

**Aviation Safety Investigation Report
199600069**

**Boeing Co
B747**

09 January 1996

Readers are advised that the Australian Transport Safety Bureau investigates for the sole purpose of enhancing transport safety. Consequently, Bureau reports are confined to matters of safety significance and may be misleading if used for any other purposes.

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.

Investigations commenced after 1 July 2003, including the publication of reports as a result of those investigations, are authorised by the Executive Director of the Bureau in accordance with the Transport Safety Investigation Act 2003 (TSI Act). Reports released under the TSI Act are not admissible as evidence in any civil or criminal proceedings.

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.

Approaching Curtin, the crew rotated positions as the pilot in command returned from a rest period and the first officer vacated the flight deck. The second officer remained on the flight deck and continued to operate the radios while the pilot in command assumed the duties of the flying pilot. The crew carried out an information brief at the changeover but could not remember the exact details regarding the level change proposals.

Shortly after the crew had reported the Curtin position with an estimate for ATMAP, the Brisbane sector controller notified the position report and estimate to the Perth flight service operator on international HF radio and coordinated a change of level to FL 390 with Bali Control. The controller then issued a clearance to the crew, advising: "When ready climb to FL 390, requirement reach FL 390 by ATMAP". The second officer correctly read back the level and requirement.

On transfer from Brisbane Control to the Perth HF operator, the crew reiterated the requirement to be at FL 390 by ATMAP. However, the aircraft maintained the current level of FL 370 and subsequently entered the Indonesian FIR at the wrong level. The crew reported maintaining FL 370 at ATMAP to Bali HF and again on first contact with Bali Control on VHF (approximately 15 minutes later). It was at this point, when the aircraft was identified on radar, that the level was first queried by ATC. The Bali controller then requested confirmation of the original coordination message from the Australian controller, who confirmed that the aircraft had been required to reach FL 390 by ATMAP.

ANALYSIS

The crew remarked that there was nothing exceptional with respect to the conduct of the flight apart from some problems experienced maintaining situational awareness. The crew thought the traffic with which they were conflicting at FL 350 was a British Airways aircraft when in fact it was Thai International. The British Airways aircraft was on a parallel route which would eventually converge with A576 but, at this stage, was well clear of the incident aircraft. The Thai aircraft had reported at Curtin three minutes earlier than the Qantas B747, but this report was not remembered by the crew. This aspect was not considered to be a significant factor in the incident. However, during the investigation it became evident that a lack of situational awareness could ultimately affect pilot actions and that in the future, the introduction of new technology such as automatic dependent surveillance (ADS) might further reduce the ability of aircrew to develop and maintain an air picture. Should separation break down under such circumstances, one of the secondary methods of minimising the likelihood of a collision or near miss would be removed.

The second officer believed he noted the level requirement in the aircraft deck log but he did not remember referring to the log to confirm the requirement. As a result of his understanding of ATC requirements given at the crew information brief following his return to the flight deck, the pilot in command believed the requirement was to reach FL 390 by ILDM (a position reporting point in Indonesian airspace) and was thus unconcerned that the aircraft was maintaining FL 370 on entering the adjacent FIR. However, he was the flying pilot at the time that the ATC clearance requiring climb to FL 390 by ATMAP was issued.

The pilot in command and the second officer agreed that the clearance had been correctly issued and read back. They could offer no explanation for their failure to comply with the conditions of the clearance.

Currently, there is no specific company procedure, other than good crew resource management practices, for flight crews to record and action amended clearances or those containing a future requirement. However, the crew members believe there are a number of means available to aircrew to record clearances. Generally, these are used at the discretion of the individuals concerned.

Indonesia had issued NOTAM A 0008/96 on 3 January 1996 which required crews to report their boundary position for the Bali FIR to Control on VHF radio. However, this NOTAM had not been received in Australia by the date of the occurrence. Therefore the crew (and Perth HF) had no reason to change previous standing instructions to contact Bali on HF at the boundary. This factor had the potential to remove a safety net in that the Bali controller had a delay in receiving the ATMAP position report which required relaying through the Bali HF operator. The investigation was unable to determine why the NOTAM was not received in Australia.

SIGNIFICANT FACTORS

1. Crew resource management proved to be ineffective in that the crew did not climb the aircraft to FL 390 by ATMAP.
2. The lack of a standard operating procedure to record and act on clearances did not provide a means of alerting the crew when a future action was required.

SAFETY ACTION

As a result of the investigation the company has:

1. Implemented a flight standing order (FSO) which will:
 - initiate the use of the flight management computer as a reminder tool for clearances;
 - highlight the requirement for flight crew personnel to ensure conditional clearances are brought to the attention of other crew members; and
 - instruct crew members to notate all enroute clearances.
2. Initiated an educational program, via the check-and-training system, highlighting aspects outlined in the FSO.
3. Proposed the publishing of a safety magazine article detailing the crew's perspective of the incident.

As an additional result of the investigation, the safety deficiencies in regard to crew situational awareness and the potential problems of introducing Automatic Dependent Surveillance have been referred to the Bureau's Safety Deficiency Section for further analysis. Any resulting safety output made by the Bureau will be published in the Quarterly Safety Deficiency Report.
