Aviation Safety Investigation Report 199401750

Cessna Aircraft Company 310R

07 July 1994

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Aviation Safety Investigation Report

199401750

Occurrence Number: 199401750 **Occurrence Type:** Incident
Location: Canberra
State: ACT **Inv Category:** 3
Date: Thursday 07 July 1994
Time: 0749 hours **Time Zone** EST
Highest Injury Level: None

Aircraft Manufacturer: Cessna Aircraft Company
Aircraft Model: 310R
Aircraft Registration: VH-SKT **Serial Number:** 310R1815
Type of Operation: Air Transport Domestic Low Capacity Passenger Scheduled
Damage to Aircraft: Nil
Departure Point: Deniliquin NSW
Departure Time: 0633 EST
Destination: Canberra ACT

Crew Details:

Role	Class of Licence	Hours on Type	Hours Total
Pilot-In-Command	ATPL 1st Class	164.0	3200

Approved for Release: Tuesday, September 17, 1996

FACTUAL INFORMATION

A Cessna 310 aircraft was operating a scheduled low capacity regular public transport (RPT) flight from Deniliquin to Canberra. Due to fog extending from the surface to approximately 400 ft above ground level (AGL), the aircraft had been cleared to conduct an instrument landing system (ILS) approach to runway 35 at Canberra. The pilot was about to execute a go-around from the minima when he sighted the runway 35 high intensity approach lights (HIAL). He recalled seeing beyond the runway 35 threshold to the first taxiway and almost to the runway intersection; approximately 600 m and 900 m from the threshold respectively. The pilot elected to continue the landing. Just as the aircraft was about to flare, the aerodrome controller (ADC) instructed the aircraft to go around. The ADC subsequently advised the Cessna 310 pilot that an airport safety officer's vehicle had entered runway 35 at the threshold. Following two unsuccessful ILS approaches, the Cessna 310 diverted to Moruya.

The Federal Airports Corporation (FAC) vehicle was being driven by a airport safety officer who had been conducting frequent visibility checks prior to the first aircraft departure. Normally all runway operations were conducted whilst communicating with the ADC while any other surface operations were conducted on the surface movement controller (SMC) frequency. On this occasion, the safety officer had been requested by the SMC to conduct runway visibility checks for runway 35 on the discrete SMC frequency in lieu of frequent switching from SMC to the ADC frequency. Prior to the occurrence, the vehicle had been authorised to enter and vacate runway 35 a number of times using this communication procedure.

The safety officer had neither expected, nor been aware, that the Cessna 310 was making an ILS approach to runway 35. Because all communications were conducted on the SMC frequency, the opportunity for the safety officer to intercept transmissions between the ADC, the Cessna 310 or any other inbound aircraft was excluded. The safety officer recalled driving past the holding point onto the runway 35 threshold and that the vehicle was approximately mid-way between the left runway edge lighting and the extended runway centerline when he saw the Cessna 310 pass about 50 ft overhead and execute a go-around. The safety officer immediately realised that he had entered runway 35 without a clearance.

The automatic terminal information service (ATIS) was transmitting information 'Alpha' for the period surrounding the occurrence. This indicated runway 35 was the duty runway, the surface wind was light and variable, QNH 1027, temperature one degree Celsius and visibility reduced to 800 m in fog. The ATIS also advised that pilots could expect an ILS approach with radar vectoring and that the HIALs were on. Consequently, visibility from the control cabin was reduced such that the SMC could neither see the runway intersection, runway 35 threshold, the vehicle nor the Cessna 310.

The SMC was aware that the Cessna 310 had been cleared to land if the ILS approach was successful. He did not expect the vehicle to enter the runway without first obtaining a clearance. When the runway incursion by the vehicle was apparent and the actual position of the Cessna 310 was unknown, the ADC instructed the Cessna 310 to execute a go-around. Simultaneously, the SMC instructed the safety officer to vacate the runway.

ANALYSIS

Runway 35 is a category one precision approach instrument runway served by an ILS and visual aids which permit operations down to a decision height of 330 ft and visibility of 1,200 m while the HIALs were operational. The ATIS report that visibility was reduced to 800 m in fog, implied that visibility may be greater than 800 m. However, actual runway visibility reports provided primarily by the FAC airport safety officer indicated a visibility fluctuating between 300 and 1,000 metres for runway 35.

