

Aviation Investigation Preliminary Report

Location:	Washington, DC	Accident Number:	DCA25MA108
Date & Time:	January 29, 2025, 20:48 Local	Registration:	N709PS (A1); UNREG (A2)
Aircraft:	BOMBARDIER INC CL-600-2C10 (A1); Sikorsky UH60 (A2)	Injuries:	64 Fatal (A1); 3 Fatal (A2)
Flight Conducted Under:	Part 121: Air carrier - Scheduled (A1); Armed Forces (A2)		

On January 29, 2025, about 2048 eastern standard time (EST), a Sikorsky UH-60L, operated by the US Army under the callsign PAT25, and an MHI (Mitsubishi Heavy Industries) RJ Aviation (formerly Bombardier) CL-600-2C10 (CRJ700), N709PS, operated by PSA Airlines as flight 5342, collided in flight approximately 0.5 miles southeast of Ronald Reagan Washington National Airport (DCA), Arlington, Virginia, and impacted the Potomac River in southwest Washington, District of Columbia.

The 2 pilots, 2 flight attendants, and 60 passengers aboard the airplane and all 3 crew members aboard the helicopter were fatally injured. Both aircraft were destroyed as a result of the accident. Flight 5342 was operating under the provisions of Title 14 *Code of Federal Regulations (CFR)* Part 121 as a scheduled domestic passenger flight from Wichita Dwight D. Eisenhower National Airport (ICT), Wichita, Kansas, to DCA. PAT25 originated from Davison Army Airfield (DAA), Fort Belvoir, Virginia, for the purpose of the pilot’s annual standardization evaluation with the use of night vision goggles (NVGs). Night visual meteorological conditions prevailed in the area of DCA at the time of the accident. Figure 1 below shows preliminary radar flight track information for PAT25 and preliminary automatic dependent surveillance-broadcast (ADS-B) information for flight 5342.



Figure 1. Google Earth image with preliminary ADS-B data for flight 5342 (blue line) and radar data for PAT25 (orange line).

The NTSB traveled to the accident site to start the investigation and supervised water recovery operations. As part of the investigative process, the NTSB invited qualified parties to participate in the investigation. These included PSA Airlines, GE Aerospace, Sikorsky, Federal Aviation Administration (FAA), the US Army, National Air Traffic Controllers Association, Air Line Pilots Association, Association of Flight Attendants, International Association of Machinists and Aerospace Workers, Collins Aerospace, and the Metropolitan Washington Airports Authority. The Transportation Safety Board of Canada provided an accredited representative and Transport Canada and MHI RJ Aviation are their technical advisors.

The parties were formed into specialized investigative groups led by NTSB group chairs in the areas of Air Carrier Operations and Human Performance, Airplane Structures, Airplane Systems, Powerplants, Helicopter Operations and Human Performance, Air Traffic Control

(ATC) and Human Performance, Helicopter Airworthiness, Aircraft Performance, Survival Factors, and Flight Recorders (consisting of subgroups for airplane flight data recorder [FDR], airplane cockpit voice recorder [CVR], helicopter FDR, and helicopter CVR. All NTSB Board members visited the accident location, with Member Inman acting as the Member on-scene.

Crew Experience

Flight 5342

Both flight crewmembers of flight 5342 held airline transport pilot certificates with type ratings for the CL-65 (which includes the CRJ-200, CRJ-700, and CRJ-900 airplanes). The captain had accumulated about 3,950 total hours of flight experience, of which about 3,024 hours were in the accident airplane make and model. The captain held an FAA first-class medical certificate issued on January 10, 2025.

The first officer (FO) had accumulated about 2,469 total hours of flight experience, of which about 966 hours were in the accident airplane make and model. The FO held an FAA first-class medical certificate issued on October 31, 2024. The captain was the pilot flying, and the FO was the pilot monitoring for the entirety of the accident flight.

PAT25

The flight crew of PAT25 consisted of an instructor pilot (IP), pilot, and a crew chief. According to information provided by the US Army, both pilots were current and qualified in the accident helicopter. The IP held the rank of Chief Warrant Officer 2 and had accumulated about 968 total hours of flight experience, of which about 300 hours were in the accident helicopter make and model. The pilot held the rank of Captain and had accumulated about 450 total hours of flight experience, of which about 326 hours were in the accident helicopter make and model. The crew chief held the rank of Staff Sergeant and had accumulated about 1,149 total flight hours, all of which was in UH-60 helicopters.

History of Flight

The following is preliminary information derived from both aircraft's flight data recorders (FDRs) and cockpit voice recorders (CVRs) as well as ATC radar data and communications.

Flight 5342 departed ICT at 1839 EST on an instrument flight rules flight plan. The helicopter flight crew filed a visual flight rules flight plan with DAA base operations and departed at 1845 with the IP in the right seat and the pilot in the left seat.

About 2015, flight 5342 started its initial descent.

About 2030, PAT25 began travelling generally southbound after maneuvering near Laytonsville, Maryland. CVR audio from the helicopter indicated the IP was the pilot flying and the pilot was the pilot monitoring and transmitting on the radio at this time.

PAT25 first checked in with the DCA tower controller at 2032. The controller issued the altimeter setting of 29.89 inches of mercury, and the PAT25 crew acknowledged by correctly reading back the altimeter setting. Following this initial contact with DCA tower, the crew conducted a change of control; the pilot became the pilot flying and the IP became the pilot monitoring and transmitting on the radio for the remainder of the flight.

At 2033:41, the PAT25 crew requested Helicopter Route 1 to Route 4 to DAA, which the tower controller approved. At 2038:39, the helicopter reached the intersection of the DC Beltway and the Potomac River near Carderock, Maryland. After briefly turning westbound, PAT25 turned back to the east and began descending as it picked up Helicopter Route 1 over the Potomac River southeast toward downtown Washington, DC.

