
Turbulence injury, Boeing 737-700, April 29, 2005

Micro-summary: This Boeing 737-700 experienced moderate turbulence in cruise, seriously injuring a flight attendant.

Event Date: 2005-04-29 at 0731 CDT


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


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


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		NTSB ID: DFW05LA112		Aircraft Registration Number: N727SW	
		Occurrence Date: 04/29/2005		Most Critical Injury: Serious	
		Occurrence Type: Accident		Investigated By: NTSB	
Location/Time					
Nearest City/Place Little Rock		State AR	Zip Code 72201	Local Time 0731	Time Zone CDT
Airport Proximity:		Distance From Landing Facility:		Direction From Airport:	
Aircraft Information Summary					
Aircraft Manufacturer Boeing		Model/Series 737-700		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 April 29, 2005, approximately 0731 central daylight time, a twin-turbofan Boeing 737-700 airplane, N727SW, operating as Southwest Airlines flight number 2440, was undamaged during an in-flight encounter with turbulence while in cruise flight at Flight Level 410 (41,000 feet mean seal level) near Little Rock, Arkansas. The airline transport rated captain, airline transport rated first officer, two of the three flight attendants, and 15 passengers were not injured. One flight attendant was seriously injured. The airplane was registered to and operated by Southwest Airlines, of Dallas, Texas. Visual meteorological conditions prevailed, and an instrument flight rules flight plan was filed for the scheduled passenger flight operating under 14 Code of Federal Regulations Part 121. The cross-country flight originated from the William P. Hobby Airport (HOU), near Houston, Texas, at 0637 and was destined for the Lambert-St. Louis International Airport (STL), near St. Louis, Missouri, where the flight landed without further incident.</p> <p>The 12,500-hour captain reported in the Pilot/Operator Aircraft Accident Report (NTSB Form 6120.1/2) that while in cruise flight at FL410 (41,000 feet msl), there was no turbulence and the flight was above an overcast cloud layer for most of the flight. The captain stated that visibility was limited at times due to a thin layer of haze. As a precaution, the captain kept the fasten seat belt sign on and instructed the flight attendants to take their seats if the flight became "bumpy."</p> <p>Several minutes later, the flight encountered a thin layer of haze. Upon exiting the layer of haze, the flight crew noticed "an unusual cloud formation" directly ahead. The captain initiated a right turn as the flight encountered "two abrupt bumps and a gain in air speed." The captain added that the encounter lasted about 15-20 seconds, which was light to moderate turbulence. Following the turbulence upset, the captain was notified by a cabin crew member that a flight attendant sustained a leg injury in the aft galley, and would need medical attention upon arrival at STL.</p> <p>A staff meteorologist for the Safety Board reviewed composite reflectivity images for the immediate area of the turbulence encounter. The satellite imagery at 1215Z indicated radiative cloud top temperature of 218.3 degrees Kelvin (K) or -54.86 degrees Celsius (C). The winds aloft at FL410 were reported from 280 degrees at 127 knots.</p> <p>Convective significant meteorological information (SIGMETs) were issued from 0955Z through 1255Z for thunderstorm activity. Convective SIGMET 18C issued at 1155Z was current for a portion of Arkansas and Oklahoma, enclosed from 10ENE TUL-40WSW ARG-20ENE LIT-20NE MLC-10ENE TUL. For an intensifying area of severe embedded thunderstorms moving from 260 degrees at 35 knots, with tops to 40,000 feet. Hail to 1 1/2 inches and wind gusts to 60 knots were possible with these storms. Severe to extreme turbulence, lightning, microburst, severe icing, and localized IFR conditions was implied with the issuance of the advisory. The provided coordinates of the turbulence upset was located outside and immediately east of the convective SIGMET in affect.</p>					
FACTUAL REPORT - AVIATION					
					Page 1

 National Transportation Safety Board FACTUAL REPORT AVIATION		NTSB ID: DFW05LA112			
		Occurrence Date: 04/29/2005			
		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:					
Runway Surface Condition:					
Type Instrument Approach: NONE					
VFR Approach/Landing: None					
Aircraft Information					
Aircraft Manufacturer Boeing		Model/Series 737-700		Serial Number 27859	
Airworthiness Certificate(s): Normal					
Landing Gear Type: Retractable - Tricycle					
Homebuilt Aircraft? No	Number of Seats: 145	Certified Max Gross Wt.	154000 LBS	Number of Engines: 2	
Engine Type: Turbo Fan	Engine Manufacturer: CFM	Model/Series: 56-7B24	Rated Power: 24000 LBS		
- Aircraft Inspection Information					
Type of Last Inspection Continuous Airworthiness	Date of Last Inspection 04/2005	Time Since Last Inspection 11 Hours	Airframe Total Time 22350 Hours		
- Emergency Locator Transmitter (ELT) Information					
ELT Installed?	ELT Operated?	ELT Aided in Locating Accident Site?			
Owner/Operator Information					
Registered Aircraft Owner Southwest Airlines Company		Street Address 2833 Shorecrest Drive			
		City Dallas	State TX	Zip Code	
Operator of Aircraft Same as Reg'd Aircraft Owner		Street Address Same as Reg'd Aircraft Owner			
		City Dallas	State TX	Zip Code 75235	
Operator Does Business As: Southwest Airlines Company			Operator Designator Code: SWAA		
- 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					

 <p>National Transportation Safety Board FACTUAL REPORT AVIATION</p>	NTSB ID: DFW05LA112
	Occurrence Date: 04/29/2005
	Occurrence Type: Accident

First Pilot Information

Name On File	City On File	State On File	Date of Birth On File	Age 37
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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? 04/2005
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Medical Cert.: Class 1	Medical Cert. Status: Without Waivers/Limitations	Date of Last Medical Exam: 01/2005
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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	12500	8000	100	12400						
Pilot In Command(PIC)	4700	2400	50							
Instructor										
Last 90 Days	73	73								
Last 30 Days	37	37								
Last 24 Hours	1	1								

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

Type of Flight Plan Filed: IFR

Departure Point Houston	State TX	Airport Identifier HOU	Departure Time 0637	Time Zone CDT
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Destination St. Louis	State MO	Airport Identifier STL	
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Type of Clearance: IFR

Type of Airspace:

Weather Information

Source of Briefing: Unknown

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
			Ft. MSL	NM	Deg. Mag.

Sky/Lowest Cloud Condition: Scattered	25000 Ft. AGL	Condition of Light: Day
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Lowest Ceiling: None	Ft. AGL	Visibility: 7	SM	Altimeter: 29.77	"Hg
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Temperature: 20 °C	Dew Point: 7 °C	Wind Direction: 210	Density Altitude: Ft.
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Wind Speed: 7	Gusts:	Weather Conditions at Accident Site: Visual Conditions
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Visibility (RVR): Ft.	Visibility (RVV) SM	Intensity of Precipitation:
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Restrictions to Visibility: No Obscuration; No Precipitation

Type of Precipitation:

Accident Information

Aircraft Damage: None	Aircraft Fire: None	Aircraft Explosion: None
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Classification:

- 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		1		2	3
Other Crew					
Passengers				15	15
- TOTAL ABOARD -		1		19	20
Other Ground					
- GRAND TOTAL -		1		19	20

National Transportation Safety Board

FACTUAL REPORT
AVIATION



NTSB ID: DFW05LA112

Occurrence Date: 04/29/2005

Occurrence Type: Accident

Administrative Information

Investigator-In-Charge (IIC)

Frank MCGill

Additional Persons Participating in This Accident/Incident Investigation:

Little Rock, Arkansas
St. Louis, MO