
Turbulence injury, Boeing 777, July 25, 2004

Micro-summary: This Boeing 777 experienced turbulence while in cruise, fracturing a flight attendant's shoulder.


Event Date: 2004-07-25 at 0115 EDT


Investigative Body: National Transportation Safety Board (NTSB), USA

Investigative Body's Web Site: <http://www.nts.gov/>

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		NTSB ID: DCA04MA061		Aircraft Registration Number: N797AN	
		Occurrence Date: 07/25/2004		Most Critical Injury: Serious	
		Occurrence Type: Accident		Investigated By: NTSB	
Location/Time					
Nearest City/Place Miami		State FL	Zip Code	Local Time 0115	Time Zone EDT
Airport Proximity:		Distance From Landing Facility:		Direction From Airport:	
Aircraft Information Summary					
Aircraft Manufacturer Boeing		Model/Series 777		Type of Aircraft Airplane	
Sightseeing Flight: No			Air Medical Transport Flight: No		
Narrative					
<p>Brief narrative statement of facts, conditions and circumstances pertinent to the accident/incident:</p> <p>On July 25, 2004, about 0115 eastern daylight time (EDT), American Airlines flight 955, a Boeing 777, N797AN, encountered clear air turbulence during cruise at flight level (FL) 370 approximately 25 nautical miles north of intersection GELOG. Flight 955 was a regularly scheduled international passenger flight from Miami International Airport, Miami, Florida, to Sao Paulo, Brazil (GRU), with 204 passengers and 13 crewmembers on board. During the turbulence encounter, one of the flight attendants suffered a fractured shoulder. The flight continued to GRU, where the injured flight attendant was transported to a hospital. The flight was operated under 14 Code of Federal Regulations Part 121 under an instrument flight plan.</p> <p>At the time of the turbulence encounter, which occurred about an hour after takeoff, flight attendants were providing meal service to the passengers. Statements from the flight attendants characterized the turbulence as "bad" or "severe" and indicated that there were at least two jolts that threw them to the floor. The injured flight attendant, who was located in the rear of the airplane, stated that she tried to hold onto an armrest in the last row after the initial jolt threw her down. She was tossed up and then down as the turbulence continued, and her shoulder struck one of the armrests. Two doctors responded to a request for help, and the injured flight attendant was treated with pain medication, ice packs, and a sling. The captain decided to continue to GRU after the doctors attended to the flight attendant and arranged for her to be transported to a hospital. The flight continued for approximately 6 hours before landing at GRU. The flight attendant was diagnosed with a fractured left shoulder.</p> <p>Statements from the captain (the flying pilot) and the first officer indicated that the event involved clear air turbulence that lasted 3-4 seconds. The captain characterized the turbulence encounter as "moderate" and being similar to a wake turbulence encounter because of the extremely short duration. He indicated that there were no aircraft in front of them and the nearest thunderstorms were greater than 20 miles to the northwest. The first officer added that they had received no turbulence warnings from other aircraft and that they were clear of all weather.</p> <p>The reserve pilot for the flight stated that he had been resting in the designated crew rest seat in first class at the time of the event. He stated that the turbulence lasted less than five seconds and involved approximately two groups of three rapid and abrupt jolts that appeared to diminish in severity over time. He indicated that the flight conditions were mostly smooth before and shortly after the event.</p> <p>The seat belt sign was on at the time of the turbulence. There was no forecast turbulence for the entire route of the flight.</p> <p>Flight Recorder Data</p> <p>A review of the flight data recorder (FDR) data indicates that the turbulence event lasted about 10</p>					
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 <p>National Transportation Safety Board FACTUAL REPORT AVIATION</p>	NTSB ID: DCA04MA061
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	Occurrence Type: Accident

Narrative (Continued)

seconds. The data further show the following about the turbulence encounter:

- there was a 60-degree change in wind direction and a +/-8 knot change in wind speed;
- the autopilot and yaw damper remained engaged and active throughout the event; (According to information provided by Boeing, the B-777's primary flight computer will disconnect the autopilot when it is overridden by manual inputs.)
- there were angle of attack deviations of +/- 3 degrees;
- there were airspeed deviations of -12 to +15 knots; and
- vertical accelerations ranged from approximately 1.6 g's to 0.2 g's; lateral accelerations ranged from approximately 0.06 g's to -0.2 g's; and longitudinal accelerations (which averaged about 0.04 g's prior to the event) ranged from approximately 0.06 g's to -0.01 g's.

