

**Aviation Safety Investigation Report  
199602626**

**Airbus  
A320  
Piper Aircraft Corp  
Warrior**

**22 August 1996**

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**Occurrence Number:** 199602626                      **Occurrence Type:** Incident  
**Location:** Coolangatta, Aerodrome  
**State:** QLD    **Inv Category:** 4  
**Date:** Thursday 22 August 1996  
**Time:** 1121 hours                                      **Time Zone** EST  
**Highest Injury Level:** None

**Aircraft Manufacturer:** Airbus  
**Aircraft Model:** A320-211  
**Aircraft Registration:** VH-HYF                                      **Serial Number:** 027

**Type of Operation:** Air Transport Domestic High Capacity Passenger  
Scheduled

**Damage to Aircraft:**

**Departure Point:** Coolangatta QLD  
**Departure Time:**  
**Destination:** Sydney NSW

**Aircraft Manufacturer:** Piper Aircraft Corp  
**Aircraft Model:** PA-28-151  
**Aircraft Registration:** VH-TXL                                      **Serial Number:** 28-7615049  
**Type of Operation:** Miscellaneous Unknown  
**Damage to Aircraft:**  
**Departure Point:** Tamworth NSW  
**Departure Time:**  
**Destination:** Coolangatta QLD

**Approved for Release:** Friday, May 9, 1997

## FACTUAL INFORMATION

The controller started acting as the Aerodrome Controller (ADC) at 1100 local time. Up until 1120, the workload was described as being light. At 1120 the ADC was responsible for one helicopter under the final approach path of runway 32, at three miles from the field and operating not above 500 ft. Another helicopter was flying from the north of the aerodrome towards the same area and had been directed to track to the west of the aerodrome. A third helicopter was waiting at Burleigh for a clearance to enter the zone. A Piper PA28 was about two miles from the runway, on final for runway 32. Two jet aircraft were also approaching final for runway 32, and were about 15 and 22 NM from the airport. An Airbus A320 reported ready at the holding point for runway 32. That aircraft was given a clearance to line up.

Because of the short distance from the parking area to the holding point, the controller was aware that airline aircraft sometimes take a long time to actually line up at the threshold. The cabin crews on the aircraft often need a considerable period of time to complete their briefings and the pilots taxi slowly to avoid stopping the aircraft. The taxiway for runway 32 was situated about 400 m from the threshold of runway 32, with the result that the time taken for aircraft to be ready for takeoff could vary. On this occasion the Airbus was reported to have been slow to line up.

The ADC asked the pilot of the Piper if he would accept a landing on runway 35, a 552 m long strip which crossed the main runway about 850 m from the threshold of runway 32. The change was accepted and the pilot was asked to report on final approach. The helicopter under the final approach path was asked how long he wanted to remain there, and was then told to report on completion of his activities. The ADC then cleared the Piper to land on runway 35. Another aircraft reported ready to line up, and the ADC instructed that pilot to hold at the holding point. A helicopter previously cleared to track northbound east of the coast from Point Danger to Burleigh was asked to make an orbit or hold due to a jet aircraft about to take off and turn right.

Departure instructions for the Airbus were obtained from the Approach Controller and the ADC cleared the aircraft for takeoff, followed by a right turn to a heading of 120 degrees. During this process he reported checking the radar screen and runway 32. He did not check the flight strips. The controller then devoted his attention to the helicopter under the final approach path for runway 32. He initially asked the pilot to fly to the west of the final path for about three miles. In response the pilot informed the ADC that he was finished in the area and requested a clearance to track to Surfers Gardens.

When a break in this interchange occurred, the pilot of the Airbus informed the controller that the other aircraft was now clear of his path, and asked to confirm whether he was clear to take off. This was re-affirmed. The pilots of the Piper had heard the Airbus being given a takeoff clearance and had been prepared to go around if that aircraft began to roll. The pilots of the Airbus had seen the Piper during their pre-takeoff scan and had waited until the aircraft had crossed their runway.

As the Piper was originally to land on runway 32, the ADC had that runway marked on the flight progress strip. When the runway was changed the new runway should have been marked. This was not done. In addition, when the second runway was activated he should have notified the Surface Movement Controller. This was not done, reportedly because the aircraft was close to landing and the second runway would only have been active for a short period of time.

