COMMONWEALTH OF AUSTRALIA-BUREAU OF AIR SAFETY INVESTIGATION

AIRCRAFT ACCIDENT INVESTIGATION SUMMARY REPORT

REFERENCE NO V116/813/1014

1. LOCATION OF OCCURRENCE

Frederick Henry Bay, 5km south of Hobart Airport, Tas.		Elevation: Sea Level
Date: 27.4.81	Time: 1814 hours	Zone: EST

2. THE AIRCRAFT

Make and Model: Aero Commander 500S	Registration: VH-EXQ
Certificate of Airworthiness: Valid from 19.6.69	
Certificate of Registration Issued to:	Operator:
Degree of Damage to Aircraft: Destroyed	Other Property Damaged: Nil

Defects discovered:
1. General mechanical wear in left engine.
2. Left engine fuel injector system outside manufacturer's specifications.
3. Slight timing fault in one magneto on right engine.

3. THE FLIGHT

Departure Point:	Melbourne	Time of departure:	1605 hours
Destination:	Hobart		
Purpose of flight:	Carriage of Passengers	Class of Operation:	Charter

4. THE CREW

Name	Status	Age	Class of Licence	Hours on Type	Total Hours	Degree of Injury
	Pilot	37	Private	77	1925	Minor

5. OTHER PERSONS (ALL PASSENGERS AND PERSONS INJURED ON GROUND)

Name	Status	Degree of Injury
	Passenger	Nil
	Passenger	Nil
	Passenger	Nil
	Passenger	Nil
	Passenger	Nil

6. RELEVANT EVENTS

Due to industrial action, normal domestic airline services had been suspended. The pilot hired the aircraft to convey persons stranded by the strike between Hobart and Melbourne. He submitted a flight plan for the proposed return flight to Melbourne that nominated operations under the Instrument Flight Rules, although he did not hold an appropriate Instrument Rating.

The flight to Melbourne was completed without known incident. After refuelling the aircraft and engaging five passengers, the return flight was commenced. A fare was paid by each passenger although the pilot did not hold either a Charter Licence or an appropriate pilot licence.

There was considerable cloud in the vicinity of Hobart Airport which, at 1800 hours, was recorded as; one okta stratus, base 800 feet; five oktas stratocumulus, base 3000 feet; five oktas altocumulus, base 11000 feet. The surface wind was a light westerly, and the runway in use was Runway 30. There were rain showers in the area and the runway was wet. The end of daylight was at approximately 1748 hours.

When the pilot of VH-EXQ contacted Hobart Tower at approximately 1800 hours, he reported on descent to 7000 feet and 50km from the airport. As the aircraft proceeded, the Aerodrome Controller cleared it for further descent in stages, to provide vertical separation from a preceding aircraft.

The only Instrument Landing System (ILS) approach at Hobart Airport was aligned with Runway 12 and the tailwind for a landing in that direction was only two or three knots. In order to expedite their arrivals, the Aerodrome Controller offered the pilots of both approaching aircraft the option of a straight-in ILS approach to Runway 12 instead of a circling approach to the into-wind Runway 30. Both pilots accepted.

At 1803 hours, the preceding aircraft was cleared for an ILS approach. The pilot of VH-EXQ was then advised to expect the same clearance but, to ensure continued separation from the other aircraft, was instructed to make one circuit of the holding pattern at Tea Tree Locator, a navigational radio aid sited approximately 22km to the north-west of the airport.

The pilot misunderstood this instruction and, on reaching Tea Tree at about 1805 hours, he continued towards the airport. At 1807 hours, the Aerodrome Controller cleared VH-EXQ for an ILS approach. The pilot acknowledged this instruction in the normal manner and did not advise that he had already commenced the approach.

In descending towards the airport the pilot had maintained a high airspeed of nearly 200 knots. From overhead Tea Tree he could see the lights of the preceding aircraft and endeavoured to reduce his speed so as to maintain separation. As a result, the aircraft was still very high as it approached the runway. This was noted by the Aerodrome Controller and, at 1810 hours, he asked the pilot whether he would be able to land on Runway 12 or would prefer to make an approach for Runway 30. The pilot chose the latter and was cleared to a right base leg for Runway 30.

6. RELEVANT EVENTS

The approach to Runway 12 was abandoned and the aircraft turned left onto a close right downwind leg for Runway 30. The landing gear, which had been extended, and the flaps, which had been set at ¼-down, were not moved from these positions.

