354 hours of night time.

The TFO held a commercial pilot certificate with ratings for airplane single engine land, airplane multiengine land, and instrument airplane. He did not hold a rotorcraft rating. He reported a total flight experience of 600 hours, including 0 hours during the last six months, on his second class medical certificate application, dated August 8, 2012. He was not yet fully qualified as a TFO and was still receiving on-the-job training at the time of the accident.

AIRCRAFT INFORMATION

The helicopter was a single-engine, high skid (extended gear) rotorcraft, serial number 1180900, and was manufactured in 1967. It was powered by a Rolls-Royce T63-A720 series engine rated at 420 shaft horsepower. The helicopter was equipped with a Spectrolab Nightsun SX-5 searchlight and a thermal imaging (FLIR) system. The helicopter was not equipped with night vision goggles.

A review of the helicopter maintenance records revealed that the most recent annual inspection was accomplished on August 23, 2012, at an airframe total time of 6,528.7 hours. The engine total time at the annual inspection was 1794.5 hours.

METEOROLOGICAL INFORMATION

The 2053 surface weather observation for Fulton County Airport (FTY), located about 3 miles northwest of the accident site, included sky clear, calm wind, with visibility 10 statute miles or greater.

WRECKAGE AND IMPACT INFORMATION

An examination of the accident site revealed the helicopter collided with wires at the top of a 42-foot-high power pole near the intersection of two roads. The elevation of the road at the main wreckage was about 1,010 feet. The main wreckage came to rest in the center of the road adjacent to the power pole. A post-crash fire ensued and the fuselage sustained substantial fire damage. Several loose, unused ammunition rounds were observed on the street within the area of the fuselage.

Utility company crews replaced the wires and provided the damaged parts to the investigation team. The wires showed evidence of arcing and impact damage. Support structure for the wires and ceramic insulators were also damaged and broken.

All main rotor blades were accounted for within the area of the main wreckage. The tail boom of the helicopter was separated from the fuselage and was found adjacent to the main wreckage. The tail rotor blades remained attached to the tail rotor gearbox. Signatures consistent with wire contact were found on the tail boom and on one main rotor blade.

The wreckage was examined on November 5, 2012 at an aircraft recovery facility at Griffin, Georgia. The majority of the helicopter was consumed by fire. The cockpit and cabin sections were completely consumed by fire. The aft fuselage ("turtle back") was protected by a stainless steel firewall and was not burned. The tail boom fairing and engine inlet fairing were consumed by fire except for a small section of the aft lower section of the tail boom fairing at the aft jack point. The boom fairing attach points were torn from the turtle back structure. Three main sections remained; the main rotor hub with blades and transmission, the engine and the tail boom section.

The mast, main rotor hub, and flight controls above the mast rails were generally not damaged by fire. The tunnel flight control rods were consumed by fire below the upper rod end bearings. Flight control continuity from the remaining sections of the tunnel control rods to the main rotors was verified except for some fractures as a result of impact. All main rotor blades were severely bent and deformed. The yellow main rotor blade tip was separated outboard of blade station 111. The separated blade section showed impact damage to the leading edge. The yellow blade pitch housing, straps and damper attachment showed corresponding damage.

The transmission rotated by hand without binding and no chips were observed on the chip detectors. The engine driveshaft couplings were bent but the driveshaft was still connected to the engine. The forward section of the tail rotor driveshaft was completely consumed by fire. The tail rotor coupling was intact, but exhibited heat damage. The overrunning clutch operated normally.

The engine was generally protected by the firewall; however, sections of the engine were burned and the engine was heat damaged. With the exception of fire damage, no obvious damage to the engine was noted. The engine was shipped to manufacturer's facilities for subsequent examination.

An extended landing gear was installed. The assembly was broken away from the fuselage and exhibited multiple fractures and was complete except for some burned sections that remained with the fuselage.

The tail boom section included the upper and lower vertical stabilizers, the tail rotor transmission, and the tail rotor assembly. The tail boom was broken from the boom fairing just forward of the tail boom mounting frame. The lower vertical had impact crushing on the left side of the leading edge and was broken at the attach point. The tail rotor blades exhibited minor impact damage. The tail rotor transmission output shaft was bent together with one pitch link. The tail rotor swashplate and pitch control moved freely. The mounting arm for the tail rotor control bellcrank on the tail rotor transmission was broken from impact. The tail rotor transmission rotated normally and there were no chips observed on the chip detector.