At 2039:10, Potomac Approach cleared the crew of flight 5342, which was inbound to DCA from the south, for the Mount Vernon Visual Runway 1 approach. At 2040:46, the airplane rolled out of a left turn established on the instrument landing system localizer for runway 1, at approximately 4,000 ft pressure altitude, 170 knots (kts), with the landing gear up and flaps extended to 20°.

At 2043:06, the flight 5342 crew made initial contact with DCA tower. At this time, the airplane was about 10.5 nautical miles (nm) from DCA. The tower controller asked if the crew could switch to runway 33. The crew agreed, and the controller subsequently cleared flight 5342 for landing on runway 33. The crew acknowledged and read back the clearance.

At 2043:48, PAT25 was about 1.1 nm west of the Key Bridge. According to the helicopter's CVR, the pilot indicated that they were at 300 ft. The IP indicated they were at 400 ft. Neither pilot made a comment discussing an altitude discrepancy. At 2044:27, as the helicopter approached Key Bridge, the IP indicated that the helicopter was at 300 ft descending to 200 ft.

The flight 5342 FDR indicated that, between 2044:41 and 2044:45, the crew selected 30° of flaps and then 45° of flaps. At 2044:49, the airplane's landing gear were down and locked. The airplane was fully configured for landing about 6.2 nm south of the airport. At 2045:27, the autopilot was disconnected and flight 5342 began a shallow right turn off of the runway 1 localizer at a radio altitude of approximately 1,700 ft and an airspeed of 134 kts. This occurred approximately 5 nm south of the airport.

At 2045:14, the crew of PAT25 advised the controller of their position over the Memorial Bridge. At 2045:30, PAT25 passed over the Memorial Bridge. CVR data revealed that the IP told the pilot that they were at 300 ft and needed to descend. The pilot said that they would descend to 200 ft. At 2045:58, the helicopter crossed over the Washington Tidal Basin and followed the Washington Channel consistent with Helicopter Route 1.

At 2046:02, a radio transmission from the tower was audible on flight 5342's CVR informing PAT25 that traffic just south of the Wilson Bridge was a CRJ (flight 5342) at 1,200 ft circling to runway 33.

CVR data from the helicopter indicated that the portion of the transmission stating the CRJ was "circling" may not have been received by the crew of PAT25. The word "circling" is heard in ATC communications as well as the airplane's CVR, but not on the helicopter's CVR.

At 2046:08, the PAT25 crew reported that they had the traffic in sight and requested to maintain visual separation. The controller approved the request. At this time, the distance between the two aircraft was about 6.5 nm. Figure 2 shows each aircraft's approximate position at 2046:02, when the controller first advised the crew of PAT25 of flight 5342.

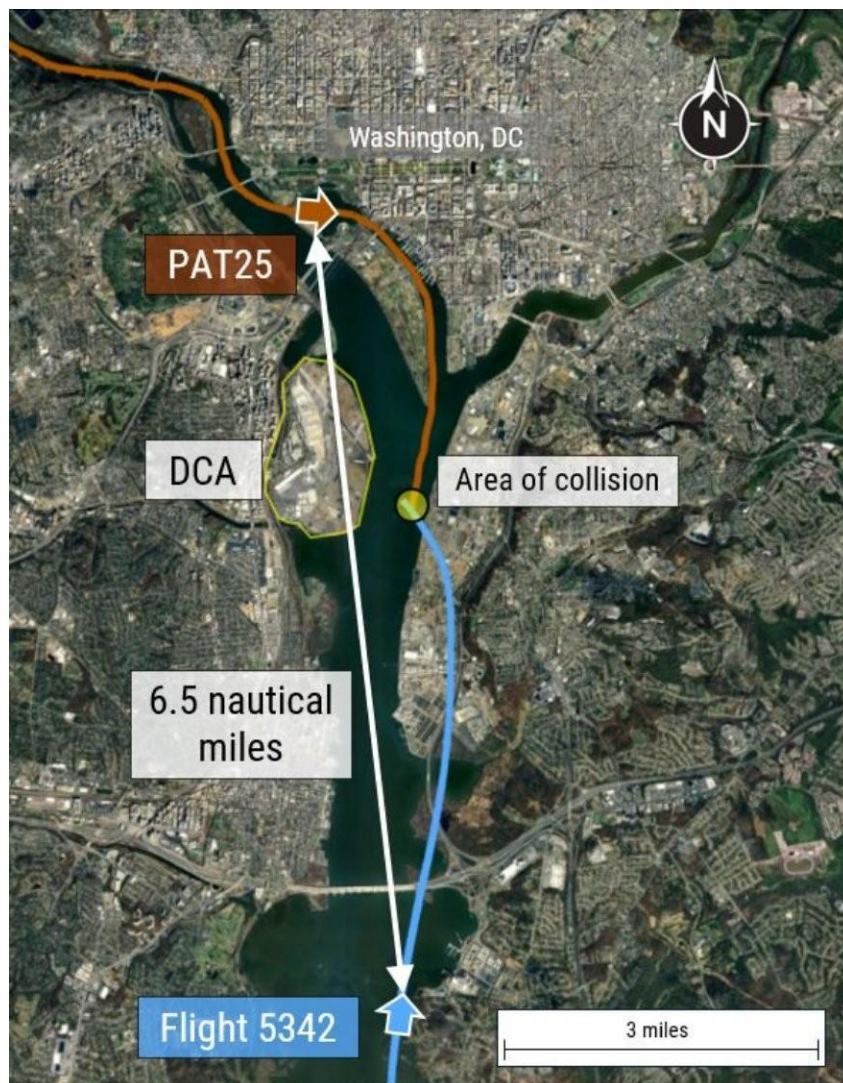


Figure 2. Google Earth image with airplane and helicopter preliminary flight tracks overlaid, and each aircraft's approximate position shown at 2046:02.

