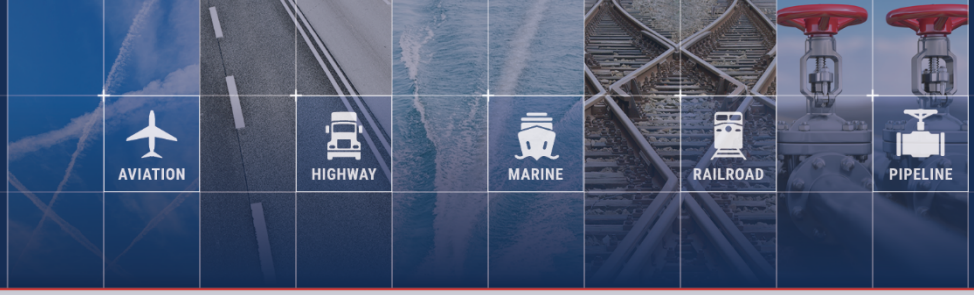

Aviation Investigation Final Report

Location:	New York, New York	**Accident Number:**	ERA19FA191
Date & Time:	June 10, 2019, 13:40 Local	**Registration:**	N200BK
Aircraft:	Agusta A109	**Aircraft Damage:**	Destroyed
Defining Event:	Loss of visual reference	**Injuries:**	1 Fatal
Flight Conducted Under:	Part 91: General aviation - Executive/Corporate		

Analysis

After dropping off a passenger during a routine weekly commuting flight, the noninstrument-rated pilot of the helicopter remained at the fixed-base operator (FBO) for about 2 hours, reviewing weather information before departing on the planned repositioning flight, which was the last flight leg of the commute. Before he departed, the pilot informed FBO staff that he saw a “twenty-minute window to make it out.” Had the pilot remained at the heliport, the helicopter owner would have incurred hourly, overnight, and landing fees depending on the length of stay. The extent to which those fees or other factors, such as the pilot’s obligation to reposition the helicopter as part of the normal commute, influenced his decision to depart could not be determined.

The pilot departed into marginal visual flight rules (MVFR) conditions, and soon after takeoff, encountered instrument meteorological conditions (IMC). Although the pilot communicated that he was attempting to return to the departure heliport; shortly thereafter, he transmitted to heliport staff that he “didn’t know where he was.” Flight track data depicted an erratic flight path after takeoff, during which the helicopter climbed above the reported cloud base of 500 ft above ground level, and witness video recordings showed the helicopter flying in and out of clouds. About 8 minutes after takeoff, the helicopter descended rapidly and impacted the roof of a building. Examination of the airframe and engines revealed no evidence of any preimpact anomalies.

The pilot’s decision to depart into MVFR conditions and the helicopter’s subsequent encounter with IMC were conducive to the development of spatial disorientation, and the helicopter’s erratic flight path and rapid descent were consistent with a loss of control due to spatial disorientation.

Probable Cause and Findings

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

The non-instrument-rated pilot's decision to initiate the flight into marginal visual flight rules and instrument meteorological conditions, which resulted in spatial disorientation and a subsequent loss of control.

Findings

Personnel issues	Decision making/judgment - Pilot
Environmental issues	Below VFR minima - Effect on personnel
Personnel issues	Spatial disorientation - Pilot
Personnel issues	Aircraft control - Pilot

Factual Information

History of Flight

Maneuvering-low-alt flying	Loss of visual reference (Defining event)
Maneuvering-low-alt flying	Collision with terr/obj (non-CFIT)

HISTORY OF FLIGHT

On June 10, 2019, about 1340 eastern daylight time, an Agusta A109E helicopter, N200BK, was destroyed when it was involved in an accident near New York, New York. The commercial pilot was fatally injured. The helicopter was operated as a Title 14 *Code of Federal Regulations (CFR)* Part 91 corporate flight.

