Aviation Safety Investigation Report 199403137

Hughes Helicopters 500 "C"

25 October 1994

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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

199403137

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: 199403137 **Occurrence Type:** Incident
Location: 55km S Waikerie
State: SA **Inv Category:** 4
Date: Tuesday 25 October 1994
Time: 1020 hours **Time Zone** CST
Highest Injury Level: None

Aircraft Manufacturer: Hughes Helicopters
Aircraft Model: 369HS
Aircraft Registration: VH-NDC **Serial Number:** 460811S
Type of Operation: Miscellaneous Media Operations
Damage to Aircraft: Nil
Departure Point: Adelaide SA
Departure Time: 0945 CST
Destination: 18km SE Loxton SA

Crew Details:

Role	Class of Licence	Hours on Type	Hours Total
Pilot-In-Command	ATPL 1st Class	1500.0	11000

Approved for Release: Thursday, April 6, 1995

The helicopter was maintaining an altitude of 2,500 feet when a small vertical jolt, accompanied by a slight roll to the right, was felt by the pilot. A check of the aircraft instruments appeared normal, but application of collective pitch only increased indicated engine torque without any change to the main rotor system pitch setting. The pilot briefed the passengers for a precautionary landing, then carried out a successful run-on landing.

An inspection of the helicopter revealed that the main rotor drive scissors link had failed, and that sometime in the past the scissor crank had been installed upside down. Examination of the aircraft records did not indicate when the scissor crank had been fitted, but showed that the failed scissor link had been recently installed, having acquired 65 hours time in service since new.

It was found that fouling had occurred between the scissor link and the incorrectly fitted scissor crank when the collective pitch control was raised towards the full up position. This caused bending stresses in the scissor link which eventually failed in flight. The fouling had not occurred prior to the installation of the new scissor link as the old scissor link had had some free play in its bearings allowing sufficient clearance between the two units.

The end of the broken scissor link jammed in the rotating swashplate and maintained some integrity between it and the main rotor head. The pilot's action in restricting collective movement during the emergency descent and landing, which kept the scissor link in contact with the swashplate, probably prevented a more serious problem from developing.