

**Aviation Safety Investigation Report
199601004**

**Mooney Aircraft Corp
Mooney
Saab Aircraft AB
340**

02 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: 199601004 **Occurrence Type:** Incident
Location: 9km N Sydney, Aerodrome
State: NSW **Inv Category:** 4
Date: Tuesday 02 April 1996
Time: 0734 hours **Time Zone** EST
Highest Injury Level: None

Aircraft Manufacturer: Saab Aircraft AB
Aircraft Model: SF-340B
Aircraft Registration: VH-SBA **Serial Number:** 311
Type of Operation: Air Transport Domestic Low Capacity Passenger Scheduled
Damage to Aircraft: Nil
Departure Point: Orange NSW
Departure Time: 0650 EST
Destination: Sydney NSW

Aircraft Manufacturer: Mooney Aircraft Corp
Aircraft Model: M20J
Aircraft Registration: VH-MZZ **Serial Number:** 24-0816
Type of Operation: Air Transport Domestic Low Capacity Passenger Scheduled
Domestic Low Capacity Passenger Scheduled
Damage to Aircraft: Nil
Departure Point: Bankstown NSW
Departure Time:
Destination:

Approved for Release: Friday, October 4, 1996

FACTUAL INFORMATION

The Saab 340 aircraft was inbound from Orange for a landing at Sydney and the crew had been instructed to track via the Sydenham locator for a left circuit to runway 16L. The Saab had been cleared to descend to 6,000 ft. At about the same time a Mooney aircraft, en route from Bankstown to Tobins Gap, was on climb to 5,000 ft while tracking north from overhead the Sydney Very High Frequency Omni-Directional Radio Range (VOR) navigation aid to Williamtown.

The approach controller was aware of the possibility of conflict between the aircraft due to the limited displacement (approximately 2.5 NM) between the Sydenham locator and the Sydney VOR. Consequently he used a function of the radar display to highlight the symbol and label of the Mooney to assist in monitoring the aircraft's track. However, due to the close proximity of the terminal radar antenna and the VOR, the Mooney passed through the radar overhead cone of silence (an area immediately above the antenna where the radar is unable to detect aircraft) as it overflew the VOR. Consequently, the Mooney's symbol and label disappeared from the controllers radar display. The radar display does not retain controller inputs for lost tracks and subsequently did not re-highlight the symbol and label when the aircraft emerged from the cone of silence. Consequently, the controller was not provided with the visual cue to assist in monitoring the aircraft's symbol after it passed over the VOR.

The controller intended to instruct the pilot of the Saab to turn downwind after passing overhead the Sydenham locator, an action that would ensure separation was maintained between the Saab and the Mooney. However, this instruction was not passed to the pilot as the controller commenced a handover/takeover to a new controller. As the Saab passed overhead the locator, the pilot maintained an easterly heading which was a converging course with the Mooney. The controller could not confirm whether or not the Saab's symbol and label were continuously displayed on the radar screen. The radar recording system showed a continuous plot for the aircraft; however, such a recording does not replay individual radar screen presentations and consequently, the actual radar display provided to the controller could not be confirmed.


The pilot of the Mooney had been instructed, by a controller on an adjacent control position, to turn north to track to Williamtown and climb to 8,000 ft. As separation between the aircraft reduced, the two controllers conducting the handover/takeover were alerted to the situation by a controller at an adjacent control position. The latter queried the track of the Saab as the aircraft was about to infringe his airspace. The new on-duty controller instructed the pilot of the Saab to turn left while the pilot of the Mooney was given traffic information and instructed to turn right for separation. Traffic was busy but not abnormal for the time of day and the weather was fine with unrestricted visibility.

The aircraft passed with approximately 1.5 NM horizontal separation and 100 ft vertical separation. The required standard was 3 NM horizontally or 1,000 ft vertically. There was a breakdown in separation.

ANALYSIS

Controllers were aware of the problem with the radar display not retaining controller inputs for lost tracks. This had become apparent with the advent of new procedures for parallel runway operations. The actual radar cone of silence is very narrow and approach controllers sometimes transfer aircraft early to either of the Directors (East or West as appropriate) to ensure aircraft tracking via the Sydenham locator do not enter the cone. The directors operate on a larger scale display and consequently are better able to monitor aircraft clear of the cone and maintain aircraft symbols on the display.

In this incident the controller elected to retain the aircraft and then became distracted while conducting a handover/takeover. The provision of separation assurance techniques would have ensured separation between the two aircraft while they were in close proximity to the cone of silence. This was not done. Alternatively, the controller could have tracked the Mooney via a route which would have ensured that the aircraft did not enter the radar cone of silence and, consequently, the system would have maintained the track on the display.



The situation was compounded by the inability of the radar and display systems to continue plotting the track of the Mooney as it passed through the overhead cone of silence. Secondary surveillance radar data from the Sydney terminal area is available from two sources and the use of multi-radar tracking would eliminate the blind spot due to the cone of silence. However, this facility is currently not available at Sydney. Additionally, the system was unable to maintain controller display inputs to re-highlight the track. While not major factors in the incident, the lack of these functions reduced the defences available to the air traffic system. New equipment being provided by Airservices Australia will address this deficiency.

SIGNIFICANT FACTOR

Separation assurance techniques were not adequately utilised.

SAFETY ACTION

Safety deficiencies involving handover/takeover aspects are being addressed through Occurrence 9600800.

