
Turbulence injury, McDonnell Douglas MD-82, August 3, 2003

Micro-summary: This McDonnell Douglas MD-82 encountered turbulence, seriously injuring a passenger.


Event Date: 2003-08-03 at 2207 EDT

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

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

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		NTSB ID: MIA03LA155		Aircraft Registration Number: N7527A	
		Occurrence Date: 08/03/2003		Most Critical Injury: Serious	
		Occurrence Type: Accident		Investigated By: NTSB	
Location/Time					
Nearest City/Place Charlotte		State NC	Zip Code 28204	Local Time 2207	Time Zone EDT
Airport Proximity: Off Airport/Airstrip		Distance From Landing Facility:		Direction From Airport:	
Aircraft Information Summary					
Aircraft Manufacturer McDonnell Douglas		Model/Series MD-82		Type of Aircraft Airplane	
Sightseeing Flight: No			Air Medical Transport Flight: No		
Narrative					
Brief narrative statement of facts, conditions and circumstances pertinent to the accident/incident:					
<p>On August 3, 2003, about 2207 eastern daylight time, a McDonnell Douglas MD-82, N7527A, registered to Wilmington Trust Company Owner Trustee, and operated by American Airlines, Inc., as a Title 14 CFR Part 121 scheduled domestic passenger flight, encountered turbulence in the vicinity of Charlotte, North Carolina. Visual meteorological conditions prevailed, and an instrument flight rules flight plan was filed. The airline transport-rated pilot, first officer, three flight attendants and 127 passengers were not injured. One passenger received serious injuries. The flight originated in New York City, New York, the same day, about 2015.</p>					
<p>An official with American Airlines Flight Safety Department stated that the airplane was en route from LaGuardia Airport, New York City, New York, to Tampa, Florida, and while at an altitude of the 31,000 feet, turbulence was encountered. He further stated that during the encounter, one passenger was in the lavatory and was injured. The flight landed at Tampa International Airport, Tampa, Florida, about 2230, and after examination the passenger was determined to have suffered a serious injury.</p>					
<p>The captain stated that the ride had been smooth, and there had been occasional light chop. He further stated that the seatbelt sign was off, and approximately seven people were standing at the time of the incident, including the three flight attendants. About 2 hours into the 3-hour flight while cruising at FL310, he said the radar showing a clear flight path with a significant line of storms approximately 30 miles east of their course. The airplane was in visual meteorological conditions, with stars and ground lights visible, especially to the west, and according to the captain, about 2207, the airplane entered instrument meteorological conditions and quickly encountered moderate chop, followed by a very sharp jolt. He said he had immediately turned on the fasten seatbelt sign after the first jolt, and they then received two more sharp jolts. He said that rain and Saint Elmo's were present, and he turned the airplane to the right, back towards where they had last seen ground lights and then informed FAA Air Traffic Control Jacksonville Center of the turn and ride condition. In about 30 seconds, he said the ride became smooth with some light chop, and they entered visual meteorological conditions again.</p>					
<p>The NTSB examined radar and weather data pertinent to the flight, and the data revealed that when the accident airplane's flight path for the period of the flight was overlaid with infrared satellite imagery for the nominal times of 2145, 2202, and 2215, the data showed that from 2151 to about 2200 the flight was flying parallel to a band of thunderstorms located about 20-30 nautical miles off the airplane's left wing. Cloud-top temperatures of the thunderstorms east of the flight's ground track showed tops of the thunderstorms to be about 45,000 feet. Also, the satellite imagery showed that another area of thunderstorms was located near the South Carolina border, about 100 miles from the airplane's 10 o'clock position. Cloud-top temperatures showed tops of these thunderstorms to be at or above 45,000 feet. In addition, the airplane's track and satellite imagery for the nominal time of 2145 showed an isolated thunderstorm with an estimated cloud top of about 36,000 feet in the vicinity of GLOVR intersection, and satellite images at 2202</p>					
FACTUAL REPORT - AVIATION					

National Transportation Safety Board

FACTUAL REPORT

AVIATION

NTSB ID: MIA03LA155

Occurrence Date: 08/03/2003


Occurrence Type: Accident


Narrative (Continued)

and 2215 showed those thunderstorm cloud tops were higher, and the thunderstorms had expanded outward and moved northeast along the airplane's track.

Greer, South Carolina (GSP) is located about 068 degrees, 105 nautical miles from the location where the turbulence event occurred. GSP digital Doppler radar data, pertinent to the accident time, was also evaluated and compared to the airplane's flight track. The radar data showed reflectivity echoes that varied from a VIP level 1 (very light) to VIP level 5 (intense), in the vicinity of the turbulence location. Reflectivity cross-sections of the radar data along the airplanes track showed that the maximum radar tops which the flight had penetrated were about 40,000 feet.

