



# **Aviation Investigation Final Report**

Location: Over the, Atlantic Ocean **Accident Number:** DCA23LA421

Date & Time: N209UA August 18, 2023, 19:11 Local Registration:

Aircraft: Boeing 777-222 Aircraft Damage: None

1 Serious, 8 Minor, **Defining Event:** Turbulence encounter Injuries:

247 None

Flight Conducted Under: Part 121: Air carrier - Scheduled

### **Analysis**

United Airlines flight 918 encountered clear air turbulence during cruise flight, while en route to the London Heathrow International Airport (LHR), London, United Kingdom resulting in one flight attendant (FA) sustaining a serious injury. The flight originated at Dulles International Airport (IAD), Dulles, Virginia.

The flight crew reported that their preflight weather briefing revealed no significant areas of weather or turbulence over their planned route to LHR. During their preflight checks an open status message "PASS ADDRESS SYSTEM" displayed on their engine indication and crew alerting system (EICAS) display and maintenance was called. A technician responded who reinitialized the entire passenger address (PA) system and cleared the status message.

The flight crew reported that prior to the JOBOC intersection, there was minimal light turbulence, and the seatbelt sign had been on and off sporadically as required. They also indicated that no turbulence was identified in their immediate vicinity from their inflight weather resources. About 80 nm east of JOBOC, the flight encountered very light turbulence and the first officer (FO), who was the pilot flying, made the PA announcement: "Flight Attendants take your seats." In a postaccident statement, the captain reported that while in the forward lavatory, the flight encountered very light turbulence and he heard through the lavatory wall, the FO make the PA announcement: "Flight Attendants take your seats." However, because he did not hear the PA announcement over the lavatory speaker he didn't know if the rest of the crew or passengers heard this announcement. The in-flight service manager (ISM), who was in the cockpit at the time also heard the FO make the announcement "Flight Attendants take your jumpseats."

As the captain attempted to take his seat (left seat) the flight encountered a moderate turbulence spike that made his knees buckle and threw him back down into the 1st observer's seat. He indicated that he was able to flash the seatbelt sign on and off three times rapidly. The flight crew then executed all the steps of the TURBULENCE IMMEDIATE ACTION GUIDE. The turbulence ended as abruptly as it had begun. The captain then made a PA announcement "Flight attendants check in." The ISM advised the captain that all the flight attendants had been knocked to the floor and one was seriously injured. The flight crew contacted dispatch and advised of the clear air turbulence encounter. The dispatcher had no reports of turbulence from any other United flights in the area.

According to the cabin crew, they did not hear the PA announcement "Flight Attendants take your seats" and therefore they were completing their normal duties when, without warning, the airplane encountered turbulence. One FA, who was delivering meals at the time of the turbulence encounter, was thrown down, impacted the floor, and was injured. According to the ISM, shortly after the encounter, the captain came on the PA and said "Flight Attendants, Check In." The cabin crew heard that announcement and the ISM reported to the flight crew that one FA was on the floor and was unable to get up.

Upon being notified of the injured FA, the flight crew declared a medical emergency and requested paramedics meet the aircraft at the gate in LHR. The injured FA was moved to an unoccupied passenger seat, given ice, and was assisted by an onboard medical doctor for the rest of the flight. After landing the FA was transported to a local hospital where she was diagnosed with a fractured left fibula.

A postaccident functional check of the passenger address system revealed no malfunctions or anomalies with the system.

#### **Probable Cause and Findings**

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

An inadvertent encounter with clear air turbulence during cruise flight.

