

**Aviation Safety Investigation Report
199402774**

**Pilatus Aircraft Ltd
PC-9
Cessna Aircraft Company
Centurion**

29 September 1994

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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:	199402774	Occurrence Type:	Incident
Location:	37km SE Melbourne		
State:	VIC	Inv Category:	4
Date:	Thursday 29 September 1994		
Time:	1125 hours	Time Zone	EST
Highest Injury Level:	None		

Aircraft Manufacturer:	Pilatus Aircraft Ltd
Aircraft Model:	PC-9
Aircraft Registration:	Serial Number:
Type of Operation:	Miscellaneous Other
Damage to Aircraft:	Nil
Departure Point:	East Sale VIC
Departure Time:	
Destination:	East Sale VIC

Aircraft Manufacturer:	Cessna Aircraft Company		
Aircraft Model:	210L		
Aircraft Registration:	VH-SRJ	Serial Number:	21061417
Type of Operation:	Miscellaneous Other Other		
Damage to Aircraft:	Nil		
Departure Point:	Essendon VIC		
Departure Time:			
Destination:	Phillip Island VIC		

Approved for Release: Wednesday, October 26, 1994

Factual Data

This incident involved a loss of separation between a Cessna 210 and a formation of four PC9s from the RAAF Roulettes aerobatic team.

The Roulettes were conducting an aerobatic display rehearsal over the Melbourne Cricket Ground (MCG) for the Australian Football League grand final. On completion of the rehearsal two of the Roulettes were to proceed to Laverton (LV) at 2000 feet via Essendon (EN) airspace and the remaining four were to proceed back to East Sale (ES) via Moorabbin (MB) at high level. Airspace requirements for the display had been previously discussed between the Roulette leader and EN tower (TWR) and the understanding was in the vicinity of the MCG but no further west than the city and no further north than Freeway Overpass (FWO).

When the Roulettes were cleared into the MCG from Point Ormond (PTO) at the start of the rehearsal, the airspace release that was issued by the departures (DEP) controller to the EN aerodrome controller (ADC) was "PTO to the MCG keep clear of the 26 localiser". Prior to the start of the rehearsal an onwards clearance for the Roulettes that were to proceed to ES was issued by DEP to EN. The clearance was "track direct to MB maintain 5000 feet" Only the Roulette leader was operating a transponder.

After the Roulettes had started the rehearsal the EN ADC requested departure instructions for VH-SRJ who was departing runway 17 at EN to track via the 150 Melbourne (ML) VOR radial to Cowes (CWS) at 3000 feet. A heading of 170 or 180 was also requested to keep VH-SRJ clear of the Roulettes. DEP issued a heading of 170 unrestricted. VH-SRJ departed and remained on EN TWR frequency. The pilot of VH-SRJ was passed traffic advice on the Roulettes and reported that he had them in sight. When VH-SRJ was transferred to DEP frequency abeam Westgate Bridge (WEG), the pilot said he still had the Roulettes in sight. VH-SRJ was then vectored onto the 150 radial at 10 miles from EN by which time the aircraft was cruising at 3000 feet.

Meanwhile, the Roulettes had advised EN ADC that they had completed their airwork and wanted an onwards clearance. EN ADC then called DEP for a clearance "MCG to Yarragon (YAR)". DEP then confirmed the previously arranged clearance of "direct MB maintain 5000 feet". EN ADC then asked the Roulettes about their details for departure and the leader advised two for LV and four for ES. EN ADC then cleared the two for LV to depart via Station Pier (SNP) at 2000 feet. The leader of the Roulettes then requested that the formation depart on a southerly heading to facilitate the breakup of the formation. This was approved by the EN ADC who then advised the four Roulettes that were bound for ES that once they were south of PTO or clear of controlled airspace to climb to 5000 feet. The EN ADC continually kept the Roulettes and other traffic holding outside EN airspace informed of each other.

At this stage DEP could see the transponder return of the Roulette leader heading for PTO at 2000 feet at 230 knots groundspeed but could not see any primary returns from the rest of the formation. He then asked EN ADC where the Roulettes were as he was expecting to see some return in the MCG area. EN ADC advised they were in the PTO area. At this time VH-SRJ was just south of and abeam PTO cruising at 3000 feet. The Roulettes that were bound for LV, including the leader using a transponder, then did a left orbit at 2000 feet and proceeded to LV.

A few seconds later a primary return was observed approximately four miles west of the 150 radial making a sweeping left arc towards MB. The formation bound for ES then called DEP and was immediately asked their present level which was reported as "left 3400 feet". A transponder code was then issued to this formation which was identified heading east towards MB leaving 4500 feet two miles east of VH-SRJ. The primary return from this formation passed within one mile ahead of VH-SRJ.

Analysis

EN TWR received a telephone call from the Roulette leader to arrange the area for the practice display. There was no consideration given to callsign requirements after the formation breakup. The display area was not specifically co-ordinated between EN TWR, DEP or the Roulette leader via intercom or air to air communication.

The DEP controller expected the Roulettes that were bound for ES to be departing from the MCG direct to MB which would have kept them clear of the 150 radial and VH-SRJ. However, the original airspace release from DEP to EN was PTO to the MCG up to 4000 feet and clear of the EN 26 localiser. Had there been a more precise description of the airspace release and onwards clearance then the EN ADC may have been more aware of the need to co-ordinate with DEP prior to clearing the Roulettes to track south.

DEP was unaware that the EN ADC had cleared the Roulettes to track south to PTO until he asked. When the Roulettes asked to track south they were already almost over PTO with an airspeed of close to four miles a minute.

The incident occurred during a peak traffic period when both DEP and EN TWR were handling moderate to heavy traffic levels. Both the DEP controller and the EN ADC were experienced in their respective positions

Significant Factors

The following factors were considered relevant to the development of the incident:

1. Co-ordination between the Roulettes, DEP and EN TWR, both before and during the exercise was loose and lacking in specific detail.
2. Callsigns for the Roulettes after the formation breakup had not been addressed prior to the display. This resulted in the DEP controller having to access another transponder code for the ES bound aircraft at a critical period of the flight.
3. The DEP controller never issued a precise description of the airspace that was released to EN ADC.
4. EN ADC likewise did not ensure that the precise lateral and vertical limits of the airspace required by the Roulettes was co-ordinated with DEP. As a result the Roulettes were not restricted to a specific block of airspace for their display.
5. DEP did not give a precise onwards clearance for the ES bound formation. A clearance should have been issued to ensure the formation set course from the MCG direct to MB. This was critical for separation with VH-SRJ.
6. The EN ADC did not recognise the significance of the need to co-ordinate with DEP the request by the Roulettes to track south to facilitate the formation break.

Safety Action Taken

1. The DEP and EN TWR controllers were taken off their rosters and given appropriate counselling.
2. A standardisation item is to be issued by Air Traffic Services (ATS) in Melbourne to highlight the need for precise descriptions of airspace releases along with a reminder of the need to take performance characteristics into account when formulating airspace releases.



3. Another standardisation item is to be issued to highlight the importance of being specific when defining a route clearance, particularly when it involves separation with another aircraft. This item will include a reminder that it is imperative that co-ordination is effected before any approval is given that may change the conditions of an issued clearance.

4. Discussion is taking place among ATS supervisory staff as to the best way of co-ordinating these types of activities between all involved parties to ensure that correct briefing and co-ordination is achieved.

