Aviation Safety Investigation Report 198903859

Air Command Gyrocopter

4 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: 198903859 **Occurrence Type:** Accident
Location: Tully QLD
Date: 4 October 1989 **Time:** 920
Highest Injury Level: Fatal
Injuries:

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

Aircraft Details: Air Command Gyrocopter
Registration: QG 874
Serial Number: N/A
Operation Type: Private
Damage Level: Destroyed
Departure Point: N/A
Departure Time: N/A
Destination: N/A

Approved for Release: 11th December 1989

Circumstances:

The pilot purchased the aircraft in kit form from the manufacturer when he was visiting the USA in June 1989. He completed a training course in the dual seat version comprising approximately 30 hours of dual instruction, and was certified competent for solo flight on 10 June 1989. After returning to Australia he assembled the aircraft with the assistance of an aircraft engineer and began flying it on 20 September 1989, and had flown approximately 5 hours since then. On the day of the accident, the pilot had been practising takeoffs and landings at the Tully aerodrome, and after about an hour of flying stopped for a break and to check the fuel. During the break he said that he would fly for another half hour, and then stop to refuel and have something to eat. During the next flight, the aircraft was seen proceeding along the runway and carrying out "S" turns to reverse direction. During the commencement of a turn to the right, whilst heading towards the southern end of the strip, the aircraft was seen to adopt a steep nose down attitude, and dive towards the ground. The aircraft impacted the ground inverted, adjacent to the strip on a heading of 200 degrees magnetic, and travelled 15 metres after initial impact before coming to rest. There was no evidence to suggest that the aircraft was operating abnormally prior to the accident sequence, and no defects were found which may have contributed to the development of the accident. The aircraft pitched nose down suddenly, and the rotor blade struck the tailfin with considerable force before ground impact. The behaviour of the aircraft is consistent with that which may occur when a gyrocopter is subjected to zero or negative "g", causing normal inflight forces to become unbalanced, and the gyrocopter to become uncontrollable. The weight of the aircraft is removed from the rotor, and the engine thrust may then turn the aircraft upside down. This could be caused by levelling off from a climb too abruptly at a low forward speed, and allowing the airflow through the rotor to be reversed.

Significant Factors:

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

1. The pilot was inexperienced and was teaching himself to fly the gyrocopter without the supervision of an instructor. His previous training was thorough, but its effectiveness was diminished by lack of continuity during the following 3 months.

2. The loss of control is considered to be due to misapplication of controls leading to a zero or negative "g" situation. The possibility of a wind gust or willy willy causing an upset was considered, but there was no such observation by witnesses, and the wind at the time of the accident was light and variable.

3. The longitudinal stability of the aircraft is dependent on the balance of forces, in the absence of a horizontal stabiliser. The aircraft was not fitted with a horizontal stabiliser which would have improved longitudinal stability and reduced control sensitivity.

Reccomendations:

1. The Civil Aviation Authority should consider the introduction of two place gyroplanes for use in a training role. At the moment there is no avenue in Australia for such training and the number of accidents involving inexperienced pilots is significant. It is recommended that CAO 95.12 be amended to include dual place gyroplanes, and that a syllabus of training be specified similar to the FAR 61.85 requirements.

2. The Civil Aviation Authority should consider the establishment of a scheme, to assist the Australian Sport Rotorcraft Association to set up a training and checking system, which would be available to members in specified areas of each State where this activity is popular.