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## **Findings**

Environmental issues	Clear air turbulence - Effect on personnel
Environmental issues	Clear air turbulence - Awareness of condition
Personnel issues	Knowledge of meteorologic cond - Cabin crew
Personnel issues	Knowledge of meteorologic cond - Flight crew
Personnel issues	Illness/injury - Cabin crew

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## **Factual Information**

## **History of Flight**

Enroute-cruise	Turbulence encounter (Defining event)	
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#### **Pilot Information**

Certificate:	Airline transport; Commercial; Flight engineer	Age:	64
Airplane Rating(s):	Single-engine land; Multi-engine land	Seat Occupied:	Left
Other Aircraft Rating(s):	None	Restraint Used:	5-point
Instrument Rating(s):	None	Second Pilot Present:	
Instructor Rating(s):	None	Toxicology Performed:	
Medical Certification:	Class 1 Waiver time limited special	Last FAA Medical Exam:	August 4, 2023
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:	21000 hours (Total, all aircraft), 3441 hours (Total, this make and model), 18307 hours (Pilot In Command, all aircraft), 214 hours (Last 90 days, all aircraft), 73 hours (Last 30 days, all aircraft), 0 hours (Last 24 hours, all aircraft)		

### **Co-pilot Information**

Certificate:	Airline transport; Commercial	Age:	48
Airplane Rating(s):	Multi-engine land	Seat Occupied:	Right
Other Aircraft Rating(s):	None	Restraint Used:	5-point
Instrument Rating(s):	Airplane	Second Pilot Present:	
Instructor Rating(s):	None	Toxicology Performed:	
Medical Certification:	Class 1 With waivers/limitations	Last FAA Medical Exam:	June 20, 2023
Occupational Pilot:	Yes	Last Flight Review or Equivalent:	
Flight Time:	15000 hours (Total, all aircraft), 1575 hours (Total, this make and model), 10000 hours (Pilot In Command, all aircraft), 245 hours (Last 90 days, all aircraft), 88 hours (Last 30 days, all aircraft) 0 hours (Last 24 hours, all aircraft)		

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### **Flight instructor Information**

Certificate:		Age:	
Airplane Rating(s):		Seat Occupied:	Rear
Other Aircraft Rating(s):		Restraint Used:	5-point
Instrument Rating(s):		Second Pilot Present:	
Instructor Rating(s):		Toxicology Performed:	
Medical Certification:		Last FAA Medical Exam:	
Occupational Pilot:		Last Flight Review or Equivalent:	
Flight Time:	0 hours (Total, all aircraft), 0 hours	(Total, this make and model)	

## Cabin crew Information

Certificate:		Age:	
Airplane Rating(s):		Seat Occupied:	Unknown
Other Aircraft Rating(s):		Restraint Used:	4-point
Instrument Rating(s):		Second Pilot Present:	
Instructor Rating(s):		Toxicology Performed:	
Medical Certification:		Last FAA Medical Exam:	
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:			

### **Cabin crew Information**

Certificate:		Age:	
Airplane Rating(s):		Seat Occupied:	Unknown
Other Aircraft Rating(s):		Restraint Used:	4-point
Instrument Rating(s):		Second Pilot Present:	
Instructor Rating(s):		Toxicology Performed:	
Medical Certification:		Last FAA Medical Exam:	
Occupational Pilot:	No	Last Flight Review or Equivalent:	
Flight Time:			

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#### **Cabin crew Information**

Certificate:	Age:	
Airplane Rating(s):	Seat Occupied:	Unknown
Other Aircraft Rating(s):	Restraint Used:	4-point
Instrument Rating(s):	Second Pilot Present:	
Instructor Rating(s):	Toxicology Performed:	
Medical Certification:	Last FAA Medical Exam:	
Occupational Pilot:	Last Flight Review or Equivalent:	
Flight Time:		

### **Cabin crew Information**

Certificate:	Age:	
Airplane Rating(s):	Seat Occupied:	Unknown
Other Aircraft Rating(s):	Restraint Used:	4-point
Instrument Rating(s):	Second Pilot Present:	
Instructor Rating(s):	Toxicology Performed:	
Medical Certification:	Last FAA Medical Exam:	
Occupational Pilot:	Last Flight Review or Equivalent:	
Flight Time:		

