Aviation Safety Investigation Report 200200885

Cessna Aircraft Company 340A

09 March 2002

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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.

Occurrence Number: 200200885 **Occurrence Type:** Accident
Location: 11km SE Cairns, Aerodrome
Date: 09 March 2002 **Time:** 1729 EST
Highest Injury Level: Serious
Injuries:

	Fatal	Serious	Minor	None
Crew	0	1	0	0
Ground	0	0	0	-
Passenger	0	0	3	0
Total	**0**	**1**	**3**	**0**

Aircraft Details: Cessna Aircraft Company 340A
Registration: N79GW
Serial Number: 340A0680
Operation Type: Non-commercial Pleasure/Travel
Damage Level: Substantial
Departure Point: Bankstown, NSW
Departure Time: 1223
Destination: Cairns, Qld

Approved for Release: 22 January 2003

FACTUAL INFORMATION

The pilot of a Cessna 340 departed Bankstown, NSW at 1223 ESuT, for Townsville, Qld via Walgett, St George, Roma, Emerald and Clermont. He reported that he climbed the aircraft to 16,000 ft and adopted a long range power setting of about 49% which equated to a true air speed (TAS) of 168 kts and a fuel burn of 141 lbs per hour.

As the pilot approached the 'OLDER' waypoint north of Clermont, he reviewed his fuel situation and, because of a strong tailwind decided to continue on to Cairns. He informed an enroute controller of his decision and requested, for fuel planning purposes, a clearance to allow him to track in the opposite direction on a one-way air route. The controller was unable to approve his request but offered the pilot a direct track to Biboohra, a navigation aid 20 NM west of Cairns. The pilot accepted the amended track with the intention of later requesting a more direct route to Cairns.

About 15 minutes later, the pilot requested a more direct track, but was told to call the approach controller for a possible clearance. He contacted the approach controller and told the controller that he had minimum fuel. The controller asked the pilot if he was declaring an emergency, to which he replied affirmative. The pilot later commented that he did this in the hope of expediting his arrival. He was instructed to descend to 6,500 ft and track direct to Cairns. The controller asked the pilot if he preferred to join the runway 15 circuit via a left downwind or right downwind, to which the pilot requested to join a left downwind. The pilot later commented that the aircraft fuel flow gauges were indicating a total flow of 140 lbs per hour and the fuel quantity gauges for the selected main tanks, although wandering somewhat, were 'displaying a healthy amount' considering that he was about 12 NM from his destination.

As the pilot approached 6,500 ft, he requested a clearance for further descent, to which the controller instructed the pilot to descend to 4,000 ft.

As the aircraft descended to 4,000 ft, the pilot saw Cairns City, but could not see the runway at Cairns airport. The aircraft's distance measuring equipment (DME) indicated 9 NM to the DME navigation aid at Cairns Airport. The pilot reported that at about this time, he observed one of the fuel flow gauges indicating zero, while at the same time, one or both engines began to surge and run roughly. He immediately informed the controller of the situation. The controller asked the pilot if he was familiar with a local airstrip (Greenhill which is 10 NM to the southeast of Cairns airport), to which the pilot replied that he wasn't. The controller indicated to the pilot that the strip was situated in his two o'clock position at a range of about two miles and to be aware of power lines and the sugar cane. The pilot was unsure of what to look for and was unable to see the strip, but after conducting a number of steep turns, saw a cleared strip in a field. He decided that he had to land. He extended the landing gear, but realised that the aircraft was too high and attempted a 360-degree steep turn onto final to reposition the aircraft. However, the airspeed was rapidly decreasing and there was insufficient height to complete the approach. At 1729 EST, the aircraft impacted the ground short of the strip and slid for about 20 metres. The pilot was seriously injured and the passengers received minor injuries.

The ATSB did not conduct an onsite investigation. Witnesses reported that the aircraft's engines were operating just prior to the crash.

The aircraft’s fuel system included main, auxiliary and locker tanks on each wing. During normal operation each engine used fuel from either the main or auxiliary tanks on the corresponding wing. Access to the locker tank fuel was by pilot-activated transfer of the fuel from the locker tank to the same side main tank. Fuel not required by the engine was returned to the main tank regardless of which tank was selected. It was possible for fuel to vent overboard when the main tank was full and fuel was being drawn from the auxiliary tank and/or transferred from the locker tank. Each main tank contained an auxiliary fuel pump that provided fuel pressure for starting and in the event of an engine driven fuel pump failure. A transfer pump was also fitted to each main tank to continuously transfer fuel from the nose section of the tank to the centre sump area of the tank. A function of the pump was to permit steep descents with a low main tank fuel quantity. Pump operation could only be deactivated by pulling a circuit breaker.

The pilot later commented that he had checked the fuel tanks before departure and could confirm that they were full. The pilot had recently flown the aircraft from the USA to Australia.

The pilot later reported that the fuel flow indicator, that had indicated zero, had been repaired about nine months prior to the accident and although initially erratic had operated flawlessly for the last three months. He went on to say that he now has no recollection of what occurred after he descended below 4,000 ft and cannot recall the engines surging.

A number of flight plans, using reported winds from the Bureau of Meteorology, were prepared by the ATSB to consider a number of possible scenarios. These calculations included a greater fuel burn than planned by the pilot, departing with less than full tanks, incorrect fuel tank usage which could result in fuel being vented overboard or remaining in the auxiliary or locker tanks, or a different TAS and groundspeed because of power settings. The ATSB calculations indicated that the aircraft should have arrived, after a descent and straight-in approach from 16,000 ft, with about 95-100 minutes of fuel on board, if fuel management and flight planning were as reported.

ANALYSIS

The reason for the initial fuel flow fluctuations was not identified by the pilot. It is likely that the pilot assumed the zero reading indicated impending fuel exhaustion and concentrated on conducting a landing in unfamiliar terrain. During the landing approach the pilot lost control of the aircraft and it descended rapidly to the ground.