

**Aviation Safety Investigation Report  
199701155**

**Saab Aircraft AB  
340  
Boeing Co  
B737**

**14 April 1997**

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**Occurrence Number:** 199701155                      **Occurrence Type:** Incident  
**Location:** Sydney, Aerodrome  
**State:** NSW    **Inv Category:** 4  
**Date:** Monday 14 April 1997  
**Time:** 0734 hours                                      **Time Zone** EST  
**Highest Injury Level:** None

**Aircraft Manufacturer:** Boeing Co  
**Aircraft Model:** 737-376  
**Aircraft Registration:** VH-TAF    **Serial Number:** 23477

**Type of Operation:** Air Transport Domestic High Capacity Passenger  
Scheduled  
**Damage to Aircraft:** Nil  
**Departure Point:** Brisbane Qld  
**Departure Time:**  
**Destination:** Sydney NSW

**Aircraft Manufacturer:** Saab Aircraft AB  
**Aircraft Model:** SF-340B  
**Aircraft Registration:** VH-KDQ    **Serial Number:** 340B-325  
**Type of Operation:** Air Transport Domestic Low Capacity Passenger Scheduled  
**Damage to Aircraft:** Nil  
**Departure Point:** Sydney NSW  
**Departure Time:** 0734 EST  
**Destination:** Canberra ACT

**Approved for Release:** Tuesday, July 7, 1998

#### FACTUAL INFORMATION

The crew of an instrument flight rules (IFR) Saab 340 operating a flight from Sydney to Canberra had received an airways clearance for a Shelleys 5 standard instrument departure (SID) on climb to 3,000 ft. The SID required the crew to track on a heading of 335 degrees magnetic (M) and to turn on to a heading of 210 degrees M when they reached 600 ft on climb. The Saab taxied for an intersection departure for runway (RWY) 34L from taxiway B10 and stopped at the holding point awaiting departure approval. This taxiway was on the eastern side of the runway and approximately 1450m north of the threshold.



The traffic flow was busy when the aerodrome controller west (ADCW) received departure instructions from the departure south radar controller (DEPS) for a Bell 206 (B206) helicopter. The B206 was to depart from the helicopter area to the east of RWY 34/16 to Bankstown, located approximately 10 NM west of Sydney aerodrome. The planned altitude for the B206 was 1,500 ft. The ADCW cleared the pilot in command (PIC) of the B206 to take-off. The PIC of the B206 was approved to cross RWY 34L behind a landing Boeing 747 (B747). At the same time the ADCW approved two taxiing Boeing 737s (B737) to cross RWY 34L at taxiway J which was parallel to and south of B10. After departure the ADCW instructed the PIC of the B206 to change to the DEPS frequency.

The next aircraft in the landing sequence for RWY 34L was a B737. The ADCW estimated that there was sufficient time for the Saab to depart prior to the B737 reaching the runway. The ADCW requested and was granted departure instructions for the Saab by DEPS. As the approaching B737 passed a position approximately 2 NM from the threshold of RWY 34L the ADCW cleared the crew of the Saab for immediate take-off after confirming that they were ready for an immediate departure.

As the Saab accelerated the B737 was on a close final approach. The ADCW was required to provide a landing clearance to the crew of the B737 or instruct the crew to go around if the runway was obstructed. The ADCW cleared the crew of the B737 to land. As the B737 touched down the Saab was approximately 1,700 m further along the runway and travelling at a slightly lower groundspeed than the B737. At the time the Saab became airborne the distance between the aircraft was approximately 1500 m. The B737 landed while the Saab was on the runway.

As the Saab became airborne DEPS called ADCW to coordinate a change of track and level for the previously departed B206. The ADCW approved the changes. At the suggestion of DEPS the ADCW instructed the crew of the Saab to cancel the SID and to maintain runway heading. This was done to maintain separation between the B206 and the Saab. There had been a lack of provision of separation between the aircraft.