At 2046:29, the flight 5342 CVR data indicated that the crew received a 1,000-ft automated callout.

At 2046:48, DCA tower cleared other jet traffic on runway 1 for immediate departure with no delay.

At 2047:27, or 32 seconds before impact, PAT25 passed the southern tip of Hains Point.

About one second later, flight 5342 began a left roll to turn to final on runway 33. The airplane was at a radio altitude of 516 ft and 133 kts. At 2047:29, the crew of flight 5342 received a 500-ft automated callout.

At 2047:39, or 20 seconds before impact, a radio transmission from the tower was audible on both CVRs asking the PAT25 crew if the CRJ was in sight. A conflict alert was audible in the background of the ATC radio transmission.

At 2047:40, the crew of flight 5342 received an automated traffic advisory from the airplane's traffic alert and collision avoidance system (TCAS) system stating, "Traffic, Traffic." At this time, the aircraft were about 0.95 nm apart, as shown in Figure 3.

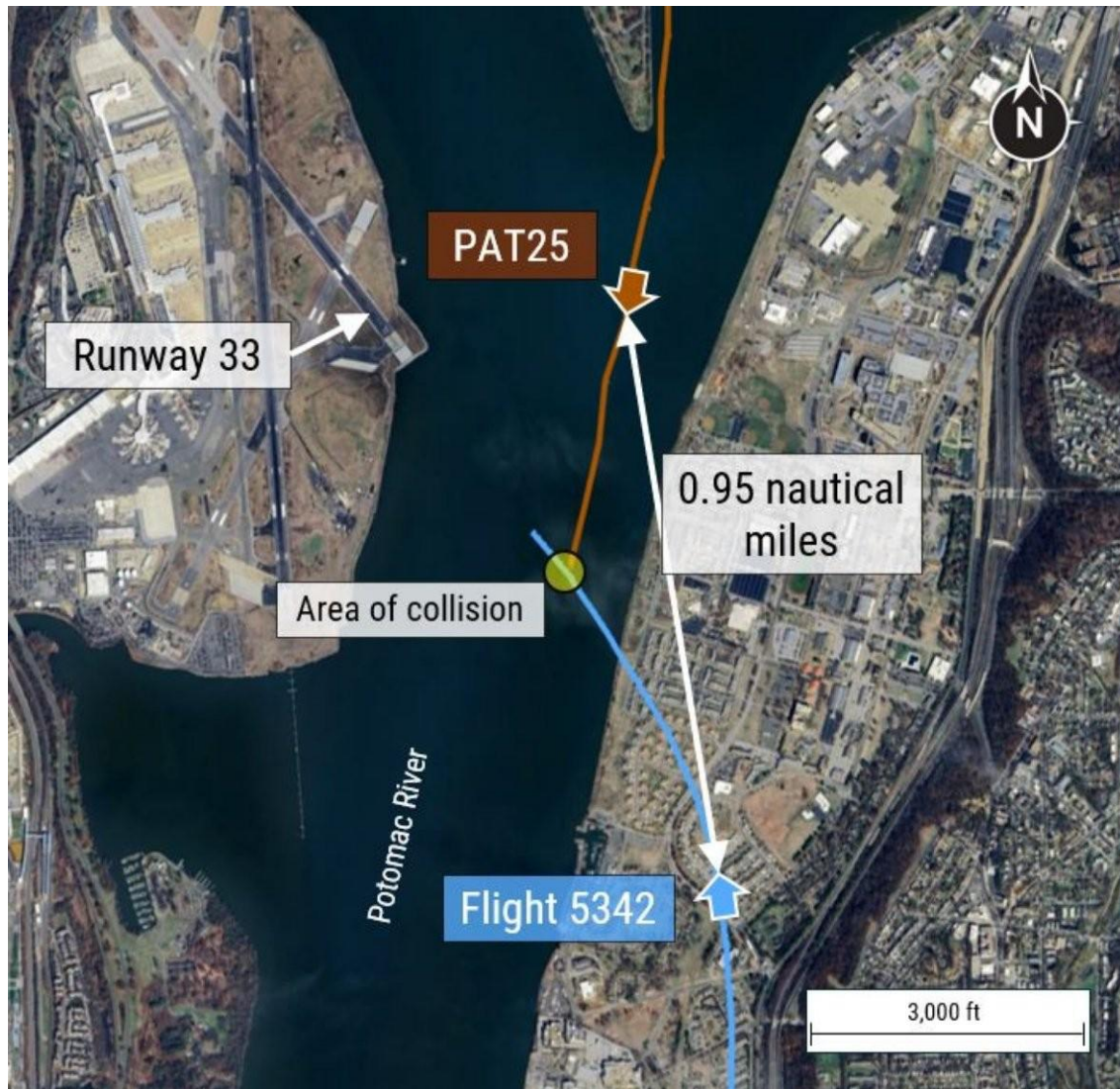


Figure 3. Google Earth image showing the approximate positions of both aircraft at 2047:40.

At 2047:42, or 17 seconds before impact, a radio transmission from the tower was audible on both CVRs directing PAT25 to pass behind the CRJ. CVR data from the helicopter indicated that the portion of the transmission that stated “pass behind the” may not have been received by the PAT25 crew, as the transmission was stepped on by a 0.8-second mic key from PAT25.

In response, at 2047:44, the crew of PAT25 indicated that traffic was in sight and requested visual separation, which was approved by DCA tower. CVR data indicated that, following this transmission, the IP told the pilot they believed ATC was asking for the helicopter to move left toward the east bank of the Potomac.

At 2047:52, or 7 seconds before impact, flight 5342 rolled out on final approach for runway 33. The airplane was at a radio altitude of 344 ft and 143 kts.

At 2047:58, or 1 second before impact, flight 5342 began to increase its pitch. FDR data showed the airplane's elevators were deflected near their maximum nose up travel.

At 2047:58, the controller issued a landing clearance to another airplane. During this transmission, audible reactions could be heard from the other tower controllers as they observed the collision, which occurred about 2047:59 while flight 5342 was over the Potomac River and on final approach for runway 33.

The flight 5342 FDR indicated that the airplane's last recorded radio altitude was 313 ft, 2 seconds before the collision. The airplane's pitch at the time of the collision was 9° nose up and roll was 11° left wing down. The airplane was descending at 448 ft per minute.

The PAT25 FDR indicated that the radio altitude of the helicopter at the time of the collision was 278 ft and had been steady for the previous 5 seconds. The helicopter's pitch at the time of the collision was about 0.5° nose up with a left roll of 1.6°.

The NTSB obtained video recordings from several sources that showed the collision between the aircraft and their descent to the water. A preliminary review of the videos revealed that the airplane's left- and right-wing navigation lights, left-wing, right-wing, and tail anticollision (strobe) lights, nose, right-wing, and left-wing landing lights, as well as the upper and lower beacon lights, were all illuminated before the collision. Further, the helicopter's lower fuselage and aft pylon anticollision (strobe) lights, along with the left, right, and tail pylon position lights, were also illuminated before the collision. None of the airplane's lights used LED technology. Video showed that, immediately after the collision, the outboard left wing of the airplane separated, and the airplane rolled about 450°, impacting the water in an approximate 45° nose-low attitude with a left roll about 90°.

Recorders

Both the FDR and CVR aboard flight 5342 were L3-Harris Communications FA2100 solid-state memory digital recorders. The FDR and CVR from flight 5342 were recovered by a Federal Bureau of Investigation (FBI) dive team and immediately provided to engineers at the NTSB Vehicle Recorder Laboratory. Data from both the CVR and FDR were downloaded successfully. The CVR contained about 2 hours and 4 minutes of good to excellent quality audio that started mid-flight due to the CVR's 2-hour recording capability. The FDR captured the entirety of the accident flight and contained about 400 parameters.

PAT25 was equipped with a Goodrich Integrated Vehicle Health Management Unit (IVHMU), which incorporated a Penny & Giles Multi-Purpose Flight Recorder (MPFR) cockpit voice and flight data recorder. The combined recorder was recovered by the Metropolitan Police Department of the District of Columbia and transported to the NTSB Vehicle Recorder Laboratory. The cockpit voice recording contained about 2 hours of excellent quality audio.

The MPFR captured the entirety of the accident flight and contained about 70 flight data parameters. By design, the MPFR portion of the IVHMU does not record date information, time information, or helicopter position information (GPS position). A review of the MPFR dataset revealed that the air data source for a parameter listed in provided documentation as “barometric altitude” was actually a recording of pressure altitude. Review of the recorded pressure altitude values revealed that they were inconsistent with other available data, and the pressure altitude parameter was declared invalid. Further work will determine if the invalid data for pressure altitude was limited to only what was recorded on the MPFR, and whether it may have affected other helicopter systems that used pressure altitude as a data source.

Operator and Aircraft Information

PSA Airlines is a wholly owned subsidiary of American Airlines based in Dayton, Ohio, and holds a 14 *CFR* 119 operating certificate for operations under 14 *CFR* Part 121. The company operates an all-jet fleet of MHI regional jet aircraft, including 61 MHI RJ CRJ700 and 80 MHI RJ CRJ900 airplanes. As part of standard FAA requirements for Part 121 operations, the CRJ was equipped with ADS-B out and a TCAS.

According to the FAA, ADS-B uses GPS satellite signals to provide air traffic controllers and pilots with accurate information to help keep aircraft safely separated in the sky and on runways. Aircraft transceivers receive GPS signals and use them to determine the aircraft’s precise position, which is combined with other data and broadcast to other aircraft and ATC facilities.

According to FAA publication “Introduction to TCAS II Version 7.1,” TCAS is a family of airborne devices that functions independently of the ground-based ATC system and provides collision avoidance protection for a broad spectrum of aircraft types. All TCAS systems provide some degree of collision threat alerting and a traffic display. TCAS II is mandated in the United States by the FAA for commercial aircraft, including regional airline aircraft with more than 30 seats or a maximum takeoff weight of more than 33,000 lbs. TCAS II provides traffic advisories (TAs) and resolution advisories (RAs), that is, recommended escape maneuvers, in the vertical dimension to either increase or maintain the existing vertical separation between aircraft. On descent below 900 ft above ground level (agl), TCAS inhibits RAs. Below 900 ft agl on descent, TCAS issues a TA when the intruding aircraft is about 20 seconds from the closest point of approach, or 0.3 nm, whichever occurs first. As the aircraft descends below 400 ft agl on arrival, the aural annunciation associated with the TA is inhibited.

According to the MHI RJ Flight Crew Operating Manual, the TCAS transceiver transmits interrogations and receives replies from other aircraft transponders. The signals are processed to produce information on range, azimuth, and altitude of aircraft in the vicinity. The TCAS provides both a visual display on the instrument panel as well as aural warnings to the flight crew when the computer predicts a conflict. A TA voice warning is announced as, “TRAFFIC -

TRAFFIC.” RA voice warning instructions include, but are not limited to, annunciations such as, “CLIMB, CLIMB,” “DESCEND, DESCEND,” or “LEVEL OFF, LEVEL OFF.”

The US Army 12th Aviation Battalion’s Bravo Company operates out of Davison Army Airfield at Fort Belvoir, Virginia, and has mission responsibility for priority air transport (PAT) and continuity of government operations. The accident helicopter was equipped with a transponder capable of transmitting ADS-B out. The helicopter was not equipped with an autopilot.

Air Traffic Control

The DCA control tower cab faces east looking across the Potomac River and, at the time of the accident, was handling traffic in a “North Operation,” meaning aircraft were landing and departing runway 1, with intermittent arrivals and departures to/from runway 33. The tower was staffed with five controllers at the time of the accident, working five open positions: assistant local control, ground control, clearance delivery, local control, and operations supervisor. The helicopter control and local control positions were combined at 1540 on the day of the accident, and the flight data and clearance delivery positions were combined. Flight 5342 was communicating with the DCA tower controller via the published control tower frequency of 119.1 MHz; PAT25 was communicating with the tower controller via the published helicopter frequency of 134.35 MHz. Both frequencies utilized the very high frequency range. Because the aircraft were on different frequencies, the crews of flight 5342 and PAT25 were not able to hear each other’s transmissions to the controller, but the controller’s transmissions to each aircraft would be audible to both flight crews.

Helicopter Routes

According to FAA Order 7210.3EE, Facility Operation and Administration, FAA Helicopter Route Charts are graphic portrayals of discrete and/or common helicopter routes or operating zones designed to facilitate helicopter access into, egress from, and operation within high density traffic areas. They generally include associated altitude or flight ceiling information to facilitate traffic avoidance and pilot adherence to minimum safe altitude requirements. The charts provide expanded and, in some cases, unique ground reference symbology to improve visual navigation.

The Baltimore-Washington Helicopter Route Chart contains the helicopter routes for the Washington, DC area; the area immediately surrounding DCA is excerpted below (see figure 4). PAT25’s route on the night of the accident included Route 1, which begins in Cabin John, Maryland, and follows the western shore of the Potomac River southeast toward Washington, DC. After crossing Key Bridge, the route follows the eastern shore of the Potomac with the Kennedy Center and Lincoln Memorial to the east and Roosevelt Island to the west, crossing Memorial Bridge (a compulsory reporting point). After Memorial Bridge, the maximum allowable altitude on Route 1 is 200 ft above mean sea level (msl).

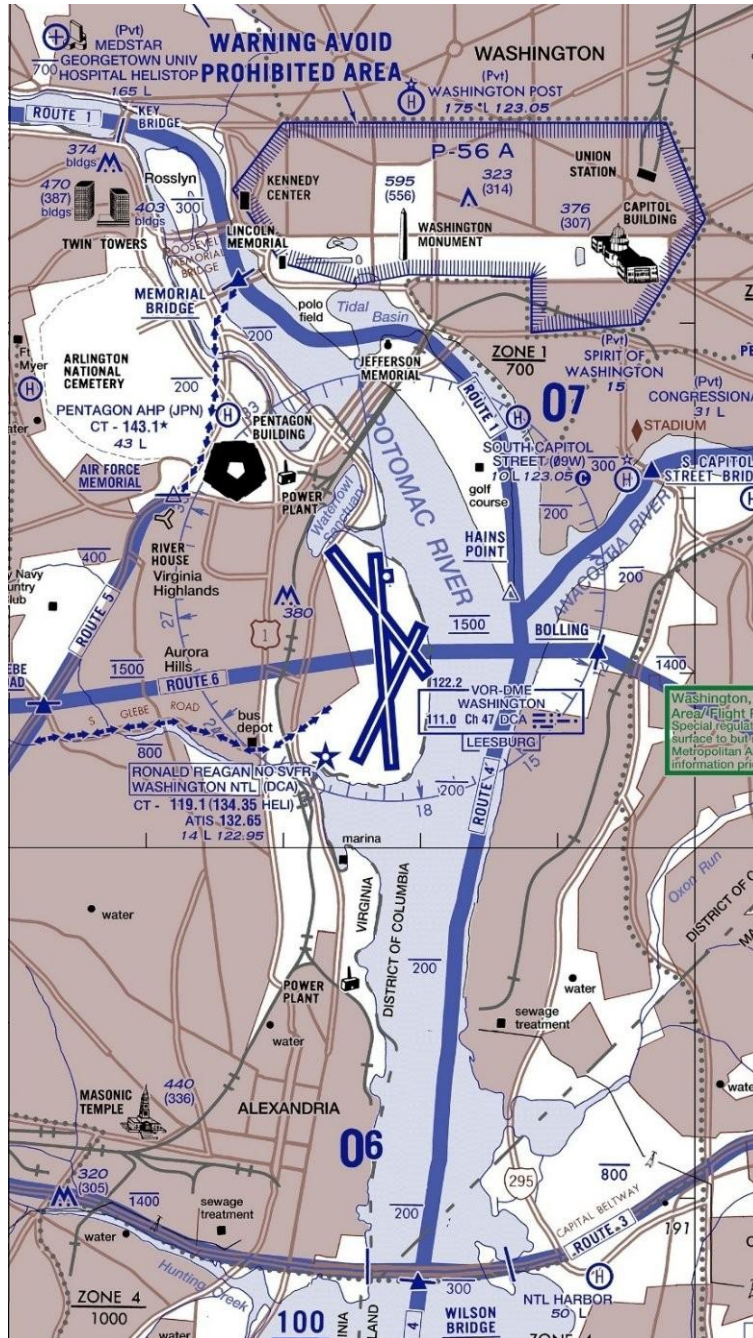


Figure 4. Excerpt of FAA Baltimore-Washington Helicopter Chart showing the area surrounding DCA. (Source: FAA.)