## **Aircraft and Owner/Operator Information**

Aircraft Make:	Boeing	Registration:	N209UA
Model/Series:	777-222	Aircraft Category:	Airplane
Year of Manufacture:	1999	Amateur Built:	
Airworthiness Certificate:	Normal; Transport	Serial Number:	30215
Landing Gear Type:	Tricycle	Seats:	380
Date/Type of Last Inspection:	September 22, 2023 Continuous airworthiness	Certified Max Gross Wt.:	568669 lbs
Time Since Last Inspection:		Engines:	2 Turbo fan
Airframe Total Time:	92517 Hrs as of last inspection	Engine Manufacturer:	P&W
ELT:	Installed	Engine Model/Series:	PW4000 SER
Registered Owner:	UNITED AIRLINES INC	Rated Power:	60000 Lbs thrust
Operator:	UNITED AIRLINES INC	Operating Certificate(s) Held:	Flag carrier (121)

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## Meteorological Information and Flight Plan

Conditions at Accident Site:       Visual (VMC)       Condition of Light:       Night         Observation Facility, Elevation:       CYQX       Distance from Accident Site:         Observation Time:       18:40 Local       Direction from Accident Site:         Lowest Cloud Condition:       Clear       Visibility       10 miles         Lowest Ceiling:       None       Visibility (RVR):         Wind Speed/Gusts:       65 knots /       Turbulence Type Forecast/Actual:       Clear air /         Wind Direction:       Turbulence Severity Forecast/Actual:       Moderate /         Altimeter Setting:       Temperature/Dew Point:         Precipitation and Obscuration:       Type of Flight Plan Filed:       IFR         Departure Point:       Dulles, VA (KIAD)       Type of Clearance:       IFR;Cruise         Departure Time:       22:20 Local       Type of Airspace:       Class A				
Observation Time: 18:40 Local Direction from Accident Site:  Lowest Cloud Condition: Clear Visibility 10 miles  Lowest Ceiling: None Visibility (RVR):  Wind Speed/Gusts: 65 knots / Turbulence Type Forecast/Actual:  Wind Direction: Turbulence Severity Forecast/Actual:  Altimeter Setting: Temperature/Dew Point:  Precipitation and Obscuration:  Departure Point: Dulles, VA (KIAD) Type of Flight Plan Filed: IFR  Destination: IFR;Cruise	Conditions at Accident Site:	Visual (VMC)	Condition of Light:	Night
Lowest Cloud Condition:  Clear  Visibility  None  Visibility (RVR):  Wind Speed/Gusts:  65 knots /  Turbulence Type Forecast/Actual:  Mind Direction:  Turbulence Severity Forecast/Actual:  Altimeter Setting:  Precipitation and Obscuration:  Departure Point:  Dulles, VA (KIAD)  Type of Flight Plan Filed:  IFR  Destination:  10 miles  10 miles  11 miles  12 miles  12 miles  13 miles  14 miles  15 miles  16 miles  17 miles  18 miles  18 miles  18 miles  18 miles  19 miles  10 miles 10 miles 10 miles 10 miles 10 miles 10 miles 10 miles 10 miles 10 miles 10 miles 10 miles 10 miles 10 miles 10 miles 10 miles 10 miles 10 miles 10 miles	Observation Facility, Elevation:	CYQX	Distance from Accident Site:	
Lowest Ceiling: None Visibility (RVR):  Wind Speed/Gusts: 65 knots / Turbulence Type Forecast/Actual:  Wind Direction: Turbulence Severity Forecast/Actual:  Altimeter Setting: Temperature/Dew Point:  Precipitation and Obscuration:  Departure Point: Dulles, VA (KIAD) Type of Flight Plan Filed: IFR  Destination: Type of Clearance: IFR;Cruise	Observation Time:	18:40 Local	Direction from Accident Site:	
Wind Speed/Gusts:  Wind Direction:  Turbulence Severity Forecast/Actual:  Moderate / Forecast/Actual:  Altimeter Setting:  Precipitation and Obscuration:  Departure Point:  Dulles, VA (KIAD)  Type of Flight Plan Filed:  IFR  Destination:  Type of Clearance:  IFR;Cruise	<b>Lowest Cloud Condition:</b>	Clear	Visibility	10 miles
Wind Direction:  Turbulence Severity Forecast/Actual:  Altimeter Setting:  Temperature/Dew Point:  Precipitation and Obscuration:  Departure Point:  Dulles, VA (KIAD)  Type of Flight Plan Filed:  IFR  Destination:  IFR;Cruise	Lowest Ceiling:	None	Visibility (RVR):	
Altimeter Setting: Temperature/Dew Point:  Precipitation and Obscuration:  Departure Point: Dulles, VA (KIAD) Type of Flight Plan Filed: IFR  Destination: London, OF (LHR) Type of Clearance: IFR;Cruise	Wind Speed/Gusts:	65 knots /		Clear air /
Precipitation and Obscuration:  Departure Point: Dulles, VA (KIAD) Type of Flight Plan Filed: IFR  Destination: Type of Clearance: IFR;Cruise	Wind Direction:			Moderate /
Departure Point:       Dulles, VA (KIAD)       Type of Flight Plan Filed:       IFR         Destination:       London, OF (LHR)       Type of Clearance:       IFR;Cruise	Altimeter Setting:		Temperature/Dew Point:	
Destination: London, OF (LHR) Type of Clearance: IFR;Cruise	Precipitation and Obscuration:			
	Departure Point:	Dulles, VA (KIAD)	Type of Flight Plan Filed:	IFR
Departure Time: 22:20 Local Type of Airspace: Class A	Destination:	London, OF (LHR)	Type of Clearance:	IFR;Cruise
	Departure Time:	22:20 Local	Type of Airspace:	Class A