The pilot reported that at some stage of the approach to Runway 30 he moved the throttles forward to increase power and maintain height. In response the aircraft yawed slightly to the right. Both propeller levers were then pushed fully forward, both throttles were fully opened and the mixture controls were checked in the full-rich position. The aircraft again swung to the right. Identifying this as evidence that the right engine had failed, and after checking from the tachometer that the right propeller was windmilling at about 1500 RPM, the pilot feathered the right propeller and selected the landing gear and flaps up. He believed that he carried out the feathering action at a height of about 300 feet and an airspeed of about 100 knots. At this time the aircraft was heading southwest, towards Single Hill (elevation 680 feet) on the shore of Frederick Henry Bay. The pilot reported that the aircraft would not maintain height or airspeed and he therefore turned left to avoid the hill. The wings were then held level until the aircraft touched down in the bay.

After the aircraft turned right at a close base leg position, but then straightened on a southwesterly heading instead of continuing the turn onto final approach, the Aerodrome Controller asked the pilot to confirm that he was tracking for Runway 30. This transmission was not answered and the Aerodrome Controller again called the aircraft. The pilot then reported that he was having trouble with the right engine and he was going to feather. This transmission was made as the aircraft was approaching Single Hill, just before it turned left and descended from view. There were no further transmissions from the aircraft despite a number of calls by the Aerodrome Controller.

The Distress Phase of Search and Rescue (SAR) procedures was declared at 1815 hours. The appropriate emergency services were alerted, including a helicopter that was on standby for SAR operations.

Prior to the aircraft striking the water, the pilot did not alert the passengers that an emergency existed or that a ditching was imminent. Life jackets were available under each occupant's seat but the passengers were not aware of this. Towards the end of the ditching run the aircraft nosed over and came to a halt inverted. It remained substantially intact and did not immediately sink. Four of the passengers exited through the cabin door onto the wing and then assisted the pilot and fifth passenger to get out. The pilot brought a single lifejacket with him and activated the emergency light that was attached to the jacket. He also brought with him an emergency radio beacon but this was not a waterproof unit and it did not operate. When the aircraft sank, two of the passengers swam about 500 metres to shore. The other four occupants remained afloat with the assistance of the life jacket and a seat cushion. They were located by the searching helicopter at 1908 hours and a life raft was dropped. Only two persons had boarded the raft when a police rescue boat arrived.

Subsequent examination of the wreckage established that, at the time of ditching, the aircraft landing gear was retracted and the right propeller was feathered. The position of the flaps could not be

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6. RELEVANT EVENTS

established. Apart from a slight timing fault in the right magneto, which would have had only minimal effect upon performance, no evidence was found of any pre-existing defect or malfunction with the right engine. The left engine, which had only 85 operating hours remaining before overhaul, was mechanically worn in such components as piston rings, valves and valve guides, and was not capable of full power output. The over-rich calibration of the fuel injector system would have contributed to the performance deterioration. A power check had been carried out on the left engine on 31.3.81 and data recorded at that check indicated a 3 percent loss of rated power at the full power setting.

Performance data contained in the manufacturer's Operations Manual indicated that under the prevailing conditions VH-EXQ should have been capable of a single-engine rate of climb of approximately 325 feet per minute; if configured with gear and flap retracted, the propeller of the inoperative engine feathered and the correct climb speed maintained. This speed was 90 knots.

Although the pilot was unclear as to the position of the aircraft when he detected the loss of right engine power, it was evident that he had not taken action to configure the aircraft for single-engine operation until after the aircraft had deviated from the normal circuit pattern and descended to about 300 feet. There was evidence that for a significant period prior to this the stall warning had been sounding. This would indicate an airspeed in the range 70-75 knots, instead of the 100 knots recalled by the pilot. At this time the pilot also asked the passenger in the front right-hand seat if he could see a light(s). The identity of the light or lights has not been determined. This passenger also reported that the pilot appeared hesitant and touched several controls without moving them. He could recall the pilot retracting the landing gear but could not remember him moving the throttles.

7. OPINION AS TO CAUSE

The probable cause of the accident was that, following an apparent loss of power by the right engine, the pilot did not operate the aircraft in the configuration and at the airspeed necessary for safe single-engine flight. The pilot's responses may have been influenced by operating under Instrument Flight Rules conditions, for which he was not qualified. The cause of the reported loss of power by the right engine was not determined.

Approved for publication under the provisions of Air Navigation Regulation 283(1)	(A.R. Woodward) A/ Director	Date: 5.11.82