The controller workload at Coolangatta was described as becoming busy irregularly. During a normal working week controllers were often on duty in the various positions when activity was low. The controller estimated that he was only able to achieve about two hours per week when the activity was moderate to busy. As a result he found it difficult to maintain a system which catered for the busy periods. Most of the time he was able to remember the complete aircraft activity picture without reference to the various systems to aid memory, such as the flight progress strips. The investigation was also informed that tower controllers often did not maintain current information on the flight strips when activity became high. There was a need to retain the activity picture in their mind as well as maintaining the information on flight strips, and this latter aspect often lost priority.

Prior to issuing a take-off clearance the controller reported that he should have scanned the runway, the circuit area, the apron and taxiway, the flight progress strips, the active bay, and the radar. On this occasion he did not do all of these actions. He attributed this to the irregular activity pattern which was not conducive to a regular scan.

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No deficiencies in workstation layout or visibility from the control tower were found. Ranges to the west of Coolangatta could have made the Piper difficult to see when it was on final approach and close to the runway. The radar display was "gated" so that aircraft within one mile of the runway were not displayed. This was done to avoid the display becoming crowded with returns of aircraft on the ground. Depending on the position of the Piper aircraft, it may have not been displayed on the radar.

During the four days prior to this incident the controller had been suffering from the effects of a virus. Although he had initially started the day not feeling like going to work, by the time he had arrived he was keen to be working.

## ANALYSIS


The term 'mental workload' refers to the difference between the amount of information processing resources required by a situation and the amount of such resources available to the person at that time. The controller was probably experiencing a significant mental workload around the time of the incident. The control situation at the time involved a significant number of different aircraft, producing an unusual task load. Although the controller rated the workload as moderate, there were periods of radio communication without significant breaks. The controller's ability to cope with the situation may have been degraded by a lack of proficiency and his recent health, although the influence of these factors could not be established.

The controller was in the habit of retaining all the relevant information and the operational picture in his memory. This meant that he was not in the habit of conducting a full sequence of checks prior to issuing a takeoff or landing clearance. One of these checks involved a scan of the flight progress strips. When his workload became high, he was in the habit of allowing activity on the flight progress strips to lapse, in favour of retaining his mental picture. That was the situation on this occasion. He probably developed a "loop", whereby he did not scan the strips because he knew they were not accurate.

When the pilot of the Piper was asked to use runway 35, the aircraft was not far from landing. As far as the controller was concerned it would not be long before that runway was no longer in use. He did not comply with the procedure to notify the SMC of the runway's activation because of the short time the runway would be in use. This action created another gap in the separation assurance of the two aircraft involved. It also excluded the other controller from any cross-checking capability.

The ADC's workload had become high very quickly and he had some problems, other than the aircraft landing on runway 35, that needed his attention promptly. The evidence indicates that he omitted the Piper from his thinking as soon as it had been cleared to land. When runway 32 was scanned prior to giving the Airbus a take-off clearance, the Piper was not seen as it was not near this runway. When the radar was scanned, the Piper was probably inside the area which was not displayed on the screen. The only other prompts which could have reminded the controller about the Piper were a scan of the strips and a strip indicating that runway 35 was active. It is likely that he would have been reminded about the presence of the Piper if he had scanned the strips, even though he had not kept them up-to-date.

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The potential for a more serious incident was averted by the crews of the two aircraft. Both crews were aware of the other aircraft and were prepared to take avoiding action. The crew of the Airbus did not commence takeoff until the other aircraft was clear of their runway. They also checked again with the controller to ensure that everything was in order for their departure. The crew of the Piper were prepared to go around and take other avoiding action if the Airbus began its takeoff roll. For these reasons, a serious incident involving an inadvertent breakdown of separation was not likely.

#### FACTORS

1. The controller was experiencing a high level of mental workload.
2. The controller was not maintaining accurate flight progress strip information.
3. The controller did not take the appropriate steps to activate runway 35.
4. The controller forgot about the Piper after issuing a landing clearance.
5. The controller did not scan all the available information prior to issuing the Airbus a take-off clearance.
6. The pilots of both aircraft maintained sufficient situational awareness to avoid each other.

#### SAFETY ACTION

The use of the team concept by Airservices Australia is being examined by the Bureau as a result of previous incidents. The details of this incident will also be considered during that research.

