



COMMONWEALTH OF AUSTRALIA

DEPARTMENT OF TRANSPORT

## AIRCRAFT INCIDENT INVESTIGATION SUMMARY REPORT

Reference No

SI/765/3229

Publication of this report is authorised by the Secretary under the provisions of Air Navigation Regulations 283 (1)

## 1 LOCATION OF OCCURRENCE

Near Pingelly, Western Australia

Date

30.10.76

## 2 THE AIRCRAFT

Make and Model

Boeing 727/276

Registration

VH-TBJ

## 3. CONCLUSIONS

3.1 On 30 October 1976, the aircraft operated as TAA Flight 8014 from Melbourne to Perth. At approximately 2042 hours WST the flight commenced a descent from its cruising height of Flight Level 330, having been cleared to descend initially to an altitude of 6000 feet, but not below the altitude restrictions applicable to the Perth Distance Measuring Equipment (DME) arrivals procedure for an approach via air route Green 94. The aircraft DME equipment was in fact selected to the DME facility at Pingelly located some 124 kilometres to the south-east of Perth. This selection was not discovered until the aircraft had descended, within the terms of subsequent clearances, to an altitude of 3000 feet, at which time it was some 93 kilometres south-east of Perth, and where it was identified by Perth Air Traffic Control radar. The lowest safe altitude in the area in which the aircraft was identified is 2800 feet. The aircraft was then climbed to 6000 feet, following which a normal approach to Perth was made. The aircraft landed at 2125 hours.

3.2 The aircraft was operated by Trans-Australia Airlines, of 50 Franklin St., Melbourne: the operator was the holder of the Certificate of Registration of the aircraft.

3.3 There was no damage to the aircraft in the occurrence and no person on board was injured.

3.4 No defects were found in the aircraft or its equipment, nor in the ground communications or radio navigation facilities, which might have contributed to the incident.

3.5 The flight was under the command of \_\_\_\_\_, aged 47 years, who was the holder of a first class airline transport pilot licence, endorsed for the aircraft type. He held a first class instrument rating. His total flying experience was 15 015 hours including 169 hours as pilot-in-command of the Boeing 727 type of aircraft. During the previous six months he had operated into Perth on four occasions but on none of those occasions had he approached Perth on air route Green 94.

3.6 The First Officer, \_\_\_\_\_, aged 34 years, held a second class airline transport pilot licence endorsed for the aircraft type. He was the holder of a second class instrument rating. His total flying experience was 5300 hours of which 1200 hours had been flown in the Boeing 727 type of aircraft.

3.7 The flight engineer was \_\_\_\_\_, aged 32 years, the holder of a flight engineer licence endorsed for the aircraft type.

3.8 The flight plan submitted at Melbourne Airport indicated that the aircraft would track via air route Green 94, and the time interval was calculated to be 205 minutes. The crew was required to report the position of the aircraft when passing, in turn, Mt. Gambler, Pipefish, Shrimp, Sea Mink and Lake Grace.

3.9 The flight departed Melbourne Airport at 2057 hours ESuT (1757 hours WST) and climbed to cruise as planned at Flight Level 330. It reported over Mt. Gambler some two minutes ahead of the flight plan calculation, at Pipefish five minutes ahead, and at Shrimp seven minutes ahead.

3.10 The flight reported reaching the Sea Mink reporting position at 2004 hours WST, eight minutes ahead of the original flight plan calculation. This position report was transmitted to Perth with an estimated time of arrival over Lake Grace which the crew had calculated in flight as 2044 hours. On the basis of the position reports received from the flight, Perth Air Traffic Control calculated the estimated time of arrival of the flight at Lake Grace as 2046 hours. Since this was within 2 minutes of the crew calculation there was no requirement that their estimate be queried nor was it queried.

3.11 At 2040 hours the flight reported to Perth that it was at the Lake Grace reporting position, which is 150 nautical miles (278 kilometres) by DME from Perth. The Perth Arrivals air traffic controller instructed the aircraft 'when ready, descend to six thousand, not below DME steps'. The flight reported leaving Flight Level 330 at 2042 hours and at that time the DME distance indicated in the cockpit was 130 nautical miles (240 kilometres).

### 3. CONCLUSIONS (Cont'd)

3.12 As the descent progressed the crew reported that they were unable to read the current Aerodrome Terminal Information broadcast on the Perth VHF Omni Range (VOR). The flight was informed that the runway in use was 'two zero, wind two four zero degrees one zero, QNH one zero one four, temperature one six, one okta two thousand'. At 2056 hours the flight called Perth Tower and, although the transmissions from the aircraft were read by the Tower, two-way communication could not be established. Satisfactory two-way communication was regained and maintained between the aircraft and Perth Arrivals Control, and at 2057 hours the flight reported that it was 20 nautical miles (37 kilometres) from Perth.

3.13 The flight was cleared to 5000 feet and, after reporting at 6 nautical miles (11 kilometres) by DME, was instructed to enter the Parkerville holding pattern and descend to 2500 feet. The flight was then cleared for final approach to Runway 20 but the crew declined this clearance indicating that they were not yet ready and advised that the flight would remain at 5000 feet.

3.14 The circumstances appeared to the Perth Approach Controller to be indicative of the aircraft experiencing radio navigation and communication difficulties and, at 2102 hours, he requested Perth Radar to monitor its approach. The flight was instructed to maintain 3000 feet until positioned at Parkerville, it then reported approaching Parkerville maintaining 3000 feet. Perth Radar was not receiving a return from an aircraft in that area. The flight then reported failure of the aircraft Instrument Landing System (ILS) receiver and shortly afterwards, in response to a query by Perth Air Traffic Control, advised that the VOR receiver was also not operating.

3.15 Perth Radar identified the aircraft at 2107:53 hours, 50 miles (93 kilometres) from Perth approaching from Pingelly. At about the same time the flight crew became aware that the aircraft DME equipment was selected to the Pingelly facility, and not to the Perth facility.

3.16 The aircraft was outside controlled airspace and the crew elected to climb to 6000 feet to re-enter the Control Area. During the climb the Perth radio navigation aids were acquired and the flight, with radar monitoring, then made a normal approach to Perth, landing at 2125 hours.

3.17 It has not been established when the two DME receivers fitted to the aircraft were selected to the Pingelly DME facility, nor why this fact was not recognised by the pilots prior to the aircraft descending to 3000 feet.

3.18 The reported arrival of the flight at Lake Grace some four minutes ahead of the arrival time calculated by the crew when at the Sea Mink position, did not alert Perth Air Traffic Control or the crew to the development of a discrepancy in the navigation of the aircraft.

3.19 The primary means of controlling aircraft in Perth controlled airspace was by the application of procedural control techniques. Perth radar was used only as an adjunct of procedural control to assist, on request, in resolving a specific traffic control situation; it was not used as the primary means of control. Appropriate use of the radar to monitor the approach of VH-TBJ to Perth could have enabled the development of the incident to have been detected.

3.20 The antennae for the VOR, the ILS, and the communications radio antennae for Perth Tower are located at Perth Airport. The communications radio antennae for Perth Arrivals Control are sited in an elevated position remote from the airport. The presence of intervening high terrain somewhat restricts the range of certain airport aids and Perth Tower radio communications with aircraft operating in the lower levels to the east of the airport; this does not impose limitations during normal operations.

### 4. OPINION AS TO CAUSE

The cause of the incident was the use of inadequate procedures by the pilots of the aircraft.

A contributory factor was that the airways operations system did not require that available ground services be used for the monitoring of the actual track and distance of aircraft during approaches to Perth.

Approved for  
publication

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Delegate of the Secretary

Date

19.7.77