

**AIRCRAFT ACCIDENT INVESTIGATION SUMMARY REPORT**

6/752/1014

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

1. LOCATION OF OCCURRENCE

Near Bankstown Airport, New South Wales	Height a.m.s.l. Airport level	Date 13.3.75	Time (Local) 1326 hours	Zone EST
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THE AIRCRAFT

Make and Model	(i) Piper PA30-160B Twin Comanche (ii) Cessna 182M	Registration	(i) VH-DUM (ii) VH-EHX
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3. CONCLUSIONS

- 3.1 At approximately 1326 hours Eastern Standard Time (EST) on 13 March 1975, Piper PA30-160B Twin Comanche aircraft registered VH-DUM, and Cessna 182M aircraft registered VH-EHX, collided in flight at a height of about 850 feet above a point approximately 3400 metres east of the aerodrome reference point for Bankstown Airport, Sydney, New South Wales.
- 3.2 Following the collision both aircraft continued in controlled flight and landed at Bankstown Airport without further incident. Both aircraft were substantially damaged, but of the four persons on board each aircraft, none were injured.
- 3.3 The collision occurred in the Bankstown Control Zone (CTR) in Visual Meteorological Conditions (VMC) during daylight hours and while both aircraft were required to be operated in accordance with the Visual Flight Rules (VFR).
- 3.4 An Air Traffic Control Unit is established in Bankstown Tower with provision for three operating positions; aerodrome control, intercommunication co-ordination, and surface movement control. Normally the tower is manned by two air traffic controllers, namely an aerodrome controller and a co-ordinator/surface movement controller. At the time of the accident there were four air traffic controllers on duty in Bankstown Tower :
- an aerodrome controller;
 - a co-ordinator/surface movement controller, who was the senior controller on duty and who was supervising a controller under training in co-ordination duties; and
 - a controller on refamiliarisation duties.
- 3.5 The aerodrome controller Steven John BATES, aged 24 years, held a current air traffic controller licence with a current aerodrome controller rating for Bankstown which authorised him to carry out any of the air traffic control (ATC) functions provided by Bankstown Tower. He first obtained his air traffic controller licence on 9 March 1973 and his Bankstown aerodrome control rating on 6 August 1974.
- 3.6 Cessna 182M aircraft, VH-EHX, was operated by Rex Aviation Ltd. of Bankstown Airport and the holder of the certificate of registration was Duret Pty. Ltd., North Parramatta, New South Wales.
- 3.7 The Cessna aircraft was being operated on a private flight and was engaged in conversion training for the purpose of endorsement of the type of aircraft in the pilot licence of the pilot under instruction. In addition to the pilot in command and the pilot under instruction, there were two other persons on board the aircraft.
- 3.8 Piper PA-30-160B Twin Comanche aircraft, VH-DUM, was operated by Airlink Pty. Ltd. of Dubbo, New South Wales and that Company was also the holder of the certificate of registration. The Twin Comanche aircraft was engaged on a charter flight from Bankstown Airport to Brewarrina Aerodrome, New South Wales. In addition to the pilot in command there were three passengers on board the aircraft.
- 3.9 At the time of the accident there was a current certificate of airworthiness for each of the two aircraft involved. There is no evidence of any defect in either aircraft which could have contributed to this accident.
- 3.10 The maximum permissible gross weight for take-off for the Cessna aircraft was 1270 kg. It has been calculated that at the time of the last take-off from Bankstown Airport the gross weight was 1302 kg - some 32 kg in excess of the permissible gross weight, but this was not a factor in the accident. It has been calculated that the centre of gravity of the aircraft was within the specified limits throughout the flight.