The flight departed from the East 34th street heliport (6N5), New York, New York, about 1330 and was destined for Linden Airport (LDJ), Linden, New Jersey. On the morning of the accident, the pilot and a pilot-rated passenger departed Bel-Aire Farms Heliport (NY46), Amenia, New York, about 1030. They stopped briefly at Hudson Valley Regional Airport (POU), Poughkeepsie, New York, for fuel, then flew to 6N5, arriving about 1130. According to the pilot-rated passenger, the flight was uneventful.

Personnel at the fixed-base-operator (FBO) at 6N5 reported that the pilot-rated passenger was at the controls as the helicopter landed. He departed the heliport by car, while the pilot remained at 6N5. The pilot waited in the lounge for about two hours. While there, he was continuously checking weather conditions using his tablet computer. Before departing, he mentioned to the staff that he saw a "twenty-minute window to make it out." The helicopter departed 6N5 about 1332.

A review of automatic dependent surveillance - broadcast (ADS-B) data from the Federal Aviation Administration (FAA) revealed that the helicopter departed and initially flew south over the East River before changing course northward. About 5 to 7 minutes after departure, the pilot contacted the FBO and requested to return to the heliport. He was advised to land on pad No. 4. The pilot then radioed that he "did not know where he was." The helicopter flew erratically over the East River, changed course and altitude several times before making a 270° turn, which approached 6N5 from the west. About 500 ft west of 6N5, at an altitude of 600 to 700 ft mean sea level (msl), the helicopter reversed course and flew erratically over Manhattan before impacting the roof of a 54-story building at 787 7th Avenue. The last recorded position of the helicopter was about 0.1 nautical mile southeast of the building at an altitude of about 1,570 ft msl. The overall height of the building above the street was about 790 ft msl, with the roof section where the helicopter came to rest (below the exterior walls and catwalks surrounding the perimeter of the roof), about 765 ft msl.

Figure 1 - Helicopter Ground Track

A witness provided video of a portion of the flight as the helicopter was flying in and out of clouds. The helicopter descended rapidly from the clouds in a nose-down pitch attitude and appeared to initially transition to a level pitch attitude before climbing into the overcast cloud ceiling and out of view.

PERSONNEL INFORMATION

According to FAA airman records, the pilot held a commercial pilot certificate with a rotorcraft-helicopter rating, which was issued on September 24, 2004. He also held a flight instructor certificate with a rotorcraft-helicopter rating, which was issued on June 20, 2018. He did not hold an instrument rating. His most recent FAA second-class medical certificate was issued on May 15, 2019, at which time he reported 2,805 total hours flight experience. The pilot received initial and recurrent training from the helicopter manufacturer in April 2015 and June 2016, respectively.

The pilot had been employed by the company that operated the helicopter (owned by the pilot-rated passenger) for about five years. The flight was part of a normal weekly commute which typically began on Mondays with a flight from Amenia, New York, to 6N5, where the passenger would disembark. The pilot would normally then reposition the helicopter from 6N5 to LDJ, where the helicopter would remain for the week. The commute was typically reversed on Fridays, when the pilot would fly the helicopter from LDJ to 6N5, pick up the passenger, and return to Amenia, New York.

AIRCRAFT INFORMATION

The twin-engine, 7-seat helicopter was manufactured in 2000. It was equipped with two 549-horsepower, Pratt & Whitney Canada PW206C engines. The most recent documented inspection was

completed on May 21, 2019, which was a 50 hour/30-day inspection. At that time, the helicopter had accrued a total of 3,939 flight hours. Both engines had accrued about 570 hours since overhaul.

METEOROLOGICAL INFORMATION

At 1351, the weather conditions at a reporting station located in Central Park, about 1 mile northeast of the accident site at an elevation of 156 ft msl, included an overcast ceiling at 500 ft above ground level (agl), visibility 1.25 statute miles (sm) in rain and mist, temperature 18°C, dew point 17°C, wind from 070° at 8 knots, and an altimeter setting of 30.05 inches of mercury.

