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## Turbulence injury, Boeing 747-422, November 19, 1996

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**Micro-summary:** This Boeing 747-422 experienced severe turbulence in cruise, breaking a flight attendant's foot.

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**Event Date:** 1996-11-19 at 1750 PST


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


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


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1. Accident reports can be and sometimes are revised. Be sure to consult the investigative agency for the latest version before basing anything significant on content (e.g., thesis, research, etc).
  2. Readers are advised that each report is a glimpse of events at specific points in time. While broad themes permeate the causal events leading up to crashes, and we can learn from those, the specific regulatory and technological environments can and do change. ***Your company's flight operations manual is the final authority as to the safe operation of your aircraft!***
  3. Reports may or may not represent reality. Many many non-scientific factors go into an investigation, including the magnitude of the event, the experience of the investigator, the political climate, relationship with the regulatory authority, technological and recovery capabilities, etc. It is recommended that the reader review all reports analytically. Even a "bad" report can be a very useful launching point for learning.
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		NTSB ID: LAX97LA051		Aircraft Registration Number: N916UA	
		Occurrence Date: 11/19/1996		Most Critical Injury: Serious	
		Occurrence Type: Accident		Investigated By: NTSB	
Location/Time					
Nearest City/Place BISHOP		State CA	Zip Code 93515	Local Time 1750	Time Zone PST
Airport Proximity: Off Airport/Airstrip		Distance From Landing Facility:		Direction From Airport:	
Aircraft Information Summary					
Aircraft Manufacturer Boeing		Model/Series 737-500		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 November 19, 1996, at 1750 hours Pacific standard time, a flight attendant sustained a serious foot injury after encountering some clear air turbulence (CAT) near Bishop, California, during cruise at flight level (FL) 290 on United Flight 2188 from San Francisco, California, to Las Vegas, Nevada. The aircraft, a Boeing 737-500, N916UA, was not damaged, nor were there any injuries to the other 112 persons onboard.</p> <p>According to the operator, the captain illuminated the fasten seat belt sign and instructed the flight attendants to take their seats. The injured aft flight attendant was in the process of securing a carrier door in the aft galley when the turbulence was encountered. After arriving in Las Vegas, she was taken to a local hospital where it was determined that her right foot was broken. Another flight attendant stated that shortly after the captain made the announcement, the aircraft dropped sharply. He was holding on to something and didn't get hurt.</p> <p>According to the operator, there were several reports of moderate or greater turbulence throughout central and southern California at flight levels under FL300. A "CAT ALERT" was in effect for the area at the time of the accident with some mention of mountain wave activity east of the Sierra Mountains. This alert was on the Weather Briefing Message (WBM) for Flight 2188. The captain was monitoring the flight conditions of other aircraft in the area and chose the smoother ride at FL290 due to turbulent rides at the higher altitudes. When the captain was advised of turbulent conditions ahead, he made the announcement to the cabin crew to take their seats.</p> <p>United Airlines procedures for crew action to take when turbulence weather conditions are anticipated are to turn on the Fasten Seat Belt sign and make a PA announcement. This permits the flight attendants to tie down serving carts and stow other loose items before taking their seats. If turbulence is encountered unexpectedly, the fasten seat belt sign will be cycled on and off three or four times and a PA announcement advising the passengers and flight attendants to be seated immediately.</p>					
FACTUAL REPORT - AVIATION					