3 CONCLUSIONS (Contd)

- 3.11 The maximum permissible gross weight for take-off for the Twin Comanche aircraft was 1690 kg. It has been calculated that at the time of take-off from Bankstown Airport the gross weight was 1663 kg, and that the centre of gravity of the aircraft was within the specified limits throughout the flight.
- 3.12 The pilot in command of the Cessna aircraft, John Arthur VALLANCE, occupied the right-hand pilot seat. He was 25 years of age and he held a current commercial pilot licence endorsed for the aircraft type. His licence was endorsed requiring him to wear corrective lenses whilst exercising its privileges: his uncorrected visual acuity has been assessed as - right eye 6/60, left eye 6/6. During the flight on which the accident occurred he was not wearing corrective lenses but in relation to the circumstances of this accident, it is considered that this did not affect his visual perception. His total flying experience amounted to 2200 hours of which 106 hours had been gained in Cessna 182 aircraft. He held a current B grade instructor rating.
- 3.13 The pilot under instruction in the Cessna aircraft, Denis Augustine SYMONS, occupied the left-hand pilot seat. He was 38 years of age and he held a current private pilot licence. His total flying experience amounted to 75 hours of which 4 hours had been gained in Cessna 182 aircraft.
- 3.14 The pilot in command of the Twin Comanche, Olaf WEYAND, occupied the left-hand pilot seat. He was 45 years of age, and he held a current commercial pilot licence endorsed for the aircraft type. His total flying experience amounted to 10 626 hours of which 5228 hours had been gained on Piper PA30 type aircraft. He held a current Class 3 instrument rating.
- 3.15 The meteorological observation made at Bankstown Airport at 1300 hours EST recorded that the wind velocity was 110 degrees (True) at 10 knots, the visibility was 16 km, and that there was 5/8 cumulus cloud at 2000 feet. Similar conditions prevailed at the time of the accident.
- 3.16 Bankstown Airport is contained in airspace designated as a control zone, operations within which are required to be conducted in accordance with procedures contained in Aeronautical Information Publications (AIP). These procedures specify that secondary control zone procedures apply within the Bankstown Control Zone. Such procedures are intended to cater for high density operations by general aviation aircraft operating in VMC, and it is intended that they allow for the fact that judgement by an air traffic controller of aircraft positions and flight paths by visual observation is not sufficiently precise, and his retention of aircraft identity may not be sufficiently reliable in high densities, to enable him to individually direct aircraft flight paths with safety.
- 3.17 The basic concept of the procedures in force in the Bankstown Control Zone is that landings and take-offs will be conducted in a standard circuit pattern, the prime responsibility of air traffic control being to control the use of the runways. Other responsibilities include regulating the number of aircraft operating concurrently, issuing clearances for non-standard operations, and providing when practicable and necessary, a collision risk alerting service to aircraft in the circuit pattern. Pilots, irrespective of flight category, are responsible for maintaining their own separation from all other aircraft when operating in VMC by day, and it is expected that this will be achieved by their visual observations assisted by the prescribed system of radio reporting.
- 3.18 Standard Instrument Departure (SID) procedures are published in the AIP Terminal Area (TMA) procedures for the use of Instrument Flight Rules (IFR) category flights departing from Bankstown Airport. They are intended to facilitate the departure of such flights from Bankstown Airport when Instrument Meteorological Conditions (IMC) prevail and also to facilitate the entry of such flights into en route controlled airspace. During daylight when Visual Meteorological Conditions prevail, and when flying those sections of the SID procedures contained within the Bankstown CTR, a pilot in command is required to comply with the VFR, and is responsible for maintaining separation from all other traffic operating in the Bankstown CTR.
- 3.19 The standard circuit pattern in use was that prescribed for the Runway 11 complex; take-offs and landings were being confined to the sealed surface runways designated Runway 11 Left and Runway 11 Centre. The Automatic Terminal Information Service (ATIS) broadcast current at the time of the accident, specified that Runway 11 Left was to be used for departures and landings to a full stop, and Runway 11 Centre was specified for 'touch and go' operations. The Cessna was engaged in circuits and landings and was flying in the standard circuit pattern for the Runway 11 complex.
- 3.20 The flight of the Twin Comanche aircraft was to be conducted under the IFR. Before take-off the pilot in command had received a clearance to proceed in accordance with the requirements of the SID

3. CONCLUSIONS (Cont'd)

designated '11 KATOOMBA'. In addition, the climb to the planned cruising altitude of 8500 feet was restricted initially to 3000 feet. SID 11 KATOOMBA, which is applicable to the Runway 11 complex at Bankstown Airport, requires that after take-off the aircraft shall be maintained on the runway heading until an altitude of 500 feet is reached then turned left onto a heading of 290 degrees (Magnetic).

21 At 1321:28 hours EST the Twin Comanche aircraft reported 'READY' on the aerodrome control frequency and was instructed to 'HOLD SHORT OF THE RUNWAY'. At 1322:31 hours EST the Cessna aircraft reported 'TURNING BASE FOR RUNWAY CENTRE'. At 1324:47 hours the Twin Comanche aircraft was cleared to take-off and the aircraft then entered Runway 11 Left, lined up and took off. The time of the take-off was manually recorded at 1325 hours: this time is accurate to \pm 30 seconds. While the Twin Comanche aircraft was at the holding point for Runway 11 Left, the Cessna aircraft completed a 'touch and go' operation on Runway 11 Centre. The time of take-off of the Cessna aircraft is not required to be recorded, but is calculated to have been 1324:30 hours. When the Twin Comanche commenced to take-off the Cessna was airborne and at a position approximately over the upwind end of Runway 11 Centre.

