



Midair Collision Involving US Army PAT25 and PSA Airlines Flight 5342 Washington, DC January 29, 2025

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Investigator-in-Charge

Overview

- First animation
 - History of flight
 - Helicopter routes
 - Air traffic control (ATC) communications
- Second animation
 - Visibility study
- Wreckage examination
- Exclusionary findings
- Safety issues
- Previously issued safety recommendations

Animations

- ATC audio included in animations
- Cockpit voice recorder (CVR) audio not included in animations
 - CVR transcript shown in animations
- First animation – 12 minutes
- Second animation – 8 minutes

First Animation – Accident Overview

Visibility Study

- Documents location, size, and movement of aircraft in each respective pilot's field of view
 - How aircraft structure may limit view
 - How conspicuous aircraft are to crew
 - Impact to see-and-avoid task
- Challenges
 - Night conditions and night vision goggles (NVGs)
 - Difficult to have accurate representation of night lighting or "cultural lighting" looked to crews

Documentation of Cultural Lighting

- Night observation flights March 27 and 28, 2025
- Crews flew accident flight paths using exemplar aircraft
- Observed by human performance, operations, and air traffic control investigators
- Videos and photos recorded view from:
 - Each aircraft
 - Air traffic control tower
 - Various ground locations
- Used to determine which program best represented the cultural lighting