The pilot held a subscription to a commercial weather service provider. A review of records from the provider revealed that the pilot had accessed "airport information" while he was on the ground at 6N5 from several airports in the area and along the route of flight from 6N5 to LDJ. Although the records did not indicate specifically what information he may have accessed or viewed, weather observations are among the information available from the inquiries. Two of the airports accessed were Downtown Manhattan/Wall St Heliport (JRB), located about 3 nautical miles southwest of 6N5, and the destination airport, LDJ.

At 1256, the observation at JRB included visibility of 2.5 statute miles in mist with an overcast ceiling of 800 ft agl. At the time of the pilot's last inquiry at 1323, the most recent observation at JRB (at 1314) included visibility of 4 sm and an overcast ceiling of 1,000 ft agl. At 1324, after the pilot's last inquiry, the visibility at JRB reduced to 1.75 sm in mist. At the time of the pilot's inquiry about LDJ at 1324, the most recent observation available (1315) included visibility 2.5 sm and an overcast ceiling of 600 ft agl. For more information, refer to the weather study report in the public docket for this accident.

WRECKAGE AND IMPACT INFORMATION

Examination of the wreckage on the rooftop revealed that all major components of the helicopter were present at the accident site and were confined to an area about 100 ft long and 20 ft wide, oriented on a heading of about 300° magnetic. Small pieces of debris were recovered from the 50th floor level and street level. The helicopter was severely fragmented and partially consumed by a post-impact fire. All four main rotor blades were fragmented. Remnants of two main rotor blades remained attached to the rotor hub, the other two blades were separated from the hub. All exhibited leading edge damage. The main rotor gearbox was impact damaged, partially fragmented, and could not be turned by hand. The tail rotor blades, hub, and gearbox remained largely intact. One tail rotor blade exhibited a leading edge gouge; the other blade tip was fracture-separated and exhibited thermal damage. The tail rotor driveshaft was fractured in several locations; an 8-ft section remained attached to the tail rotor gearbox. The tail rotor shaft and blades rotated freely when turned by hand. While most of the flight control components were identified, flight control continuity could not be established due to impact damage and extreme fragmentation of the airframe. All three landing gear actuators were in the down position.

The left engine was broken into two sections at the reduction gearbox. The compressor impeller rotated freely by hand. Several blades exhibited leading edge damage and several blade tips were bent in the direction opposite of rotation. The power turbine shaft was fractured, consistent with overload, and exhibited twisting features and rotational scoring. The fuel management module was damaged, separated from the engine control gearbox, and its control lever was oriented in the "flight" position.

The right engine was mostly intact and exhibited thermal damage. The compressor impeller would not rotate; its blades exhibited leading edge damage and were not bent. Debris was found ingested downstream of the compressor discharge area. The driveshaft between the right engine and the main gearbox was fracture-separated in a twisted pattern. The fuel management module was damaged, partially separated from the engine control gearbox, and its control was oriented in the "flight" position.

The throttle quadrant was found loose and separated from its mount. The control cable ends were not found. Although both levers were found in the "MAX" position, their position at the time of impact could not be confirmed.

Examination of the two attitude-direction indicator gyroscope instruments revealed indications of about 50-80° nose down, and about 80-120° left roll.

ADDITIONAL INFORMATION

According to the pilot's girlfriend, during the evening before and on the day of the accident, the pilot was concerned about the weather for the flight from Amenia to 6N5, and from 6N5 to LDJ. As the pilot was preparing the helicopter for the flight from Amenia, he informed his brother that he was nervous about the flight due to the poor weather conditions. His brother suggested that he not fly the trip, the pilot responded that "[the pilot-rated passenger] is making me fly." About 1200, during a telephone conversation while at 6N5, the pilot told his girlfriend that he had a "window" to reposition the helicopter to LDJ, and also said that he "shouldn't be flying, but had to…"

According to staff at the FBO at 6N5, fees that would have been incurred for the helicopter to remain at 6N5 started at $200 per hour, with an overnight fee of $250, plus a landing fee.