 <b>National Transportation Safety Board</b> <b>FACTUAL REPORT</b> <b>AVIATION</b>		NTSB ID: LAX97LA051			
		Occurrence Date: 11/19/1996			
		Occurrence Type: Accident			
<b>Landing Facility/Approach Information</b>					
Airport Name	Airport ID:	Airport Elevation Ft. MSL	Runway Used 0	Runway Length	Runway Width
Runway Surface Type:					
Runway Surface Condition:					
Type Instrument Approach: NONE					
VFR Approach/Landing: None					
<b>Aircraft Information</b>					
Aircraft Manufacturer Boeing		Model/Series 737-500		Serial Number 25383	
Airworthiness Certificate(s): Transport					
Landing Gear Type: Retractable - Tricycle					
Homebuilt Aircraft? No	Number of Seats: 115	Certified Max Gross Wt. 122500 LBS	Number of Engines: 2		
Engine Type: Turbo Fan	Engine Manufacturer: GE	Model/Series: CFM56-3-B1	Rated Power: 20000 LBS		
- Aircraft Inspection Information					
Type of Last Inspection Continuous Airworthiness	Date of Last Inspection 07/1996	Time Since Last Inspection 1013 Hours	Airframe Total Time 13535 Hours		
- Emergency Locator Transmitter (ELT) Information					
ELT Installed? No	ELT Operated?	ELT Aided in Locating Accident Site?			
<b>Owner/Operator Information</b>					
Registered Aircraft Owner UNITED AIRLINES		Street Address PO BOX 66100			
		City CHICAGO	State IL	Zip Code 60666	
Operator of Aircraft Same as Reg'd Aircraft Owner		Street Address Same as Reg'd Aircraft Owner			
		City	State	Zip Code	
Operator Does Business As:			Operator Designator Code: UAL		
- 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					
FACTUAL REPORT - AVIATION					

 <p><b>National Transportation Safety Board</b> <b>FACTUAL REPORT</b> <b>AVIATION</b></p>	NTSB ID: LAX97LA051
	Occurrence Date: 11/19/1996
	Occurrence Type: Accident

**First Pilot Information**

Name On File	City On File	State On File	Date of Birth On File	Age 53
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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): None

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: 08/1996
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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	7857									
Pilot In Command(PIC)										
Instructor										
Last 90 Days		200								
Last 30 Days		71								
Last 24 Hours		6								

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 SAN FRANCISCO	State CA	Airport Identifier SFO	Departure Time 1612	Time Zone PST
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Destination LAS VEGAS	State NV	Airport Identifier LAS	
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Type of Clearance: IFR

Type of Airspace: Class C

**Weather Information**

Source of Briefing:  
Company

Method of Briefing:

 <p><b>National Transportation Safety Board</b> <b>FACTUAL REPORT</b> <b>AVIATION</b></p>	NTSB ID: LAX97LA051
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	Occurrence Type: Accident

<b>Weather Information</b>					
WOF ID	Observation Time	Time Zone	WOF Elevation	WOF Distance From Accident Site	Direction From Accident Site
	0000		0 Ft. MSL	0 NM	0 Deg. Mag.
Sky/Lowest Cloud Condition: Clear			0 Ft. AGL	Condition of Light: Dusk	
Lowest Ceiling: None		0 Ft. AGL	Visibility: 0 SM	Altimeter: 29.00 "Hg	
Temperature: -49 °C	Dew Point: °C	Wind Direction: 270		Density Altitude: Ft.	
Wind Speed: 55	Gusts:	Weather Conditions at Accident Site: Visual Conditions			
Visibility (RVR): 0 Ft.	Visibility (RVV) 0 SM	Intensity of Precipitation: Unknown			
Restrictions to Visibility: None					
Type of Precipitation: None					

<b>Accident Information</b>		
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		1		2	3
Other Crew					
Passengers				108	108
- TOTAL ABOARD -		1		112	113
Other Ground	0	0	0		0
- GRAND TOTAL -	0	1	0	112	113

National Transportation Safety Board

**FACTUAL REPORT**

**AVIATION**



NTSB ID: LAX97LA051

Occurrence Date: 11/19/1996

Occurrence Type: Accident

Administrative Information

Investigator-In-Charge (IIC)

R G. MUCHO

Additional Persons Participating in This Accident/Incident Investigation:

ELI WEISS  
SFO CMO  
SAN FRANCISCO, CA 94010

JEFF PLANTZ  
PO BOX 66100  
CHICAGO, IL 60666