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MI-001 Main Transmission Drive Shaft Scarring Mandatory Inspection

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In several SAFARI helicopters, minor scarring has been observed on the titanium main transmission drive shaft at the point of contact with the mast bearing seals. Due to the robust design of the drive shaft, minor scarring is not a matter for concern. To prevent this from developing on helicopters currently being built, the factory has begun to install a "Speedi Sleeve" and a rubber "V" ring in new construction and service to existing machines. The sleeve prevents wear on the shaft from the edge of the seal, and the rubber ring keeps foreign material away from the edge of the seal.

A transmission recently returned to the factory for repair exhibits an unacceptable level of scarring of the main transmission drive shaft at the point of contact with the seals. This machine has been operated for 360 hours. At 293 hours, service was performed by the factory, and the scarring on the shaft was present but not significant. It has now exceeded safe operating limits. At the time of the earlier service, the installation of the sleeve and "V" ring had not been put into practice.

Over many years of servicing factory and privately owned helicopters, shafts with varying numbers of operating hours have been examined at the factory and shown only surface scarring. Parts removed from crashed helicopters are labeled and segregated, and an old shaft was found in these parts with a high level of scarring. The accident was not related to the shaft, and it did not shear in the event. While surface scarring is not a cause for concern, scarring to the depth of the shear line machined into the shaft at the lower end is cause for replacement of the shaft. All main transmission drive shafts should be inspected for excessive wear. A Speedi Sleeve and "V" ring should be installed on all main transmission drive shafts to prevent any possible damage.

There have not been enough instances of observed damage to establish a definite inspection deadline. The wear on the shaft will be affected by the operating environment and other factors, and is not consistent with operating hours; however, this situation will not occur in a few hours of operation. Helicopters with a low number of operating hours may delay the installation of the sleeve and "V" ring until inspection is convenient without compromising the integrity of the main transmission drive shaft.

Transmissions built or serviced recently require no inspection, as the sleeve was installed at the factory. The “V” ring was more recently adopted, and may not be present. Sleeves began to be routinely installed in December, 2009. Installation of “V” rings began in August, 2010. The “V” ring can be retrofitted without dismantling the transmission, and will protect the shaft from foreign material until it can be permanently installed at a 250 hour service interval. Please contact the factory for further information if you are unsure about the presence of the sleeve.

The factory will work with the affected owners of SAFARI Helicopters on a case-by-case basis to determine what should be done to ensure the safe operation of the helicopter. On that same basis, the factory will adjust the cost of any parts or repairs, depending on the age and condition of the helicopter. Please contact your dealer or the factory for further information.