In addition, the NTSB also examined the Flight Data Recorder (FDR) from the accident airplane. The FDR recording contained about 91 hours of data, with the incident flight being the fifth to last flight, and lasting about 2 hours, 19 minutes. The data pertaining to the turbulence event showed that the airplane was at 31,007 feet, 286 knots, and 216 deg, when the altitude began to slightly increase, and minor fluctuations in vertical and lateral acceleration began to occur. About 9 seconds after the altitude began to increase, the airplane experienced its maximum positive vertical acceleration of 1.593 g's before dropping to -0.076 g's about two seconds later. About a second after that, the vertical acceleration reached 1.373 g's. The altitude reached was 31,055 feet, 5 seconds later, and then it decreased to 30,991 feet. Over the next minute, the airplane turned to the right to a heading of 237 degrees, and minor fluctuations in vertical acceleration continued until about 10 seconds prior to completion of the turn. The autopilot had remained engaged throughout the event.

 National Transportation Safety Board FACTUAL REPORT AVIATION		NTSB ID: MIA03LA155			
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		Occurrence Type: Accident			
Landing Facility/Approach Information					
Airport Name	Airport ID:	Airport Elevation Ft. MSL	Runway Used NA	Runway Length	Runway Width
Runway Surface Type: Unknown					
Runway Surface Condition: Unknown					
Type Instrument Approach: Unknown					
VFR Approach/Landing: Unknown					
Aircraft Information					
Aircraft Manufacturer McDonnell Douglas		Model/Series MD-82		Serial Number 49919	
Airworthiness Certificate(s): Transport					
Landing Gear Type: Retractable - Tricycle					
Homebuilt Aircraft? No	Number of Seats: 136	Certified Max Gross Wt. 150500 LBS	Number of Engines: 2		
Engine Type: Turbo Jet	Engine Manufacturer: Pratt & Whitney	Model/Series: JT8D-217C	Rated Power: 20850 LBS		
- Aircraft Inspection Information					
Type of Last Inspection Continuous Airworthiness	Date of Last Inspection	Time Since Last Inspection Hours	Airframe Total Time Hours		
- Emergency Locator Transmitter (ELT) Information					
ELT Installed? No	ELT Operated? No	ELT Aided in Locating Accident Site? No			
Owner/Operator Information					
Registered Aircraft Owner Wilmington Trust		Street Address 1100 N Market St			
		City Wilmington	State DE	Zip Code 19890	
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; Domestic; Passenger Only					
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First Pilot Information

Name On File	City On File	State On File	Date of Birth On File	Age 44
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Sex: M	Seat Occupied: Left	Principal Profession: Civilian Pilot	Certificate Number: On File
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Certificate(s): Airline Transport

Airplane Rating(s): Multi-engine Land

Rotorcraft/Glider/LTA: None

Instrument Rating(s): Airplane

Instructor Rating(s):

Type Rating/Endorsement for Accident/Incident Aircraft? Yes	Current Biennial Flight Review?
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Medical Cert.: Class 1	Medical Cert. Status: Valid Medical--no waivers/lim.	Date of Last Medical Exam: 07/2003
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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										
Pilot In Command(PIC)										
Instructor										
Last 90 Days										
Last 30 Days										
Last 24 Hours										

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

Type of Flight Plan Filed: IFR

Departure Point New York City	State NY	Airport Identifier LGA	Departure Time 2015	Time Zone MST
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Destination Tampa	State FL	Airport Identifier TPA	
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Type of Clearance: IFR

Type of Airspace: Class A

Weather Information

Source of Briefing:

Method of Briefing:

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Weather Information					
WOF ID	Observation Time	Time Zone	WOF Elevation	WOF Distance From Accident Site	Direction From Accident Site
CLT	2151	EDT	Ft. MSL	12 NM	360 Deg. Mag.
Sky/Lowest Cloud Condition: Few			2800 Ft. AGL	Condition of Light: Night	
Lowest Ceiling: Broken		13000 Ft. AGL		Visibility: 9 SM	Altimeter: 30.03 "Hg
Temperature: 23 °C	Dew Point: 22 °C	Wind Direction: 180		Density Altitude: Ft.	
Wind Speed: 4	Gusts:	Weather Conditions at Accident Site: Visual Conditions			
Visibility (RVR): Ft.	Visibility (RVV) SM	Intensity of Precipitation:			
Restrictions to Visibility:					
Type of Precipitation:					

Accident Information		
Aircraft Damage: None	Aircraft Fire: None	Aircraft Explosion: None

Classification: U.S. Registered/U.S. Soil					
- Injury Summary Matrix	Fatal	Serious	Minor	None	TOTAL
First Pilot				1	1
Second Pilot				1	1
Student Pilot					
Flight Instructor					
Check Pilot					
Flight Engineer					
Cabin Attendants				3	3
Other Crew					
Passengers		1		128	129
- TOTAL ABOARD -		1		133	134
Other Ground					
- GRAND TOTAL -		1		133	134

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AVIATION



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Administrative Information

Investigator-In-Charge (IIC)

John W. Lovell

Additional Persons Participating in This Accident/Incident Investigation:

Joe Murray
FAA FSDO
Tampa, FL 33609