Route 1 then continues south of the Washington Monument, crossing West Potomac Park and the Tidal Basin before following the Washington Channel along East Potomac Park. Hains Point, the southernmost tip of East Potomac Park and located at the confluence of the Potomac and Anacostia rivers, is identified as a non-compulsory reporting point and the area where Route 4 intercepts Route 1. Route 4 continues south to the Woodrow Wilson Bridge

along the Potomac River's eastern shore, with DCA to the west. South of Wilson Bridge, the maximum allowable altitude along Route 4 increases from 200 ft msl to 300 feet msl.

According to postaccident information obtained from FAA aeronautical information specialists, helicopter routes have no defined lateral boundaries and are drawn to depict linear paths along defined surface features in a manner legible to flight crews. Any applicable altitude and lateral distance restrictions are typically documented in the chart specifications or in warning boxes displayed on the chart.

Airport Information and Emergency Response

DCA, located in Arlington, Virginia, is operated by the Metropolitan Washington Airports Authority (MWAA) and is the 24th busiest airport in the United States. Due to noise regulations, aircraft flight patterns follow the Potomac or Anacostia rivers.

DCA maintains three operational runways; runway 1/19 is the runway most commonly used for arriving and departing traffic and is 7,169 ft long with a width of 150 ft. Runway 15/33 is the second most commonly used runway and is 5,204 ft long and 150 ft wide. Runway 33 is equipped with a four-light precision approach path indicator (PAPI) that provides a 3° visual approach path indication to the runway touchdown zone. The runway 33 PAPI was operational at the time of the accident.

MWAA Aircraft Rescue and Firefighting (ARFF) was notified of the accident about 2048 when the air traffic control tower activated the alert phone. At 2050, the tower confirmed the location of the accident was in the water at the approach end of runway 33, and runway 15/33 was subsequently closed. ARFF rescue boats launched at 2053, and the first victim was located in the water at 2059.

Recovery of human remains was conducted by divers from the FBI's Evidence Response Team, DC Fire & EMS Department, Metropolitan Police Department, Maryland State Police, Baltimore City and County Police and Fire, Randive, Inc. (under contract to the US Navy Supervisor of Salvage and Diving Operations [SUPSALV]), Prince George's County Police divers, Maryland Natural Resources divers, Maryland State Fire Marshal divers, Anne Arundel County Fire Department divers and Maryland Transportation Authority Police Marine Division (surface support). The District of Columbia Office of the Chief Medical Examiner conducted autopsies of the civilian crew and toxicology samples were sent to FAA's Forensic Sciences Laboratory, Civil Aerospace Medical Institute (CAMI) for analysis, as is standard practice. Civilian passengers were examined by the DC medical examiner. The Armed Forces Medical Examiner conducted autopsies and toxicology testing of the military crew.

Recovery Operations and Aircraft Examinations

The wreckage of both aircraft was located in the Potomac River in depths ranging between 1 and 8 ft depending on tidal conditions. The helicopter wreckage was about 3,730 ft southeast of the approach end of runway 33 and included most of the major structure. The airplane was

fragmented into several pieces centered about 2,345 ft southeast of the approach end of runway 33. The outboard left wing was recovered away from the main airplane wreckage, about 2,790 ft southeast of the approach end of runway 33. The Army Corps of Engineers and the US Navy SUPSALV surveyed the accident site using sonar and divers with helmet cameras. SUPSALV was assigned responsibility for aircraft recovery operations, which the NTSB supervised. The wreckage was recovered to a secured hangar at DCA.

Airplane

The airplane sustained extensive water impact damage to most of its structure. The fuselage was recovered in 13 major sections comprising the entire length of the airplane, from the radome in the nose to the aft fuselage and tail cone. Two areas of damage were noted to the lower right side aft fuselage wing-to-body fairing. There was a puncture in the right side of the fairing about 10 inches (in) by 8 in, and a slash through the lower surface of the fairing, internal structure, and lavatory access door about 29 in long by 2 in wide. An approximate 2-ft-long section of one of the helicopter's tail rotor blades was embedded in the slash (see figure 5).



Figure 5. Damage to aft fuselage with tail rotor blade.

The vertical stabilizer and rudder remained attached to the aft fuselage and tail cone. The horizontal stabilizer and attached elevators separated from the top of the vertical stabilizer. The right wing was largely intact and remained attached to a portion of the right center fuselage. The right slats and flaps were in the fully extended position. The right landing gear remained attached and was in the extended position.

The inboard left wing between the airplane's centerline and wing station (WS) 178 was significantly fragmented. The upper portion of the left main landing gear remained attached to the left wing and the lower portion was separated; the outboard tire displayed a diagonal slash through all its layers. The outboard left wing from WS 178 to the wingtip was separated and recovered in the debris field. The inboard end of the left center slat displayed a linear slash mark about 52 inches long (see figure 6). The slat skin aft of the leading edge of the slash was

gouged and abraded linearly aftward. The left wing forward spar aft of the slat was also cut along the same diagonal line, and the interior wing structure was damaged and deformed aft and inboard. There was some black paint transfer on the interior wing structure.

Two other sections of the inboard left slat displayed impact/denting and associated black paint transfer (see figure 7). Various pieces of fibrous materials were found in multiple sections of the airplane, including the left wing and vertical stabilizer. Samples of the fibrous material were collected for documentation and identification at the NTSB Materials Laboratory.

