Aviation Safety Investigation Report 198800011

Boeing 747-238SP

14 May 1988

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NOTE: All air safety occurrences reported to the ATSB are categorised and recorded. For a detailed explanation on Category definitions please refer to the ATSB website at www.atsb.gov.au.

Occurrence Number: 198800011 **Occurrence Type:** Incident
Location: 667 km NW Nadi, Fiji (en route San Francisco - Sydney)
Date: 14 May 1988 **Time:** 0230
Highest Injury Level: Minor
Injuries:

	Fatal	Serious	Minor	None
Crew	0	0	0	0
Ground	0	0	0	-
Passenger	0	0	20	0
Total	**0**	**0**	**23**	**0**

Aircraft Details: Boeing 747-238SP
Registration: VH-EAB
Serial Number: 22672
Operation Type: International Regular Public Transport
Damage Level: Minor
Departure Point: San Francisco USA
Departure Time: N/K
Destination: Sydney NSW

Approved for Release: 29/08/1988

Circumstances:

The aircraft was operating as Flight QF004/145 from San Francisco to Sydney, cruising at flight level 390 in smooth, clear, moonless conditions. The aircraft Captain occupied the left control position and the Second Officer occupied the right. The weather radar system was serviceable and operating. No significant weather had been forecast or observed by the crew during the flight. Although the "fasten seatbelt" signs had earlier been turned off, passengers had been advised, by cabin announcements, that it was recommended that seat belts should be worn unless moving around the cabin. This information was also included in the passenger safety briefing cards as well as being stamped onto each seatbelt buckle. About six hours after leaving San Francisco, the Captain noticed stars he had observed from his left window were becoming obscured. Upon closer inspection he noticed cloud ahead, and to the left of, the aircraft. Although no weather radar returns were apparent, the Captain took the precaution of turning on the fasten seatbelt signs. Approximately 15 seconds later the aircraft encountered a short period of moderate to severe turbulence. A number of passengers and flight attendants were flung about the cabin, incurring minor injuries as they struck fixed objects. Damage to the aircraft was minor and confined to internal fittings. After considering the condition of the injured, the enroute medical facilities and the superficial nature of the aircraft damage, the Captain decided the flight should continue as planned. The aircraft subsequently landed at Sydney where further medical treatment was provided. Twenty passengers required short term treatment in hospital. The investigation of the incident revealed that the flight crew had operated the aircraft in accordance with approved company procedures. Their knowledge, and use, of the weather radar systems was considered satisfactory. All weather radar systems depend on the fact that water particles, either in suspension (cloud) or as rainfall, will reflect a radar energy beam to an extent generally dependent upon the density and size of the water droplets. The aircraft encountered vertical air

currents associated with an isolated towering cumulus cloud, which evidently contained insufficient moisture to be detectable by weather radar.

Significant Factors:

It was considered that the following factors were relevant to the development of the incident:

1. The ability of the flight crew to visually detect significant cloud formation was substantially affected by dark, moonless conditions.

2. The cloud formation encountered by the aircraft lacked sufficient moisture to have been detected by weather radar.

3. The aircraft was affected by a short period of moderate to severe turbulence associated with cloud.

4. A number of passengers had failed to follow the recommended usage of the seltbelts.