

**Aviation Safety Investigation Report
199601268**

**Boeing Co
B747
Britten Norman Ltd
BN-2A-6**

22 April 1996

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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.

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: 199601268 **Occurrence Type:** Incident
Location: Cairns, Aerodrome
State: QLD **Inv Category:** 4
Date: Monday 22 April 1996
Time: 0845 hours **Time Zone:** EST
Highest Injury Level: None

Aircraft Manufacturer: Britten Norman Ltd
Aircraft Model: BN-2A-6
Aircraft Registration: VH-RTP **Serial Number:** 79
Type of Operation: Charter Unknown
Damage to Aircraft: Nil
Departure Point: Cairns
Departure Time: 0846 EST
Destination: Laura

Aircraft Manufacturer: Boeing Co
Aircraft Model: 747-338
Aircraft Registration: VH-EBT **Serial Number:** 23222
Type of Operation: Air Transport High Capacity International Passenger
Scheduled
Damage to Aircraft: Nil
Departure Point: Sydney NSW
Departure Time:
Destination: Cairns QLD

Approved for Release: Friday, November 1, 1996

FACTUAL INFORMATION

A Boeing 747 from Sydney, was on descent for landing at Cairns airport. The duty runway was runway 15 and the weather was visual meteorological conditions (VMC). The aircraft was inbound from the south-east and the controller elected to track the Boeing 747 in close proximity to the departure end of the active runway while manoeuvring for a landing from the north. The crew of the Boeing 747 had been assigned progressively lower levels south of the airport and had reported visual. Subsequently, the approach controller instructed the crew to descend to "3,000 ft visual" while the aircraft continued to track direct to the Cairns very high frequency omni-direction radio range (VOR) navigation aid.

Due to pending departures from runway 15, the approach controller planned to maintain the Boeing 747 at 3,000 ft until the mid-downwind position. This would have enabled the departing aircraft to climb to an initial level of 2,000 ft, while ensuring vertical separation from the inbound Boeing 747. Once radar or visual separation was established between the two aircraft, the approach controller intended to instruct the respective crews to climb or descend as appropriate. The controller had not specifically advised the Boeing 747 crew of any expected departures but had on three occasions while the aircraft was south of the airport, instructed them to "Maintain 3,000 ft visual".

When the Boeing 747 was immediately south of the airport, the approach controller requested the crew to report sighting a De Havilland Twin Otter aircraft outbound to Lizard Island (to the northeast) on climb to 3,000 ft. The controller was concerned that radar separation between the Boeing 747 and the Twin Otter may have been reduced as the Boeing 747 tracked downwind. Assigning visual separation responsibility to the crew of the Boeing 747 would ensure separation was maintained. The crew of the Boeing 747 reported sighting the Twin Otter and advised that they could pass behind the aircraft while tracking downwind.

At this stage, the crew were under a high workload due to the higher than normal altitude, the proximity to the aerodrome, and the requirement to configure the aircraft for landing. The controller instructed the crew of the Boeing 747 to track downwind, but did not re-confirm the requirement to maintain 3,000 ft or assign a visual approach; nor was the controller required to do so. At the same time the pilot of a Britten Norman Islander aircraft departing from runway 15 had been instructed to maintain 2,000 ft to ensure vertical separation with the Boeing 747. As the Islander aircraft became airborne, the approach controller noticed that the radar display altitude label for the Boeing 747 was approaching 2,500 ft (on descent), as the aircraft entered early left downwind. After the controller queried the aircraft's level with the crew and confirmed that they were on descent, he instructed the crew to maintain 2,000 ft. However, as the Islander aircraft had not climbed above 1,000 ft and visual separation was being used by the controller, the crew of the Boeing 747 were then instructed to make a visual approach. The Boeing 747 landed shortly after without further incident. There was a breakdown in procedures but no breakdown in separation.

ANALYSIS

The Boeing 747 crew were not aware of the pending departure of the Islander aircraft and, on being instructed to track for downwind, their perception was that they had been issued with a visual approach instruction. Consequently, the crew commenced descent to circuit altitude. Pilots are required to maintain the last assigned altitude or flight level until cleared to a lower (or higher) altitude, cleared to carry out a visual approach, or cleared for final when conducting an instrument approach. In this case no such instruction had been issued. The instruction to "Maintain 3,000 visual" only indicated that responsibility for terrain clearance had been assigned to the crew.

The crew developed an expectation of a clearance for a visual approach after sighting and being required to visually pass behind the outbound Twin Otter. Additionally, the crew were concerned with the need to slow the aircraft to circuit speed while having to descend to circuit altitude and complete cockpit checks in time for landing. The crew's haste to complete a number of tasks concurrently pre-disposed them to making an error. The crew could have notified the approach controller of its concerns and requested radar vectors or alternative tracking to ensure sufficient time to complete tasks prior to landing. However, they became focused on the tasks within the cockpit, and sighting and avoiding the outbound Twin Otter.

The crew may have been alerted to the situation had the controller provided more information. If the controller had notified the crew to expect descent below 3,000 ft on downwind due to departing traffic from runway 15, they may have concentrated on maintaining the assigned level until specifically cleared to make a visual approach. While the approach controller did provide separation and was not obliged to provide traffic information to the crew of the Boeing 747, the lack of traffic awareness was a failed defence in the air traffic system. Alternatively, the controller could have reiterated the requirement to "Maintain 3,000 ft visual" with the new tracking clearance for downwind. Either of these actions may have provided a defence against the incident.

A compounding factor in the incident was the current Aeronautical Information Publication (AIP) radiotelephony phraseology for flights in controlled airspace. The phrases in AIP OPS CTL - 38 paragraph 31 are ambiguous and open to misinterpretation. Specifically, the phraseology relates to assignment of separation responsibility and could lead a pilot to expect a clearance to make a visual approach, after traffic reported by a controller is sighted by the pilot. This is not necessarily the case, as often the sighting of traffic by pilots, is only one aspect of separation in the airspace management process. Depending on the situation a number of methods of separation can be used to ensure the separation of one aircraft from a number of other aircraft.

SIGNIFICANT FACTOR

The crew of the Boeing 747 misinterpreted the controller's instruction to track for left downwind as a clearance to make a visual approach and, consequently, descended below the last assigned level of 3,000 ft.

SAFETY ACTION

Local Safety Action

1. The operator issued an operations flight standing order which cautioned crews to be vigilant to the differences between a clearance to "Descend tothousand visual" and "Make visual approach".
2. The operator has proposed publishing an article relating the aspects of the incident in the company safety magazine.

Bureau of Air Safety Investigation Action

As a result of this investigation the Bureau of Air Safety Investigation issued the following interim recommendation to Airservices Australia on 7 November 1996:

"IR960093

The Bureau of Air Safety Investigation recommends that Airservices Australia review the wording in AIP/OPS CTL-38 and MATS 12-A-18 to prevent possible confusion regarding a clearance to make a visual approach".
