

Brief of Accident

Adopted 05/17/2001

LAX99LA291 File No. 1786	09/02/1999	SANTA BARBARA, CA	Aircraft Reg No. N371UA	Time (Local): 14:06 PDT
Make/Model: Boeing / 737-322			Fatal	Minor/None
Engine Make/Model: Cfm / CFM56-3C-1			Crew 0	4
Aircraft Damage: Minor			Pass 0	108
Number of Engines: 2				
Operating Certificate(s): Flag Carrier/Domestic				
Name of Carrier: UNITED AIRLINES, INC.				
Type of Flight Operation: Scheduled; Domestic; Passenger Only				
Reg. Flight Conducted Under: Part 121: Air Carrier				

Last Depart. Point: LOS ANGELES, CA
Destination: SAN FRANCISCO, CA
Airport Proximity: Off Airport/Airstrip

Condition of Light: Day
Weather Info Src: Weather Observation Facility
Basic Weather: Visual Conditions
Lowest Ceiling: None
Visibility: 10.00 SM
Wind Dir/Speed: 230 / 009 Kts
Temperature (°C): 21
Precip/Obscuration:

Pilot-in-Command	Age: 42	Flight Time (Hours)
Certificate(s)/Rating(s) Airline Transport; Multi-engine Land; Single-engine Land		Total All Aircraft: 6117 Last 90 Days: 178 Total Make/Model: 1743
Instrument Ratings Airplane		Total Instrument Time: UnK/Nr

The flight had just leveled off at flight level 240 with the autopilot still engaged. The seat belt sign had been off for about 5 minutes, and the cabin crew was in the process of preparing a beverage service. The airplane was crossing a VORTAC when the flight encountered turbulence the crew categorized as 'severe,' with a rapid right roll and pitch excursion. The captain disconnected the autopilot and attempted to counter the excursions with control inputs. As a result of the aircraft motions, 1 flight attendant sustained serious injuries, and another flight attendant and 13 passengers sustained minor injuries. The airplane sustained minor damage, limited primarily to ceiling tiles and seats. A review of the meteorological data showed no evidence of any atmospheric phenomena in the area. A simulation study comparing the known airplane response to control inputs versus the motion of the airplane as recorded on the DFDR data showed that the flight controls alone did not cause the recorded motion of the airplane. Radar data established that the flight was in trail of a MD-11 by 11.5 nmi and 97 seconds when the upset occurred. The MD-11 had climbed through the flight's cruise altitude and was 600 feet above the flight at the time of the encounter. Wake vortex studies by NASA have documented vortex descent rates between 270 and 440 feet per minute.

Brief of Accident (Continued)

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SANTA BARBARA, CA

Aircraft Reg No. N371UA

Time (Local): 14:06 PDT

Occurrence #1: VORTEX TURBULENCE ENCOUNTERED

Phase of Operation: CRUISE

Findings

1. (C) WEATHER CONDITION - OTHER
2. (C) WAKE TURBULENCE - ENCOUNTERED

Findings Legend: (C) = Cause, (F) = Factor

The National Transportation Safety Board determines the probable cause(s) of this accident as follows.

The flight's encounter with wake vortices from a preceding heavy aircraft.