



# National Transportation Safety Board

## Aviation Accident Data Summary

<b>Location:</b>	Pacific Ocean, PO	<b>Accident Number:</b>	LAX02LA146
<b>Date &amp; Time:</b>	05/01/2002, 0629 UTC	<b>Registration:</b>	N182UA
<b>Aircraft:</b>	Boeing 747-422	<b>Injuries:</b>	1 Serious, 6 Minor, 283 None
<b>Flight Conducted Under:</b>	Part 121: Air Carrier - Scheduled		

### Analysis

The flight encountered severe turbulence while operating at 31,000 feet msl, and a flight attendant sustained a serious injury. The encounter occurred near position 174 degrees 20 minutes east longitude and 24 degrees 18 minutes south latitude. According to the captain, prior to the turbulence event, the airplane was flying over a flat broken cloud layer with a smooth ride. He reported, in part: "Passing 25 degrees south at FL310 we noticed that the cloud tops were gradually rising. Radar showed very little - a few green returns off to the right. We were in an area of no forecasted turbulence or cumulonimbus buildups. I turned on the seatbelt sign and made a passenger announcement." The seriously injured flight attendant was in the process of securing the duty free cart when she was struck by it during the turbulence encounter. Digital Flight Data Recorder (DFDR) data showed that the airplane experienced a series of oscillating vertical and lateral accelerations that lasted almost 2 minutes. The vertical accelerations (expressed in units of gravity or "g's", 1.0 is normal) ranged from a low of +0.31 to a high of +1.7. The lateral accelerations (a value of zero is normal) ranged from 0.119 left to 0.115 right. During the time frame of the encounter, the airplane's Flight Management Computer reported winds aloft went from 92 knots to 50, then back to 101. The indicated airspeed also varied from a pre-encounter average value of 315 knots to a peak of 344 before returning to the nominal 315 value. Review of the weather portion of the dispatch and flight release package provided to the flight crew noted that in the vicinity of 173 degrees east and 25 degrees south the upper air winds between 31,000 and 35,000 feet were forecast to be from 290 degrees at 102 to 113 knots. The document also noted the possibility of turbulence from longitudes 164 degrees east to 172 degrees east along the planned flight track. The National Weather Service Significant Weather Forecast Chart valid for the flight showed a 120 knot jet stream and the possibility of occasional moderate or lesser clear air turbulence south of the accident location and an area of isolated cumulo nimbus clouds with tops to 40,000 feet to the north. The only SIGMETS in effect for turbulence concerned an area some 900 miles to the west and south of the accident location.

### Probable Cause

The National Transportation Safety Board determines the probable cause(s) of this accident to be: An in-flight encounter with clear air turbulence and wind shear, which resulted in a serious injury to a flight attendant.

### Findings

Occurrence #1: IN FLIGHT ENCOUNTER WITH WEATHER  
Phase of Operation: CLIMB - TO CRUISE

## Findings

### 1. (C) WEATHER CONDITION - TURBULENCE,CLEAR AIR

#### Pilot Information

<b>Certificate:</b>	Airline Transport; Flight Instructor; Commercial; Flight Engineer	<b>Age:</b>	58
<b>Airplane Rating(s):</b>	Multi-engine Land; Single-engine Land	<b>Instrument Rating(s):</b>	Airplane
<b>Other Aircraft Rating(s):</b>	None	<b>Instructor Rating(s):</b>	Airplane Multi-engine; Airplane Single-engine
<b>Flight Time:</b>			

#### Co-Pilot Information

<b>Certificate:</b>	Airline Transport; Flight Engineer	<b>Age:</b>	52
<b>Airplane Rating(s):</b>	Multi-engine Land; Single-engine Land	<b>Instrument Rating(s):</b>	Airplane
<b>Other Aircraft Rating(s):</b>	None	<b>Instructor Rating(s):</b>	None
<b>Flight Time:</b>			

#### Aircraft and Owner/Operator Information

<b>Aircraft Make:</b>	Boeing	<b>Registration:</b>	N182UA
<b>Model/Series:</b>	747-422	<b>Engines:</b>	4 Turbo Fan
<b>Operator:</b>	United Airlines, Inc	<b>Engine Manufacturer:</b>	Pratt & Whitney
<b>Operating Certificate(s) Held:</b>	Flag carrier (121)	<b>Engine Model/Series:</b>	PW2040
<b>Flight Conducted Under:</b> Part 121: Air Carrier - Scheduled			

#### Meteorological Information and Flight Plan

<b>Conditions at Accident Site:</b>	Visual Conditions	<b>Condition of Light:</b>	Day
<b>Observation Facility, Elevation:</b>	NZAA	<b>Weather Information Source:</b>	Weather Observation Facility
<b>Lowest Ceiling:</b>	Broken / 3500 ft agl	<b>Wind Speed/Gusts, Direction:</b>	11 knots / , 230°
<b>Temperature:</b>	15° C	<b>Visibility</b>	20 Miles
<b>Precipitation and Obscuration:</b> No Obscuration; No Precipitation			
<b>Departure Point:</b>	Sydney (YSSY)	<b>Destination:</b>	San Francisco, CA (SFO)

#### Wreckage and Impact Information

<b>Crew Injuries:</b>	1 Serious, 1 Minor, 19 None	<b>Aircraft Damage:</b>	None
<b>Passenger Injuries:</b>	5 Minor, 264 None	<b>Aircraft Fire:</b>	None
<b>Ground Injuries:</b>	N/A	<b>Aircraft Explosion:</b>	None
<b>Latitude, Longitude:</b>	-24.300000, 174.333333		

## Administrative Information

Investigator In Charge (IIC): RICHARD B PARKER

Adopted Date: 04/25/2006

Investigation Docket: NTSB accident and incident dockets serve as permanent archival information for the NTSB's investigations. Dockets released prior to June 1, 2009 are publicly available from the NTSB's Record Management Division at [pubinq@ntsb.gov](mailto:pubinq@ntsb.gov), or at 800-877-6799. Dockets released after this date are available at <http://dms.nts.gov/pubdms/>.

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