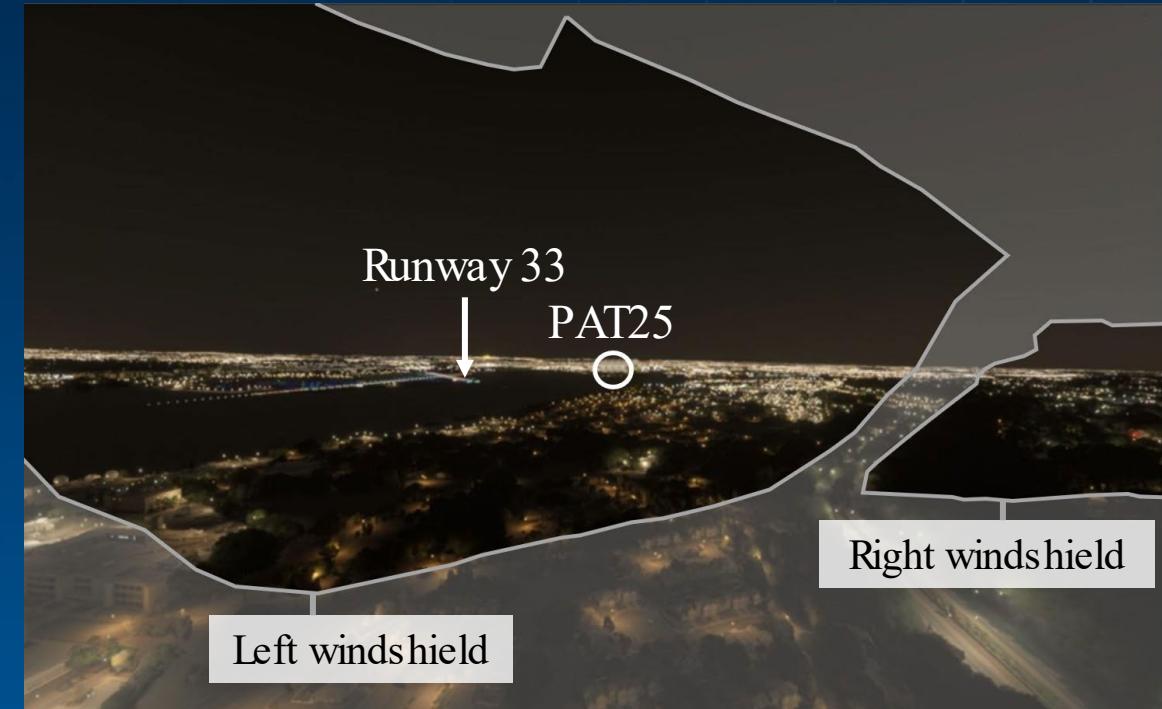
Cultural Lighting Around Washington, DC



Interior View of Exemplar CRJ700 Cockpit



Photo of exemplar airplane cockpit



Simulated view from left seat of Flight 5342
35 seconds before collision

Interior View of Exemplar UH-60L Cockpit

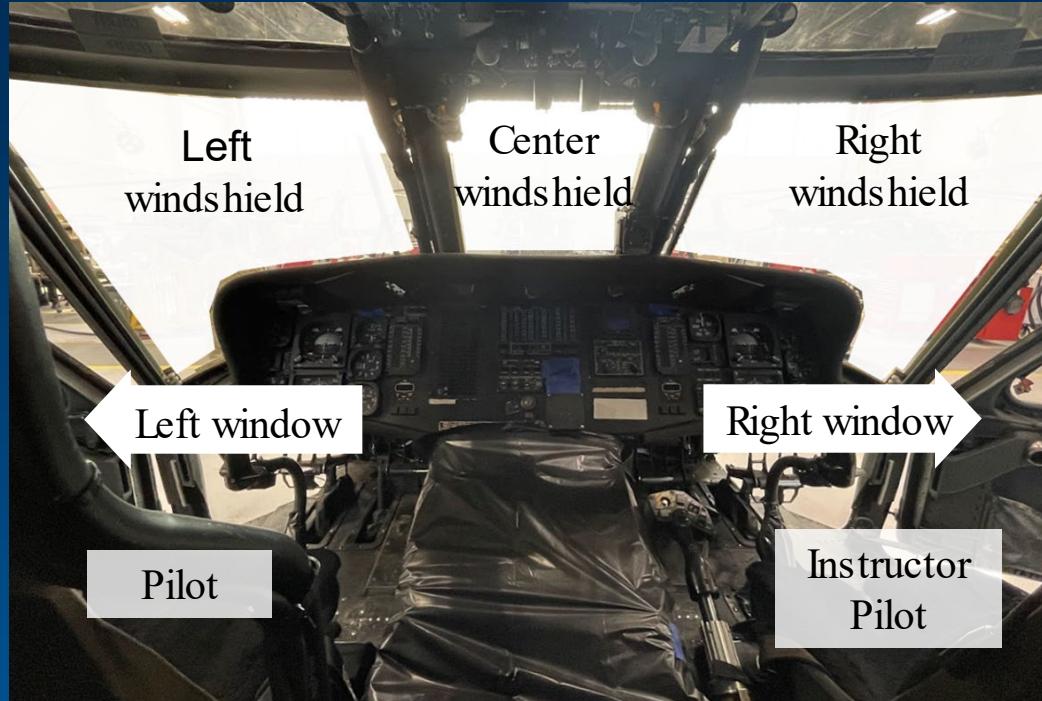
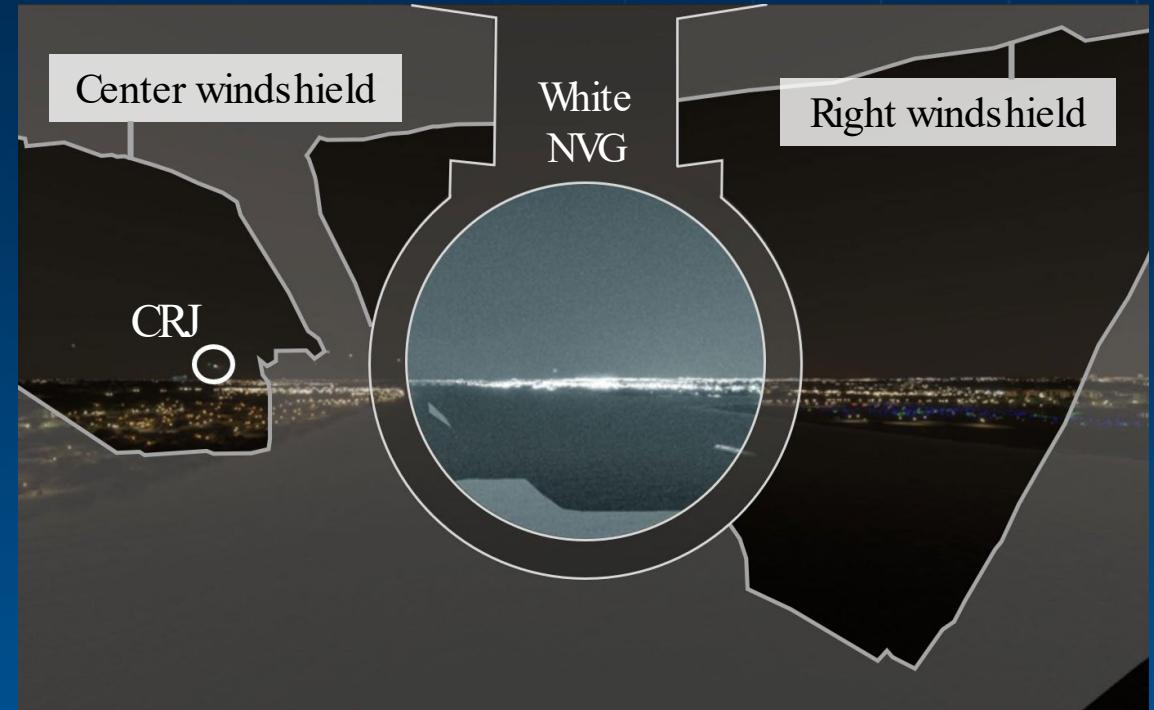