MEDICAL AND PATHOLOGICAL INFORMATION

Pilot

A postmortem examination of the pilot was performed at the offices of Fulton County Medical Examiner, Atlanta, Georgia, on November 4, 2012. The autopsy report noted the cause of death as "Blunt Force Head Injuries" and the manner of death was "accident."

Forensic toxicology testing was performed on specimens of the pilot by the Federal Aviation Administration (FAA) Bioaeronautical Sciences Research Laboratory (CAMI), Oklahoma City, Oklahoma. The CAMI toxicology report indicated no carbon monoxide, cyanide, ethanol, or drugs.

TFO

A postmortem examination of the TFO was performed at the offices of Fulton County Medical Examiner, Atlanta, Georgia, on November 4, 2012. The autopsy report noted the cause of death as "Blunt Force Chest Trauma and Thermal Injury" and the manner of death was "accident."

Forensic toxicology testing was performed on specimens of the TFO by the Federal Aviation Administration (FAA) Bioaeronautical Sciences Research Laboratory (CAMI), Oklahoma City, Oklahoma. The CAMI toxicology report indicated no carbon monoxide, cyanide, ethanol, or drugs.

TESTS AND RESEARCH

The engine was disassembled and examined at the Rolls-Royce facilities at Indianapolis, Indiana on January 22, 2013. During the engine examination, nothing was discovered that would prevent normal engine operation. Rotational scoring signatures were observed in the stage four nozzle in the blade tracks of both the stage three and stage four wheels that were consistent with engine operation at impact. Rotational scoring signatures on the compressor impeller shroud from contact with the compressor impeller were observed and were consistent with engine operation at impact.

Both the power turbine governor and fuel control unit remained in their normal positions. Both displayed blackening from post-crash fire exposure, but were otherwise normal in appearance. Removal of the fuel control fuel inlet fitting revealed that the internal fuel filter was melted. Both the fuel control throttle arm and the power turbine governor arms were slightly stiff, but could be manually actuated from stop to stop.

On May 14, 2013, the fuel control unit and the power turbine governor were disassembled and examined at the Honeywell facilities at South Bend, Indiana. No failed parts were discovered within either unit that would have precluded normal operation.

Reports of the engine and engine controls inspections are included in the public docket for this accident investigation.

ADDITIONAL INFORMATION

Interviews with APD Helicopter Unit Personnel

On November 15, 2012, the NTSB IIC visited the APD Helicopter Unit and interviewed available flight crews. The scope of the interviews included the qualifications and experience of the accident flight crew, unit policies and procedures, particulars of the accident flight, and the unit safety program. Records of the individual interviews are located in the public docket for this accident investigation. The following is a factual synopsis of those interviews.

The accident flight was the first flight of the day for the unit as there was no day shift manned that day. The evening shift began at 1600 and was to end at midnight; the pilot and TFO reported for duty at 1600. A call came in to respond to a missing child, and the flight crew began preparation for the flight, which included a review of the weather, locating the search area on a map, and performing the preflight procedures for the aircraft. The unit's Standard Operating Procedure (SOP) included locating missing children in a prioritized list of mission objectives. The mission objectives were rated 1 through 9, with 1 being the highest priority. "Missing children" were ranked at a "6" on the scale.

The unit's flight crew reading file included an entry on minimum altitudes. The file entry stated that aircraft should remain at 500 feet agl until in contact with the ground unit; the ground unit or supervisor would then clear the flight to proceed at lower altitudes. One unit pilot reported that, on a mission of this type, it would not be possible to discern a missing child from 500 feet, at night, and a lower altitude would be required.

The pilots interviewed generally regarded the accident pilot as meticulous, capable, and competent. He knew the local area well and enjoyed flying at night. He had no problems passing check rides and other pilots were comfortable flying with him. Most of the unit pilots had not observed the accident pilot flying "too low." One pilot did report that, if any pilot in the unit had a tendency to fly low, it was the accident pilot.