## Wreckage and Impact Information

Crew Injuries:	1 Serious, 8 Minor, 4 None	Aircraft Damage:	None
Passenger Injuries:	243 None	Aircraft Fire:	None
Ground Injuries:		Aircraft Explosion:	None
Total Injuries:	1 Serious, 8 Minor, 247 None	Latitude, Longitude:	40,-60

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#### **Administrative Information**

Investigator In Charge (IIC): Hauf, Michael

Additional Participating Persons: Ryan Hurling; United; Chicago, IL
FAA AVP100

Original Publish Date: March 12, 2024

Last Revision Date: Investigation Class: Class 4

Note: The NTSB did not travel to the scene of this accident.

Investigation Docket: https://data.ntsb.gov/Docket?ProjectID=192927

The National Transportation Safety Board (NTSB) is an independent federal agency charged by Congress with investigating every civil aviation accident in the United States and significant events in other modes of transportation—railroad, transit, highway, marine, pipeline, and commercial space. We determine the probable causes of the accidents and events we investigate, and issue safety recommendations aimed at preventing future occurrences. In addition, we conduct transportation safety research studies and offer information and other assistance to family members and survivors for each accident or event we investigate. We also serve as the appellate authority for enforcement actions involving aviation and mariner certificates issued by the Federal Aviation Administration (FAA) and US Coast Guard, and we adjudicate appeals of civil penalty actions taken by the FAA.

The NTSB does not assign fault or blame for an accident or incident; rather, as specified by NTSB regulation, "accident/incident investigations are fact-finding proceedings with no formal issues and no adverse parties ... and are not conducted for the purpose of determining the rights or liabilities of any person" (Title 49 Code of Federal Regulations section 831.4). Assignment of fault or legal liability is not relevant to the NTSB's statutory mission to improve transportation safety by investigating accidents and incidents and issuing safety recommendations. In addition, statutory language prohibits the admission into evidence or use of any part of an NTSB report related to an accident in a civil action for damages resulting from a matter mentioned in the report (Title 49 United States Code section 1154(b)). A factual report that may be admissible under 49 United States Code section 1154(b) is available here.

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