Photo of exemplar UH-60L Cockpit



Simulated view from right seat of PAT25
19 seconds before collision

Visibility Study Limitations

- Cultural lighting accuracy
 - Some landmarks unrealistically bright
 - Not all aircraft south of Wilson Bridge shown
- Aircraft external lighting accuracy
 - CRJ700 model lighting didn't work, model in animation is Boeing 737
- Night vision goggle accuracy
 - Shown stationary with head not moving
 - Does not depict additional light sources such as stars

Second Animation – Visibility Study

Wreckage Examination

- Wreckage of both aircraft located in Potomac River in water depths ranging between 1 to 8 ft
- About 90% of both aircraft recovered
- Helicopter's main rotor contacted underside of airplane's left wing
- Outboard section of the airplane's left wing separated in flight
- Video evidence showed both aircraft rapidly descending and impacting the water

Exclusionary Findings

- Pilots of flight 5342 were certificated and qualified
- Pilots of flight 5342 were medically qualified for duty and had no evidence of impairment
- Pilots of flight 5342 had adequate rest opportunities
- Pilot, Instructor Pilot (IP), and crew chief of PAT25 were qualified and current
- Pilot, IP, and crew chief of PAT25 were medically qualified for duty and had no evidence of impairment
- PAT25 crewmembers had adequate rest opportunities

Exclusionary Findings

- Both aircraft were properly certificated, equipped, and maintained
- Air traffic controllers working in tower cab were certificated and current
- Local controller, assistant local controller, and operations supervisor had no evidence of impairment by medical conditions
- Local controller, assistant local controller, and operations supervisor had adequate rest opportunities
- No evidence of local atmospheric pressure anomalies that would have impacted barometric altimeter readings

Safety Issues

- Design of helicopter routes and operator understanding of route structure and limitations
- Controller workload, position combining, and communication practices
- Extensive use of pilot-applied visual separation and inherent limitations of see-and-avoid
- Deficiencies in FAA safety culture and postaccident drug and alcohol testing
- Limitations of traffic awareness and alerting systems on both aircraft
- Shortcomings in FAA and US Army safety assurance and risk management processes

Previously Issued Urgent Safety Recommendations

- NTSB found insufficient separation between traffic on Route 4 and runway 33
- Alternate route for helicopters was needed
- Two recommendations issued March 11, 2025
 - Prohibit operations on Helicopter Route 4 between Hains Point and Wilson Bridge when runways 15 and 33 are being used at Ronald Reagan Washington National Airport (DCA). (A-25-1)
 - Designate alternate helicopter route that can be used to facilitate travel between Hains Point and Wilson Bridge when that segment of Route 4 is closed. (A-25-2)

FAA Safety Actions

- Implemented temporary airspace restrictions around DCA
- Removed Route 4 section between Hains Point and Wilson Bridge
- Prohibited use of DCA runways 15/33 and 4/22 during specific, limited helicopter operations

What We Found: Helicopter Route Design

- Airplane pilots were unaware of conflicts between helicopter routes and approach and departure corridors to DCA
- Current aeronautical charting does not provide adequate information
- Lack of information is not unique to DCA
- No record of annual review of helicopter route chart at DCA

What we propose:

- Five recommendations to FAA

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Parties to the Investigation

- Aerosonic
- Air Line Pilots Association (ALPA)
- Association of Flight Attendants (AFA)
- BAE Systems
- Collins Aerospace
- Federal Aviation Administration (FAA)
- GE Aerospace
- International Association of Machinists and Aerospace Workers (IAM)

Parties to the Investigation

- Metropolitan Washington Airports Authority (MWAA)
- National Air Traffic Controllers Association (NATCA)
- PSA Airlines
- Sikorsky
- United States Army

ICAO Annex 13

- Accredited Representative from Transportation Safety Board of Canada (TSB), State of Design and Manufacture
 - Technical Advisor from Transport Canada
 - Technical Advisor from MHI RJ Aviation

Staff Presentations

- Air traffic control (ATC)
- Human performance (ATC)
- FAA ATC postaccident drug & alcohol testing
- Automatic Dependent Surveillance-Broadcast (ADS-B) and collision avoidance systems
- Helicopter operations
- Human performance (aircraft flight crews)
- Safety data and safety management systems (SMS)



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