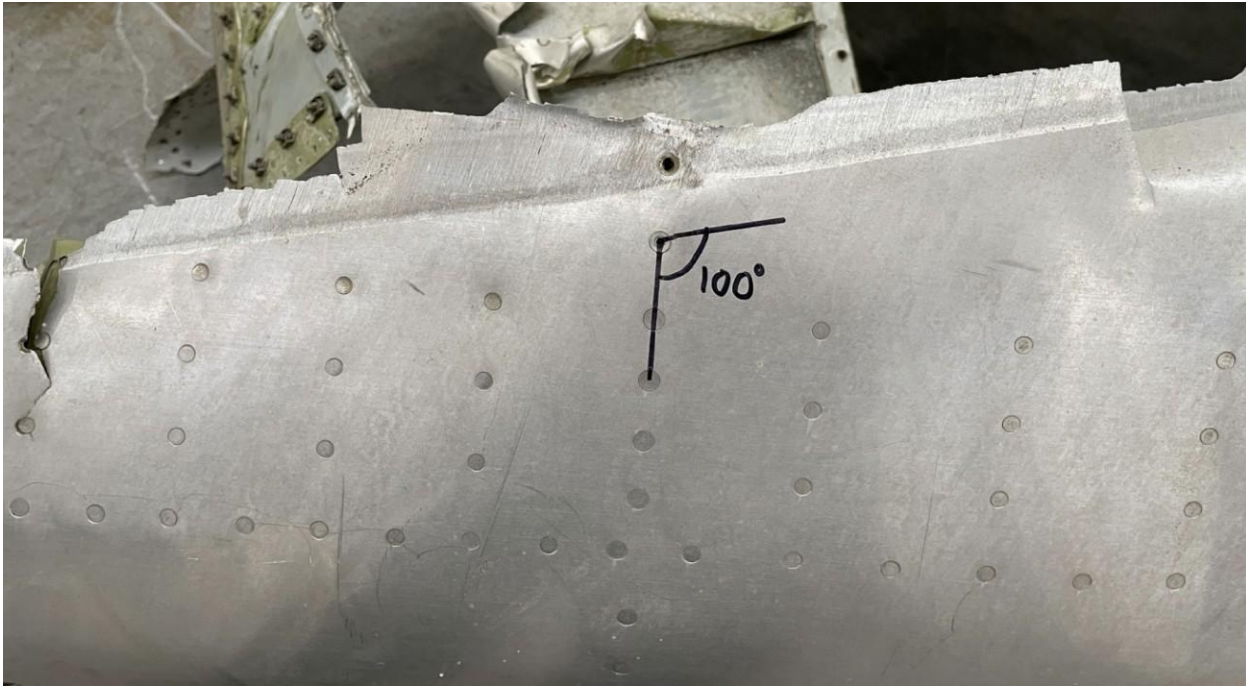


Figure 6. Close up view of slash mark displayed on left outboard slat.



Figure 7. Close up view of impact mark on left inboard slat.

The left (No. 1) engine was recovered separated from its pylon with the core mostly intact. Both fan core cowls were separated during the accident. The nacelle displayed no evidence of fire or uncontainment. All fan blades were bent aft and their leading edges exhibited dents, gouges, and missing material. The right (No. 2) engine was recovered mostly intact with its pylon attached. The nacelle displayed no evidence of fire or uncontainment. The fan blades were all full length and bent opposite the direction of rotation except for one blade that was fractured and separated about midspan. The leading edges of blade Nos. 10, 12, 14, 16, 19, and 22 displayed localized deformation near their tips. A section of the fan case rub strip was rubbed away from the 8 to 11 o'clock locations.

The airplane's TCAS transmitter receiver, communication management unit, transponder, air data computers, and exterior light bulbs were retained for additional examination.

Helicopter

The helicopter came to rest inverted with the tail structure separated from the fuselage around the tail transition section. The main fuselage had fractured into multiple pieces and was primarily held together during recovery by cabling, hoses, and remnant structure. The two internal crash-resistant fuel tanks (CFT) were present in their normally installed location; the right internal CFT was partially detached and the left internal CFT remained attached to the airframe.

The tail boom was intact and exhibited damage limited to wrinkled skin. The vertical fin was mostly intact, except for its upper end, which was fractured and deformed to the right. The stabilator was intact and exhibited impact deformation in the forward direction about the middle and aft end of the stabilator.

The main gearbox (MGB) remained attached to the structural roof beams, which had separated from the main fuselage. The MGB housing was whole, and the main rotor shaft remained installed. The main rotor hub remained installed on the main rotor shaft. All four main rotor blades were fractured near the hub.

The tail rotor hub inboard and outboard retention plates were recovered as an assembly and remained installed on the tail rotor gearbox output shaft. One of the four tail rotor blades remained mostly intact but exhibited damage to its tip and trailing edge. Remnants of the other three tail rotor blades remained in the retention plate assembly.

The cockpit area was heavily fragmented. The left seat pilot's barometric altimeter and horizontal situation indicator were found separate from the cockpit area. The left barometric altimeter Kollsman window read between 29.88 and 29.89 inches of mercury (inHg).

A portion of the right seat pilot's instrument cluster was found separated from the cockpit structure but remained connected via hoses and cables. The right barometric altimeter Kollsman window was set to 29.87 inHg. Both left and right barometric altimeters, as well as the left and right radar altimeters and their antennae, were retained for additional examination. The electronic standby instrument system (ESIS) was found partially separated and remained attached via wiring. The glass cover was fractured, but the screen was not cracked. The ESIS was retained for additional examination.

The pitot-static system was highly fragmented, with fractured pieces found in the cockpit area of the main wreckage. One whole pitot-static probe and one partial pitot-static probe were recovered, both of which were separated from the helicopter fuselage. The pitot and static lines from the left and right side pitot probes were traced along the airframe and exhibited fractures in multiple locations. The fittings at the unions along these lines were checked for security and confirmed to be tight. The fittings on the fractured pieces of the pitot-static system were confirmed to be tight except for one fitting for a pitot outlet line found near the cockpit nose wreckage. This line and the two pitot-static probes were retained for further examination.

