

**Aviation Safety Investigation Report
199704005**

**Boeing Co
B737
Airbus
Airbus**

04 December 1997

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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: 199704005 **Occurrence Type:** Incident
Location: 111km ESE GABIT
State: Other **Inv Category:** 4
Date: Thursday 04 December 1997
Time: 1630 hours **Time Zone** UTC
Highest Injury Level: None

Aircraft Manufacturer: Boeing Co
Aircraft Model: 737-377
Aircraft Registration: VH-CZC **Serial Number:** 23655

Type of Operation: Air Transport High Capacity International Passenger
 Scheduled
Damage to Aircraft: Nil
Departure Point: Darwin NT
Departure Time: 2135 UTC
Destination: Bali Indonesia

Aircraft Manufacturer: Airbus
Aircraft Model: A340
Aircraft Registration: SU-GBN **Serial Number:**

Type of Operation: Air Transport High Capacity International Passenger
 Scheduled
Damage to Aircraft: Nil
Departure Point: Sydney NSW
Departure Time: 1923 UTC
Destination: Singapore

Approved for Release: Monday, September 21, 1998

FACTUAL INFORMATION

The Airbus A340 (A340) was on air route A587 and the Boeing 737 (B737) was on air route G462. The routes intersected at waypoint KETUT, which is 200 NM bearing 103 degrees magnetic from Bali. Both aircraft had been cleared to enter the Bali flight information region (FIR) at flight level (FL) 350. The waypoint KETUT is a reporting point for aircraft on A587 but not for aircraft on G462. All communications prior to this point were made on high frequency (HF) radio SELCAL, which does not alert pilots that there may be conflicting traffic.



The conflicting traffic was under the jurisdiction of the Bali East controller. There was radar coverage to approximately 150 NM, and a combination of procedural and radar control was being used by the controller. Flight plans for both aircraft had been received at the Bali Control Centre. However, the flight plans did not indicate an estimate for the KETUT position.

At the time of the incident, the controller had three aircraft on his frequency - the B737, the A340, and a Boeing 747 (B747) en route Singapore to Sydney. The B747 was tracking via Bali at FL330 and the B737 would have had to descend through that level for arrival at Bali. The B747 was identified on radar and was estimating overhead at Bali at 1436 UTC. The other two aircraft were not identified on radar.

At 1410, the A340 pilot reported to Bali East at ONOXA, a reporting point on the FIR southern boundary. ONOXA is 197 NM from KETUT on the designated route A587. The Bali East controller then requested an estimated time of arrival (ETA) for IKAPI, a reporting point on the northern FIR boundary where the aircraft would exit the FIR. The pilot advised an estimate of 1530 and the controller coordinated this information to Ujung Pandang, which was the next control agency.

KETUT was a compulsory reporting point for aircraft on A587. The reason the A340 crew did not advise an estimate for KETUT when reporting at ONOXA was not established. The reason the controller did not request A340's ONOXA estimate was also not established.

At 1428, the crew of the B737 reported at SOTRA at FL350. The Bali East controller requested an ETA for GABIT, a reporting point 150 NM east of Bali, and the crew advised that their ETA was 1447. At 1439 the crew of the A340 requested advice of any traffic at FL350. The controller asked the crew to repeat the request. The A340 crew then stated that they were descending to FL310 to avoid conflicting traffic. The crew of the B737 asked the crew of the A340 to report their position. There was no reply to this request. The A340 crew then reported to the Bali East controller that there was traffic

2 NM to their north, passing from right to left at FL350. The controller questioned this report. The A340 crew repeated the information and reported that they were maintaining FL310. The controller then advised the A340 to "maintain FL310 for a while". At 1443, the A340 was cleared to climb to FL350 by the Bali East controller.

At the time of the occurrence, the control centre was staffed by four controllers and a supervisor. The Bali East controller had left the control room on a break and another controller had taken over control duties of the Bali East sector. The controller taking over had not been aware of the potential conflict between the aircraft on air routes A587 and G462.

Although the occurrence location was within normal radar coverage, the radar data was not being recorded during the period of the incident due to a technical problem.

Each control position had a single flight progress strip bay. The bay was used to store pending flight progress strips. Active flight progress strips were placed on the flat console surface in front of the radar screen. There was a checklist for the compilation of flight progress strips, but this had not been compiled with.

ANALYSIS



The controller had taken over the Bali East sector duties only a short time before the incident and he had not been properly briefed on the traffic that was within his jurisdiction. His attention appeared to have been focussed on the potential conflict between the southbound B747 at FL330, and the B737 inbound to Bali at FL350. He was aware that the B737 would require descent through the B747's level but had not been briefed that there was a requirement to establish vertical separation between the A340 and the B737. The situation was compounded because the flight progress strips were not prepared in accordance with the checklist and the flight progress bays were not being utilised in the most appropriate manner to provide situational awareness of the traffic in the sector.

Although, in this instance, an estimate for the KETUT position was omitted by the crew of one aircraft, the provision of an estimate by the crew of the other aircraft may have assisted the controller to better appreciate the traffic disposition, and alerted him to the conflict. In this context, the promulgation of KETUT as a compulsory reporting point for the two intersecting routes (A587 and G462) would have provided a higher level of safety.

Controllers normally combined flight progress strips for aircraft being controlled on the radar display console. However, this action ensured that aircraft being controlled by different procedures (radar and procedural control) were not easily differentiated. It also provide limited cues to controllers to assist them in maintaining an awareness of traffic disposition in their area of responsibility. Use of the available flight progress board with a number of key position designators would assist controllers in the management of aircraft under procedural control. Positioning the flight progress strips for radar-identified aircraft at the radar display console, adjacent to the procedural flight progress board, would have provided a better overall representation of traffic disposition.

SIGNIFICANT FACTORS

1. KETUT was not a compulsory reporting point for both routes.
2. The controller who compiled the flight progress strip for the A340 did not notate KETUT on that aircraft's strip.
3. The controller handing over responsibility for Bali East control did not conduct an adequate handover.
4. The Bali East controller did not adequately review the active flight progress strips after taking over responsibility for the position.
5. A procedural flight progress board was not used to manage aircraft operating in the Bali East area of responsibility.
6. The crew of the A340 did not advise an estimate for KETUT, a compulsory reporting point.
7. The Bali East controller did not appreciate the conflict between the A340 and the B737.

SAFETY ACTION

As a result of this occurrence the B737 operator:



1. issued a safety notice to all aircrew advising them of the details of the occurrence; and
2. recommended that the priority be given for the fitment of a traffic alert and collision avoidance system (TCAS) to company aircraft operating international flights.

In addition, the Bureau of Air Safety Investigation suggests that the Indonesian Directorate of Aviation Safety, in conjunction with Angkasa Pura I:

1. review flight progress strip display practices and procedures, including strategies to ensure their correct compilation;
2. review published handover/takeover procedures, including strategies to improve controller compliance; and
3. 3. Include KETUT as a compulsory reporting point for aircraft operating on route G462.

