Aviation Safety Investigation Report 199803046

Cessna Aircraft Company
Cessna
Airbus
Airbus

06 August 1998

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Aviation Safety Investigation Report

199803046

Occurrence Number:	199803046	**Occurrence Type:**	Incident
Location:	7km SSE Melbourne, Aerodrome		
State:	VIC	**Inv Category:**	4
Date:	Thursday 06 August 1998		
Time:	1317 hours	**Time Zone**	EST
Highest Injury Level:	None		

Aircraft Manufacturer:	Airbus		
Aircraft Model:	A340		
Aircraft Registration:	BHXI	**Serial Number:**	
Type of Operation:	Air Transport High Capacity International Passenger Scheduled		
Damage to Aircraft:	Nil		
Departure Point:	Melbourne Vic.		
Departure Time:	1317 EST		
Destination:	Hong Kong		

Aircraft Manufacturer:	Cessna Aircraft Company		
Aircraft Model:	172		
Aircraft Registration:	VH-ZWR	**Serial Number:**	
Type of Operation:	Air Transport High Capacity International Passenger Scheduled High Capacity International Passenger Scheduled		
Damage to Aircraft:	Nil		
Departure Point:	Essendon Vic.		
Departure Time:			
Destination:	Kyneton Vic.		

Approved for Release: Wednesday, November 18, 1998

FACTUAL INFORMATION

An Airbus Industrie A340 registered as BHXI and operating flight number Cathay 104 (CPA104) had been flight-planned to operate a flight from Melbourne to Hong Kong. The crew of the A340 had been cleared to depart Melbourne on a KEPPA TWO standard instrument departure (SID) with a requirement to maintain 5,000 ft. The KEPPA TWO departure was able to be conducted from Melbourne runways 16, 27 or 34. The Melbourne Automatic Terminal Information service (ATIS) was "Information Sierra" with a variable easterly wind at 5 kts. Downwind on runway 27 was reported as 5 kts. The duty runway at Melbourne was runway 16 for arrivals and runway 27 for departures.

The departure of CPA104 was coordinated with both the Departures North controller and the Essendon aerodrome controller (ADC) by the Melbourne ADC. The crew of CPA104 was cleared for take off and instructed to contact Departures airborne.

A Cessna C172 registered as VH-ZWR had been flight-planned from Essendon to Kyneton at 3,500 ft, flying under the visual flight rules. The Essendon ADC had cleared the pilot in command to depart the Melbourne CTR on an amended route via Rockbank at an amended level of 1,500 ft. The aircraft had departed from Essendon's runway 17 and had made a right turn to track via Rockbank. Because the C172 would transit only controlled airspace that was the responsibility of Essendon Tower, coordination for this aircraft with other control agencies was not required.

The Departures North controller identified CPA104 airborne and cleared the crew to climb to flight level 200. The controller then observed on radar an unidentified aircraft squawking code 4000, departing Essendon westbound and crossing the departure track of the A340. The controller initiated corrective action but the A340 passed behind the unidentified aircraft with 1 NM horizontal and 900 ft vertical separation. The separation standard was infringed: the required standard between these two aircraft was either 3 NM or 1,000 ft. The unidentified aircraft was subsequently confirmed to be VH-ZWR.

Air traffic control coordination procedures required the Melbourne ADC to obtain departure instructions for CPA104 from the Departures North controller, as the aircraft was planned to depart on a northerly track. The coordination between ADC and Departures was carried out and an "unrestricted" clearance was obtained. The use of the non-duty runway for departures from Melbourne was not unusual. Runway 16 was often used for aircraft tracking to southerly destinations or for the larger international aircraft requiring the longer runway.

Because CPA104 was departing from runway 16, additional coordination was required between the Melbourne ADC and the Essendon ADC in accordance with Local Instruction LOA2976 - Coordination for Non-Duty Departures Runway 16. Coordination with the Essendon ADC was attempted; however, due to conflicting traffic, the departure was not authorised by the Essendon ADC at the time.

The workload at Essendon was considered to be high with controllers working in all operational positions. Additional airspace had been negotiated and released to Essendon by the Melbourne Centre. The airspace configuration on this day was unusual. The usual configuration was for Essendon Tower to have the south-east quadrant of the Melbourne control zone (CTR) up to and including 2,000 ft. The south-east quadrant was from south of the extended centreline to runway 26 to east of the extended centreline from runway 17. For a planned calibration of the Essendon instrument landing system (ILS), an extension to the airspace was agreed that would encompass normal airspace, plus the airspace from the extended centreline of runway 26 to the western edge of the CTR up to and including 3,000 ft. This additional airspace included all airspace south of the extended centreline of Essendon's runway 26 up to and including 3,000 ft.