The aft portion of the No. 1 (left) engine from the diffuser and midframe assembly to the tail cone was recovered intact with no evidence of external fire or uncontainment. Additional pieces recovered by dive teams included the accessory gearbox, one compressor case half, the compressor stage 2 bladed disk, the power takeoff shaft bevel gear, two pieces of the main frame, and the swirl frame. The output drive assembly was separated from the engine but remained attached to a portion of the helicopter torque tube. The aft side of the output drive assembly contained the fractured end of the power turbine drive shaft. The helicopter drive shaft was fractured in front of the engine's output drive assembly.

The No. 2 (right) engine appeared intact with no evidence of external fire or uncontainment. Hand rotation of the output drive shaft resulted in corresponding smooth and continuous rotation of the power turbine.

Review of helicopter maintenance records indicated, and examination of the recovered helicopter wreckage confirmed, that the helicopter was equipped with a transponder. The transponder and its remote control unit were retained for additional examination.

Two iPad minis were recovered separate from the helicopter main wreckage and retained for additional examination.

Near Midair Collision Events at DCA

Review of information gathered from voluntary safety reporting programs along with FAA data regarding encounters between helicopters and commercial aircraft near DCA from 2011 through 2024 indicated that a vast majority of the reported events occurred on approach to landing. Initial analysis found that at least one TCAS resolution advisory (RA) was triggered per month due to proximity to a helicopter. In over half of these instances, the helicopter may have been above the route altitude restriction. Two-thirds of the events occurred at night.

A review of commercial operations (instrument flight rules departures or arrivals) at DCA between October 2021 and December 2024 indicated a total of 944,179 operations. During that time, there were 15,214 occurrences between commercial airplanes and helicopters in which there was a lateral separation distance of less than 1 nm and vertical separation of less than 400 ft. There were 85 recorded events that involved a lateral separation less than 1,500 ft and vertical separation less than 200 ft.

The data indicated that, between 2018 and 2024, runway 1 accounted for about 57% of arrivals, runway 19 accounted for about 38% of arrivals, runway 33 accounted for about 4% of arrivals, and runway 15 accounted for less than 1 percent of arrivals at DCA. Runway 15 accounted for about 5% of departures from DCA.

Safety Actions

On January 31, 2025, the FAA issued a Notice to Airmen (NOTAM) prohibiting helicopter traffic from operating over the Potomac River near DCA from the surface up to and including 17,999 ft msl with exceptions for lifesaving medical, active law enforcement, air defense, or presidential transport missions. If such missions are required, civilian aircraft will not be allowed in the area. The most recent version of the NOTAM, 5/4379, was issued on February 19, 2025, with updated dimensions for the temporary flight restriction. The NOTAM is in effect through March 31, 2025, at 2359 UTC.

On March 11, 2025, the NTSB issued two urgent safety recommendations to the FAA concerning the helicopter routes near DCA.

The NTSB's investigation is ongoing.

Aircraft and Owner/Operator Information (A1)

Aircraft Make:	BOMBARDIER INC	Registration:	N709PS
Model/Series:	CL-600-2C10	Aircraft Category:	Airplane
Amateur Built:			
Operator:	PSA Airlines	Operating Certificate(s) Held:	Flag carrier (121)
Operator Designator Code:			

Aircraft and Owner/Operator Information (A2)

Aircraft Make:	Sikorsky	Registration:	UNREG
Model/Series:	UH60 L	Aircraft Category:	Helicopter
Amateur Built:			
Operator:	Army Department of Defense	Operating Certificate(s) Held:	None
Operator Designator Code:			

Meteorological Information and Flight Plan

Conditions at Accident Site:	VMC	Condition of Light:	Night
Observation Facility, Elevation:	KDCA,14 ft msl	Observation Time:	20:52 Local
Distance from Accident Site:	0 Nautical Miles	Temperature/Dew Point:	10°C /-7°C
Lowest Cloud Condition:	Clear	Wind Speed/Gusts, Direction:	14 knots / 23 knots, 300°
Lowest Ceiling:	None	Visibility:	10 miles
Altimeter Setting:	29.9 inches Hg	Type of Flight Plan Filed:	IFR (A1); MVFR (A2)
Departure Point:	Wichita, KS (ICT) (A1); Fort Belvoir, VA (DAA) (A2)	Destination:	Washington, DC (DCA) (A1); Fort Belvoir, VA (DAA) (A2)

Wreckage and Impact Information (A1)

Crew Injuries:	4 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:	60 Fatal	Aircraft Fire:	Unknown
Ground Injuries:		Aircraft Explosion:	Unknown
Total Injuries:	64 Fatal	Latitude, Longitude:	38.845339,-77.024187

Wreckage and Impact Information (A2)

Crew Injuries:	2 Fatal	Aircraft Damage:	Destroyed
Passenger Injuries:	1 Fatal	Aircraft Fire:	Unknown
Ground Injuries:		Aircraft Explosion:	Unknown
Total Injuries:	3 Fatal	Latitude, Longitude:	38.845339,-77.024187

Administrative Information

Investigator In Charge (IIC):	Banning, David
Additional Participating Persons:	Patrick Lusch; FAA AVP-110 Darren Hall; PSA Airlines Sam Farmiga; GE Aerospace Javier Casanova; Sikorsky Col Matthew Parker; US Army Seth Myers; National Air Traffic Controllers Association (NATCA) Daniel Mullin; Air Line Pilots Association (ALPA) Robin Coombs ; Association of Flight Attendants Robert Brown; International Association of Machinists and Aerospace Workers (IAM) Chris Paulino; Metropolitan Washington Airports Authority (MWAA) Ewan Tasker; Transportation Safety Board of Canada David Fisher; Mitsubishi Heavy Industries Ian Sturgeon; Transport Canada Shelley Ford; Collins Aerospace
Investigation Class:	Class 1
Note:	The NTSB traveled to the scene of this accident.