Pilot Information

Certificate:	Commercial; Flight instructor; Private	**Age:**	58,Male
Airplane Rating(s):	Single-engine land	**Seat Occupied:**	Right
Other Aircraft Rating(s):	Helicopter	**Restraint Used:**	Unknown
Instrument Rating(s):	None	**Second Pilot Present:**	No
Instructor Rating(s):	Helicopter	**Toxicology Performed:**	Yes
Medical Certification:	Class 2 With waivers/limitations	**Last FAA Medical Exam:**	May 15, 2019
Occupational Pilot:	Yes	**Last Flight Review or Equivalent:**	
Flight Time:	(Estimated) 2805 hours (Total, all aircraft)		

Aircraft and Owner/Operator Information

Aircraft Make:	Agusta	**Registration:**	N200BK
Model/Series:	A109 E	**Aircraft Category:**	Helicopter
Year of Manufacture:	2000	**Amateur Built:**	
Airworthiness Certificate:	Normal	**Serial Number:**	11072
Landing Gear Type:	Retractable - Tricycle	**Seats:**	7
Date/Type of Last Inspection:	May 21, 2019 Continuous airworthiness	**Certified Max Gross Wt.:**	
Time Since Last Inspection:		**Engines:**	2 Turbo shaft
Airframe Total Time:	3939 Hrs as of last inspection	**Engine Manufacturer:**	Pratt & Whitney Canada
ELT:	C126 installed, not activated	**Engine Model/Series:**	PW206C
Registered Owner:	N200bk Inc	**Rated Power:**	549 Horsepower
Operator:	N200bk Inc	**Operating Certificate(s) Held:**	None

Meteorological Information and Flight Plan

Conditions at Accident Site:	Instrument (IMC)	**Condition of Light:**	Day
Observation Facility, Elevation:	NYC,156 ft msl	**Distance from Accident Site:**	1 Nautical Miles
Observation Time:	13:51 Local	**Direction from Accident Site:**	29°
Lowest Cloud Condition:		**Visibility**	1.25 miles
Lowest Ceiling:	Overcast / 500 ft AGL	**Visibility (RVR):**	
Wind Speed/Gusts:	8 knots /	**Turbulence Type Forecast/Actual:**	/
Wind Direction:	70°	**Turbulence Severity Forecast/Actual:**	/
Altimeter Setting:	30.04 inches Hg	**Temperature/Dew Point:**	18°C / 17°C
Precipitation and Obscuration:	No Obscuration; No Precipitation		
Departure Point:	New York, NY (6N5)	**Type of Flight Plan Filed:**	None
Destination:	Linden, NJ (LDJ)	**Type of Clearance:**	None
Departure Time:	13:30 Local	**Type of Airspace:**	FAR 93

Airport Information

Airport:	East 34Th Street 6N5	**Runway Surface Type:**	
Airport Elevation:	10 ft msl	**Runway Surface Condition:**	
Runway Used:		**IFR Approach:**	None
Runway Length/Width:		**VFR Approach/Landing:**	None

Wreckage and Impact Information

Crew Injuries:	1 Fatal	**Aircraft Damage:**	Destroyed
Passenger Injuries:		**Aircraft Fire:**	On-ground
Ground Injuries:	N/A	**Aircraft Explosion:**	None
Total Injuries:	1 Fatal	**Latitude, Longitude:**	40.761665,-73.981941

Administrative Information

Investigator In Charge (IIC):	Brazy, Douglass
Additional Participating Persons:	David Gerlach; FAA/AVP-100; Washington, DC Christopher Lemieux; Leonardo Helicopters; Philidelphia, PA Merryn Spielman; Pratt & Whitney of Canada; Longueuil
Original Publish Date:	February 9, 2022
Last Revision Date:	
Investigation Class:	Class 3
Note:	The NTSB traveled to the scene of this accident.
Investigation Docket:	https://data.ntsb.gov/Docket?ProjectID=99586