

**Aviation Safety Investigation Report
199702212**

**Piper Aircraft Corp
Cherokee Six**

27 June 1997

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The pilot's fuel management technique for the remaining three tanks was to operate from the right main fuel tank from takeoff until reaching cruise level, a period of approximately 10 minutes. He would then select the right tip tank and draw fuel from this tank for approximately 50 minutes. The left main fuel tank was then selected and would be drawn from for about 30 minutes. This would be followed by the right main fuel tank for a further 30 minutes, and so on, in order to maintain the aircraft's lateral balance.

On the day of the incident, the pilot had planned to fly from Oodnadatta to Condobolin via Broken Hill, with a possible extension to Parkes depending on in-flight calculations of fuel remaining. The pilot had started preparations for this leg shortly after dawn. Following a refuelling stop at Broken Hill, the aircraft departed at 1422 EST for Condobolin. When the aircraft reached Menindee at an altitude of 5,000 ft, a significant amount of cloud was observed along the planned track. A diversion was made to the south and the aircraft was descended to maintain altitudes between 2,000 ft and 3,000 ft. With the weather to the north still looking unsuitable for continued VFR flight, the pilot elected to divert for a landing at Griffith.

Greater than expected headwinds were encountered on the track to Griffith with the aircraft's groundspeed reducing from 90 kts, the planned groundspeed for the Broken Hill to Condobolin leg, down to as low as 75 kts. However, the pilot believed that he had more than sufficient fuel to reach Griffith. He became concerned about the fuel state when the aircraft was some 20 NM north-west of Griffith. He subsequently transmitted a message on the flight service frequency indicating that he may need to consider a landing before reaching Griffith. An alert phase was declared and crews of aircraft in the locality were asked to provide assistance in guiding the pilot to Griffith in the failing light conditions.

The pilot reported that the engine started to falter when the aircraft was approximately 10 minutes flight time from Griffith. He had been drawing fuel from the right tip tank and responded quickly by changing the fuel selector to the left main fuel tank. The pilot was verbally assisted to locate the lights of the aerodrome by the crews of two aircraft in the area. At the top of the descent for landing, the engine started to falter again so the pilot selected the right main fuel tank. Whilst on final approach, the engine again started to falter, however, the pilot was concentrating on the landing and chose not to make another fuel tank selection. A safe landing was completed at 1820, however the engine stopped during the ground roll and the aircraft had to be pushed clear of the runway. The total elapsed flight time from Broken Hill was 3 hours and 58 minutes.

The aircraft underwent inspection by a LAME at Griffith following the incident. No anomalies could be found with the fuel system, fuel gauges or the engine, which may have contributed to the incident. No explanation could be found for the fuel overflow problems which had been experienced earlier in the trip.

The pilot held a valid licence and medical certificate for the operation being undertaken. He had accumulated a total of approximately 750 hours and had flown about 50 hours in a similar Cherokee Six previously. Whilst he held a Night VFR rating, he did not satisfy the recency requirements in order to exercise the privileges of that rating. However, this was not considered to be a contributing factor to the incident.

The pilot had recently purchased the PA 32-260 after completing a 40 minute inspection flight at Roma with the previous owner. He later ferried the aircraft from Bathurst to Bankstown, a flight of approximately 1 hour and 20 minutes. In addition, he had completed a half hour period of circuits before embarking on the pleasure trip. He had amassed some 25 hours in the aircraft during the trip, culminating in the incident flight.

On reflection, the pilot believed that the incident resulted from a number of contributing factors. The incident flight was flown at much lower altitudes than those of the previous legs of the journey, most of which had been flown at approximately 7,500 ft. The pilot reported that he continued to use a high power setting of 2,450 RPM and a slightly richer mixture to maintain smooth operation of the engine. In addition, the aircraft was not fitted with an Exhaust Gas Temperature or Cylinder Head Temperature gauge to assist with accurate leaning techniques. The resultant effect would have been a higher fuel consumption than he had previously experienced. Discussions with other pilots and maintenance personnel who were familiar with the aircraft type, considered that a fuel consumption rate of 60 L/hr was a more accurate reflection of the aircraft type's average fuel consumption. Using this fuel consumption figure and fuel capacities gleaned from the aircraft's flight manual, the fuel endurance of the aircraft, with the remaining three tanks, was calculated to be approximately 4 hrs and 10 minutes. When a fuel consumption rate of 55 L/hr was substituted, the aircraft's endurance was approximately 4 hours and 33 minutes, still 12 minutes less than the pilot had calculated.

The pilot added that a passenger had to return to Sydney to enable him to connect with a flight to Perth. This self-imposed pressure influenced his decision to "push on". These two factors, combined with the cumulative effects of fatigue resulting from a five day journey, the last day of which had commenced at dawn, most likely eroded his ability to make sound decisions and judgements, in what became stressful circumstances.

