Aviation Safety Investigation Report 199600539

Unknown
Gyroplane

19 February 1996

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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.

Aviation Safety Investigation Report

199600539

The Bureau did not conduct an on scene investigation of this occurrence. The information presented below was obtained from information supplied to the Bureau.

Occurrence Number: 199600539 **Occurrence Type:** Accident
Location: 5km N Orroroo
State: SA **Inv Category:** 4
Date: Monday 19 February 1996
Time: 1946 hours **Time Zone** CSuT
Highest Injury Level: Fatal
Injuries:

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

Aircraft Manufacturer: Unknown
Aircraft Model: Gyroplane
Aircraft Registration: G5537 **Serial Number:** G5537
Type of Operation: Non-commercial Pleasure/Travel
Damage to Aircraft: Destroyed
Departure Point: Unknown
Departure Time:
Destination: Unknown

Approved for Release: Monday, September 9, 1996

Reports indicated that the pilot had intended to conduct a test flight in his gyrocopter to check the propeller installation. A short time later he was observed flying in an easterly direction at an estimated height of 400 - 500 ft above ground level, when two loud bangs were heard.

A search located the wreckage of the gyrocopter which was mainly intact except that its wooden propeller had separated from the engine crankshaft flange. Pieces of the shattered propeller, a section of rotor blade skin, and the propeller mounting hub/ pre-rotator drum were found along the flight path, within 230 m of the gyrocopters impact point.

Examination of the engine revealed the crankshaft flange had failed at the attachment bolt holes, allowing the propeller and mounting hub to separate and pass up through the rotor system, striking a rotor blade and tearing a large section of skin away from its spar. The gyrocopter then became uncontrollable and descended rapidly to the ground due to loss of rotor speed and aerodynamic lift.

The propeller attachment bolts, although bent, were still attached to the hub/pre-rotator drum. There were no indications that the bolts had been loose, or the propeller had broken prior to the flange failure.

The crankshaft flange was manufactured from a Subaru cast iron flywheel, machined to a thickness of about 6.5 mm, with an associated loss of material integrity. The flange probably failed due to accumulative stresses imposed on it during operations from fluctuating propeller loads, engine RPM changes, and abrupt aircraft manoeuvres.

The crankshaft flange was manufactured from an unsuitable material. No other faults or malfunctions were found with the gyrocopter, or its controls, which may have contributed to the accident.