 National Transportation Safety Board FACTUAL REPORT AVIATION		NTSB ID: DCA04MA061				
		Occurrence Date: 07/25/2004				
		Occurrence Type: Accident				
Landing Facility/Approach Information						
Airport Name		Airport ID:	Airport Elevation Ft. MSL	Runway Used	Runway Length	Runway Width
Runway Surface Type:						
Runway Surface Condition:						
Type Instrument Approach:						
VFR Approach/Landing:						
Aircraft Information						
Aircraft Manufacturer Boeing		Model/Series 777		Serial Number		
Airworthiness Certificate(s):						
Landing Gear Type:						
Homebuilt Aircraft?		Number of Seats:	Certified Max Gross Wt. LBS	Number of Engines: 2		
Engine Type: Turbo Fan		Engine Manufacturer: Rolls-Royce		Model/Series: RB211	Rated Power: 91450 LBS	
- Aircraft Inspection Information						
Type of Last Inspection		Date of Last Inspection	Time Since Last Inspection Hours	Airframe Total Time Hours		
- Emergency Locator Transmitter (ELT) Information						
ELT Installed?		ELT Operated?		ELT Aided in Locating Accident Site?		
Owner/Operator Information						
Registered Aircraft Owner		Street Address				
		City		State	Zip Code	
Operator of Aircraft AMERICAN AIRLINES INC		Street Address 4333 Amon Carter Blvd				
		City Fort Worth		State TX	Zip Code 76155	
Operator Does Business As:			Operator Designator Code: AALA			
- Type of U.S. Certificate(s) Held:						
Air Carrier Operating Certificate(s): Flag Carrier/Domestic						
Operating Certificate:			Operator Certificate:			
Regulation Flight Conducted Under: Part 121: Air Carrier						
Type of Flight Operation Conducted: Scheduled; International; Passenger Only						

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First Pilot Information

Name On File	City	State	Date of Birth On File	Age 58
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Sex: M	Seat Occupied: Left	Principal Profession: Occupational Pilot	Certificate Number: On File
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Certificate(s): Airline Transport

Airplane Rating(s): Multi-engine Land; Single-engine Land

Rotorcraft/Glider/LTA: None

Instrument Rating(s): Airplane

Instructor Rating(s):

Type Rating/Endorsement for Accident/Incident Aircraft?	Current Biennial Flight Review?
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Medical Cert.:	Medical Cert. Status:	Date of Last Medical Exam: 07/2004
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- Flight Time Matrix	All A/C	This Make and Model	Airplane Single Engine	Airplane Multi-Engine	Night	Instrument		Rotorcraft	Glider	Lighter Than Air
						Actual	Simulated			
Total Time	38578	1700								
Pilot In Command(PIC)	33000	1700								
Instructor	2000	0								
Last 90 Days	240	240								
Last 30 Days	80	80								
Last 24 Hours	3	3								

Seatbelt Used? Yes	Shoulder Harness Used? Yes	Toxicology Performed? No	Second Pilot?
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Flight Plan/Itinerary

Type of Flight Plan Filed: IFR

Departure Point	State	Airport Identifier	Departure Time	Time Zone
Miami	FL	MIA		

Destination	State	Airport Identifier	
Sao Paulo		GRU	


Type of Clearance:

Type of Airspace:

Weather Information

Source of Briefing:

Method of Briefing:

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Weather Information

WOF ID	Observation Time	Time Zone	WOF Elevation <small>Ft. MSL</small>	WOF Distance From Accident Site <small>NM</small>	Direction From Accident Site <small>Deg. Mag.</small>
Sky/Lowest Cloud Condition: Clear				<small>Ft. AGL</small>	Condition of Light: Night
Lowest Ceiling:			<small>Ft. AGL</small>	Visibility: <small>SM</small>	Altimeter: <small>"Hg</small>
Temperature: <small>°C</small>	Dew Point: <small>°C</small>	Wind Direction: 70		Density Altitude: <small>Ft.</small>	
Wind Speed: 9	Gusts:	Weather Conditions at Accident Site: Visual Conditions			
Visibility (RVR): <small>Ft.</small>	Visibility (RVV) <small>SM</small>	Intensity of Precipitation:			
Restrictions to Visibility: No Obscuration; No Precipitation					
Type of Precipitation:					

Accident Information

Aircraft Damage: None	Aircraft Fire:	Aircraft Explosion
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Classification:

- Injury Summary Matrix	Fatal	Serious	Minor	None	TOTAL
First Pilot				1	1
Second Pilot				2	2
Student Pilot					
Flight Instructor					
Check Pilot					
Flight Engineer					
Cabin Attendants		1		9	10
Other Crew					
Passengers				204	204
- TOTAL ABOARD -		1		216	217
Other Ground					
- GRAND TOTAL -		1		216	217

National Transportation Safety Board

FACTUAL REPORT

AVIATION



NTSB ID: DCA04MA061

Occurrence Date: 07/25/2004

Occurrence Type: Accident

Administrative Information

Investigator-In-Charge (IIC)

Frank Hilldrup

Additional Persons Participating in This Accident/Incident Investigation: