Aviation Safety Investigation Report 199602499

Boeing Co
B747
McDonnell Douglas Corporation
Hornet

08 August 1996

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Aviation Safety Investigation Report

199602499

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: 199602499 **Occurrence Type:** Incident
Location: Temar, (IFR)
State: Other **Inv Category:** 3
Date: Thursday 08 August 1996
Time: 0254 hours **Time Zone** UTC
Highest Injury Level: None

Aircraft Manufacturer: Boeing Co
Aircraft Model: 747-338
Aircraft Registration: VH-EBV **Serial Number:** 23224
Type of Operation: Air Transport High Capacity International Passenger Scheduled
Damage to Aircraft: Nil
Departure Point: Narita, Japan
Departure Time:
Destination: Sydney, NSW

Aircraft Manufacturer: McDonnell Douglas Corporation
Aircraft Model: F/A-18A
Aircraft Registration: **Serial Number:**
Type of Operation: Air Transport High Capacity International Passenger Scheduled
High Capacity International Passenger Scheduled
Damage to Aircraft: Nil
Departure Point: Atsugi, Japan
Departure Time:
Destination: Atsugi, Japan

Approved for Release: Friday, May 9, 1997

FACTUAL INFORMATION

An Australian registered B747 aircraft had departed Tokyo on a flight to Sydney. The crew had been radar-vectored by air traffic control around an active military restricted area (R116) and were commencing a left turn to intercept their planned route in accordance with the instructions received. As the aircraft climbed through flight level (FL) 220, the crew received a traffic alerting and collision avoidance system (TCAS) traffic advisory warning of unidentified aircraft crossing from right to left and climbing from a level beneath that of the B747.

A pair of U.S. military FA-18 aircraft had departed from the Atsugi Naval Air Facility to operate in R116, which was located just east of the air route which the B747 was intercepting. Initially, the formation was proceeding under instrument flight rules but changed to visual flight rules on passing 9,000 ft, and tracked visually to the exercise area. Their rate of climb at this time was approximately 6,000 ft/min.

After receiving the TCAS traffic advisory, the crew of the B747 saw the military formation and, as the formation had changed course to be in conflict with the predicted track of the B747, they elected to increase the rate of climb and continue the left turn, to ensure separation from the FA-18s. During this manoeuvre, the rate of climb of the B747 reached 5,000 ft/min, higher than normal for this stage of flight. No traffic information was given by air traffic control in relation to the FA-18 aircraft.

While the crew of the B747 were carrying out their evasive action, the crews of the FA-18s had sighted the B747 and commenced a level-off manoeuvre to maintain FL 225. They calculated that their track to R116 would have conflicted with that of the B747, and assessed that as that aircraft had left FL 225, vertical separation would be achieved by the time horizontal separation was lost.

Radar analysis indicates that the aircraft passed with a minimum of 1,200 ft vertical difference while there was no horizontal separation. Because the appropriate standard is a minimum of 1,000 ft, no breakdown of separation occurred.

ANALYSIS

The FA-18 pilots were operating in accordance with the "see and avoid" principle of visual flight. They acted in accordance with the rules for aircraft transiting to or from the restricted area and maintained a level beneath that already vacated by the B747.

The crew of the B747 reacted to the visual sighting of military aircraft closing rapidly on their aircraft and on a track that was in conflict with their intended flight path. The TCAS equipment confirmed that the rate of closure and track change of the FA-18 formation would place the aircraft in imminent conflict. Even though there was no resolution advisory, the B747 crew elected to commence an evasive manoeuvre based on their observations. They had no information on the intent of the military crews and did not know of the decision of those pilots to level off below their aircraft.

The air traffic controllers were aware of the visual flight procedures used by the military formation and only had a requirement to pass traffic information on such flights if their other duties allowed. In this case, the controller was too busy to pass traffic to the Australian crew. This crossing point is a particularly busy section of airspace and it is normal for traffic information not to be given as military crews are required to remain clear of civil aircraft.

SAFETY ACTION

The Japanese Civil Aviation Bureau advised the military authorities to remind pilots of the airspace structure and of their requirement to remain well clear of civil traffic.

The Bureau requested that the operator fully brief crews on airspace requirements and military crossing points, and how TCAS advisories can be expected in this environment.