
Turbulence injuries, Boeing 737-242C, March 4, 1998

Micro-summary: This Boeing 737-242C experienced turbulence in cruise, injuring several people.


Event Date: 1998-03-04 at 1315 PST


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


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

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 National Transportation Safety Board FACTUAL REPORT AVIATION		NTSB ID: LAX98LA104		Aircraft Registration Number: N746AS	
		Occurrence Date: 03/04/1998		Most Critical Injury: Serious	
		Occurrence Type: Accident		Investigated By: NTSB	
Location/Time					
Nearest City/Place RENO		State NV	Zip Code 89502	Local Time 1315	Time Zone PST
Airport Proximity: Off Airport/Airstrip		Distance From Landing Facility:		Direction From Airport:	
Aircraft Information Summary					
Aircraft Manufacturer Boeing		Model/Series 737-242C		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 March 4, 1998, at 1315 hours Pacific standard time, Alaska Airlines Flight 684, a Boeing 737-242C, N746AS, encountered severe clear air turbulence (CAT) at flight level (FL) 350 approximately 90 miles north-northeast of Reno, Nevada. There was no damage to the aircraft. Of the 116 personnel onboard, 3 passengers and 2 flight attendants received minor injuries, and 1 flight attendant suffered a broken ankle. Due to the injuries, the flight diverted to Reno. Visual meteorological conditions prevailed at the time. The flight was operated by Alaska Airlines, Inc., as a non-stop, regularly scheduled domestic passenger flight from Seattle to Las Vegas.</p> <p>According to the operator, en route conditions were smooth up until the event. The Captain noted no turbulence, chop, etc., and there were no reports by other aircraft of any turbulence. After level off, the seat belt signs were turned off and the normal announcement made by the flight crew to keep the seat belts fastened while seated. Normal service was in progress in the cabin at the time of the accident.</p> <p>A review of the flight recorder data indicated that, for the CAT period involved, vertical acceleration (Nz) varied from +1.0g to +1.51g to -0.07g to +1.3g to +0.86g over a 6-second interval. (See enclosed sketch and FDR time histories.) The recorded data also indicated stable atmospheric conditions (Nz = 1.0g) at FL 350 during the several minutes prior to CAT onset.</p>					
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 National Transportation Safety Board FACTUAL REPORT AVIATION		NTSB ID: LAX98LA104			
		Occurrence Date: 03/04/1998			
		Occurrence Type: Accident			
Landing Facility/Approach Information					
Airport Name	Airport ID:	Airport Elevation Ft. MSL	Runway Used 0	Runway Length	Runway Width
Runway Surface Type:					
Runway Surface Condition:					
Type Instrument Approach:					
VFR Approach/Landing:					
Aircraft Information					
Aircraft Manufacturer Boeing		Model/Series 737-242C		Serial Number 23123	
Airworthiness Certificate(s): Transport					
Landing Gear Type: Retractable - Tricycle					
Homebuilt Aircraft? No	Number of Seats: 119	Certified Max Gross Wt. 128600 LBS	Number of Engines: 2		
Engine Type: Turbo Jet	Engine Manufacturer: P&W	Model/Series: JT8D-17	Rated Power: 16000 LBS		
- Aircraft Inspection Information					
Type of Last Inspection Continuous Airworthiness	Date of Last Inspection 12/1997	Time Since Last Inspection 724 Hours	Airframe Total Time 40001 Hours		
- Emergency Locator Transmitter (ELT) Information					
ELT Installed? Yes	ELT Operated? No	ELT Aided in Locating Accident Site?			
Owner/Operator Information					
Registered Aircraft Owner ALASKA AIRLINES		Street Address 19300 PACIFIC HIGHWAY SOUTH			
		City SEATTLE	State WA	Zip Code 98188	
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: ASAA		
- 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>National Transportation Safety Board FACTUAL REPORT AVIATION</p>	NTSB ID: LAX98LA104
	Occurrence Date: 03/04/1998
	Occurrence Type: Accident

First Pilot Information

Name On File	City On File	State On File	Date of Birth On File	Age 39
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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; Single-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: 11/1997
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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	10000	3000	1500	8500						
Pilot In Command(PIC)		1450								
Instructor										
Last 90 Days	120	120		120						
Last 30 Days	35	35		35						
Last 24 Hours	2	2		2						

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 SEATTLE	State WA	Airport Identifier SEA	Departure Time 1210	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 A

Weather Information

Source of Briefing: Company

Method of Briefing:

 National Transportation Safety Board FACTUAL REPORT AVIATION	NTSB ID: LAX98LA104
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Weather Information

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: Scattered 30000 Ft. AGL Condition of Light: Day

Lowest Ceiling: None 0 Ft. AGL Visibility: 50 SM Altimeter: 29.00 "Hg

Temperature: -54 °C Dew Point: °C Wind Direction: 305 Density Altitude: Ft.

Wind Speed: 100 Gusts: 30 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

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		1	2		3
Other Crew					
Passengers			3	108	111
- TOTAL ABOARD -		1	5	110	116
Other Ground	0	0	0		0
- GRAND TOTAL -	0	1	5	110	116

National Transportation Safety Board

FACTUAL REPORT

AVIATION



NTSB ID: LAX98LA104

Occurrence Date: 03/04/1998

Occurrence Type: Accident

Administrative Information

Investigator-In-Charge (IIC)

WELDON T. ARMSTRONG

Additional Persons Participating in This Accident/Incident Investigation:

JAMES THORPE
WP-RNO-FSDO
RENO, NV 89502

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