#### Runway separation standards

The ADCW was required to provide the crew of the B737 with landing or go-round instructions before that aircraft reached a height of 200 ft above the landing threshold. Runway separation standards required that landing aircraft should not be permitted to cross the runway threshold until a preceding departing aircraft (less than 136,000 kg maximum take-off weight) was airborne. Controllers were required to consider the effect of aircraft carrying out a go round and the implications for separation with other aircraft.

#### Technical crew

The B737 co-pilot was the handling pilot for the landing. The crew could not recall if the Saab was airborne or still on the runway when they landed. The provision of a landing clearance to the crew of an aircraft entitled the PIC to continue with the landing if it was deemed safe to do so, or to conduct a go round if the situation was not considered to be safe.

#### Separation responsibilities between ADCW and DEPS

The ADCW was responsible for controlling arriving and departing aircraft for RWY 34L and was jointly responsible in conjunction with DEPS for separating aircraft in the airspace to the west of RWY 34L.

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The ADCW and DEPS did not establish which controller was to coordinate the separation between the B206 and Saab or the type of separation to be used. Both these aspects needed to be coordinated prior to departure instruction being issued and the crew receiving a take-off clearance.

When the ADCW requested departure instructions for the Saab, DEPS assumed that the aircraft would be cleared for take-off after the B737 landed. Consequently, DEPS did not query the ADCW regarding the separation of the B206 and the Saab.

#### Runway usage

The ADCW believed that there was an opportunity to utilise the northern portion of RWY 34L for the departure of the Saab while the two B737s crossed the runway. This required the ADCW to confirm with the crew of the Saab that they were ready for an immediate departure, to obtain departure instructions from DEPS and to issue the take-off clearance to the crew of Saab prior to the approaching B737 requiring a landing clearance.

As the ADCW issued the take-off clearance to the crew of the Saab the B737 was approximately 2 NM from the threshold of the runway. Aerodrome controllers generally accepted 2 - 3 NM as the point at which the runway should be vacated by other traffic to ensure that an approaching B737 or similar type aircraft could be assured of a landing.

The Saab accelerated slower than the ADCW expected. The ADCW appreciated that runway separation was unlikely to be maintained between the Saab and the B737. Faced with the decision to either approve the B737 to land or to instruct the crew to conduct a go around the ADCW believed that the better option was to clear the aircraft to land. He believed that this option was the safer alternative under the circumstances.

#### Air traffic service performance

The ADCW felt a degree of pride in his ability to perform tower control duties. He endeavoured to provide minimum disruptions or delays to aircraft.


#### ANALYSIS

The ADCW's desire to not unduly delay aircraft probably caused him to attempt to facilitate the departure of the Saab at a time when there was little or no margin to compensate for delays in crew reaction to instructions or differences in individual aircraft performance.

It was unlikely that there was sufficient time for the Saab to depart as the arriving B737 had passed the position on the approach used by aerodrome controllers as a guide to assist them in managing runway usage.

The ADCW was left with limited options to resolve the situation. Subsequently, he issued a landing clearance to the crew of the B737 and allowed the crew of the Saab to continue the take-off.

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His desire to provide a service to aircraft may have caused him to act hastily and consequently overlook the need to coordinate the provision of separation between the B206 and the Saab after departure, and to miscalculate the runway separation between the Saab and the B737.

DEPS and the ADCW had a shared responsibility to ensure separation was maintained between departing aircraft. However, DEPS incorrectly assumed that the ADCW would not clear the Saab for take-off before the B737 landed. DEPS should have queried the ADCW as to his plan to maintain separation between the B206 and the Saab when the ADCW requested departure instructions for the Saab. Subsequently, it was only the action of the B206 PIC requesting an amended route and level that prompted DEPS to eventually query ADCW and for the potential conflict to be resolved.

#### SIGNIFICANT FACTORS

1. The ADCW did not coordinate with DEPS for the maintenance of separation between the B206 and the Saab.
2. The ADCW did not ensure that separation would be maintained between the B206 and the Saab prior to issuing the crew of that aircraft with a take-off clearance.
3. DEPS did not query the ADCW with regard to the position of the B206 when the latter requested departure instruction for the Saab.
4. The ADCW did not allow for a sufficient margin between the arriving B737 and the departing Saab to compensate for differences in aircraft performance.