The aircraft conducting the calibration testing of the ILS was operating to and overshooting from Essendon's runway 26. The aircraft was an Astra 1125 jet aircraft operating under the callsign of Auscal 01 (ADA01). This was the first time that this type of aircraft had been used for calibration tests: previously the Airservices Australia Fokker F28 had conducted the testing. When the F28 did the testing, it was able to overshoot from the approach prior to crossing the runway intersection, which obviated the need to sequence the aircraft with other traffic. The Astra aircraft needed to conduct an overshoot from all approaches, which necessitated complex sequencing with all other traffic. It was this aircraft that precluded CPA104 getting airborne when the Melbourne ADC first attempted to coordinate a departure with the Essendon ADC.

When the Melbourne ADC next attempted to coordinate with the Essendon ADC the departure of CPA104, the Essendon controller pre-empted the request as soon as the "hotline" communication line was opened by issuing a clearance using the word "approved" for the Melbourne runway 16 departure. Melbourne Tower advised that "he (CPA104) would be after the one on short final". The Essendon ADC replied with the statement "OK, behind him, approved". The Essendon ADC stated during interview that he couldn't recall issuing the approval for the departure of CPA104.

Although not a documented procedure, the practice in Essendon Tower was to place a runway-16 departure designator strip in the bay containing departure strips. The designator strip was used to remind and alert controllers of aircraft cleared to depart from runway 16 at Melbourne. Essendon Tower did not hold individual flight progress strips for Melbourne's aircraft and the runway-16 designator strip was used to indicate a pending departing aircraft. Controllers were trained to scan the strip bay to identify conflicting aircraft prior to issuing a subsequent clearance to an aircraft that could potentially conflict with aircraft departing Melbourne's runway 16. The Essendon ADC stated during interview that although the designator strip was placed in the departure bay, he did not scan the strip bay prior to clearing VH-ZWR for departure and the right turn.

ANALYSIS

Although the Essendon ADC did not recall approving the departure clearance for CPA104, the designator strip was reputedly placed in the departure bay. Analysis of the audio recording indicated that the Essendon ADC issued the take-off clearance for VH-ZWR approximately 3 seconds after approving CPA104's departure. This action indicated that the Essendon ADC did not recognise the potential for conflict between the two aircraft when the judgement was made to clear VH-ZWR for takeoff and make the right turn. An alternative hypothesis is that a judgement was made that there was no conflicting traffic for the departure of VH-ZWR, prior to issue of the take-off clearance and receipt of the hotline call from Melbourne. The controller's mind-set regarding VH-ZWR did not change because the implications of CPA104's departure did not register with the controller. Importantly, the potential for conflict was not recognised when the Essendon ADC approved CPA104's departure. The latter hypothesis is supported by the controller's failure to scan the strips prior to the take-off transmission being made because his mind-set was that VH-ZWR was clear for takeoff.

The traffic density and complexity on this particular day was reported to be unusually high. This additional workload may have increased the cognitive demands on the controller, unbeknown to other members of the team. The other controllers were also busy and the ADC was reputedly a very experienced controller. These two factors may have been the reason that the performance of the ADC was not monitored more closely.

Analysis of the radar data indicated that when the 3-NM radar separation standard was infringed, vertical separation indicated that CPA104 was 500 ft below VH-ZWR and climbing. When the aircraft were at the same level of 1,300 ft, radar separation had reduced to 2.2 NM. When CPA104 passed behind VH-ZWR, vertical separation had increased to 900 ft and radar separation had reduced to 1.25 NM. A vertical separation standard of 1,000 ft was re-established when the aircraft were 1.4 NM apart.

SAFETY ACTION

The Airservices Australia investigating officer made the following two recommendations:

"1. Amend LOA 2976 to:

a. Give better examples of the approval process for Melbourne runway 16 departures; and
b. Promulgate usage and the process to be followed by Essendon tower of the runway 16 designator strip.

2. Consider releasing all control zone airspace to Melbourne and Essendon towers".

Melbourne ATC management agreed to implement Recommendation 1 at the next revision of Local Instructions. Management will consider Recommendation 2 following consultation with terminal control unit staff.