Regarding the unit's safety program, a unit TFO also assumed the role of Unit Safety Officer. When asked about the safety culture in the unit, he responded that it was "very strong" and the pilots understood to "knock it off" if safety of flight dictated. The Safety Officer produced a monthly safety newsletter and examples were provided to the NTSB IIC. The unit did not have a formal risk assessment program in place at the time of the accident. On July 3, 2013, the Atlanta Police Department Helicopter

Unit implemented a flight risk assessment tool for use by unit flight crews. The tool assesses flight risk based on an evaluation of weather, pilot-in-command experience, tactical flight officer experience, type of call/response, and other factors. Based on a numerical value, the mission must be approved by the pilot-in-command (low risk value) up to the unit commander (high risk value).

Pilot Information

Certificate:	Commercial	**Age:**	48
Airplane Rating(s):	None	**Seat Occupied:**	Right
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	
Instrument Rating(s):	Helicopter	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	September 27, 2012
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	March 6, 2012
Flight Time:	2933 hours (Total, all aircraft), 1284 hours (Total, this make and model), 2933 hours (Pilot In Command, all aircraft), 43 hours (Last 90 days, all aircraft)		

Other flight crew Information

Certificate:	Commercial	**Age:**	40,Male
Airplane Rating(s):	Single-engine land; Multi-engine land	**Seat Occupied:**	Left
Other Aircraft Rating(s):	None	**Restraint Used:**	
Instrument Rating(s):	Airplane	**Second Pilot Present:**	No
Instructor Rating(s):	None	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 Without waivers/limitations	**Last FAA Medical Exam:**	August 8, 2012
Occupational Pilot:	No	**Last Flight Review or Equivalent:**	
Flight Time:	600 hours (Total, all aircraft), 0 hours (Last 90 days, all aircraft), 0 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Hughes	**Registration:**	N368PD
Model/Series:	OH-6A	**Aircraft Category:**	Helicopter
Year of Manufacture:		**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	1180900
Landing Gear Type:	High skid	**Seats:**	4
Date/Type of Last Inspection:	August 23, 2012 Annual	**Certified Max Gross Wt.:**	2550 lbs
Time Since Last Inspection:		**Engines:**	1 Turbo shaft
Airframe Total Time:	6528 Hrs as of last inspection	**Engine Manufacturer:**	Rolls-Royce
ELT:	Not installed	**Engine Model/Series:**	T63-A720
Registered Owner:	ATLANTA POLICE DEPARTMENT	**Rated Power:**	420 Horsepower
Operator:	ATLANTA POLICE DEPARTMENT	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Visual (VMC)	**Condition of Light:**	Night
Observation Facility, Elevation:	FTY	**Distance from Accident Site:**	3 Nautical Miles
Observation Time:	22:53 Local	**Direction from Accident Site:**	330°
Lowest Cloud Condition:	Clear	**Visibility**	10 miles
Lowest Ceiling:	None	**Visibility (RVR):**	
Wind Speed/Gusts:	/	**Turbulence Type Forecast/Actual:**	/
Wind Direction:		**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.02 inches Hg	**Temperature/Dew Point:**	16°C / 11°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	Atlanta, GA (ATL)	**Type of Flight Plan Filed:**	None
Destination:	Atlanta, GA (ATL)	**Type of Clearance:**	None
Departure Time:	22:24 Local	**Type of Airspace:**	

Wreckage and Impact Information

Crew Injuries:	2 Fatal	**Aircraft Damage:**	Substantial
Passenger Injuries:		**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	2 Fatal	**Latitude, Longitude:**	33.752777,-84.467224

Administrative Information

Investigator In Charge (IIC):	Hicks, Ralph
Additional Participating Persons:	Steven Newcomer; FAA/FSDO; Atlanta, GA John Hobby; MD Helicopters, Inc.; Mesa, AZ David W Riser; Rolls-Royce Corporation; Indianapolis, IN Scott Melius; Atlanta Police Department; Atlanta, GA
Original Publish Date:	March 7, 2014
Last Revision Date:	
Investigation Class:	Class
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=85495