The pilot stated that he flew the ILS to the missed approach point of 2,200 ft, where he had become visual. He had been about to go-around when he sighted the runway 35 HIAL and the runway 35 threshold through light mist. He added that although he could not sight the T-VASI, he elected to continue the approach. He did not see the safety officer's vehicle on the threshold.

Air traffic control do not have the authority to close a runway or an aerodrome due to meteorological phenomenon. Additionally, a pilot may:

a) make an approach for the purpose of landing at an aerodrome; or

b) continue to fly towards an aerodrome of intended landing specified on the flight plan; if the pilot believes on reasonable grounds that the meteorological minima determined for that aerodrome will be at, or above, the meteorological minima determined for the aerodrome at the time of arrival at that aerodrome.

Consequently, the pilot in command of an aircraft is responsible for ascertaining if weather conditions are suitable for the conduct of an instrument approach and landing.

The distance from the missed approach point to the runway 35 threshold is approximately 925 m with the HIALs contained within the last 800 m. The distances from the runway 35 threshold to the T-VASI, first taxiway and intersection are approximately 300 m, 600 m and 900 m respectively. Therefore, for a pilot to achieve the required 1,200m visibility at the missed approach point would require the T-VASI to be in sight. While the ATIS was indicating a runway visibility 'reduced to 800 m', the availability of ILS approaches and the departure of other aircraft, would indicate to a pilot conducting an ILS approach that he could expect a successful approach and landing. However, upon reaching the minima, it becomes a very different scenario when the visibility is considerably less than expected. It becomes a matter of judgement between the pilot's estimate for the required visibility and a safety officer counting runway lights to report actual runway visibility.

The evidence indicates the Cessna 310 pilot may have deviated from the prescribed minima requirements by continuning the approach with a reported visibility, at the time, of approximately 400 m at the threshold of runway 35. While he believed his decision to have been correct, it is considered highly unlikely that the required runway visibility of 1,200 m could have existed. If the required visibility did exist, then it was so marginal that a 1,200 m visibilty could not have been maintained if the vehicle on the threshold and the T-VASI could not be seen.

The safety officer believed that the runway was closed and that the visibility checks were for the departure of a Dash 8 aircraft currently at the terminal. The safety officer could not recall receiving, nor requesting, a specific clearance from the SMC to enter runway 35. However, on many previous requests from SMC, the request and clearance to enter the runway were embedded in one transmission. Consequently, the safety officer had not been required to stop at the runway holding points, change to the ADC frequency and request a specific clearance to enter the runway. The deviations from standard operating procedures and phraseology by the SMC and the airport safety officer created an environment of ambiguity associated with expectation and repetiton of previous runway clearances. Retaining all communications with the safety officer on the SMC frequency erroded one of the system defences until there was a failure; the safety officer forgot to obtain a clearance to enter the duty runway.

Collectively, deviations from standard operating procedures and standards by the SMC, safety officer and the pilot of the Cessna 310 did not allow for lapses in judgment, practices, decision making and, effectively, removed human performance redundancies.

CONCLUSION

Findings

1. Ad hoc variations to standard operating phraseology between the airport safety officer and the SMC, whilst conducting runway visibility range assessments, were inappropriate.

2. The ATIS transmission indicating that visibility was reduced to 800 m created a false expectation for the flight crew of arriving aircraft.

3. Both the SMC and airport safety officer failed to achieve complete and comprehensive transfer of situational awareness information.

4. The airport safety officer omitted to obtain the required clearance prior to entering the duty runway

5. The pilot in command of the Cessna 310 continued the approach, below the decision altitude, from a position where the T-VASIS could not be sighted and the runway visibilty range at the threshold was approximately 400 m.

Significant Factors

1. The airport safety officer lost situational awareness and omitted to obtain a clearance prior to entering the duty runway.

2. The pilot in command of the Cessna 310 misjudged the required visibility of 1,200 m and continued the runway 35 ILS approach when visibility was below the published minima.

SAFETY ACTIONS

Following this occurrence, the FAC initiated amendments to the Canberra Airport Operations Manual addressing low visibility operations. Additionally, some aspects of deficiencies of airside vehicle operations have been addressed as a consequence of recommendations resulting from Investigation Report 9301481 issued in July 1994.