

**Aviation Safety Investigation Report
198900249**

Rockwell Commander 500S

6th October 1989

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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: 198900249
Location: Port Headland Harbour WA
Date: 6th October 1989
Highest Injury Level: Minor
Injuries:

Occurrence Type: Accident
Time: 1632

	Fatal	Serious	Minor	None
Crew	0	0	0	0
Ground	0	0	0	-
Passenger	0	0	3	0
Total	0	0	4	0

Aircraft Details: Rockwell Commander 500S
Registration: VH-NLL
Serial Number: 3722
Operation Type: Charter
Damage Level: Substantial
Departure Point: Port Headland WA
Departure Time: 1630
Destination: Punmu WA

Approved for Release: 19th November 1990

Circumstances:

Shortly after takeoff, on the 33 degree Celcius day and close to the approved maximum weight, the right engine surged and lost power. The pilot completed his engine failure after takeoff check list and looked for a landing site. The only suitable area, in the aircraft's flight path was the harbour. The aircraft was unable to maintain height and the pilot reported that it descended at 100 feet per minute until it struck the water. The pilot then retarded the left throttle and allowed the aircraft to ditch. The symptoms reported by the pilot indicated that there had been an interruption to the fuel flow to the right engine. The investigation found that the right hand electrical fuel boost pump was unserviceable. No other faults were found. The reason for the engine failure could not be determined. At the manufacturer's approved maximum weight of 3060 kilograms the single engine performance charts contained in the USA approved Flight Manual, indicate that the aircraft should climb at 230 feet per minute at 33 degrees Celcius. The Civil Aviation Authority had approved an increase in maximum weight to 3357 kilograms, however, the Australian approved Aircraft Flight Manual does not contain any single engine performance information. The USA manual does not contain any information on performance at the increased maximum weight. Practical experience indicates that a single engine AC500S should be able to achieve a positive, but minimal, rate of climb at the accident flight weight and temperature, if all other conditions are at their optimum. On this occasion wind conditions were turbulent, making accurate flying difficult and the aircraft was not able to achieve a positive rate of climb once the right engine had failed.

Significant Factors:

The following factors were considered relevant to the development of the accident

1. There was an interruption to fuel flow to the right hand engine. It could not be determined whether the unserviceable electrical fuel boost pump contributed to the interruption.
2. The right engine lost power during a critical phase of the takeoff.
3. Experience indicates that single engine performance in the prevailing conditions would have been marginal.
4. The pilot had limited experience on the Rockwell Commander 500S and this coupled with the weight and weather conditions may have resulted in the aircraft not being able to achieve safe single engine climb.