Aviation Safety Investigation Report 199301885

Boeing Co
B747

28 June 1993

Aviation Safety Investigation Report

199301885

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Investigations commenced on or before 30 June 2003, including the publication of reports as a result of those investigations, are authorised by the Executive Director of the Bureau in accordance with Part 2A of the Air Navigation Act 1920.

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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.

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The Bureau did not conduct an on scene investigation of this occurrence. The information presented below was obtained from information supplied to the Bureau.

Occurrence Number: 199301885 **Occurrence Type:** Incident
Location: 29km SE of Cairns
State: QLD **Inv Category:** 4
Date: Monday 28 June 1993
Time: 1054 hours **Time Zone** EST
Highest Injury Level: None

Aircraft Manufacturer: Boeing Co
Aircraft Model: 747-438
Aircraft Registration: VH-OJA **Serial Number:** 24354
Type of Operation: Air Transport High Capacity International Passenger Scheduled
Damage to Aircraft: Nil
Departure Point: Sydney NSW
Departure Time: 0835 EST
Destination: Cairns QLD

Crew Details:

Role	Class of Licence	Hours on Type	Hours Total
Pilot-In-Command	ATPL 1st Class	1607.4	16530
Co-Pilot/1st Officer	ATPL 2nd Class	1768.5	5354

Approved for Release: Thursday, November 10, 1994

To facilitate arrival at Cairns, the aircraft had been instructed to maintain an indicated airspeed of 340 kts during descent and was given a DME Arrival to 3,000 ft. A DME (Distance Measuring Equipment) Arrival is an approach that places upon the pilot the responsibility for monitoring the descent of the aircraft. On this type of approach the pilot is required to descend the aircraft so that it is above the published distance/altitude steps. The instructions were acknowledged by the pilot. Subsequently, when the pilot reported that the aircraft was in visual conditions, the Cairns approach controller noticed, on his radar screen, that the aircraft had descended below the DME step (ie the minimum altitude allowed) at 16 DME.

Analysis of the aircraft flight recorder data and the recorded Cairns radar information indicated that the aircraft had descended below the 6,400 ft DME step at 22 DME to 6,000 ft. It was levelled at that altitude before commencing a further descent, subsequently descending below the 5,500 ft step at 18 DME and remaining below the minimum allowed altitude until 13 DME.

The flight crew reported that, except for a very short period at 18 DME, the aircraft was operated clear of cloud.

During the approach the aircraft was being operated with the flight management computer programmed to maintain the aircraft above the DME Arrival steps. The flight management system can be operated in several modes, according to the requirements of the pilot. As the aircraft approached cloud, during the descent, the pilot changed the operating mode selection to slow the aircraft in case turbulence was encountered. In doing this he cancelled the programmed DME Arrival descent profile. After passing through the cloud the previous mode was reselected but, as the DME Arrival profile was not reprogrammed, the aircraft continued a normal descent to the assigned altitude of 3,000 ft.

Safety Action

As a result of this and several other occurrences involving DME arrivals, the Bureau of Air Safety Investigation made a Recommendation (R930274) to the Civil Aviation Authority under Occurrence Report 9301953. This recommendation stated in part:

The Bureau of Air Safety Investigation recommends that the Civil Aviation Authority:

Examine the need for instrument rated pilots to demonstrate proficiency in the DME Arrival procedure.

The Civil Aviation Authority replied in part:

'The majority of recent reports have occurred at Cairns since the commissioning of the Cairns terminal area radar. This was indicative of a localised problem and subsequent discussion with domestic airlines has confirmed this. The airlines have introduced a training program to overcome any deficiencies in this area.

Within the Authority agreement has been reached to make DME Arrivals a mandatory flight training and flight checking requirement. This will be reflected in forthcoming amendments to the Syllabus of Training and the Flight Test Report Form.'