3.22 During the approach, landing and take-off segments of the 'touch and go' operation, the Cessna aircraft would have been in the area visible to the pilot in command of the Twin Comanche aircraft at the holding point. Also, as the 'touch and go' was being completed, the crew of the Cessna could have heard the aerodrome controller issue the clearance to the Twin Comanche for take-off on Runway 11 Left.

3.23 Cockpit visibility studies conducted in respect of each aircraft indicate that the Cessna aircraft would have been clearly visible ahead, through the windscreen of the Twin Comanche aircraft during the time that the Twin Comanche was lining up on Runway 11 Left, and during its take-off roll. But, when the Twin Comanche aircraft assumed a climbing attitude and was climbing straight ahead, the Cessna may have been obscured from the view of the pilot in command by the coaming above the instrument panel.

3.24 Immediately prior to the Cessna aircraft commencing its turn to the left onto a crosswind leg of the circuit pattern, the Twin Comanche aircraft would have been visible to the pilot in the left-hand seat of the Cessna aircraft, through the left windows of the aircraft, had he looked in the direction of the Twin Comanche. Scanning, prior to commencing a left turn, of that sector of the traffic circuit being flown by the Twin Comanche, would have been a normal procedure.

3.25 The cockpit visibility studies indicate that neither aircraft would have been visible to the other whilst either was turning to the left. It has been calculated that when the Cessna aircraft completed its turn to the left, it was established on a crosswind leg in a wings level climbing attitude for approximately 13 secs before the collision occurred. It is probable that during this time the Twin Comanche aircraft would have been visible to the crew in the Cessna aircraft had they looked in the direction of the Twin Comanche.

3.26 The aerodrome controller observed the Twin Comanche aircraft taking off, and he had noted the relative position of the Cessna aircraft at that time. He next observed the Twin Comanche aircraft during a routine scan of the circuit pattern. It was in a climbing turn to the left and apparently in close proximity to the Cessna aircraft which was climbing on a crosswind leg of the circuit pattern. At 1326:23.5 hours EST he transmitted 'TRAFFIC A TWIN COMANCHE AND A CESSNA ON CROSSWIND': this advice did not convey that a collision was imminent, nor did the aerodrome controller intend it to do so. The positions of the aircraft as viewed from the aerodrome controller's position were such that he was not able to judge their flight paths relative to each other.

3.27 As the Twin Comanche aircraft approached a heading consistent with a crosswind leg of the traffic pattern the pilot in command and two of the passengers sighted the Cessna aircraft very close on their starboard side. The pilot in command took immediate action in an attempt to avoid the Cessna but, before this action became effective, the starboard propeller of the Twin Comanche passed through the elevator, tailcone, rudder and lower rear fuselage of that aircraft. The Twin Comanche passed beneath the Cessna, crossing from left to right. At 1326:50 hours EST the pilot in command of the Twin Comanche notified Bankstown Tower that his aircraft had collided with another aircraft.

3.28 None of the persons on board the Cessna aircraft were aware of the proximity of the Twin Comanche until after the collision had occurred.

3.29 Prior to the report of the collision from the pilot in command of the Twin Comanche neither the aerodrome controller, nor the other air traffic controllers in Bankstown Tower were aware that a collision had occurred.

3. CONCLUSIONS (Contd)

3.30 None of the persons on board the Cessna aircraft and the Twin Comanche aircraft recalled hearing the message transmitted by the aerodrome controller. In addition to the two aircraft involved in the collision there were seven aircraft operating in the Bankstown CTR. The pilots in command of two of these aircraft recalled hearing the message. The transmission was recorded on the Bankstown automatic voice recorder.

3.31 Both the Cessna and the Twin Comanche aircraft were maintaining a radio communication watch on the Bankstown aerodrome control frequency of 118.1 MHz, and speaker reception was being used in both aircraft. Subsequent tests indicated that the radio transceiving equipment in the Cessna and Twin Comanche aircraft, and in Bankstown Tower, was operating normally.

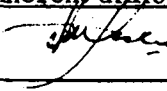
3.32 There was no evidence to indicate that the cockpit workloads existing in either aircraft was other than normal, nor that any form of distraction occurred which would have diverted the attention of the pilots from their duties.

4. OPINION AS TO CAUSE

The cause of the accident was that, whilst operating in an environment where the maintenance of separation between aircraft was a pilot responsibility, neither of the pilots in command, nor the pilot under training, exercised the degree of vigilance necessary for the avoidance of collision.

A contributory factor was that the alerting service provided by air traffic control at secondary control zones is limited by the inherent difficulty of depth judgement.

Approved for
publication



(I.M. Leslie)
Delegate of the Secretary

Date

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