Aviation Safety Investigation Report 199301532

Piper Aircraft Corp Chieftain

29 May 1993

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Aviation Safety Investigation Report

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Occurrence Number: 199301532 **Occurrence Type:** Accident
Location: Innamincka
State: SA **Inv Category:** 3
Date: Saturday 29 May 1993
Time: 1258 hours **Time Zone** CST
Highest Injury Level: Serious
Injuries:

	Fatal	Serious	Minor	None	Total
Crew	0	1	0	0	1
Ground	0	0	0	0	0
Passenger	0	3	0	0	3
Total	**0**	**4**	**0**	**0**	**4**

Aircraft Manufacturer: Piper Aircraft Corp
Aircraft Model: PA-31-350
Aircraft Registration: VH-LIC **Serial Number:** 31-7652173
Type of Operation: Air Transport Domestic Low Capacity Passenger Scheduled
Damage to Aircraft: Destroyed
Departure Point: Innamincka SA
Departure Time: 1258 CST
Destination: Durham Downs SA

Crew Details:

Role	Class of Licence	Hours on Type	Hours Total
Pilot-In-Command	Senior Commercial	966.4	2930

Approved for Release: Friday, May 20, 1994

The pilot was conducting a scheduled passenger service flight from Port Augusta with a stop at Innamincka. A commercial pilot, travelling as a non-paying passenger, occupied the co-pilot's seat to observe the operation. Two additional passengers were on board the aircraft for the entire flight.

After landing at Innamincka, the aircraft was refuelled by the pilot in command and the oil levels of both engines were checked by the observer, who experienced difficulty securing the combination oil filler cap-dipsticks. He asked the pilot for instructions and, although some advice was given, the pilot did not check the security of the dipsticks.

Take-off was commenced towards the north into a 10-15 knot wind with a surface temperature of about 20 degrees C. Shortly after lift-off, at the first power reduction, the observer in the co-pilot's seat advised that there was oil seeping back along the cowl from the right side oil filler hatch. The pilot reported that he increased power to both engines but believed there was no response from the right. He began an immediate left turn to complete a circuit and attempted to secure the right engine and feather the propeller. The aircraft then began a roll to the right, the nose dropped and the aircraft impacted the ground. As the aircraft rolled right and the nose dropped, the pilot reported that he had secured the left engine and feathered the propeller. The observer in the co-pilot seat reported hearing a continuous stall warning horn as the right wing began to drop.

All occupants, although injured, were able to vacate the aircraft through the main cabin door. The pilot provided assistance to the passengers and then returned to the airport to summon help.

Examination of the wreckage revealed that the aircraft impacted the ground in a nose down, right wing low attitude while turning right. The landing gear collapsed due to impact forces and the right wing separated. Deceleration and impact forces were severe. The right propeller was found in the fine pitch range with no damage to the uppermost blade and the other two bent backwards. The right engine oil filler cap-dipstick was found to be correctly installed in the oil filler neck. There was a pattern of engine oil over the rear of the engine and inside the cowl originating from the oil filler neck.

The left engine was partially torn from its mountings and displaced about 90 degrees to the right. Its propeller was in the fully feathered position. The oil filler cap-dipstick was on the ground adjacent to the engine. An oil spill pattern similar to that on the right engine was evident.

The pilot in command held a Senior Commercial Pilot Licence, a Command Instrument Rating and a current Class 1 Medical certificate. He was endorsed on the aircraft type and had last been checked in emergency procedures eight months previously.

The person in the co-pilot's seat had recently qualified as a commercial pilot and had completed some flying training with the operator. He was on board the flight to observe a typical commercial operation to enhance his employment prospects as a pilot. This observer status had been previously granted to other pilots. The company management provided strict guidelines to pilots in command of such flights regarding the non-active role of these observer pilots.

The aircraft maintenance release was valid and the aircraft had been loaded within the Flight Manual maximum weight and centre of gravity limits at the time of the accident.

The right engine was run on a test stand and assessed as being capable of normal operation. The combination oil cap-dipstick prevented oil loss when correctly inserted and clipped down. When in place but not clipped down, with the engine running above 1800 rpm, an oil leak pattern similar to that seen at the accident site occurred over the rear of the engine .

It is considered likely that the dipstick had been loose prior to impact, but was correctly replaced in the filler neck after the accident. The design of the oil filler system tends to restrict oil loss with a loose dipstick. This condition would not require an immediate reaction by the pilot to prevent engine damage.

The right propeller was dismantled for inspection and found in the normal fine pitch range but capable of feathering. The uppermost blade was not damaged and backwards bending of the other two blades indicated that it was stationary or rotating slowly at impact.

Severe impact damage to the left engine precluded a test run. It was bulk stripped with no defects evident that would have prevented normal operation. The left propeller was dismantled and found to have been in the fully feathered position prior to impact. Damage sustained would indicate that it was stationary or rotating slowly at impact.

Based on the physical wreckage and impact examination and on the pilot and passenger comments, it is evident that when the pilot secured the right engine and began the left turn, the airspeed dropped and the aircraft stalled. When the right wing dropped the aircraft entered an incipient spin. Due to the low altitude at which control was lost, the pilot was unable to effect a recovery.

Findings:

1. The aircraft had a valid maintenance release and was within maximum weight and centre of gravity limitations at the time of the accident.

2. The pilot-in-command was correctly licensed and endorsed for the aircraft type.

3. Oil levels had been checked and oil added to the right engine by a non-crew member.

4. The combination oil cap-dipsticks had not been checked for correct installation by the pilot-in-command and were probably loose at take-off.

5. The oil filler design of the engine will restrict oil loss when a dipstick is not correctly secured.

6. The left propeller was feathered and the right propeller was in the fine pitch range; both were stationary or rotating slowly at impact.

7. The right engine was capable of normal operation and was successfully run on a test stand after the accident.

8. Impact damage to the left engine precluded a test run but a strip inspection indicated that it was capable of normal operation.

9. The aircraft stalled and entered an incipient spin to the right prior to ground impact.

Significant Factors:

1. The pilot-in-command reacted inappropriately to a perceived engine problem shortly after take-off.

2. Control of the aircraft was lost at a height insufficient to effect a recovery.